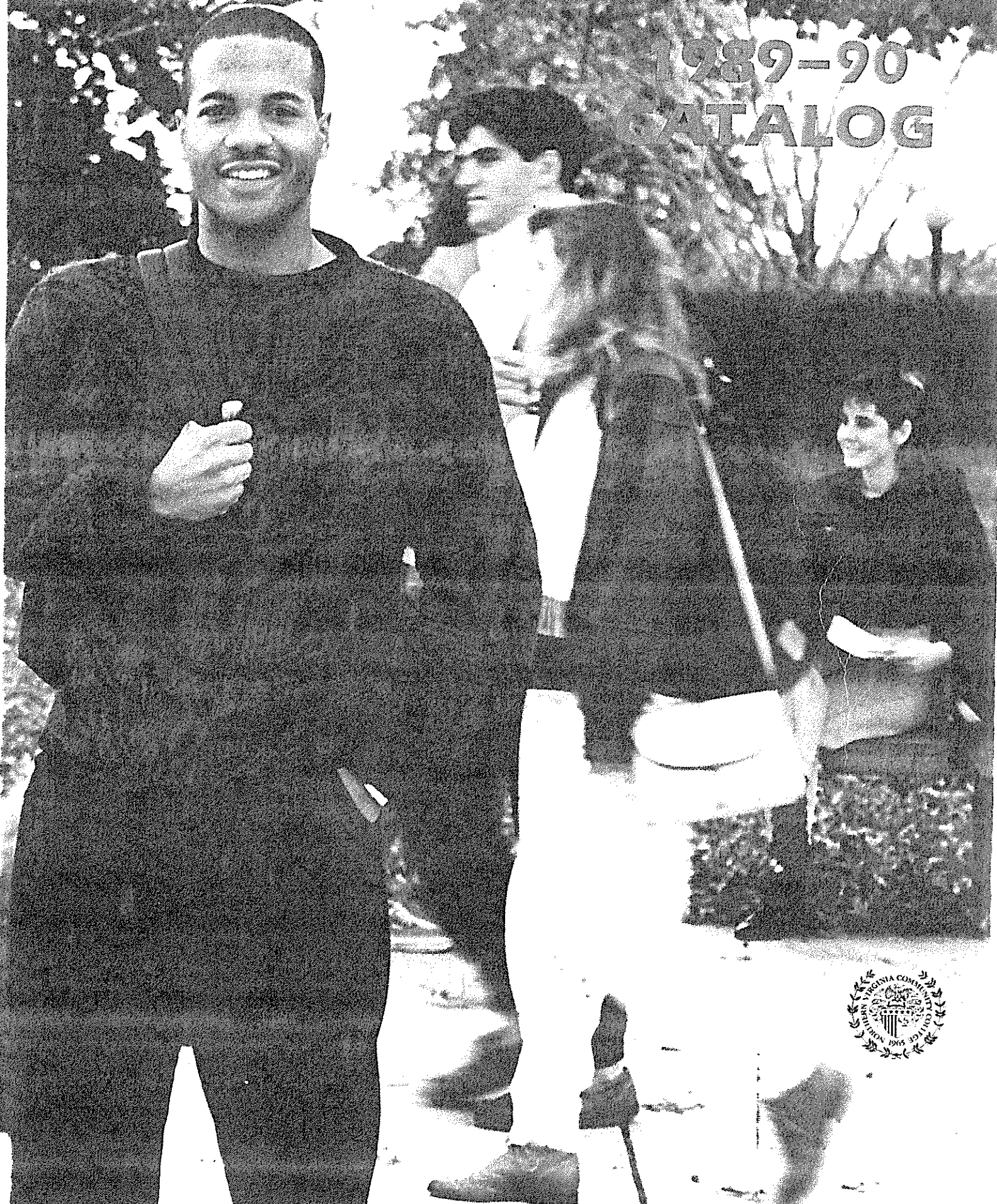


NORTHERN VIRGINIA COMMUNITY COLLEGE

1989-90
CATALOG





Electronics

PRESIDENT OF THE COLLEGE

Richard J. Ernst

NORTHERN VIRGINIA COMMUNITY COLLEGE BOARD

Nancy M. Perry, *Chairman*

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VIRGINIA COMMUNITY COLLEGE SYSTEM

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Secretary to the State Board

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Doreen S. Williams

Administrative Offices

Brault Building

4001 Wakefield Chapel Road

Annandale, Virginia 22003

Telephone: (703) 323-3000

Alexandria Campus

3001 North Beauregard Street

Alexandria, Virginia 22311

Telephone: (703) 845-6200

Annandale Campus

8333 Little River Turnpike

Annandale, Virginia 22003

Telephone: (703) 323-3000

Loudoun Campus

1000 Harry Flood Byrd Highway

Sterling, Virginia 22170

Telephone: (703) 450-2500

Manassas Campus

6901 Sudley Road

Manassas, Virginia 22110

Telephone: (703) 368-0184

Woodbridge Campus

15200 Neabsco Mills Road

Woodbridge, Virginia 22191

Telephone: (703) 670-2191

Extended Learning Institute

(Mailing Address)

8333 Little River Turnpike

Annandale, Virginia 22003

Telephone: (703) 323-3368

For those who live in the Metropolitan area, where Loudoun, Manassas, or Woodbridge may be a long distance call, a Metro number is provided—323-3000. Ask for the campus and extension.

Loudoun	ext. 500
Manassas	ext. 216
Woodbridge	ext. 212



It is the policy of the Virginia Community College System to maintain and promote equal employment and educational opportunity without regard to race, color, sex or age (except where sex or age is a bona fide occupational qualification), religion, handicap, national origin, or other non-merit factors.

The mission of the Virginia Community College System is to function within the total educational community, in those areas assigned to it by law, to assure that all individuals in the Commonwealth of Virginia are given a continuing, low-cost opportunity for the development and extension of their skills and knowledge.

COLLEGE CALENDAR

FALL SEMESTER 1989

16-Week Session

Classes Begin August 28
 Labor Day Holiday September 4
 Last Day to Apply for Graduation September 8
 Columbus Day Holiday October 9
 Last Day to Withdraw Without Grade Penalty November 2
 Thanksgiving Holidays November 23-26
 Classes and Examinations End December 20

First 8-Week Session

Classes Begin August 28
 Labor Day Holiday September 4
 Last Day to Apply for Graduation September 8
 Last Day to Withdraw Without Grade Penalty October 2
 Columbus Day Holiday October 9
 Classes and Examinations End October 23

Second 8-Week Session

Classes Begin October 24
 Thanksgiving Holidays November 23-26
 Last Day to Withdraw Without Grade Penalty November 27
 Classes and Examinations End December 20

WINTER INTERSESSION 1990

Classes Begin January 2
 Last Day to Withdraw Without Grade Penalty January 9
 Martin Luther King, Jr.'s Birthday Holiday January 15
 Classes and Examinations End January 16

SPRING SEMESTER 1990

16-Week Session

Classes Begin January 17
 Last Day to Apply for Graduation January 26
 Spring Break March 18-25
 Last Day to Withdraw Without Grade Penalty March 26
 Classes and Examinations End May 15
 Commencement Ceremony May 18

First 8-Week Session

Classes Begin January 17
 Last Day to Apply for Graduation January 26
 Last Day to Withdraw Without Grade Penalty February 19
 Classes and Examinations End March 13

Second 8-Week Session

Classes Begin March 26
 Last Day to Withdraw Without Grade Penalty April 30
 Classes and Examinations End May 15
 Commencement Ceremony May 18

SUMMER SESSION 1990

12-Week Term

Classes Begin May 17
 Last Day to Apply for Graduation May 25
 Memorial Day Holiday May 28
 Independence Day Holiday July 4
 Last Day to Withdraw Without Grade Penalty July 5
 Classes and Examinations End August 8

8-Week Term

Classes Begin June 14
 Independence Day Holiday July 4
 Last Day to Withdraw Without Grade Penalty July 17
 Classes and Examinations End August 8

First 6-Week Term

Classes Begin May 17
 Last Day to Apply for Graduation May 25
 Memorial Day Holiday May 28
 Last Day to Withdraw Without Grade Penalty June 11
 Classes and Examinations End June 27

Second 6-Week Term

Classes Begin June 28
 Independence Day Holiday July 4
 Last Day to Withdraw Without Grade Penalty July 23
 Classes and Examinations End August 8



Students on Campus

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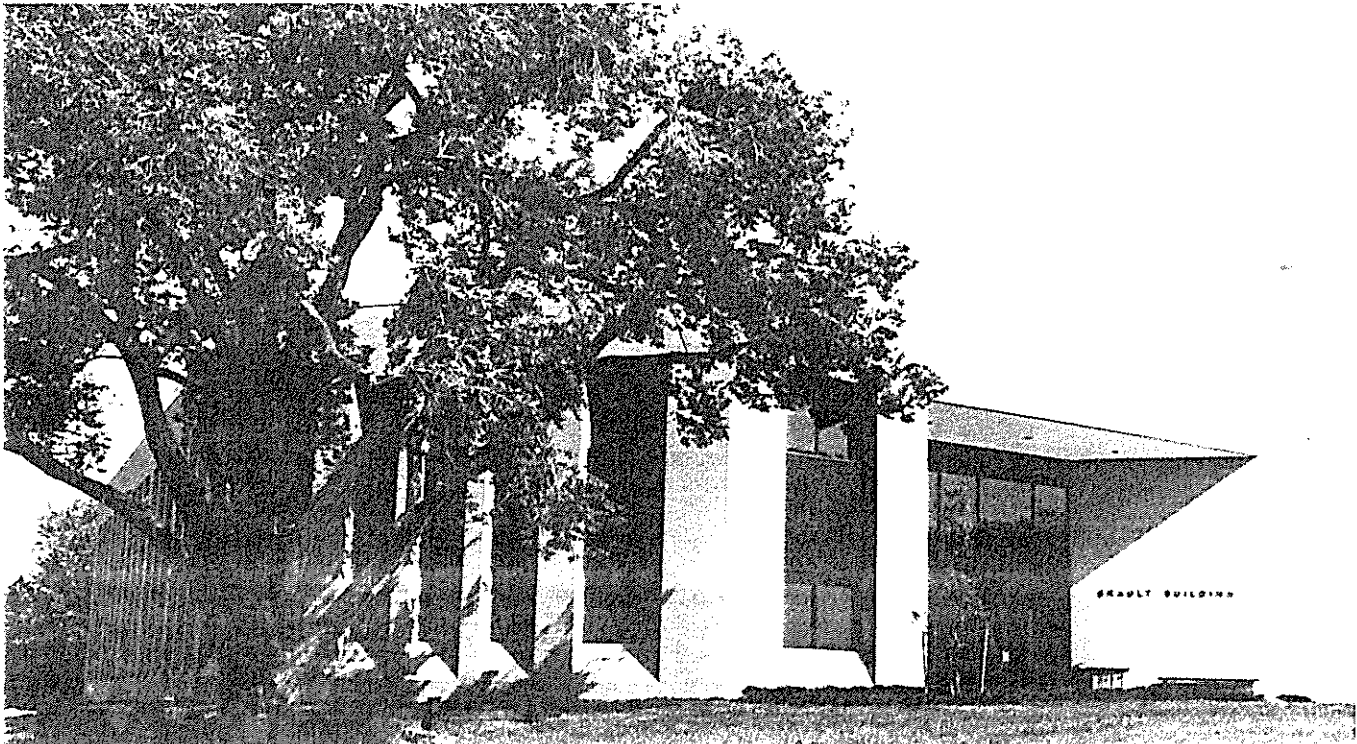
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Classification of Students	19	N— Annandale Campus—8333 Little River Turn-	
Admission Requirements	19	pike, Annandale; 76.4 acres; one mile west of	
Domicile Requirements	20	Interstate Route 495 on Route 236.	
Registration	20	L— Loudoun Campus—1000 Harry Flood Byrd	
Auditing a Course	21	Highway, Sterling; 91.4 acres, on Route 7 at	
Senior Citizens Admission	21	State Route 637, midway between Tysons Cor-	
Tuition and Fees	22	ner and Leesburg.	
Credits and Grading	23	M— Manassas Campus—6901 Sudley Road, Man-	
Transferring from Other Colleges	24	assas; 100.4 acres, on Route 234 between Inter-	
Advanced Standing	24	state Route 66 and Route 29/211.	
Degrees and Certificates	25	W— Woodbridge Campus—15200 Neabsco Mills	
Graduation Requirements	25	Road, Woodbridge; 109 acres, adjacent to Inter-	
Academic Regulations	25	state Route 95 at State Route 642 in Prince	
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College Staff

The Brault Building, 4001 Wakefield Chapel Road, is located on the northwest corner of the Annandale Campus at the intersection of Wakefield Chapel Road and Little River Turnpike (Route 236). College staff are housed in this facility, as well as in other locations on the Annandale Campus and off campus.

College Staff	Room	Telephone
President Dr. Richard J. Ernst	CH305	323-3101/ 3102
Dean, Academic and Student Services Dr. Max L. Bassett	CH310	323-3195
Dean, Financial and Administrative Services Dr. Roy Flores	CH214A	323-3122
Associate Dean, Curriculum Services Dr. Barbara A. Wyles	CH310	323-3198
Associate Dean, Instructional Technologies and Extended Learning Dr. Steven G. Sachs	ELI200	323-3371
Associate Dean, Planning and Management Services Dr. Paul G. Larkin	CH316-D	323-3273
Director, Budget Gail L. Heasley	CH214	323-3125
Director, Center for Business and Government Services Dianne S. Long	CH307	323-4293
Director, Economic & Technology Development John M. Jerke	CH 316	323-4293

Director, College Relations and Development M. Charlotte Wilhelmi	CH312	323-3753
Director, Computing and Information Systems Richard W. Bratcher	CT228	323-3278
Director, Extended Learning Institute ELI	ELI	323-3379
Director, Facilities Planning, Development and Services Dr. William B. McKinney	CW307	323-3120
Director, Fiscal and Support Services Michelle Hannahs	CH214	323-3125
Director, Personnel Services John L. Kennedy	CH203	323-3361
Director, Telecommunications Center Dr. C. Edward Cavert	CTM14	323-3350
Executive Director, NVCC Educational Foundation, Inc. Elizabeth A. Murphy	CH312	323-3023
Coordinator, Affirmative Action and Grants Development Everett V. Eberhardt	CH210	323-3266
Coordinator, Institutional Research CH316-B	CH316-B	323-3129
Coordinator, Media Processing Services Sandra J. Beeson	CG112	323-3096
Coordinator, Public Relations James L. Bradley, III	CH210	323-3196
Coordinator, Student Aid and Benefits Marie A. Bennett	CH109	323-3199

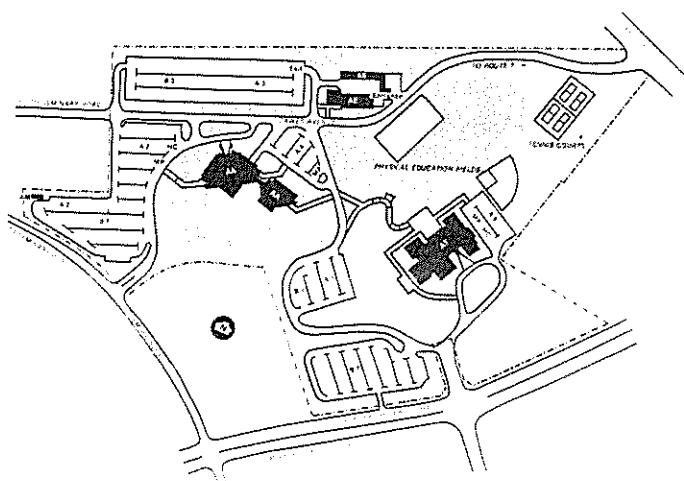


Alexandria Campus

The Alexandria campus is located at 3001 North Beauregard Street on a 51.4 acre site, just off Interstate Route 395 and Route 7. A major addition to the main building and an engineering building were completed for the fall of 1980. The John Tyler School was purchased from the City of Alexandria in 1980. The campus also maintains classrooms in leased, temporary facilities at other off-campus locations.

- A—Staff/Faculty Parking
- AA—Donald L. Bisdorf Building
- AE—Engineering Building
- AM—Maintenance Building
- AT—Tyler Building
- B—Student Parking
- MP—Motorcycle Parking
- O—Official (State Vehicle) Parking
- SH—Severely Handicapped Parking
- V—Visitor Parking

Campus Staff	Room	Telephone
Provost		
Dr. Jean C. Netherton	AA210	845-6222
Dean of Student Development		
Dr. John H. Popeck	AA216	845-6219
Chairman, Division of Automotive, Engineering and Public Services Technologies		
Dr. Craig S. Washington	AE209	845-6263
Chairman, Division of Business		
Fay R. Avery	AA373	845-6314
Chairman, Division of Humanities		
Dr. Elaine C. Niner	AA263	845-6206
Chairman, Division of Natural Sciences and Mathematics		
Dr. J. Clarence Sasser	AA363	845-6341
Chairman, Division of Social Sciences		
Dr. Elizabeth L. Johns	AA273	845-6214
Chairman, Division of Visual and Performing Arts		
Dr. Rudolph J. Fiorillo	AT232	845-6244
Admissions and Records		
Suzanne H. Fuller	AA220	845-6217
Bookstore		
Mary Ann Mulroy	AT144	845-6221
Business Office		
James B. Trent	AA225	845-6281
Community Services		
Rebecca W. Gates	AA106	845-6280
Continuing Education		
Dr. Nancy McNamara	AA239	845-6212
Cooperative Education		
Patricia A. Rheams	AA366	845-6354
Counseling Services		
Dr. Fred J. Hecklinger	AA232	845-6301
Financial Aid		
Dr. Chalmers Archer, Jr.	AA170	845-6350
Job Counseling Services		
Bernadette M. Curtin	AA232	845-6245
Learning Resource Center		
Dr. Gloria P. Terwilliger	AA318	845-6254
Learning Laboratory	AA344	845-6215
Library	AA232	845-6231
Public Information Officer	AA215	845-6348
Security		
Clifford H. Shelley	AA225	845-6270
Student Activities		
Amy D. Goss	AT241	845-6207

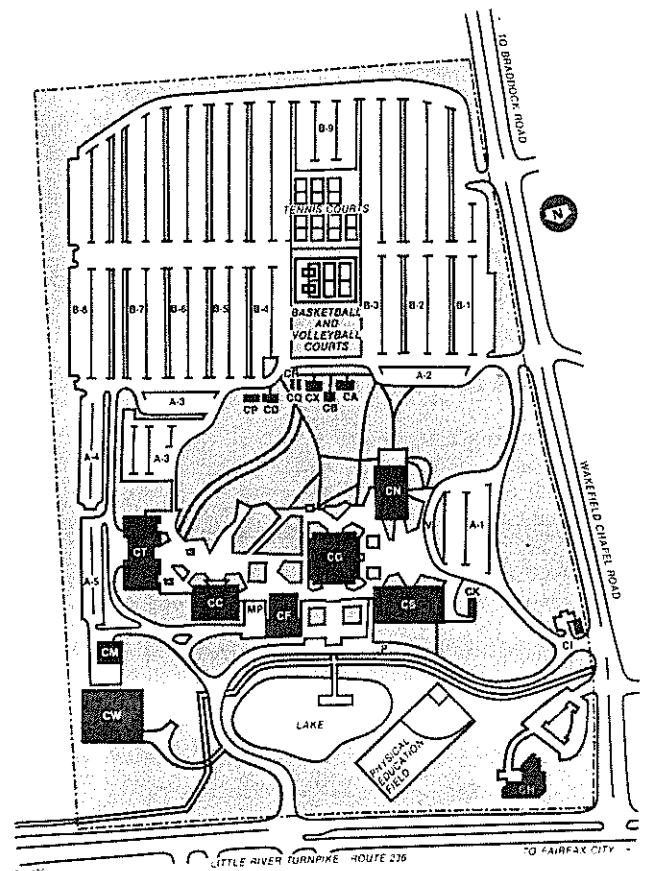


Annandale Campus

The Annandale campus is located at 8333 Little River Turnpike on a 76.4 acre site in central Fairfax County, one mile west of the Capital Beltway, Interstate Route 495, on Route 236. This campus has the College Services Building, a Classroom Building, Science Building, Library Building, TV/Technical Building, Nursing Building, temporary Music Buildings, temporary EMT Buildings, and three temporary faculty office buildings.

- A—Faculty Parking
- B—Student Parking
- CA—Temporary Building A
- CB—Temporary Building B
- CC—Classroom Building
- CD—Temporary Music Building D
- CF—Food Services Building
- CG—Godwin Building
- CH—College Services Building
- CI—Security and Information Building
- CK—Greenhouse
- CM—Maintenance Building
- CN—Nursing Building
- CP—Parcos Building
- CQ—EMT Trailer
- CR—Radiographic Trailer
- CS—Science Building
- CT—TV—Tech Building
- CW—Warehouse
- CX—Temporary Building C
- MP—Motorcycle Parking
- P—Open Parking—Right Hand Side of Road
- V—Visitor Parking—30 Minutes

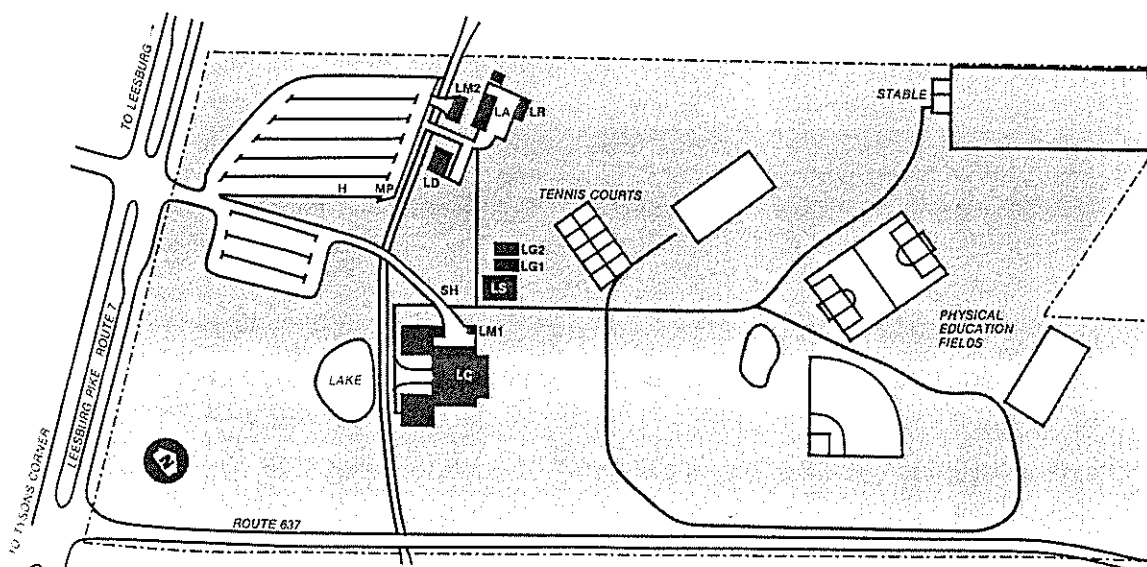
Campus Staff	Room	Telephone
Provost		
Dr. Barbara D. Holmes	CG214	323-3222
Dean of Student Development		
Dr. Elizabeth S. Grizzard	CG205A	323-3382
Chairman, Division of Business		
Mr. William C. Hill	CC223A	323-3157
Chairman, Division of Communications and Humanities		
Dr. Jonathan A. Yoder	CC103F	323-3189
Chairman, Division of Engineering Technologies		
Dr. Josef R. Horowitz	CT305B	323-3109
Chairman, Division of Health Technologies		
Dr. Richard F. Thompson	CN214D	323-3426
Chairman, Division of Natural Sciences and Mathematics		
Mr. George E. Taylor	CS122A	323-3228
Chairman, Division of Social Sciences and Public Services		
Dr. John F. Burgess, Jr.	CS203	323-3260
Admissions and Records		
Lang W. Fields, Jr.	CG211C	323-3400
Bookstore		
Tom Riposa	CG124	323-3185
Business Office		
Bob Roark	CG204A	323-3131
Community Services		
Diane Harris	CG203A	323-3168
Continuing Education		
William B. McCampbell	CG203	323-3159
Cooperative Education		
Martha E. Kossoff	CG203	323-3146
Counseling Services		
Dr. Fred H. Billups	CG216I	323-3200
Financial Aid		
James R. Brunner, Jr.	CG206	323-3427
Job Counseling Services		
Wyatt McGinnis, Jr.	CG206	323-3144
Learning Resource Center		
Director	CG302A	323-3216
Learning Laboratory	CG407	323-3221
Library	CG300	323-3128
Security		
Roger C. Simond	CI103	323-3111
Student Activities		
Terry A. Johnson	CG103	323-3147
Student Health Service		
Judith E. Molseed, R.N.	CG214K	323-3219



The Loudoun campus is located at 1000 Harry Flood Byrd Highway at Sterling on a 91.4 acre site at the intersection of Route 7 and State Route 637 in Loudoun County. There are four permanent buildings, plus a temporary Interior Design Building and greenhouse/laboratories. The Loudoun campus also supplements limited on-campus space with off-campus rentals for off-campus instruction.

- A—Faculty Parking
- B—Student Parking
- H—Handicapped Parking
- LA—Animal Science Building
- LC—Classroom and Administrative Building
- LD—Temporary Interior Design Building
- LG1—Greenhouse 1
- LG2—Greenhouse 2
- LM1—Volatile Storage Building
- LM2—Maintenance Building
- LR—Dog Runs
- LS—Natural Science Building
- MP—Motorcycle Parking
- SH—Severely Handicapped Parking

Campus Staff	Room	Telephone
Provost		
Dr. R. Neil Reynolds	LC214	450-2517
Dean of Student Development		
Dr. John C. Sartorius	LC214	450-2512
Chairman, Division of Communication and Human Studies		
Dee Wayne White		450-2527
Chairman, Division of Natural and Applied Sciences		
Dr. Nancy C. Aiello	LC303	450-2575
Admissions and Records		
Barbara B. Lowe	LC220	450-2501
Bookstore		
Maureen Farrar	LC111	450-2589
Business Office		
Robert M. Thompson	LC222	450-2562
Continuing Education		
Betty J. Beyer	LC214A	450-2551
Cooperative Education	LC220D	450-2506
Counseling Services	LC216	450-2571
Financial Aid and Job Counseling	LC220	450-2537
Learning Resource Center		
Dr. Bernadine C. Thomas	LC217B	450-2566
Learning Laboratory	LC217A	450-2508
Library	LC217	450-2567
Public Information Officer		
Christine Hofmeister	LC218	450-2555
Security		
William D. Collins	LC222	450-2540
Student Activities		
Lloyd L. Wells	LC216E	450-2571
Student Health Service		
Isabel McMahon, R.N.	LC112	450-2541

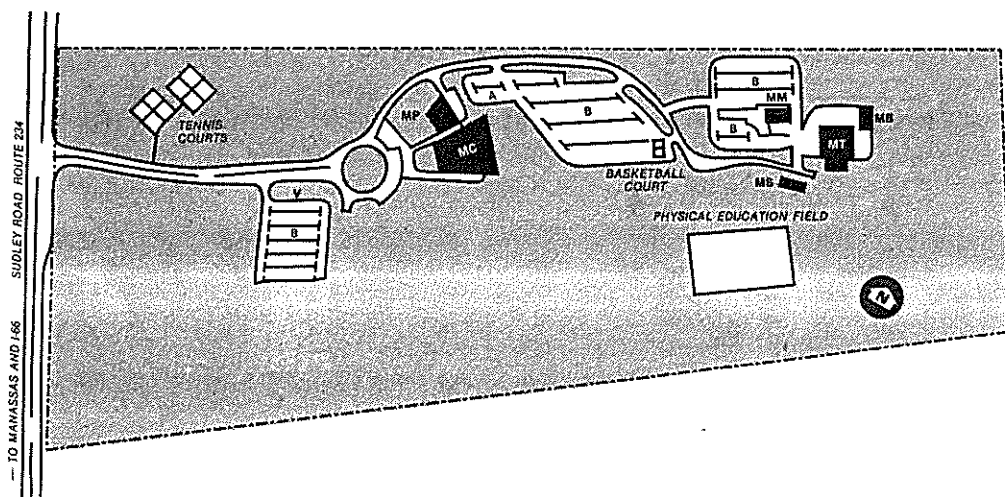
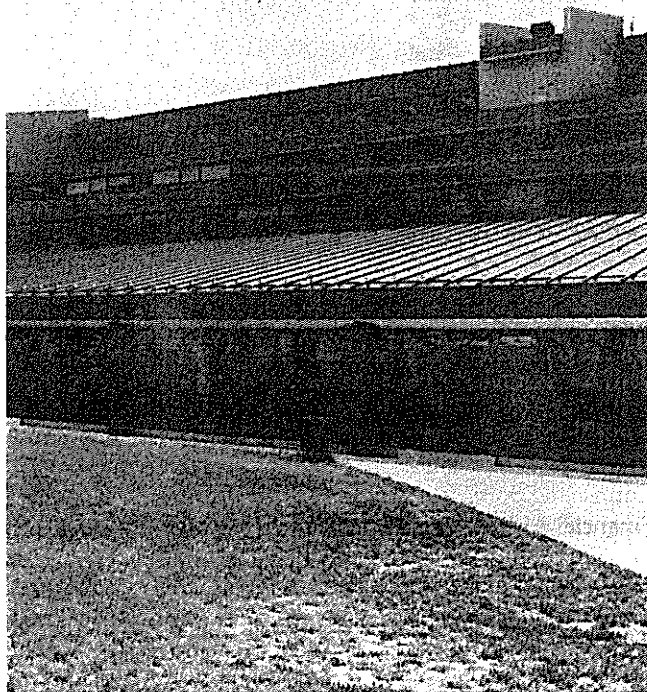


Manassas Campus

The Manassas campus is located in western Prince William County on a 100.4 acre site at 6901 Sudley Road. The campus is just north of Interstate Route 66 on State Route 234. In addition to the main building, a power technology building provides laboratories for highly specialized programs. There is also a permanent maintenance building and a temporary Art Laboratory Building. Off-campus instruction is offered at several locations including a local high school.

- A—Faculty Parking
- B—Student Parking
- MB—Paint Spray Building
- MC—Classroom and Administration Building
- MM—Maintenance Building
- MP—Central Plant
- MS—Temporary Art Studio A
- MT—Power Tech Building
- V—Visitor Parking

Campus Staff	Room	Telephone
Campus Telephone		Metro 323-3000 (703) 368-0184
Provost		
Dr. Wilfred B. Howsmon, Jr.	MC317	ext. 263
Dean of Student Development		
Dr. Calvin E. Woodland	MC318	ext. 244
Chairman, Division of Communications and Human Studies		
Dr. Arnold J. Bradford	MC404	ext. 237
Chairman, Division of Natural and Applied Sciences		
Marilou S. Giacofci	MC404	ext. 236
Admissions and Records		
Donna M. Vandevender	MC321	ext. 239, 216
Bookstore		
Steve Fredericks	MC131	ext. 241
Business Office		
Nancy V. Wyatt	MC327	ext. 238, 215
Continuing Education		
M'Kean M. Tredway	MC330	ext. 242, 231
Cooperative Education		
Dr. Verna M. Smith	MC330	ext. 265
Counseling Services		
Financial Aid	MC404	ext. 218
Guy Gibbs	MC404	ext. 233
Learning Resource Center		
Cathy E. Sabol	MC101	ext. 245
Learning Laboratory	MC102	ext. 228
Library	MC101	ext. 222
Public Information Officer		
Security	MC404	ext. 214
Candido Alicia	MC322	ext. 234
Student Activities		
Student Health Service	MC119	ext. 246
Judith E. Molseed, R.N.	MC124	ext. 219

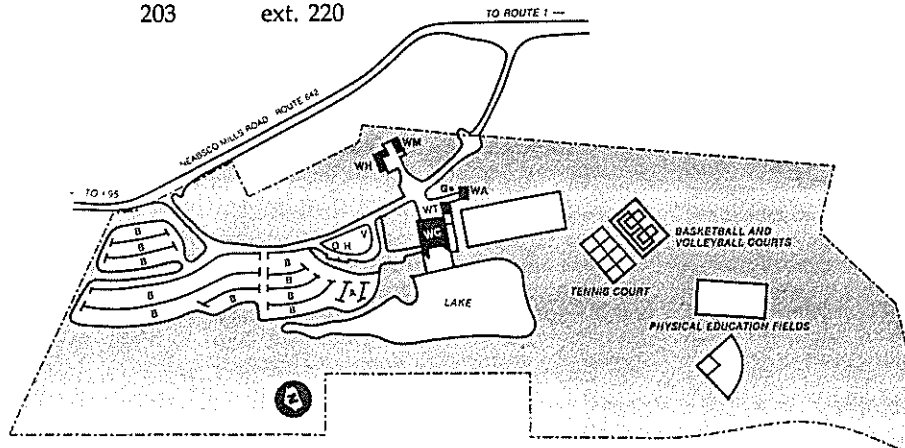
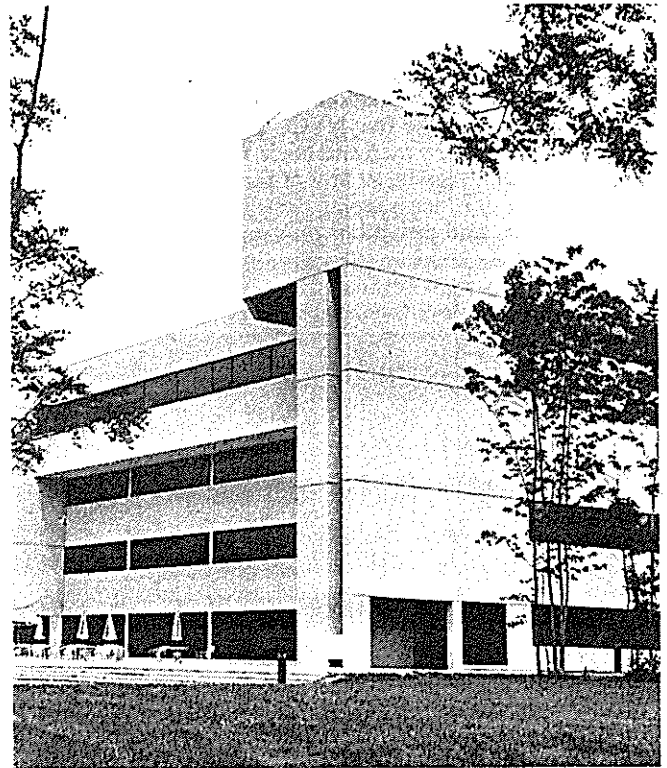


Woodbridge Campus

The Woodbridge campus is adjacent to Interstate Route 95 on State Route 642 on a 109 acre site in Prince William County. There are two permanent buildings and two temporary buildings at 15200 Neabsco Mills Road. There is a main building and the newly constructed Heating, Ventilation and Air Conditioning building, plus a temporary photography and design building, and a temporary laboratory and classroom building.

- A—Faculty Parking
- B—Student Parking
- C—Greenhouse
- H—Handicapped Parking
- O—Official Parking
- V—Visitor Parking
- WA—Temporary Photo Lab Building A
- WC—Classroom and Administrative Building
- WH—HVAC Lab Building
- WM—Maintenance Building
- WT—HVAC Trailer

Campus Staff Campus Telephone	Room	Telephone Metro 323-3000 (703) 670-2191
Provost		
Dr. Lionel B. Sylvas	210	ext. 254
Dean of Student Development		
Dr. Thomas R. Niles, II	203	ext. 220
Chairman, Division of Business and Social Science		
Dr. Mary B. NeSmith	314	ext. 255
Chairman, Division of Communications and Humanities		
Dr. Donald H. Frantz, Jr.	330	ext. 256
Chairman, Division of Environmental and Natural Sciences		
Dr. Alan R. Clarke	233	ext. 252
Admissions and Records		
Susan Liller	217	ext. 212
Bookstore		
Gail Pender		
Josephine Agresto	115	ext. 258
Business Office		
Edward K. Yellman	215	ext. 215
Continuing Education		
Dr. James A. Mustachio	230	ext. 242
Cooperative Education		
Thomas L. Henry	221	ext. 218
Counseling Services	221	ext. 218
Financial Aid		
Ervinia Miller	424	ext. 250
Job Counseling Services		
Dr. Janet K. Vitalis	221	ext. 218
Learning Resource Center		
Dr. Gordon M. Cook	409	ext. 217
Learning Laboratory	419	ext. 217
Library	402	ext. 217
Public Information Officer	253	ext. 234
Security		
Irvin H. Duncan	229	ext. 231
Student Activities		
Ellen J. Fancher	124	ext. 219
Student Health Services	203	ext. 220



Extended Learning Institute

The Extended Learning Institute (ELI) provides courses for those who prefer not to attend regular classes on campus. You may be eager to learn, but find it difficult or impossible to attend regular classes when they are scheduled. Instruction for ELI courses utilizes television, audio and video cassette tapes, and printed materials designed especially for independent study.

Most ELI courses are self-paced. The maximum time allowed for completing most ELI courses is usually longer than for on-campus courses.

When taking an ELI course, you are not entirely on your own. Faculty members assigned to each course provide valuable assistance by telephone, office visits, or through the mail. When on-campus examinations are required, you may take them at any one of the five NVCC campuses.

You may register by mail and begin most ELI courses at any time, or you can register at any of the five NVCC campuses each semester. It is necessary to designate a home campus for college records and any other on-campus activities.

If you are a veteran and enroll in an ELI course, you will not be certified for benefits until you satisfactorily complete the course.

The Extended Learning Institute has no classrooms or laboratories. Student services and faculty are provided by the campuses. Offices are located on Forbes Place, off Port Royal Road, behind the Ravensworth Shopping Center in Springfield.

For additional information or assistance, see the "Extended Learning Institute Course Requirements" section of this catalog or write to the Extended Learning Institute, Northern Virginia Community College, 8333 Little River Turnpike, Annandale, Virginia, 22003. You may also telephone (703) 323-3368.

ELI Staff

Director of the Extended Learning Institute

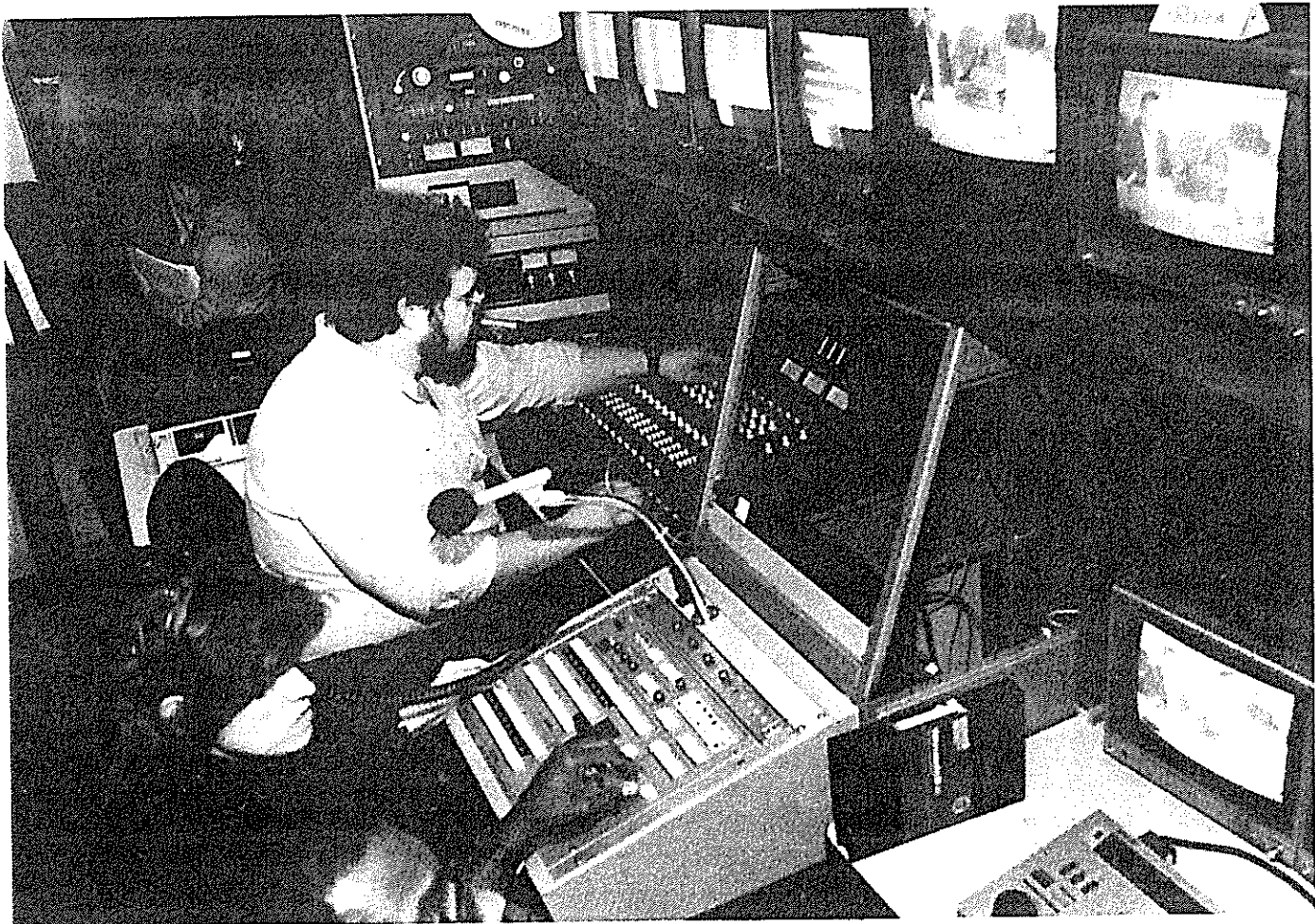
Manager of Records and Registration

Jayne Townend

Telephone

323-3379

323-3379



Telecommunications Control Room

The College

Northern Virginia Community College serves the counties of Arlington, Fairfax, Loudoun and Prince William, and the cities of Alexandria, Falls Church, Fairfax, Manassas Park and Manassas. NVCC strives to meet the educational and training needs of people with differing abilities, education, experiences and individual goals through a variety of curricula and community services.

Northern Virginia Community College consists of the Alexandria, Annandale, Loudoun, Manassas and Woodbridge campuses, and the Extended Learning Institute. All of the campuses provide classrooms, laboratories, student services, counseling, faculty and administrative offices, a learning resource center, a cafeteria, and a student lounge.

Offices for college-wide services are on the Annandale campus. These include the president's office, academic and student services, financial and administrative services, public relations, personnel, accounting, office of the college registrar, affirmative action and grants development, institutional research, facilities planning and development, veterans programs, and others. These offices provide services to all five campuses and the Extended Learning Institute.

The college operates on the semester system with 16-week fall and spring semesters and a shorter summer session.

Credit, non-credit and community service courses of the college are designed to help meet the requirements for trained manpower in Northern Virginia by cooperating with local industry, business, professions and government. Certificate and associate degree programs in occupational and technical curricula are designed to help meet this need by preparing you for the types of employment generally available in Northern Virginia.

College transfer curricula are designed for those planning to work toward a bachelor's degree. These associate degree programs offer freshman and sophomore courses in the arts and sciences for transfer to four-year colleges and universities. The developmental studies program offers courses to meet the prerequisites needed for admission to certificate and degree curricula.

Many of the curricula at NVCC are available on any campus. Some of the highly specialized programs are offered on only one or two campuses.

NVCC provides a strong counseling program to assist you in making sound decisions regarding occupational, educational and personal goals. A counselor will help you find the curriculum best suited to your interests and needs. The college also provides services in pre-college and freshman orientation, job placement, financial aid, student health, testing, veterans affairs, and student activities.

Virginia Community College System

Northern Virginia Community College is one of 23 two-year colleges that make up the Virginia Community College System (VCCS). The VCCS was established in 1966 with a mission which complements the missions of the secondary schools and the senior colleges and universities in the Commonwealth. This mission is to ensure that all individuals in the Commonwealth are given a continuing, low cost opportunity for the development and extension of their skills and knowledge.

Emphasis is placed on occupational-technical education and student development services. Transfer, developmental, continuing education and community service programs are an integral part of the mission.

Administration

The governing board for all 23 colleges in the Virginia Community College System is the State Board for Community Colleges. Members of this Board are appointed by the Governor of the Commonwealth of Virginia. The Northern Virginia Community College Board provides local leadership and approves items to be recommended to the State Board for consideration. Members of the NVCC Board are appointed by the nine political jurisdictions served by the college. The local board is composed of three members from Fairfax County and one member from each of the other jurisdictions.

Members of the community also serve on curriculum advisory committees for occupational and technical curricula offered at the college. Committee members are selected from occupational fields which are directly related to the career objectives of programs at NVCC. These committees provide the guidance necessary for planning new programs and insuring that courses and programs continue to provide instruction in the skills suited for the job market in Northern Virginia.

The maintenance and operating budget for the college is provided through appropriations made by the Virginia General Assembly. The nine political jurisdictions of Northern Virginia provide local funding for the purchase of sites and site development. The General Assembly approves capital outlay funding for building construction and the initial equipment.

College Mission

The mission of NVCC, in keeping with the mission of the Virginia Community College System, is to function within the total educational community, in those areas assigned to it, to ensure that all individuals in the Northern Virginia area are given an opportunity for the continuing development and extension of their skills and knowledge. This is accomplished through programs and courses of instruc-

tion, not extending beyond the associate degree level and encompassing post-secondary occupational-technical education, college transfer education, general education, developmental instruction, continuing education, specialized training, community services, and cooperative education, complemented by a full program of student development services. NVCC seeks to carry out its mission using the most effective and appropriate instructional methods and materials available, stressing educational excellence, and providing full accountability to its constituents.

Programs

Northern Virginia Community College is a comprehensive institution of higher education, offering programs of instruction generally extending not more than two years beyond the high school level.

1. Occupational Technical Education

The occupational and technical education programs are designed to meet the increasing demand for technicians, clerical workers, para-professionals, and skilled craftsmen for employment in industry, business, the professions, and government. These programs, which normally require two years or less of training beyond high school, may include preparation for agricultural, business, engineering, health and medical, industrial, service, and other technical and occupational fields. The curricula are planned primarily to meet the needs for workers in the region being served by the college, but the State Board for Community Colleges may designate certain community colleges as centers to serve larger areas of the state in offering expensive and highly specialized occupational and technical education programs.

2. College Transfer Education

The college transfer program includes freshman and sophomore courses in arts and sciences and preprofessional programs meeting standards acceptable for transfer to baccalaureate degree programs in four-year colleges and universities. NVCC transfer courses closely parallel courses at four-year institutions. Since requirements vary among four-year schools, if you are planning to transfer, you should check the requirements of the receiving institution before you plan your course of study at NVCC.

3. General Education

The courses in general education encompass the common knowledge, skills, and attitudes needed by each individual to be effective as a person, an employee, a consumer, and a citizen. These include the basic courses required of all students in the occupational and technical education program and in the college transfer program.

4. Continuing Education

Continuing Education programs are offered to enable you to continue your learning experiences. This may include credit and non-credit work offered during the day and evening hours.

5. Community Services

The college provides specialized services to help meet the cultural and educational needs of the citizens of the Northern Virginia area. These services include non-classroom and non-credit cultural events, workshops, meetings, lectures, conferences, seminars, short courses, and special community projects which are designed to provide needed cultural and educational opportunities for the citizens of the region. The college works cooperatively with other local and state agencies and with businesses interested in developing such services. The college facilities also are available insofar as possible to four-year colleges and universities desiring to offer extension programs at the level of the third and fourth year of college and of graduate education in the region, subject to the prior approval of the State Council of Higher Education for Virginia.

6. Special Training Program

Special training may be provided where specific job opportunities are available. This special training is coordinated with Virginia's economic expansion efforts and with the needs of prospective or established employers. Instruction is designed to assist Virginia residents in gaining skills necessary for entering employment and/or to retrain persons displaced from other jobs so that they may obtain gainful employment. Such special training programs shall be terminated at that point where the learning of skills ends and the development of speed in these skills begins. These programs, which are usually of a short-term nature, are tailored to fit the exact needs of a company and shall terminate when known new employment needs are met and when the primary objective stated above has been met. The training sites for these programs may be any suitable space within the Commonwealth of Virginia approved by the Virginia Community College System.

7. Developmental Studies

Developmental or preparatory courses are offered to prepare you for admission to the college transfer and occupational technical programs in the college. These developmental courses are designed to develop the basic skills and understandings necessary to succeed in other courses and curricula.

8. Cooperative Education

Cooperative Education (Co-op) is a unique educational program that provides the opportunity for you to explore and develop a career through an actual work situation. In co-op you apply the concepts, skills, and theories learned in the classroom to a real job. You earn both a salary and college credit. Co-op helps you gain professional and technical experience in your career field and eases your entry into a permanent career position. Cooperative Education has been found to be especially effective for students making a career change and adults returning to school. Students in applicable programs are strongly

encouraged to gain relevant work experience through the Cooperative Education program.

Learning Resource Centers

A Learning Resource Center at each campus provides library services, audiovisual services, and Learning Laboratory facilities. The materials, systems and services in the Learning Resource Center are designed to support the programs of the college and to create an environment conducive to learning. While the primary emphasis is directed towards supporting instructional programs at each campus, appropriate services are provided to citizens as a part of the college commitment to serve the educational needs of the community.

The combined college collection of more than 300,000 units of print and non-print materials is "accessed" through joint union catalogs and is available to students at any of the campuses. Books, periodicals, films, and other resources are loaned among the campuses by intercampus mail couriers.

Open stacks and immediate access to materials are common to all campuses. Books, newspapers, pamphlets, documents, and other materials are selected primarily for support of the campus instructional programs, as well as for personal intellectual growth and the development of a cultural environment. Extensive use of micro-forms for information storage and retrieval adds breadth and depth to the resources. On-line searching of bibliographic databases is available at all campuses. Access to microcomputers is available at most campuses.

Library

Each campus library offers basic reference and curricular resources, and is enriched by access to the total college collection. Staff members provide reference assistance and instruction in the use of resources.

Through regional consortia arrangements, students also have borrowing privileges at public libraries in the Washington metropolitan area and at other institutions of higher education in Northern Virginia.

Learning Laboratory

Systems for individual use of self-instructional materials are common to all campus Learning Laboratories. Individualized instruction is offered through a variety of instructional systems, including electronic study carrels and computer-assisted instruction. Testing services for placement purposes, for classes, and in support of the Extended Learning Institute are administered in the Learning Laboratories. Trained staff members provide access, instruction, and tutorial assistance in foundation subjects. Both specialized and generalized Learning Laboratories are designed to support and complement the instructional programs on the individual campuses.

Audiovisual Services

Support for classroom instruction, community services, the library, and the Learning Laboratory is a function of Audiovisual Services. Assistance in the technological aspects of instructional design is also provided. Reprographics and photography are available. Television and other mediated approaches to instruction in all major formats are produced by Audiovisual Services.

Accreditation and Recognition

NVCC is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools.

Curricula of the college are approved by the NVCC Board and by the State Board. The two-year, associate degree programs are also approved by the State Council of Higher Education for Virginia.

Health technologies programs are accredited by the American Medical Association, the American Dental Association, the National League for Nursing, or the American Physical Therapy Association. See the individual program descriptions for additional details.

Consortium

Northern Virginia Community College is a member of the Consortium for Continuing Higher Education in Northern Virginia, which fosters interinstitutional cooperation to broaden learning opportunities for adult students. The other members of the Consortium are: George Mason University, Marymount University, Strayer College (Arlington Campus), the University of Virginia, and Virginia Polytechnic Institute and State University.

NVCC Educational Foundation

In order to supplement state and local monies, the college has established a foundation to provide additional financial support. The Northern Virginia Community College Educational Foundation, Inc., was established in December, 1979 as a non-profit, tax-exempt 501(c)(3) charitable foundation to the college and the Virginia Community College System. Its purpose is to raise money to support the college's programs, students, and activities.

Gifts to the Foundation are tax deductible under Section 170 of the Internal Revenue Service Code and may be restricted or unrestricted. The foundation will accept gifts of cash, securities, real estate, insurance policies, and personal property such as books and other library materials, works of art and equipment. Charitable gift annuities, remainder unitrusts, bequests, life-income plans, and memorial gifts can also be arranged for the donor's and college's benefit. Special procedures have been worked out for the establishment of

scholarship funds for the benefit of currently enrolled students.

The Foundation is governed by a board of directors representing both public and private agencies and businesses in Northern Virginia. Day-to-day operations are managed by an executive director. The Foundation is located at the Brault Building, 4001 Wakefield Chapel Road, Annandale, Virginia 22003, (703) 323-3023.

Alumni Federation

Established in June, 1983, the Northern Virginia Community College Alumni Federation comprises graduates and former non-graduate students (30 credits or more) from the five NVCC campuses.

The federation seeks to advance the growth and development of the college; to promote the personal, educational, and professional development of alumni; and to establish, encourage, and maintain a mutually beneficial relationship among the college, its alumni, and the Northern Virginia community.

Federation policy is formulated by a Board of Governors, elected annually by the membership; Federation management and operation is under the supervision of the Foundation Assistant for Alumni Affairs. Active committees include Publications, Scholarship, Awards, Program, Nominations-Elections-Bylaws, and Alumni Senate. If you have interest in the Alumni Federation, contact the Foundation Assistant, Brault Building, 4001 Wakefield Chapel Road, Annandale, VA, 22003, at 323-2364.

History of the College

Northern Virginia Community College was established in 1964 as Northern Virginia Technical College to serve the eighth planning district. A statewide technical college system was established with 23 regions under legislation enacted by the Virginia General Assembly. Robert W. McKee was the first president.

The college opened for classes in the fall of 1965 in a renovated warehouse at Bailey's Crossroads. The initial enrollment was 761, served by a faculty and staff of 46.

Enrollment for the 1966 Fall Quarter increased to 2,226 students.

The college was renamed Northern Virginia Community College in 1966 when the General Assembly changed the new system to the Virginia Community College System. College transfer curricula were added to the existing occupational/technical curricula for a more comprehensive program.

In 1966, the College Board purchased 78 acres in Annandale as the first of five permanent campus sites. The first permanent building for the college was constructed at the Annandale Campus and opened in 1967. Sites of approximately 100 acres each were purchased in 1967 for future campuses in Loudoun, Manassas and Woodbridge. In 1969, a 22.5-acre site was purchased in Alexandria for that campus.

Dr. Richard J. Ernst became the second president of the college in September, 1968.

The college has experienced rapid growth in student enrollment and the expansion of educational programs. College enrollment steadily increased to almost 10,000 students in the 1970 Fall Quarter. In the 1973 Fall Quarter, NVCC became the largest institution of higher education in Virginia with 17,260 students.

The Annandale Campus added buildings in 1969, 1970 and 1972.

The Loudoun, Manassas and Woodbridge Campuses began operation in the fall of 1972 by setting up temporary offices and offering evening courses at community locations. The Alexandria Campus continued the use of the Bailey's Crossroads facilities and opened the first phase of construction on the new site in the spring of 1973.

The Loudoun and Manassas Campuses added day and evening classes on campus when the first permanent buildings were completed in the fall of 1974. The Woodbridge Campus did the same in the fall of 1975.

The Extended Learning Institute (ELI) of the college began offering home study courses in January 1975. ELI has served more than 97,500 students.

During the 1987-88 fiscal year (July 1, 1987-June 30, 1988), the college served

60,038 different students in credit courses. In addition, 17,315 students registered for non-credit courses. Community service activities attracted 108,634 participants during the year.

The 1988 Fall Semester enrollment was 33,466 full-time and part-time students.

Honors Program

Honors education is for the student who wishes to inquire more deeply into issues. Honors courses are concerned with freeing the motivated student to think broadly and independently. Primarily, two kinds of courses are offered: those consciously interdisciplinary, perhaps coordinating two or more courses, and those within particular disciplines on special topics or new approaches to standard courses.

Emphasis is not upon increased amounts of course work but on greater enrichment through a more intensive learning experience. A student interested in taking any honors course must first apply for admission to that course. Genuine intellectual curiosity and willingness to challenge oneself are the real measures of qualification. An honors student should meet at least one of the following requirements: (1) life experience or special aptitude which may outweigh past, uneven academic performance, (2) the recommendations of two faculty members, (3) a GPA of 3.5 for enrolled students, or (4) SAT scores of 1100 or placement in the top 10% of the student's graduating class. A student who wishes to inquire further into the honors program and the courses offered should contact the Honors Committee Chairman at the campus of his or her choice.

Alexandria Campus	Dr. Paul J. McVeigh, Jr.
Annandale Campus	Dr. Florine Greenberg Mr. Thomas Hardy
Loudoun Campus	Mr. Donatus C. Hayes Dr. Victoria S. Poulakis
Manassas Campus	Dr. Jean F. Goodine
Woodbridge Campus	Dr. Robert C. Kilmer



Students on Campus

Home Campus

When you apply to the college, you must designate a home campus. Student records are maintained at the campus you designate. Requests for transcripts should be forwarded to your home campus.

Change of Home Campus

Should circumstances require you to change your home campus, you should do so as soon as possible before the beginning of the registration period for the next semester. If you have received financial aid, you must notify the Financial Aid Office to transfer your financial aid records.

If you have been a student at the college previously but are not currently enrolled in classes, you may change your home campus by simply going to any campus for registration for the upcoming semester. If you are enrolled in classes for the current semester, you must request a change of campus at least five working days prior to the beginning of registration for the next semester, or you must wait until after the last day of the add/drop period for that semester to make a change.

Classification of Students

Curricular Student

You are classified as a curricular student when admitted to a curriculum of the college. You must be a high school graduate, have earned a Graduate Equivalency Diploma (GED), or have completed an approved developmental program. Your academic file must contain all of the information required for admission to the college. A curricular student may be either a full-time or part-time student working toward completion of a certificate or associate degree at the college.

Non-Curricular Student

If you have not requested admission to a curriculum or developmental program, you may still register for courses by identifying your reason for enrolling at NVCC. You may be classified as a non-curricular student under one of the following circumstances:

1. Upgrading employment skills for your present job;
2. Developing skills for a new job;
3. Exploring a new career. You may be undecided about a career goal or an occupational choice. If you are changing from one educational objective to another, you are expected to declare another objective prior to completing 30 credit hours of course work;
4. Personal satisfaction or for general knowledge;
5. Transient student. You may be enrolled at NVCC while maintaining primary enrollment with another college or university;
6. Non-degree transfer student. You may be enrolled at NVCC to take only a certain number of courses for transfer to

another college or university prior to completing the graduation requirements of a specific curriculum at NVCC;

7. High school student. You may get special permission from NVCC and your principal to enroll at the college;
8. General or curricula requirements pending. You may not have met all of the general or specific admission requirements as stated in the college *Catalog* but may be accepted by the college to take courses for one semester only, with special approval from the college;
9. Restricted enrollment. You may meet admission requirements of a specific curriculum but be temporarily denied entry because of an enrollment limitation. You could enroll in other courses while waiting for entry into your chosen curriculum, with special approval of the college.

Full-Time Student

You are considered a full-time student if you have enrolled in 12 or more credits of course work as of the last day to add/drop for regular semester sixteen (16) week classes.

Part-Time Student

You are considered a part-time student if you are carrying fewer than 12 credits of course work as of the last day to add/drop for regular semester sixteen (16) week classes.

Freshman

You are classified as a freshman until you complete 30 credits of course work in a degree program.

Sophomore

You are classified as a sophomore after you complete 30 credits of course work in a degree program. Credits transferred from other institutions are included, provided they apply toward meeting the requirements of your curriculum at NVCC.

Admission Requirements

Admission to the College

If you have a high school diploma or the equivalent, or are at least 18 years of age, you are eligible for admission to Northern Virginia Community College.

All applicants must complete the Application for Admission. At this time, you are strongly advised to seek the assistance of counselors for academic, career or transfer information.

Students are accepted on a first-come/first-served basis with priority given to: (1) legal residents domiciled in the cities and counties supporting the college, (2) Virginia residents, (3) U.S. Citizens, and (4) others. It is even more important for you to apply early to the college if you are interested in being admitted to a curriculum. Certain programs have space shortage

which can limit enrollment. Some of these curricula may have waiting lists.

High school transcripts are used for academic advisement to enhance your prospects for success in your chosen curriculum. These transcripts are required in order to be considered for admission to the following curricula: Veterinary Technology, Dental Hygiene, Dental Laboratory Technology, Medical Laboratory Technology, Nursing, Physical Therapist Assistant, Radiography, and Respiratory Therapy. Transcripts are preferred for Emergency Medical Services Technology and Medical Record Technology programs. Contact the appropriate campus Counseling Office regarding admission to these programs.

Official transcripts from other colleges or universities are required for acceptance of transfer credits at NVCC. Students seeking veterans benefits will also be required to submit transcripts of all previous college-level study.

International students requiring an I-20 form for admission on an F-1 or M-1 visa must provide official transcripts as noted in the section on "International Student Admission Requirements" in this catalog.

Application for Admission forms may be mailed to the Admissions and Records Office of your choice or brought to the campus during registration. You are urged to submit your Application for Admission to the college at least 30 days prior to the first day of registration for the semester in which you plan to enroll. This should provide you with the opportunity to meet with a counselor for academic assistance prior to registration. Applications mailed to the college at least two weeks before registration can be processed and a response will be mailed back to you. If you do not mail your application at least two weeks before registration, you should take the application to your selected home campus.

The college reserves the right to evaluate Application for Admission forms and to refuse admission to applicants when it is considered to be in the best interest of the college.

When you enroll as a student at NVCC, you accept the rules and regulations of the college. Any violation may be subject to appropriate action by the college.

Admission to a Curriculum

In addition to the general admission requirements for acceptance by the college, there are specific requirements listed in the Instructional Programs section of this catalog for each individual curriculum. Be sure to check the curriculum of your choice to see if you have the required prerequisites for enrolling in that curriculum. If you do not meet these requirements, you may be able to make up deficiencies by taking developmental courses.

Registration for Non-Credit Community Service Courses

You do not need to apply for admission to the college to take non-credit courses.

Contact the Office of Continuing Education at the campus where you wish to attend for course and registration information.

International Student Admission Requirements

International students are defined as all non-United States citizens holding either temporary or permanent visas. An international student applying for admission to the college must hold a valid visa either on or beyond the semester deadline date or to the end of the semester of enrollment as determined by the U.S. Immigration and Naturalization Service.

NVCC does not issue I-20 forms to applicants who are not in the United States at the time of application.

International Students requiring I-20 forms who entered the United States to study at another college, university, or language school must successfully complete at least one term of work at that institution and submit an I-20 or I-538 form, as appropriate, prior to being considered for admission to NVCC.

A temporary visa holder (except F-1 and M-1 visa holders) may be accepted by the college on a temporary basis but must hold a valid visa continuously during each semester of enrollment, as indicated on the I-94. Such visa holders may be considered for subsequent issuing of an I-20 for a future semester if I-20 admission requirements for international students are met.

There are special requirements for international students who must have an I-20 form and are seeking enrollment at NVCC. You must:

1. have the equivalent of an American high school diploma;
2. have official transcripts and records of previous educational experiences translated into English and certified before they are sent to NVCC by the institution you attended;
3. submit documentation that you possess health insurance;
4. submit verification of financial support (INS form I-134);
5. submit a minimal TOEFL score of 500;
6. submit all appropriate forms and test scores sixty (60) days prior to the beginning of classes for the semester you plan to attend. The deadline for the fall semester is June 29, 1989, and for the spring semester is November 17, 1989. Information about required forms and tests is contained in an international student admissions form available in the office of Admissions and Records. You will not be accepted until all general and special application requirements are completed. Generally, you will not be admitted if you are not in good academic standing at your previous institution.

If you are an international applicant for admission and your native language is not English, you must either achieve a 500 TOEFL score for holders of student

visas or a satisfactory score on the college English Proficiency Test for holders of other visas. Information on this testing requirement is available from the Admissions and Records office.

If an I-20 form has been submitted for you, you must be admitted to a curriculum and maintain satisfactory full-time enrollment status.

High School Student Enrollment at NVCC

If you have not yet earned a high school diploma or its equivalent, you may attend the college full-time as part of an early admissions program. Some of your college courses can fulfill your Virginia high school graduation requirement if you have prior written approval of your high school principal.

It is also possible to be a part-time NVCC student while still enrolled in high school. Once again, you would need to have written approval of your high school principal.

Any high school student who wants to attend NVCC is required to comply with the admission requirements of the college. This would include a high school transcript showing all study completed to date.

Domicile Requirements

Effective July 1, 1984 all applicants for admission to Northern Virginia Community College, who are claiming entitlement to in-state tuition privileges are required by Section 23.7-4, of the Code of Virginia, to complete an "Application for Virginia In-State Tuition Rates" form.

To be eligible for in-state tuition rates, you must be domiciled in Virginia for a minimum of one year before the first official day of classes. Domicile is defined as your "present, fixed home where you return following temporary absences and where you intend to stay indefinitely".

As a minor you have the same domicile as your parents/legal guardian. Once you become 18 years old, you can establish a domicile that is different from your parents/legal guardian. However, if you are over 18 and are financially dependent on your parents/legal guardian, they must be domiciled in Virginia in order for you to be eligible for in-state tuition benefits.

The college will review many factors when determining your domicile, for example: residence during the past year prior to the first official day of classes, state to which income taxes are paid or filed, voter registration, motor vehicle registration, driver's license, employment, sources of financial support, other social or economic ties with Virginia or other states. The presence of any or all of these factors does not automatically result in Virginia domicile. The factors used to support a case for in-state tuition benefits must have existed for one year before the first official day of classes.

Residence or physical presence in Virginia primarily to attend a college or university does not entitle you to in-state tuition rates.

If you are a nonmilitary student whose parent or spouse is a member of the United States armed forces, you may establish domicile in the same manner as any other student. However, a nonmilitary student, not otherwise eligible for in-state tuition, whose parent or spouse is a member of the military stationed or residing in the Commonwealth pursuant to military orders and claiming a state other than Virginia on their State of Legal Residence Certificate, shall be entitled to in-state tuition charges under certain conditions. Contact the Admissions and Records office at your home campus for more information.

It is presumed that people falling within the following categories do not have the intent to be domiciled in Virginia: holders of temporary visas, persons who by law must maintain their domicile or legal residence in another state and persons who have selected another state or country as their domicile.

When enrollments must be limited for any program or course, first priority shall be given to qualified students who are domiciled in one of the political subdivisions supporting the college. These subdivisions are listed under General Information.

Domicile requirements are subject to any changes in Virginia law pertaining to entitlement to reduced tuition changes.

Registration

Before you can register, you must be admitted to NVCC and must designate a home campus, where your records will be maintained. You may register at any campus unless you are enrolled in a restricted program, or unless you are on an F-1 or an M-1 visa. If you are in any of these categories, you must register at your home campus. If you are receiving financial aid, you may register at any campus, but you must pay tuition and process financial aid forms at your home campus.

Refer to the campus section of your choice in the *Schedule of Classes* for specific instructions on how, when, and where to register.

Extended Learning Institute Registration

Most Extended Learning Institute courses are available for you to start at any time convenient for you. Registration may take place on a campus or by mail through ELI. Registration details are available by calling the Extended Learning Institute (703) 323-3368. See the Extended Learning Institute section for additional information. You may apply to the college and register by mail at the same time.

Late Registration

If you have not registered by the time

classes have begun, you may register during the late registration period. The dates for the late registration period are published in the *Schedule of Classes*.

If you have already registered, you may add or drop classes during the add/drop period as published in the *Schedule of Classes*. You may register and begin most ELI independent study courses at any time.

Change of Registration

A Registration and Add/Drop Worksheet is required by the Office of Admissions and Records for making any change in your schedule after registration. Failure to follow established procedures could place your college attendance in jeopardy. Changes are effective as of the time they are requested and approved. Retroactive changes are not usually permitted. Schedule changes may be made during the periods printed in the *Schedule of Classes*.

1. Dropping a Course

A Registration and Add/Drop Worksheet is required by the Office of Admissions and Records and must be processed through the Business Office. You may drop a course within the add/drop period as published in the *Schedule of Classes*. See the Refund section for additional information.

2. Adding a Course

A Registration and Add/Drop Worksheet is required by the Office of Admissions and Records and must be processed through the Business Office for adding a course. Once registered, you may add a course at any time during the add/drop period which is published in the *Schedule of Classes*. Any request for entry into a class after the first week of the semester must be approved by the instructor, division chairman and provost. Requests must be made through the Office of Admissions and Records, and payment made at the Business Office.

3. Withdrawal from a Course

A withdrawal form is required by the Office of Admissions and Records. You may withdraw from a course within the first 60% of a session without academic penalty, and you will receive a grade of "W". Withdrawal after that time will result in a grade of "F" except under mitigating circumstances which must be documented. Copies of this documentation will be placed in your academic file. See the Grading System section for explanation of grades. You must process withdrawal forms in person at the Office of Admissions and Records. If you have received any financial aid or veterans' benefits, you must also report your withdrawal to your campus Financial Aid Office and/or veterans advisor. Failure to follow established procedures could affect your eligibility to return to NVCC or enter another college.

4. Cancellation of a Section or Course by the College

The college will process a refund for courses or sections cancelled by the college if no other course or section carrying the same number of credits is added.

5. Curriculum Change

To transfer from one curriculum to another, you must contact a counselor to initiate completion of a new Program Placement form.

Specific Course Schedule Changes

In some circumstances, you may change courses or sections without additional tuition expense.

Regular Course to Developmental Course

In cases where a student enrolls in an entry-level regular course for which there is a preparatory developmental course, and then incurs difficulty in keeping up with the regular course work in the first three weeks (21 calendar days) of the course, students may, with the approval of the instructor, initiate a drop, and enroll in a developmental course which is more suited to his/her capabilities. In making the transfer from the regular course to the developmental course, the student will be charged additional tuition on a per hour basis for the additional credit hours. If the exchange results in fewer credit hours, the student qualifies for a tuition refund only if the transaction occurs during the regular add/drop period for the course being dropped.

Developmental Course to Another Developmental Course

Students may transfer from one developmental course to another within the same discipline using the add/drop procedure form even though this transaction may occur after the standard add/drop period for the sixteen-week session. In these cases, the three-week (21 calendar days) limit does not apply. No change in tuition occurs if the change from one developmental course to another developmental course occurs within the same discipline and the credit-hour values of the courses remain identical. Any credit hours which are added as a result of this course exchange will result in additional tuition on a per hour basis. If the exchange results in fewer credit hours, the student qualifies for a tuition refund only if the transaction occurs during the regular add/drop period for the course being dropped.

Developmental Course Changes

Course changes after the end of the add/drop period require the approvals of the gaining instructor, the gaining division chairman, and the provost. There is no refund for courses dropped and tuition is charged for courses added.

Course Section Changes

You may request a change from one section to another of the same course and course length within the same semester after the add/drop period for the sixteen-week session if you can justify mitigating circumstances. This justification must be recorded on an add/drop form and approved by the instructors of the sections involved and their respective division chairmen. If such changes are approved, no additional tuition will be charged.

Auditing a Course

You may audit a course and attend without taking examinations. Registrations for audit will be accepted only during the late registration period each semester, and the approval of the instructor and the division chairman is required. The regular tuition rate is charged. Requests for credit enrollment in a class will be given priority over audit enrollment. You may also audit Extended Learning Institute courses.

Audited courses carry no credit and do not count as a part of your course load. If you desire to change your status in a course from audit to credit, you must do so within the add/drop period for the session. Changes from credit to audit must be made by the official last day for students to withdraw from a class without penalty. After this day, the audit grade "X" is invalid if you are enrolled for credit.

Contact the office of Admissions and Records for instructions on auditing a course.

Senior Citizens Enrollment

Under the Virginia "Senior Citizens Higher Education Act of 1974", as amended, anyone who is 60 years of age or older, whose legal domicile has been Virginia for one year, and whose federal taxable income does not exceed \$7,500 for the year preceding enrollment is eligible to enroll in credit courses at NVCC without charge and/or audit a maximum of three courses (credit or non-credit) per semester without charge. Senior citizens whose taxable income exceeds \$7,500 may audit a maximum of three courses (credit and/or non-credit) per semester without charge. Senior citizens must submit an application to determine eligibility for tuition-free enrollment and be accepted by the college. Under the law, senior citizens will be accommodated on a space-available basis (after all tuition paying students have registered) commencing with the late registration period. However, those senior citizens who have completed seventy-five percent of their degree requirements may register at the same time as tuition-paying students.

Application Fee

There is no fee for the submission of an Application for Admission.

Tuition

Tuition rates for 1989-1990 were not available at the time this catalog was published. Tuition rates will be printed in the appropriate *Schedule of Classes*.

Tuition is due upon registration. Payment of tuition entitles you to use the library, bookstore, student lounge, and other facilities of the college except parking. Vehicle registration is required before a parking permit can be purchased. There are no special library fees. You must pay for any school property that you damage or lose, such as laboratory or shop equipment, supplies, library books and materials.

Some courses such as music, physical education and aviation require non-college support services from other agencies and individuals. Costs for these additional charges are paid by you directly to the individual or agency providing the service.

All tuition and fees are approved by the State Board for Community Colleges which has the authority to change any and all tuition and fees without prior notice.

In-State Tuition Entitlement

To be eligible for in-state tuition rates, you must be domiciled in Virginia for a minimum of one year before the first official day of classes. See Domicile Requirements section for details.

To change your tuition status from out-of-state to in-state you must initiate the process by completing an "Application for Virginia In-State Tuition Rates" form. This form can be obtained in your home campus Admissions and Records Office. All forms should be completed before the registration period begins for the semester in which the in-state charges will take effect.

The college reserves the right to recoup deficiency charges when the wrong tuition rate is paid. Your home campus Admissions and Records office can clarify any question concerning domicile status.

Payment

Tuition is payable by cash, check, money order, contract, VISA or MasterCard.

Checks (payable to NVCC) can only be accepted for the exact amount due. Credit cards are accepted only for tuition. A service charge of \$5.00 is charged to you for any check that is dishonored, except when the bank is at fault. A dishonored check that is not an error of the bank must be redeemed with cash, certified check or money order before you can complete or withdraw from current courses, or register for future courses. If you issue a dishonored check that is not a bank error, you will be required to pay by cash, certified check or money order for one year from the date of payment to the college for the dishonored check before personal checks will be accepted again. Under extenuating circumstances, waiver of this policy may be considered upon written request to the campus business manager.

For students who have paid tuition by VISA or MasterCard, authorized refunds cannot be issued as a credit to charge card accounts. Refunds so authorized will be processed in the usual manner and a refund check will be mailed to the student at the address of record with the college.

Refunds for Courses Dropped

Tuition refunds are not automatic except for courses cancelled by the college.

Students are eligible for a full refund if a course is dropped during the official add/drop periods as published in the *Schedule of Classes* and as indicated on the student's official receipt form. For special session classes without a published add/drop period, add/drop will be proportionate to the length of the class. There is no refund after these points in time. Specific dates for tuition payments and refunds are published in the *Schedule of Classes* and are on the student's official receipt form.

To drop a course, you must complete the Registration and Add/Drop Worksheet, process it through the Admissions and Records Office, and deliver it to the Business Office.

Requests for refunds for ELI courses must be made in writing to ELI and post-marked within 15 percent of your enrollment period. Refund dates will be included in the packet mailed to you by ELI when you register.

Some exceptions in refund procedures for developmental courses exist. For further information, contact your home campus Admissions and Records and/or Business Offices.

If the college cancels a course or the student drops a course during the add/drop period, the course is deleted from the student's record.

Refunds for Withdrawal from College

You must drop all classes by completing a Registration and Add/Drop Worksheet to withdraw from the college. This form should be processed through the Admissions and Records Office and delivered to the Business Office. Official withdrawal from the college will become effective on the date that this form is received.

Students withdrawing from the college are eligible for a full refund of tuition if they withdraw during the add/drop period for the courses in which they were enrolled as published in the applicable *Schedule of Classes*.

Non-Payment of Debts

Continued attendance at NVCC is dependent upon proper settlement of all debts owed the institution. Should you fail to satisfy all due and payable amounts for tuition and fees, college loans, college fines, or other debts you owe the college, you may be suspended. Until all current

debts you owe the college have been satisfied, you will not be reinstated if suspended and will not be permitted to register. Transcripts will not be issued and recommendations will not be written, nor other services provided.

The policies governing the failure to meet financial obligations will also apply to students owing fines to libraries of institutions and participating public libraries of the Consortium for Continuing Higher Education in Northern Virginia.

Graduation Fee

There is no fee for graduation.

Identification Cards

Student identification cards are issued without charge. They are validated each semester at registration. Lost cards will be replaced upon request to your home campus Office of Admissions and Records. ID cards may be required for registration, course changes, transcript requests, library material use, admissions to special student activities, etc.

Books and Supplies

You are expected to obtain your own books, supplies, and consumable materials needed in your studies. It is estimated that the cost of these items will average \$225 per semester for a full-time student.

Transcripts

An NVCC transcript of your academic record may be issued from your home campus Admissions and Records Office. Official transcripts are released only to other colleges or agencies upon your written request. Only an unofficial copy of your transcript may be released directly to you. There is no fee for transcripts. Financial Aid transcripts are available at no cost through your home campus Financial Aid Office.

Library Fines

There is a charge for all overdue library materials. If you lose a book or other materials, you must notify the library to stop the accumulation of any fines. However, you will have to pay for lost materials. This rule also applies to books and materials borrowed from Consortium institutions (George Mason University, the University of Virginia, V.P.I. & S.U. at Reston, and Marymount University).

A fine of five cents a day (with a maximum fine of \$3.00) will be charged for regular circulating material. Fines for reserved materials are fifty cents a day (with a \$5.00 maximum). In the event of loss, the charge will be the replacement cost of the lost item plus any fines.

Parking and Vehicle Registration Fee

Any student (full or part-time) who wishes to park a vehicle in the student parking lots (Lot B) on any campus must pay a vehicle registration fee. A three-semester permit may be purchased for \$37. A two-semester permit may be purchased for \$26. Permits for a single semester may be obtained for \$15. Purchase of a permit entitles the student to use any student parking lot. Students who withdraw from classes may receive a refund on the basis of full semester payment for the semester(s) or partial semester(s) used. Otherwise, the fee is not refundable unless all courses scheduled are canceled by the college. Students can register their vehicles during the regular registration and add/drop periods. Student permits are required by 7 a.m. the first Monday after the add/drop period.

Some campuses have parking meter spaces and students may choose to use them rather than purchasing a parking permit.

Student Identification Number

You are requested to use your Social Security number as an identification number at the time you apply for admission. If you are unable or unwilling to provide this number, a substitute identification number will be assigned to you. The Social Security number identification system provides for a consistent and efficient means for student records. Your identification number is used for grade reporting, class rolls and other records.

Applicants for financial aid are requested to submit Social Security numbers. Pell Grant Program applicants are advised that Social Security numbers are required by the U.S. Department of Education when processing applications.

Student Records Access

The college observes Public Law 93-380 in providing for the privacy of official student records and the rights of students to review these records. You may review your official records by making a request to the office of Admissions and Records. The college will not release any personally identifiable information about you without your permission, except to certain school and governmental officials as provided by the law.

Requests by individuals and agencies for release of student information must be presented in writing. Your permission for the college to release any information must also be in writing. Information which is considered public information is described in the current issue of the college *Student Handbook*.

Credits

A credit at NVCC is equivalent to one collegiate semester hour credit. Usually,

one credit for a course is given for approximately three clock hours of work weekly as follows:

1. One hour of lecture plus an average of two hours of out-of-class assignments;
2. Two hours of laboratory or shop work plus an average of one hour of out-of-class assignments;
3. Three hours of laboratory or shop work with no regular out-of-class assignments;
4. Fixed credit and variable hours with behavioral objectives assigned to a developmental course; or
5. Variable credit (one to five credits) is assigned to all supervised study, seminar and project, and coordinated internship courses. One to six credits is assigned to cooperative education courses.

Grading System

A = Excellent-4 grade points per credit

B = Good-3 grade points per credit

C = Average-2 grade points per credit

D = Poor-1 grade point per credit

F = Failure-0 grade points

I = Incomplete-No credit. The "I" grade is used for verifiable unavoidable reasons. Since the "incomplete" extends enrollment in the course, requirements for satisfactory completion will be established through student/faculty consultation. Courses for which the grade of "I" (incomplete) has been awarded must be completed by the end of the subsequent semester or another grade (A, B, C, D, F, W) must be awarded by the instructor based upon course work which has been completed. (Nursing courses must be completed within the first two weeks of the subsequent semester.) For "I" grades earned at the end of the spring semester, you will have through the end of the subsequent fall semester to complete the requirements. A "W" grade should only be awarded under mitigating circumstances which must be documented and a copy

of this documentation must be placed in your academic file.

P = Pass-No grade point credit; applies only to Developmental Studies, non-credit courses, Orientation (STD 100) and specialized courses and seminars at the discretion of the college. Only seven credit hours of "P" grade may be applied toward graduation. This maximum may be extended to fifteen credit hours for an approved experiential learning program such as PLACE.

R = Re-Enroll-No grade point credit. A grade of "R" means that you were making satisfactory progress but did not complete all the course objectives. You must re-enroll and pay the appropriate tuition to complete the course objectives. (The "R" grade applies to a limited number of courses.)

U = Unsatisfactory-No grade point credit; applies only to Developmental Studies, non-credit courses, Orientation (STD 100) and specialized courses and seminars at the discretion of the college.

W = Withdrawal-No credit. A grade of "W" is awarded if you withdraw or are withdrawn from a course after the add/drop period but prior to the completion of 60% of the session. After that time, you will receive a grade of "F" except under mitigating circumstances which must be documented and a copy of the documentation must be placed in your academic file.

X = Audit-No credit. Permission of the instructor and the division chairman is required to audit a course.

The grade point average (GPA) is determined by dividing the total number of grade points earned in courses by the total number of credits attempted. The GPA is carried out to two digits past the decimal point (example 1.00). No rounding shall be done to arrive at the GPA. When a course is repeated, only the last grade will be used in the GPA computation for graduation. The following example illustrates a GPA of 2.00 obtained by dividing 30 by 15.

Course	Credit Hours Attempted	Grade	Grade Points	Credit Hours Comp'd	Total Grade Points
MTH 166	4	A	4	4	16
ENG 111	3	B	3	3	9
MUS 141	2	C	2	2	4
PED 101	1	D	1	1	1
CHM 113	5	F	0	0	0
PSY 100	0	W	0	0	0
	<u>15</u>			<u>10</u>	<u>30</u>

Students who think that a semester grade is in error may check by contacting the appropriate instructor through the instructional division within 20 working days after grades are mailed. If the grade is in error, the instructor will take the necessary steps to correct it. After the 20 working day period, the grade will stand, except in the case of "I" grades, which must be changed within one academic semester of their issuance.

Developmental Courses Grading

A "P" (pass) will be assigned to indicate satisfactory completion of the course objectives for each developmental course.

If you are making satisfactory progress but have not completed all of the objectives for a developmental course, you will be assigned an "R" (re-enroll) and you must re-enroll and pay the appropriate tuition to complete course objectives.

If you are not making satisfactory progress in a developmental course, you will be assigned a "U" (unsatisfactory). You should meet with your counselor for possible re-evaluation of your goals and for determination of any subsequent academic work.

Credits earned for developmental courses are not counted in grade point computations toward graduation or in determining sophomore status. They are used in determining full-time or part-time status.

Posting of Grades

Final grades are usually posted by student identification number. If you do not want your grades posted, you should so advise each instructor prior to the end of the course.

Honor Roll and Dean's List

Your name will be placed on the Honor Roll for any semester in which your cumulative grade point average is 3.50 or higher and you have earned a minimum of 20 semester hours of credit at NVCC.

Your name will be placed on the Dean's List for any semester in which your cumulative grade point average is 3.20 or higher and you have earned a minimum of 15 semester hours of credit at NVCC.

Transferring from Other Colleges

If transferring to NVCC from another college, usually you are eligible for acceptance by NVCC if you are eligible for reentry to that college.

When transferring from another college, consult the Admissions and Records Office at NVCC for an assessment of credits earned. Generally, no credit will be given for subjects with a grade lower than "C". You may be advised to repeat courses if it

is apparent that this will help you make satisfactory progress in your curriculum at NVCC.

An evaluation of credits earned at other institutions can be made after all official documents required for acceptance have been received by the office of Admissions and Records. When the course content is similar and the credit is the same as an NVCC course, the course generally will transfer as an equivalent course. When the content is unlike any course offered at NVCC, elective credit may be granted. The division in which you are enrolled at NVCC will determine if and how transferred credits may be used in meeting specific degree requirements.

You may take courses at other institutions while attending NVCC. To insure that these courses will transfer, you must receive prior written approval from the chairman of the academic division at NVCC from which you expect to receive your degree.

Credit may be transferred from colleges and universities accredited outside of the Southern Association of Colleges and Schools. This credit may be transferred according to the recommendations in the current issue of the directory published by the U.S. Department of Health, Education and Welfare or in the current AACRAO Guide. These colleges and universities must have been approved by their state accrediting agencies.

Credit will be allowed for military service schools if this credit is recommended in a *Guide to the Evaluation of Educational Experiences in the Armed Services*, and if study is applicable to your program at NVCC.

If you are considering transferring from another college or university to NVCC, you are encouraged to apply for admission to NVCC and submit all transcripts as early as possible.

Advanced Standing

NVCC has an advanced standing program which allows previous academic study, examination, or occupational experience to be evaluated for possible college credit. To be eligible, you must be admitted to a curriculum. Advanced placement allows you to be placed beyond the starting point for certain courses in your curriculum.

Advanced standing may be granted students who successfully complete examination in any of the following programs:

1. College Level Examination Program (CLEP) examinations from Educational Testing Service (ETS) for advanced standing. The CLEP has been approved in four basic liberal arts areas and in specific subject areas. If you want to participate in the CLEP program, contact the Counseling Office at your campus.
2. NVCC will award specific course credit for acceptable scores on the United States Armed Forces Institute (USAFI) tests. As USAFI is no longer operative, arrangements have been made for the Defense Activity for Non-Traditional

Education Support (DANTES) to administer and store standardized subject tests and General Educational Development Tests (GEDs) for military personnel.

To obtain results of USAFI courses and high school and college-level GEDs, follow these instructions:

- a. For military personnel tested through USAFI prior to July 1, 1974, write to DANTES Contract Representative (Transcripts), Educational Testing Services, Box CN6605, Princeton, New Jersey, 08541-6605.
 - b. The scores of military personnel tested overseas after July 1, 1974, may be obtained from Educational Testing Services, Box CN6604, Princeton, New Jersey, 08541-6604.
 - c. Military personnel tested in the United States at official GED centers or by State Departments of Education must request transcripts directly from the State Department of Education or the official GED center concerned.
3. Advanced Placement examinations of the College Entrance Examination Board may be used for advanced placement. Specific college course credits will be granted for scores of three, four, or five on the Advanced Placement (AP) examinations. You must have official AP score reports forwarded from ETS to NVCC for inclusion in your permanent record in the Admissions and Records Office of your home campus in order to get appropriate evaluation.
 4. Assessment by Local Examination (ABLE) is available at NVCC. ABLE examinations are constructed at NVCC where tests are not available from outside sources such as CLEP. The college grants specific course credit for acceptable performance on ABLE examinations. Credits earned through ABLE exams cannot be used to fulfill residency requirements.

Credit for Prior Learning

In addition to the Advanced Standing Program, NVCC has a program called PLACE (Prior Learning Activity for Credit Evaluation). PLACE is for adults who have gained college level experience through work, volunteer activities, participation in civic and community assignments, travel, independent study and similar "life experiences".

In order to convert these experiences into college credit, students must register for STD 298, Seminar and Project/PLACE Workshop. This portfolio course assists students in assembling evidence of their accomplishments. Completed portfolios are assessed by designated faculty who may recommend the awarding of credits.

Through the portfolio process, up to 15 semester credits in degree programs or 10 semester credits in certificate programs may be awarded. Credits earned through PLACE cannot be used to fulfill residency requirements.

Waiver of P.E. Requirements for Veterans

Veterans and servicemembers who served on active duty for at least 181 continuous days may request a waiver for physical education courses based upon submission of the appropriate forms to the Admissions and Records Office. Form DD-214 is required for veterans and form DD-295 or a certified letter stating length of service is required for servicemembers. No credit is granted for this waiver. Other credits must be substituted to meet the total requirements of a specific curriculum. Application for Waiver should accompany the document when it is submitted.

Degrees and Certificates

Northern Virginia Community College awards the following degrees or certificates to students who successfully complete approved curricula at the college.

1. An Associate in Applied Science degree (A.A.S.) is awarded for completion of two-year occupational/technical curricula. These programs are designed for those who plan to obtain employment immediately following completion of the program.
2. A certificate is awarded for completion of one-year occupational/technical curricula. Also, if you pursue a degree program but fail to meet the degree requirements, you may be eligible for a certificate.
3. An Associate in Arts degree (A.A.) is awarded for completion of two-year Fine Arts, Liberal Arts, or Music curricula at the college. These programs are designed for those who plan to transfer course work to four-year colleges or universities toward completion of a bachelor's degree program.
4. The Associate in Science degree (A.S.) is awarded for completion of two-year curricula with majors such as Business Administration, Education, Engineering, and other pre-professional programs. These programs are designed for transfer to four-year colleges or universities toward completion of a bachelor's degree program.
5. Multiple degrees—you may earn more than one degree or certificate at NVCC. All of the graduation requirements for each individual curriculum must be completed prior to the award of the degree or certificate for that program. When the Associate in Science degree in General Studies is one of the multiple degrees to be awarded, the A.S. degree in General Studies shall include a minimum of 9 semester hours beyond the requirements of any other degree awarded to you by the college.

Graduation Requirements

Associate Degree Requirements

To be eligible for graduation with an associate degree (A.A.S., A.A. or A.S.) from the college, you must:

1. Have been admitted to the curriculum;
2. Have fulfilled all of the course work and credit hour requirements of the curriculum as outlined in the college *Catalog*. The catalog to be used to determine graduation requirements is the one in effect at the time of your initial program placement in the curriculum from which you are graduating, or any subsequent catalog of your choice. The catalog to be used in certifying your graduation shall have been in effect no more than seven years prior to the time of graduation;
3. Have been recommended for graduation by the appropriate instructional authority in your curriculum;
4. Have taken at least 20% of the credits in the curriculum at NVCC;
5. Have completed the general education requirements for an associate degree;
6. Have earned a grade point average of at least 2.00 on courses attempted which are applicable toward graduation in the curriculum;
7. Have applied for graduation in your campus office of Admissions and Records on or before the dates published in the *Schedule of Classes* for each semester.
8. Have resolved all financial obligations to the college and returned all materials, including library books.

Certificate Requirements

To be eligible for graduation with a certificate or a career studies certificate from the college you must:

1. Have been admitted to the curriculum;
2. Have fulfilled all of the course requirements of the curriculum as outlined in the college *Catalog*. This includes achieving a passing grade in each course in the curriculum. The catalog to be used to determine graduation requirements is the one in effect at the time of your initial program placement in the curriculum from which you are graduating, or any subsequent catalog of your choice. The catalog to be used in certifying your graduation shall have been in effect no more than seven years prior to the time of your graduation.
3. Have been recommended for graduation by the appropriate authority in the curriculum;
4. Have earned a grade point average of at least 2.0 in all courses attempted which are applicable toward graduation in the curriculum;
5. Have completed at least 50% of the credits for the certificate at NVCC;
6. Have applied for graduation in the office of Admissions and Records on or before the dates published in the *Schedule of Classes* for each semester;
7. Have resolved all financial obligations to the college and returned all materials, including library books.

Certificate of Completion

If you successfully complete a program of instruction which does not lead to a certificate or an associate degree, you may be

awarded a Certificate of Completion. These are also given for noncredit courses at the college.

Graduation Honors

Students attending NVCC for a minimum of 30 credit hours in degree programs are eligible for graduation honors. Those attending NVCC for a minimum of 50% of the credit hours in their certificate program are eligible for graduation honors. You must apply for graduation in the office of Admissions and Records to be eligible for graduation honors. Graduation honors are determined by your cumulative grade point average.

Appropriate honors are based on scholastic achievements and recorded on the degree or certificate as follows:

Grade Point Average	Honor
3.20	Cum Laude (with honor)
3.50	Magna Cum Laude (with high honor)
3.80	Summa Cum Laude (with highest honor)

Academic Regulations

Attendance

Regular attendance at classes is required. Absences equal to 30 percent of the scheduled instructional time for a course will be considered as unsatisfactory progress unless the instructor has made other arrangements for the class (or individual students) to complete course objectives.

Credit will not be granted for work completed in courses in which you are not officially registered.

It is your responsibility to inform the instructor prior to an absence from class whenever possible. Frequent unexplained absences may result in dismissal from the course. The student is responsible for making up all work missed during an absence.

Academic Standing

The college is responsible for letting you know when you are having academic difficulty. After you receive official notice, the college will assist in setting objectives, planning for improved study habits, and dealing with other factors that relate to your academic progress.

The college will send you official notification on your student grade report when you are having academic difficulty. You will be given an appropriate period of time to show improvement. The college may determine that you are best served by being prevented from further registration for a period of time if you show no academic improvement.

The college provides the following official indications of academic difficulty:

1. Academic Warning

If you fail to maintain a minimum grade

point average of 2.00 for any semester or fail any course you will receive an academic warning.

2. Academic Probation

If you fail to maintain a minimum cumulative grade point average of 1.50, you will be placed on academic probation until your grade point average reaches 1.50 or better. The statement "Placed on Academic Probation" will be included on your permanent record. You will be ineligible for appointive or elective office in student organizations and usually will be required to carry less than a normal course load the following semester. While on academic probation you are required to consult a counselor. An average between 1.50 and 1.99 may not result in formal academic probation; nevertheless, a minimum of 2.00 in your curriculum is a prerequisite to the receipt of an associate degree. Part-time students will not be placed on academic probation until they have attempted 12 semester credit hours.

3. Academic Suspension

If you are on academic probation and fail to attain a minimum grade point average of 1.50 for the next semester, you will be placed on academic suspension. Academic suspension normally will be for one semester unless you reapply and are accepted for readmission to another curriculum of the college. The statement "Placed on Academic Suspension" will be included on your permanent record.

If informed that you are on academic suspension, you may submit an appeal in writing to the chairman of the Admissions Committee for reconsideration of your case. A suspended student may be readmitted after termination of the suspension period and upon formal written petition to the chairman of the Admissions Committee. Students will not be placed on suspension until 24 semester credit hours have been attempted.

Following your reinstatement after academic suspension, you must achieve a minimum 2.00 grade point average for the semester. You must maintain at least a 1.50 grade point average in each subsequent semester of attendance. You remain on probation until your overall grade point average is raised to a minimum of 1.50.

4. Academic Dismissal

If you do not maintain at least a 2.00 grade point average for the semester of re-

instatement to the college when on academic suspension, you will be academically dismissed. If you have been placed on academic suspension and achieve a 2.00 grade point average for the semester of your reinstatement, you must maintain at least a cumulative 1.50 grade point average in each subsequent semester of attendance. You will remain on probation until your cumulative grade point average is raised to a minimum of 1.50. Failure to attain a cumulative 1.50 grade point average in each subsequent semester until cumulative GPA reaches 1.50 will result in academic dismissal. Academic dismissal normally is permanent unless, with good cause, you reapply and are accepted under special consideration for readmission by the Admissions Committee of the college. The statement "Academic Dismissal" will be placed on your permanent record.

Examinations

You are expected to take tests at regularly scheduled times. In addition, every student is required to take a final examination, receive an appropriate evaluation instrument, or continue receiving instruction during the scheduled final examination period. Any deviation from the final examination schedule must be approved by the campus provost.

Academic Load

The minimum full-time academic load is 12 credits, and generally the maximum full-time load is 18 credits. To carry an academic load of more than 18 credits, you ordinarily must have a 3.00 grade point average or higher, the approval of the provost or his/her designee, and usually the approval of your faculty advisor or counselor.

Student Rights and Responsibilities

As a member of the student body of the college, there are certain rights which you may expect to enjoy as well as obligations which you accept by your enrollment. The college's policy on academic dishonesty and a statement on student rights and responsibilities are contained in the current edition of the *Student Handbook*. Also found

in the *Student Handbook* is the college's policy and procedures on student conduct and discipline.

Extended Learning Institute Course Requirements

Textbooks

Textbooks for Extended Learning Institute (ELI) courses may not be the same as those used on campus. They may be purchased at any NVCC campus bookstore or ordered by mail. If the book is not available at one of the campuses, the bookstore will arrange to get it from another campus for you. Books ordered from the bookstore by mail are shipped within 72 hours.

Assignment Due Dates

Even though ELI courses are self-paced, you are required to submit some assignments by specific due dates. If you do not submit these assignments on time, you can be dropped from the course with a grade of "W."

Services Available to ELI Students

All college and campus services are available to ELI students. Some restrictions may exist in the case of financial aid and veterans benefits. Some services, such as bookstores, counseling, and learning laboratory/learning resource centers, are sometimes closed during breaks at the end of each term. Faculty members may also be on vacation at these times, so there may be some delay in returning written work that has been submitted to ELI. For more information on the availability of services, contact the campus nearest you or the Extended Learning Institute.

ELI Examinations

Each course has at least one exam which you must take in person at a campus learning laboratory. This is a proctored exam. To pass an ELI course, you must pass the proctored exams, regardless of how well you do on other course assignments. Proctored exams may be scheduled at your convenience (including evenings) by calling the learning laboratory at the campus nearest to you. If you cannot get to a campus learning laboratory, other arrangements for proctoring the exam can be made by contacting ELI.

Each campus provides a number of services designed to help with your education, career and personal development. Counseling, testing, faculty advising, financial aid, job referral, student activities, health services and information about the college are explained in this section. Other services such as admissions and records are explained elsewhere in this catalog.

The dean of student development on each campus is responsible for most of the student services. Contact the dean or members of the student development staff to take full advantage of these opportunities for assistance. If taking courses through the Extended Learning Institute, you can enroll through the student services on your home campus or contact ELI.

Counseling Services

Counselors are professionals who are available to assist you in your educational career and life planning. They can help you to make effective decisions and to deal with problems that you may be facing while in attendance at the college. Interviews with counselors are confidential. Referral information is available for persons requiring professional assistance beyond the scope and training of the counselors.

A counselor can help you explore and develop career goals and plan your education to help meet those goals. If you want to enroll in a degree or certificate curriculum, and if you did not indicate a choice of curriculum on your Application for Admission, it is suggested that you meet with a counselor for curriculum placement. This may mean planning a developmental program to gain the necessary skills in certain areas to meet the entrance requirements for a curriculum. It may mean planning a program to take the right courses for transfer to a four-year college or university when you leave NVCC. It may mean selecting the occupational/technical program best suited to your abilities.

During your first semester at NVCC, the counselor will refer you to a faculty advisor who will assist you in planning your second semester and the rest of your program.

Counseling services are open to you throughout your stay at the college. You are encouraged to continue to visit your counselor for whatever reason you may have. Any change of curriculum must be made through your counselor.

Counselors assist you with financial aid information, inventories, career information, volunteer service placement information, job counseling information, and personal information materials. Special group programs are also available in career planning seminars, personal exploration groups, and other skill building workshops.

Testing Services

The counseling service on each campus provides a testing program to help you better understand your abilities, interests,

skills, and values. Tests and inventories are administered and interpreted at nominal charge to students.

Information is available about national testing programs such as the Test of English as a Foreign Language (TOEFL) and College Level Examination Program (CLEP).

Information Services

1. Orientation

An orientation program provides you with the opportunity to learn skills and information that will help you to be successful at NVCC. The orientation program may begin weeks before registration when you meet with a counselor for a program placement interview. In this interview, career interests and educational goals are explored. It will be determined at this time if there is a need for additional information or tests. Your application for admission to a specific curriculum will be evaluated, and the first semester's courses planned.

The orientation course, STD 100, is required for graduation in all degree curricula and many certificate curricula. It is best to take this credit course in your first semester at the college. The Extended Learning Institute also has an orientation course available for those who cannot attend a campus-based section.

2. Career, Educational and Personal Information

A variety of printed material is available in the Counseling Center and in the Learning Resource Center of each campus. Reference books and college catalogs providing information on colleges and professional schools are available. Other books and pamphlets describe the entrance requirements, working conditions and compensations of thousands of career and job opportunities. Specialized materials are there to help you learn more about how to plan for your education and personal development.

3. Student Handbook

The NVCC *Student Handbook* provides additional information about the college. Student activities and organizations are described. Food services, bookstores, parking regulations, the statement of student rights and responsibilities, and a listing of college and campus office locations and phone numbers are included.

Faculty Advising

For the first semester at the college, you should work with a counselor to plan a program for meeting your educational objectives. You will then be referred to a faculty advisor or counselor for all subsequent terms. Your faculty advisor/counselor will assist you in planning the rest of your program.

To graduate, you must obtain certification by your faculty advisor that all course requirements for the degree or certificate have been met. All students are encouraged to seek information and assistance

from faculty advisors in career and occupational planning in addition to curriculum planning.

Even if you are not enrolled in a specific curriculum major, you may seek assistance from faculty advisors and counselors to help select courses during registration.

Financial Aid Services

NVCC strives to assure that no one be denied the opportunity of attending the college for financial reasons. The financial aid program provides a variety of ways for you to get funds for college.

Financial aid counselors at each campus provide information about financial aid programs, application procedures and eligibility.

Jobs are available on campus through a work-study program. If you can show financial need, you may qualify for participation in this program.

Loans are available through the Perkins Direct Student Loan and the Stafford (Guaranteed) Student Loan Program. If you need a loan, contact the Financial Aid Office for information and a determination of eligibility for a loan.

Supplemental Educational Opportunity Grants (SEOG) are federally funded and available in conjunction with other types of financial aid.

The Pell Grant, which is federally funded, requires financial need and at least half-time enrollment.

The College Scholarship Assistance Program provides scholarships for students domiciled in Virginia. The program is provided through the State Council of Higher Education for Virginia to students attending Virginia colleges who are in good academic standing.

Applications for financial aid are available from the Financial Aid Office on campus. Application must be made on your home campus and should be made well in advance of the semester for which assistance is needed. Applicants for all aid programs, including loans, must file a Financial Aid Form (FAF) through the College Board. Completed applications received by March 31, 1989 will receive priority consideration.

The NOVA Student Financial Aid Committee is composed of representatives of the administration, student body, Financial Aid Offices, and faculty as appointed by the President. The Committee reviews and recommends policy on administering financial aid programs.

Extended Learning Institute courses will not be included in any calculation used to determine a student's eligibility for any financial aid funds or loan deferments.

Additional information on scholarships, grants, loans, and on-campus employment may be found in the 1989-90 Financial Aid Brochure.

Satisfactory Progress

To be eligible for financial aid, a student must maintain satisfactory academic prog-

ress for all periods of enrollment. Degree-seeking students may be eligible for financial aid for no more than the equivalent of six full-time semesters of enrollment. Certificate-seeking students may be eligible for financial aid for no more than the equivalent of three full-time semesters of enrollment. Students who are required to take developmental studies are limited to receiving financial aid for 30 credits of developmental studies and 30 credits of ESL courses.

Students must demonstrate satisfactory academic progress by completing the minimum number of required credits and achieving the minimum required GPA as measured by the Credit Completion Schedule. Completed credits are those for which a grade of A, B, C, D, R, or P was earned. Students may receive financial aid for up to seven (7) credits of pass/fail coursework. The schedule is prorated for part-time students. An evaluation of this requirement will be done at the end of each summer session for degree-seeking students and at the end of each fall semester and summer session for students enrolled in certificate programs.

CREDIT COMPLETION SCHEDULE

Total Full-Time Semester Equivalent	Required Credits Completed	Required Cumulative GPA*
1	12	*
2	24	1.75
3	36	1.75
4	48	2.00
5	60	2.00
6	72	2.00

*13-23 credits requires a 1.5 G.P.A.

Students whose academic standing is "Suspension" will be immediately ineligible for aid until they have achieved a cumulative GPA of at least 1.50, and made up any other deficiencies under this policy.

Students may apply to the Financial Aid Office for a probationary eligibility when unusual and mitigating circumstances have prevented them from meeting the terms of this policy. Students may appeal their status under this policy through the NVCC Student Grievance Procedures.

Students who withdraw from or fail to attend classes are subject to repaying financial aid. Additional information is available in your Financial Aid Office.

Scholarships

Private citizens, businesses, non-profit institutions, and associations have generously donated scholarship funds for students. Recipients are selected by the Student Financial Aid Committee or by the donor. Most scholarships require that you provide a statement of financial need, and some are curriculum or career related. The Financial Aid Office on each campus can provide information about the current availability of individual scholarships as well as application materials.

The following scholarships are generally available each year:

Kathy Ahern Memorial Scholarship Fund
 Alexandria Art Tuition Scholarship
 Alpha Delta Tau Scholarship
 Robert Altomare Scholarship
 Alumni Federation Scholarship
 Animal Science Scholarship
 Aviation Technology Scholarship
 The Baptist Ministers' Wives and Widows Fellowship
 of Northern Virginia and Vicinity
 Eleanor Becci Memorial Scholarship
 Marilyn S. Blois Scholarship
 Joseph L. Boneta Security Scholarship
 Brandel Biology Scholarship
 Senator Adelard L. Brault Scholarship
 Deanna Bronder Memorial Scholarship
 George L. Buc Memorial Scholarship
 Jeff Carroll Memorial Scholarship
 Clifton Community Woman's Club Scholarship
 Commonwealth Republican Women's Club Scholarship
 Judy Mann Distefano Memorial Scholarship
 Steven Dresdner Memorial Scholarship
 Early Childhood Education Scholarship
 Fairfax County Home Economists Scholarship
 Falls Church Garden Club Scholarship
 Falls Church Women's Club Scholarship
 Leslie V. Forte Minority Scholarship
 James Freimuth Memorial Scholarship
 Arthur R. Geier Memorial Scholarship
 Rhonda A. Gilliam Memorial Scholarship, Theta Rho Lambda
 Goose Creek Herb Guild Scholarship
 Greater Rosslyn Business & Professional Association Scholarship
 Christopher Guerrero Scholarship
 Hazleton Laboratories Scholarship
 Paula Hickey Memorial Nursing Scholarship
 HRIM Scholarship
 Dr. Lloyd and Elizabeth Iddings Scholarship
 Interstate Van Lines Scholarship
 Clifford Alan James Memorial Scholarship
 James L. Jones Nursing Scholarship
 Dr. Barnard D. Joy Memorial Scholarship
 Kaiser Permanente Nursing Scholarship
 Liberty Savings Bank Scholarship
 Loudoun-Robey Scholarship
 George F. Lowerre Memorial Scholarship
 Marketing Curriculum Advisory Committee Scholarship
 Marriott Corporation Scholarship
 Herbert E. McCartney Automotive Scholarship
 Media General Cable of Fairfax Scholarship
 Mobil Foundation Honors Scholarship
 Charles Monroe Memorial Scholarship
 Northern Virginia Community Foundation Scholarship
 Northern Virginia Dentists Scholarship
 NVDS Dental Assisting Scholarship
 NVDS Dental Lab Technician Scholarship
 David T. Oliver Memorial Scholarship
 Omicron Chi Omega Scholarship
 Optimist Club of Vienna Scholarship
 Irene Payne Memorial Scholarship
 Phi Theta Kappa (AN) Scholarship

Frances Pickett Scholarship (Haymarket Women's Club)
 Prince William Parent/Teacher Scholarship
 Providence Club Extension Homemakers Scholarship
 Restaurant Association of Metropolitan Washington Scholarship
 Reston Garden Club Scholarship
 Lynn Garris Sheldon Memorial Scholarship
 Joseph Sobien Memorial Scholarship
 Sterling Area Garden Club Horticulture Scholarship
 Stonewall Jackson Scholarship
 Tele-Sec Scholastic Achievement Award
 TRW Scholarship in Computer Science
 Evelyn Wade Literary Scholarship
 Visual and Performing Arts Scholarship
 Women's Club of Mclean Scholarship
 Women's Club of Vienna Scholarship
 Woodbridge Honors Scholarship
 Zonta Club of Arlington-Fairfax Scholarship

Career Planning and Job Counseling

The college maintains a job referral service for off-campus jobs. Employment opportunities may be available while attending NVCC, during vacations, and even after graduation.

Local businesses cooperate with the college to provide part-time employment for students. An effort is made to refer you to a job in a field related to your college program. If you work more than 20 hours per week, you should adjust your course load accordingly. Referral information is available from the Career Planning and Job Counseling Office on each campus.

Student Health Services

Limited student health services are available on each campus for individual health counseling and referral to appropriate specialists within the community as needed. Various health education and health screening programs are sponsored by the student health services.

A student accident and health insurance policy is available. You are encouraged to consider the coverage provided by this policy if you do not have other accident and health insurance. A dental plan is also available.

Services for Students with Disabilities

NVCC is committed to serving persons with physical and learning disabilities. A goal of NVCC is that each qualified student have an equal opportunity to pursue a college education regardless of the presence or absence of a disability. To reach that goal, NVCC will provide the course, program and building modifications and auxiliary services which are necessary to assure equal access. NVCC assumes that

disabled students will assist the college in identifying needed resources and possible agency sources.

Campus resources provide the direct services to students and some of the administrative support with the additional administrative support provided by college staff. Questions of compliance with section 504 of the Rehabilitation Act of 1973, as amended, should be addressed to the Coordinator of Affirmative Action and Grants Development.

Each campus and the Extended Learning Institute has identified one or more staff members to assist disabled students. They generally serve as the disabled person's initial contact and generally consist of the campus student health nurse and a designated counselor. Areas of general assistance include counseling, registration, special academic needs and liaison with area rehabilitative service agencies. Information regarding special parking permits can be obtained in the Student Health Office, Security Office, or Counseling Center.

If you require any of these special services, you should contact the special services counselor four to six weeks prior to the beginning of classes. Early requests for special services enable the college to better assist you with your individual needs.

Student Activities

A variety of educational, cultural and social experiences are open to you at NVCC. Many of these learning opportunities are available outside of the classroom.

A counselor/coordinator of student activities on campus assists in planning extracurricular events and with the development of student organizations. The Student Government Association provides support for student groups who are promoting activities on campus. Student activities and organizations are open to all interested students, faculty and staff.

Student organizations which are recognized by the college include:

Academic Association of Vietnamese Students
Administration of Justice Club
Alexandria Campus Historical Association
Alexandria Campus Music Club
All-African Student Union
Animal Science Club
Anthropology Club
Arab Students Association*
Art Students League
Association for Cooperative Education Students
Auto Association
Baptist Student Union
Black Studies Association
Chinese Culture & Friendship Club*
Chinese Students Association*
Circle K Club of NVCC*
Cooperative Education Association
Data Processing Management Association
Dental Assistants Association
Dental Hygienists Association
Dental Laboratory Technology Club

Deutscher Klub
Deutscher Verein
Fine Arts Club
Friends of Pakistan
Honors Students Association*
Horticulture Club
Hotel Sales Management Association
Jewish Association*
Korean Christian Student Fellowship
Korean Student Organization
Le Cercle Francais
Model United Nations Club
Musica NOVA
Muslim Students Association
Nazarene Christian Campus Fellowship
Newman Student Association
NOVA Art Association
NOVA Dancers*
NOVA Jazz Club
NOVA Medieval Society*
NOVAN Theatre Players
Nurses Christian Fellowship*
NVCC Freewheelers
NVCC Nomads*
Omega Mu
Outdoor Adventure Club
Phi Beta Lambda (National Business Organization)
Phi Theta Kappa Alumni Association
Phi Theta Kappa Fraternity (National Junior College Honorary Scholastic Society)
Physical Therapist Assistants Club
Psychology Club
Radiography Association
Recreation and Parks Society
Science Club
Shoes of the Fisherman*
Society for Minority Concerns
Spanish-American Latin Student Association
Spanish Club
Special Olympics Advocate Program Club
Student Nurses Association
Student Photography Association
Universal Circle*
Vietnamese Student Community
Virginia Air Conditioning and Refrigeration Association
Woodbridge Arts Association
Woodbridge Honors Organization

*Approval pending

Vocational Rehabilitation

The college cooperates with the Virginia State Department of Vocational Rehabilitation in providing education and training for persons who are handicapped.

Army Reserve Officer Training Corps (ROTC)

As a Northern Virginia Community College student you may enroll on the Annandale Campus in Army ROTC (Military Science) courses. The ROTC program is available through a cooperative agreement with Georgetown University. If you want information on eligibility for ROTC Financial Assistance or Army Scholarships, you

may contact the ROTC program at Georgetown University in Washington, D.C., or the Division of Social Sciences and Public Services at the Annandale Campus. The military science credits transfer to advanced Army ROTC programs at other institutions. There is no service commitment during the first two years of enrollment and you may discontinue participation after any semester. The program is open to all students.

Veterans Affairs Office

The college participates in the Veterans Education Outreach Program. This federal program is designed to assist veterans in becoming students and supporting educational endeavors while enrolled. The Office of Veterans Affairs coordinates all veterans activities for the college. Veterans benefits, information, and counseling services for veterans are available at each campus.

Veterans Benefits

The degree programs of the college are approved for training eligible servicepersons, veterans, and dependents. Some certificate programs are also approved for training. Additional information is available from the Veterans Office on each campus.

Veterans and dependents who may be eligible for educational benefits from the Veterans Administration should contact their campus Veterans Office each semester to complete the necessary forms to establish and maintain their eligibility for benefits. Full-time educational benefits are available to veterans and dependents registering for and maintaining 12 or more credits in degree program courses. Three-quarter-time benefits are paid for 9 to 11 credits and half-time benefits are paid for 6 to 8 credits per semester. Active duty servicepersons and those registered for less than 6 credits are entitled to tuition reimbursement only. Certificate programs are measured differently for payment. Courses taken through the Extended Learning Institute (ELI) and accelerated courses are also measured differently. Certification for ELI courses will be done when the course is completed. See your campus Veterans Office for details.

Veterans may have earned credits at another college, vocational school, or technical school. Credits may have also been earned by taking CLEP, ABLE, DANTEs, or USAFI exams. You must insure that an official transcript is sent to the Admissions and Records Office during your first semester of enrollment. Veterans and service persons must have their military training evaluated along with their transcripts from non-military schools. DD Form 214s (Certificate of Release or Discharge from Active Duty) originals or copy #4 should be copied by Admissions and Records for evaluation and returned to you. Generally, repeating courses which have been previously passed will not be certified to the Veterans Administration for payment.

If you receive educational benefits, you must report your enrollment each semester to the Veterans Office on your home campus. The information will then be certified and reported to the Veterans Administration. Any changes to your registration must also be reported to the Veterans Office. Changes include: cancelled classes, dropped classes, withdrawing from classes, adding classes, or any other type of change that may affect your eligibility to receive benefits from the Veterans Administration. Excessive absences may result in the dismissal from the course and adjustment of benefits from the Veterans Administration. Any change in status must be reported to the Veterans Administration as soon as possible, but no more than 30 days after the change has been officially completed at the college.

Satisfactory Progress Policy for Recipients of Veterans Benefits

To be eligible for veterans educational benefits, recipients must maintain satisfactory academic progress in accordance with Northern Virginia Community College standards as printed in the college *Catalog*. In addition, the following standards must be met:

1. A recipient may only be certified for enrollment in courses required to complete his/her program of study, either at NVCC or at another approved postsecondary institution.
2. Recipients must be placed in a program of study by the end of his/her first term of enrollment either at NVCC or at another approved postsecondary institution.
3. Developmental study courses may only be used for purposes of calculating enrollment levels for certification when full authorization has been submitted to the campus veterans advisor. Developmental study courses are not approved for Chapter 30 and Chapter 106 students.
4. A recipient will be reported to the Veterans Administration as making unsatisfactory progress when his/her cumulative GPA falls below the required level based on the following schedule:

Regular Credits Attempted (Grades A, B, C, D, F)	Minimum Cumulative GPA Requirement
13—23	1.50
24—47	1.75
48 +	2.00

This standard will be applied each term. However, when a recipient has not achieved the minimum cumulative GPA requirement but has achieved a term's GPA of at least a 2.0 for the term being evaluated, he/she will have achieved satisfactory progress.

5. When a student's record does not meet the minimum standards of this policy,

the student's next term will be a "probationary" term except in the case of academic suspension (see paragraph six). If the student's GPA for the probationary term is 2.0 or better, he/she will be found to be making satisfactory progress. His/her eligibility for veterans benefits may be continued in a probationary status until his/her cumulative GPA equals or exceeds the minimum requirement of paragraph four. Processing of certifications for students on probation will be delayed until grades are available to determine if the student is eligible for certification. If at the end of any probationary term the student's GPA for that term does not meet or exceed the minimum requirement of 2.0, the student will be found to be making unsatisfactory progress, it will be reported to the Veterans Administration and NVCC will cease certifying the student's enrollment for veterans educational benefits.

6. At the end of each term, recipients who have been identified as meeting the college's definition of "Academic Suspension" will be ineligible for certification and reported to the Veterans Administration as making unsatisfactory academic progress.
7. If a recipient is found to be making unsatisfactory progress, it will be reported to the Veterans Administration and the college will cease providing certification of enrollment. He/she will be reinstated when he/she has achieved the required cumulative GPA through continued enrollment at NVCC. The term's GPA will have no effect. The enrollment certification may not be retroactive unless the Veterans Administration has approved mitigating circumstances.
8. "P" grade credits in excess of the limit of seven credits which may apply to graduation requirements or grades of "W", "R", or "X" will result in a revised certification of the level of enrollment submitted to the Veterans Administration. A grade of "I" will be reported to the Veterans Administration if it is not changed by the end of the next term (excluding summer). Any financial liability that exists because of a revised certification is the responsibility of the recipient. Liabilities are determined by the Veterans Administration.
9. Recipients will be notified in writing when they have not met the minimum standards. Recipients' questions regarding their standing should be addressed to the campus veterans advisor or the dean of student development on their home campus.
10. Students may request a probationary period from the Veterans Administration when deficiencies are the result of mitigating circumstances, by writing the Veterans Administration. If mitigating circumstances are found and accepted by the Veterans Administration, the student will present this evidence to the campus veterans advisor

for certification of the term in which his/her progress was unsatisfactory.

Virginia War Orphans Education Program

The Virginia War Orphans Education Program provides educational assistance for children, or surviving children, of certain veterans or service personnel. To be eligible for assistance under this program, an applicant must meet some basic eligibility requirements. For more information or applications, contact the Veterans Office on your campus.

Servicemembers Opportunity College

NVCC has been designated as an institutional member of Servicemembers Opportunity Colleges (SOC), a group of over 400 colleges and universities providing voluntary postsecondary education to members of the military throughout the world. As a SOC member, NVCC recognizes the unique nature of the military lifestyle and has committed itself to easing the transfer of relevant course credits, providing flexible academic residency requirements, and crediting learning from appropriate military training and experiences. SOC has been developed jointly by educational representatives of each of the Armed Services, the Office of the Secretary of Defense and a consortium of thirteen leading national higher education associations; it is sponsored by the American Association of State Colleges and Universities (AASCU) and the American Association of Community and Junior Colleges (AACJC).

In addition to its SOC membership, NVCC is one of approximately 50 institutions providing occupational and flexible Servicemembers Opportunity Colleges Associate Degree programs on over 200 Army installations worldwide. These programs lead to associate degrees and most of them correspond to enlisted and warrant officer job specialties. Through prior agreement, students in SOCAD programs:

1. have residency credit limited to 1/4 of total degree requirements taken at any time;
2. are awarded credit for experience in their military occupational specialty (MOS) and service schools as appropriate to their program;
3. are awarded credit for non-traditional learning based on results of national tests, such as CLEP and SSTs, as appropriate to their program;
4. have a SOCAD Student Agreement completed as their official evaluation stating remaining degree requirements and eliminating the need for reevaluation of previous credit;
5. are guaranteed that courses listed in transferability charts in the SOCAD Handbook will be accepted for degree requirements within each curriculum area.

Northern Virginia Community College offers many types of credit and non-credit programs. This section of the college *Catalog* will help you understand what these programs are.

This section contains a description of each of the one-year and two-year curricula of the college. Special courses are available to help you upgrade your skills in specific subjects. Cooperative Education programs allow you to work and earn college credits at the same time. The credit programs of the college are outlined and explained in this section.

Community Service

The Office of Continuing Education on each campus helps to plan and provide many types of credit and non-credit programs to meet special interests within the community. Various community education programs and seminars focus attention on social issues. Business, industry and professional organizations provide special courses at NVCC for their employees. These programs can be set up at the college or where you work.

Many non-credit programs are offered each semester to serve special community needs. A listing of community service courses is included in each *Schedule of Classes*.

Courses and workshops often result from requests by individuals or groups within the community. The topics vary from job skills to personal enrichment interests. The programs pay for themselves through fees charged to participants. State funds are not used for setting up or offering a course, or paying the instructor. Fees for community service courses vary depending upon the actual cost of each course. Community service course information and registration instructions are available at each campus Office of Continuing Education.

Cultural affairs are available through short courses, special lectures, music presentations and art festivals. Community groups and organizations may also make special arrangements to use facilities of the college for their own programs or meetings.

Business Services and Technology Transfer

Northern Virginia Community College has made a commitment to providing educational services to the employees of businesses, corporations and government agencies in Northern Virginia. Existing courses or individually developed courses and services are available through the five campuses and Extended Learning Institute. The Center for Business and Government Services is the college-wide office which coordinates such training activities

as: management development, basic and technical skills, organizational development, etc.

The college has been selected as one of nine sites in Virginia for a new technology transfer program which assists small to medium-sized businesses in becoming more competitive, productive and profitable. This economic development program, sponsored jointly by the Center for Innovative Technology and the Virginia Community College System, helps all types of businesses, including manufacturers, distributors and service firms, find solutions to technology-related business needs. At Northern Virginia Community College, the technology transfer program is managed through the Center for Business and Government Services. The director of the technology transfer program works one-on-one with a business on a confidential basis and without charge to integrate unfamiliar or underutilized technological resources with the specific needs of the business. The director draws from resources that include public institutions of higher education, local and statewide economic development programs, federal agencies and private sector resources. Businesses are referred to reliable, cost-effective training, education and business development services available through the community college and other resources. Businesses needing assistance should call the Northern Virginia Community College director at The Center for Business and Government Services, (703) 323-4293.

Continuing Education Units for Non-Credit Courses

The college awards Continuing Education Units (CEU) upon completion of most non-credit courses. One CEU represents ten hours of participation in community service courses which meet the following standards:

1. The non-credit activity is planned in response to an assessment of educational needs for a specific target population.
2. There is a statement of objectives and rationale.
3. Content is selected and organized in a sequential manner.
4. There is evidence of pre-planning.
5. The activity is instructional and is approved by an academic or administrative unit of the institution best qualified to affect the quality of the program content and to approve the resource personnel utilized.
6. There is provision for registration for individual participants.
7. Evaluation procedures are utilized.
8. Criteria are established for awarding Continuing Education Units to individual students prior to the beginning of the activity.

Cooperative Education

Cooperative Education (Co-op) is an ac-

ademic program designed to provide you with practical on-the-job learning experience in your career field. You earn college credit and a grade while working in an approved job. The Co-op coordinator guides you in the cooperative learning process and originates, develops, and approves the Co-op jobs.

Cooperative Education bridges the gap between theory and practice by providing the opportunity for you to apply the concepts and skills learned in the classroom to a job situation. The professional and technical experience you gain through Cooperative Education establishes a record of performance in your career field and eases your entry into a permanent career position. Over 80% of the Cooperative Education graduates remain with their Co-op employers upon graduation. If you Co-op with a federal government agency, you can be retained *non-competitively* in a permanent position upon graduation.

To be eligible to participate in the Cooperative Education program, you must:

1. Be program placed in a degree or certificate program which offers co-op experience.
2. Have completed 15 semester hours of college work or the equivalent, including transfer credit.
3. Have completed a minimum of two courses in your major area of study.
4. Have a 2.00 or better grade point average.
5. Be approved by a Co-op coordinator after a review of your academic/employment record and a determination of your potential for success in a Co-op position.

Before registering for Co-op, you must have written approval from the Cooperative Education coordinator and be hired by an approved Co-op employer.

Credit earned in the Cooperative Education program may be used to substitute for up to 10 credits of course work in selected degree programs with the approval of your faculty advisor, may be used for elective credit, or earned as additive credit.

Cooperative Education is offered on the Alexandria, Annandale, Loudoun, Manassas and Woodbridge campuses. Information is available through your Cooperative Education Office, counselor, or faculty advisor.

Developmental Studies

If you are coming to the college without some high school courses or prerequisites needed for admission to a curriculum, or if you wish to upgrade your skills, the developmental studies program may be the place for you to begin your course of study at NVCC.

Once you are accepted by the college (see Administrative Information section) you may take developmental courses until you are ready to go into the program of your choice. Developmental courses are offered at all campuses of the college. These courses (numbered 001 through 009) are available in biology, chemistry, English

composition, spelling, English as a second language, reading and mathematics (arithmetic through trigonometry).

Counselors will help you determine the areas in which your skills and knowledge are below college entry level. In some cases you must complete your developmental courses before enrolling in certain courses or being admitted to a curriculum. In other cases, you can take college level courses along with developmental courses. The approval of a counselor or faculty advisor in the curriculum would be required.

Developmental courses carry credits, but these are primarily for administrative purposes such as calculating tuition and student course loads. The credits do not apply toward graduation and are not counted in your grade point average.

There is a wide variety of instructional methods and materials used at the college for developmental courses. In some courses there is a choice of either the classroom type of lecture/discussion or individualized (programmed) instruction in which you can work at your own rate of learning. Also, with some of these courses you can sign up during the semester and complete the work at a pace suited to your needs. Some developmental courses are offered through the Extended Learning Institute. If you have any questions, please check with a counselor or faculty advisor.

Academic Computing

NVCC has a number of academic computing resources available for the support and enhancement of the instructional program.

All campuses have academic computing laboratories with interactive terminals connected to NVCC's IBM-4341 computer.

Campus academic computing systems for special use include a microprocessor, plotter and desk-top microcomputer for instruction in the Annandale Campus engineering and data processing disciplines, as well as a medical records computer management system in the Annandale Health Technologies programs. The Alexandria Campus uses a mini-computer system called TICCIT (Time-shared, Interactive, Computer-Controlled, Information Television) with 128 time-sharing terminals for instruction in a variety of subject areas, including English, music, mathematics and biology. In addition, each campus is equipped with at least one micro-computer laboratory.

Curricula of Study General Information

In the following section, the degree and certificate curricula are listed. They are arranged in alphabetical order according to title of the major or special area of study. Each curriculum listing:

1. Provides information concerning occupational or transfer objectives;

2. States special curriculum admission requirements, if any, beyond those for acceptance by the college;
3. Specifies the required courses and minimum number of credit hours for completion;
4. Suggests a sequence for taking courses; and
5. Provides an outline to follow for completion of the curriculum with full-time study.

A.A.S. Degree General Requirements

Major Courses and Credit Requirements:

1. Approximately 50% of the courses or credit hours in all A.A.S. degree curricula are in the given major area of study.
2. Approximately 25% of the courses or credit hours are in closely related and supporting areas.
3. The total number of credit hours required for each curriculum is specified, with the minimum number of any degree being 65 credits.

General Education Courses for A.A.S. Degrees

Each degree curriculum contains a minimum of 25% of the total credit hours in general education areas. Those areas include humanities, social science, natural science and mathematics.

Some substitutions within the humanities and social science areas are allowed for the A.A.S. degree. These are as follows:

1. **English** (Minimum of 3 credits required) ENG 111-112 College Composition I-II (6 cr.) and SPD elective (1 cr.) or ENG 111 College Composition I (3 cr.) and SPD elective (3 cr.) or ENG 111 College Composition I (3 cr.) and a 3-credit ENG composition elective and an SPD elective (1-3 cr.)
2. **Social Science** (Minimum of 6 credits required)
May be selected from:
History (American or Western)
Economics
Political Science
Psychology
Sociology
Other Social Sciences

Special Requirements for A.A.S. Degrees:

1. STD 100 Orientation (1 credit)
2. PED (total of 2 credits). PED 101 Fundamentals of Physical Activity (1 cr.) is required. The remaining 1 credit may be selected from the various 1 credit-hour activity courses.
3. Computer component, either as a portion of a course or as a discrete course.
4. Math course.

Course Level Requirement

Only courses designated with 100-level and above numbers are counted toward degree requirements.

A.A. and A.S. Degrees General Requirements and Electives

Elective Requirements

Specified electives are sometimes given according to discipline area requirement. The exact course to be taken is to be chosen with approval of a counselor or faculty advisor.

Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated. A full year's sequence of courses is generally easier to transfer than only one semester of a sequence.

General Requirements

1. English

For transfer purposes, students should take: ENG 111-112 College Composition (6 cr.) and a 200-level literature sequence.

2. Mathematics

Mathematics courses for transfer should be selected from one of the following course sequences:

a. **Non-Science, Non-Mathematics, and Non-Engineering Majors:** MTH 181-182 Finite Mathematics I-II or MTH 166 College Algebra and Trigonometry and MTH 271 Applied Calculus I or MTH 151-152 Mathematics for the Liberal Arts I-II.

b. **Science, Mathematics, and Engineering Majors:** MTH 173-174 Calculus with Analytic Geometry I-II or MTH 166 College Algebra and Trigonometry and MTH 271 Applied Calculus I or MTH 277 Multi-Variable Calculus and MTH 285 Linear Algebra and MTH 291 Ordinary Differential Equations.

3. Foreign Language Requirement for A.A. Degree in Liberal Arts

To receive an Associate in Arts degree in Liberal Arts, you must demonstrate proficiency in one foreign language through the intermediate level, either by examination or by completion of course work. If you have previously studied a foreign language and wish to continue the same language, you must arrange with the foreign language faculty of the Humanities Division to take a placement test. If you have successfully completed (within the last two years) the third level in high school of a foreign language, you should not enroll in 101-102 of the same language. Take 201-202 depending on the results of the placement test.

4. Humanities

Humanities courses for transfer may be selected from the following areas: music, art, drama, humanities, language, philosophy, literature (American, English or World), speech or English. The humanities course sequence selected should be the one acceptable to the four-year college or university to which transfer is contemplated.

5. Social Science

A.A. degree requirements include 6 credits in history (American or Western). A.S. degree requirements include a minimum of 3 credits in history (American or Western). In addition, for both A.A. and A.S. degrees, a two-semester sequence of social science courses for a total of 6 credits must be completed in one of the following disciplines: economics, geography, political science, psychology, social science, or sociology. Anthropology may be found listed as a sociology course. The social science course sequence selected should be the one acceptable to the four-year college or university to which transfer is contemplated.

6. Natural Science

Natural Science courses (with labs) for transfer may be selected from the following areas:

- a. Science majors: biology, chemistry, physics and geology.
- b. Non-Science majors: biology, chemistry, physics and geology and the natural science 101-102 course sequence.

Special Requirements for A.A. and A.S. Degrees

1. STD 100 Orientation (1 credit)
2. PED Physical Education (total of 2 credits). PED 101 Fundamentals of Physical Activity (1 credit) is required. The remaining one credit may be selected from the various one-credit-hour activity

courses. The physical education requirement of the institution to which transfer is contemplated should be completed prior to transfer if at all possible.

Course Level Requirement

Only courses with 100-level or above numbers are counted toward degree requirements.

Minimum Credit Requirements

A minimum of 65 credits is required for an A.S. or A.A. degree. The total number of credits required for a given degree is specified for each curriculum.

Certificate General Requirements

1. The minimum number of credits required for certificates is 30 credits. The total number of credits required for a given certificate is specified for each curriculum.
2. All major courses and possible substitutions are given with each curriculum.
3. The required general education component is incorporated in each curriculum listing.

Career Studies Certificate

The career studies certificate is a response to the short-term training needs of many individuals, and can be completed in less time than the conventional one- and two-year programs and degrees. A minimum of 10 credits is required to complete

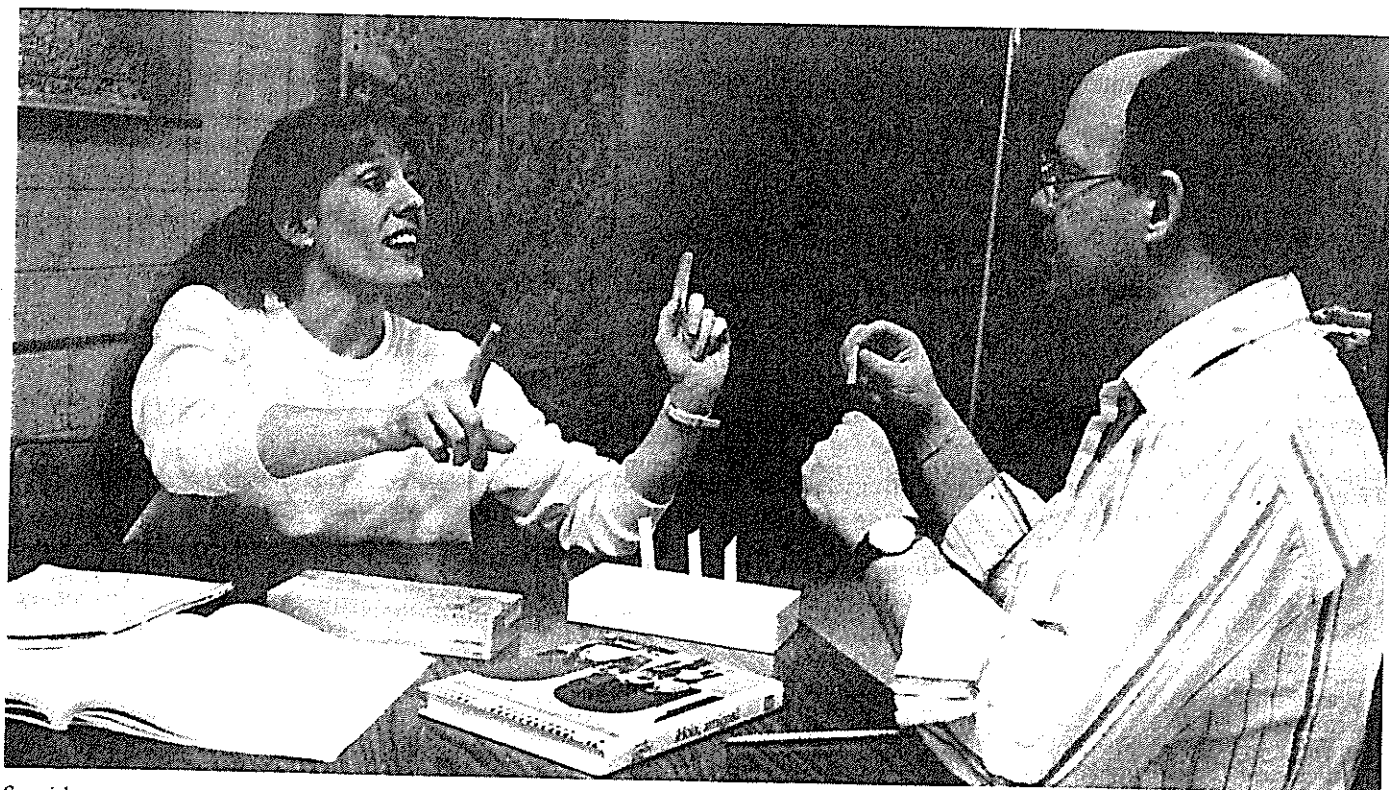
a career studies certificate. The total number of credits required for a given career studies certificate is specified for each curriculum, with generally a 10-18 credit-hour range. The career studies programs are designed for expansion of job and life skills, retraining for career change and investigating new career possibilities. In some instances the career studies certificate is applicable toward the achievement of a higher academic award, such as a one-year certificate or an associate degree.

Curriculum Requirements:

During the first semester of enrollment, students must meet the general admission requirements for acceptance by the college and any specific requirements of the curriculum.

Curricula

The certificate and degree curricula offered by the college are entered in alphabetical order by major title in the following list. All general education, orientation, and physical education courses which are required for degree and certificate curricula are offered on all campuses of the college. Specialized major courses required for some degree curricula are not offered on all campuses. Those campuses offering all of the major courses needed for a given degree or certificate are noted by an X following the curriculum entry. Campus symbols are as follows: AL-Alexandria, AN-Annandale, LO-Loudoun, MA-Manassas, and WO-Woodbridge.



Spanish

Major (Degree or Certificate)

Specialization	AL	AN	LO	MA	WO
Accounting (A.A.S.).....	X	X	X	X	X
Air Conditioning and Refrigeration (A.A.S. & Certificate).....					X
Architectural Drafting (Certificate).....	X	X		X	
Architecture (A.A.S.).....	X	X		X	
Art Education (A.S.).....	X	X	X	X	X
Automotive Body Technology (Certificate).....	X			X	
Automotive Diagnosis and Tune-Up (Certificate).....	X			X	
Automotive Electrical Technician (Certificate).....	X				
Automotive Machinist (Certificate).....	X				
Automotive Maintenance and Tune-Up (Career Studies Certificate).....	X				X
Automotive Technology (A.A.S.).....	X				
Diagnostician.....	X			X	
Repair.....	X			X	
Automotive Transmissions and Power Trains (Certificate).....	X				
Aviation Technology (A.A.S.).....				X	
Career Pilot.....				X	
Aviation Technology: Flight Attendant (Certificate).....				X	
Aviation Technology Transfer (A.A.S.).....				X	
Business Administration (A.S.).....	X	X	X	X	X
Business Management (A.A.S.).....	X	X	X	X	X
Cardiac Care Technician (Career Studies Certificate).....		X			
Civil Engineering (A.A.S.).....	X	X			
Land Surveying.....		X			
Civil Engineering Technician (Certificate).....	X	X			
Commercial Art (A.A.S.).....	X		X		
Commercial Photography.....	X		X		
Computer Graphics Design.....	X		X		
Illustration.....	X		X		
Complete Dentures (Career Studies Certificate).....		X			
Computer Information Systems (A.A.S.).....					
Microcomputer Usage.....	X	X	X	X	X
Programming.....	X	X	X	X	X
System Analyst.....	X	X	X	X	X
Technical Support.....	X	X	X	X	X
Computer Science (A.S.).....	X	X	X	X	X
Construction Inspection (Certificate).....	X				
Construction Management Technology (A.A.S.).....	X			X	
Corrections Science (A.A.S. & Certificate).....	X	X			X
Dental Hygiene (A.A.S.).....		X			
Dental Laboratory Technology (A.A.S.).....		X			
Dietary Manager (Certificate).....		X			
Dietetic Technician (A.A.S.).....		X			
Early Childhood Development (A.A.S.).....	X				
Early Childhood Development Assistant (Certificate).....	X				
Early Childhood Education: Child Home Care (Nanny) (Certificate).....	X				
Education (A.S.).....	X	X	X	X	X
Industrial Education.....	X	X	X	X	X
Electricity (Career Studies Certificate).....					X
Electronics (A.A.S.).....		X			X
Computer Technology.....		X			X
Electronics Technician (Certificate).....		X			X
Emergency Medical Services Technology (A.A.S. & Certificate).....		X			
Engineering (A.S.).....	X	X			
Electrical Engineering.....		X			
Engineering Drafting (Certificate).....	X	X		X	
Fine Arts (A.A.).....	X	X	X	X	X
Art/Fine Art Photography.....	X	X	X		X
Fire Protection Technology (Certificate).....	X	X			
Fire Science Administration (A.A.S.).....	X	X			
Fire Protection Technology.....	X	X			
Fire Science Investigation.....	X	X			
Fire Science Administration (Certificate).....	X	X			
Fire Science Investigation (Certificate).....	X	X			
General Studies (A.S.).....	X	X	X	X	X
Gerontology (A.A.S.).....	X				
Gerontology: George Mason Transfer (A.A.S.).....	X				
Horticulture Technology (A.A.S.).....			X		
Floriculture.....			X		

	AL	AN	LO	MA	WO
Hotel, Restaurant and Institutional Management (A.A.S.).....		X			
Food Service Management		X			
Hotel Management		X			
Hotel, Restaurant and Institutional Management:					
Food Service Management (Certificate)		X			
Hotel, Restaurant and Institutional Management:					
Hotel Management (Certificate)		X			
Human Services Associate (A.A.S.)					
Mental Health	X				
Interior Design (A.A.S.).....			X		
Legal Assisting (A.A.S.)	X				
Liberal Arts (A.A.).....	X	X	X	X	X
Art History	X	X	X	X	X
International Studies	X	X	X		X
Music	X	X	X		
Philosophy	X	X			X
Religion	X	X			X
Speech Communication	X	X	X		X
Machine Tool Operation (Certificate)		X			X
Marketing (A.A.S.)	X	X			X
Fashion	X	X			X
Mechanical Engineering (A.A.S.)		X			
Computer-Aided Drafting and Manufacturing		X			
Electro-Mechanical Technology		X			
Medical Laboratory Technology (A.A.S.).....		X			
Medical Office Assisting (Career Studies Certificate)		X			
Medical Record Technology (A.A.S.)		X			
Microcomputer Repair (Career Studies Certificate)		X			X
Microcomputer Usage (Career Studies Certificate).....		X			X
Music (A.A.).....	X	X	X	X	X
Jazz/Popular Music	X	X	X		
Sacred Music	X	X	X		
Music Recording Technology (Certificate).....	X	X	X		
Nursing (A.A.S.).....			X		
Occupational Safety Assistant (Career Studies Certificate).....	X				
Office Administration and Management (A.A.S.)	X	X	X	X	X
Office Systems Technology (A.A.S.& Certificate)	X	X	X	X	X
Executive Secretary	X	X	X	X	X
Word Processing	X	X	X	X	X
Phlebotomy (Career Studies Certificate)		X			
Physical Security (Career Studies Certificate).....	X	X		X	X
Physical Therapist Assistant (A.A.S.).....		X			
Planning (Career Studies Certificate).....	X				
Police Science (A.A.S. & Certificate).....	X	X			X
Radiography (A.A.S.).....		X			
Real Estate (A.A.S. & Certificate)	X	X		X	
Recreation and Parks (A.A.S.)		X			
Recreation Vehicle: Marine Mechanics (Career Studies Certificate).....	X				
Recreation Vehicle: Motorcycle Mechanics (Career Studies Certificate)	X				
Respiratory Therapy (A.A.S.& Certificate).....		X			
Safety Technician (Certificate).....	X				
Science (A.S.).....	X	X	X	X	X
Mathematics	X	X	X	X	X
Security Administration (A.A.S.).....	X	X	X	X	X
Small Business Management (Certificate).....	X	X	X	X	X
Substance Abuse Rehabilitation (A.A.S.)	X				
Substance Abuse Rehabilitation Counselor (Certificate).....	X				
Technical Illustration (Career Studies Certificate)	X				
Travel and Tourism (A.A.S.& Certificate)		X			
Turf and Grounds Management (Career Studies Certificate).....			X		
Veterinary Technology (A.A.S.)			X		
Welding (Certificate).....				X	
Welding: Advanced Techniques (Career Studies Certificate)				X	
Welding: Basic Techniques (Career Studies Certificate)				X	X
Woodworking (Career Studies Certificate)					X

Northern Virginia Community College—A Cooperative Education institution—You earn a future when you earn a degree.

ACCOUNTING

Associate in Applied Science Degree Business Management Degree Program

Purpose: The curriculum is designed for persons who seek employment in the accounting field or for those presently in accounting who desire to increase their knowledge and update their skills. The occupational objectives include: accounting trainee, accounting technician, junior accountant, accountant.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and a strong background in basic arithmetic.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ACC	211-212 Principles of Accounting I-II.....	3	3
BUS	100 Introduction to Business.....	3	
BUS	121 Business Mathematics I.....		3
BUS	150 Principles of Management.....		3
CIS	150 Intro. to Microcomputer Software ...	3	
ECO	120 Survey of Economics.....		3
*ENG	111-112 College Composition I-II.....	3	3
MTH	120 Introduction to Mathematics.....	3	
PED	101 Fund. of Physical Activity.....	1	
PED	Elective.....		1
STD	100 Orientation.....	1	
Total Credits		17	16

Second Year		Credits	
		1st Semester	2nd Semester
ACC	221-222 Intermediate Accounting I-II....	3	3
ACC	231 Cost Accounting I.....	3	
ACC	241 Auditing I.....		3
ACC	261 Prin. of Federal Taxation I.....	3	
**ACC	Elective.....		3
**ACC	Elective.....		3
BUS	225 Applied Business Statistics.....		3
BUS	241 Business Law I.....	3	
FIN	215 Financial Management.....		3
SPD	110 Intro. to Speech Communication.....	3	
—	Social science elective.....	3	
Total Credits		18	18

Total minimum credits for the Accounting major (A.A.S. Degree) = 69.

* ENG 115 or ENG 116 may be substituted for ENG 112.

** ACC 215, ACC 219, ACC 232, ACC 242, and ACC 262 are acceptable electives.

AIR CONDITIONING AND REFRIGERATION

Associate in Applied Science Degree Environmental Control Technology Degree Program

Purpose: This curriculum is designed to prepare students for jobs in the refrigeration and air conditioning field. The occupational objectives include: service, maintenance, repair and installation of refrigeration and air conditioning equipment.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
AIR	101-102 Principles of Refrigeration I-II...	4	4
AIR	111 Air Cond. & Ref. Controls I.....	3	
AIR	134 Circuits & Controls I.....		3
AIR	155 Heating Systems.....	4	
AIR	199 Supervised Study.....		1
MTH	103-104 Basic Tech. Math I-II.....	3	3
*ENG	111 College Composition I.....		3
PED	101 Fundamentals of Physical Activity...	1	
STD	100 Orientation.....	1	
—	Social science elective.....		3
Total Credits		16	17

Second Year		Credits	
		1st Semester	2nd Semester
AIR	205 Hydronics & Zoning.....	4	
AIR	211 Air Conditioning Controls.....	4	
AIR	251 Air Cond. Systems I.....	4	
AIR	238 Advanced Troubleshooting & Service.....		3
AIR	252 Air Cond. Systems II.....		4
AIR	207 Heat Loads & Psychometrics.....		4
AIR	245 Electric Heat & Heat Pumps.....		4
SPD	110 Intro. to Speech Communication.....	3	
PED	Elective.....		1
—	Social science elective.....	3	
Total Credits		18	16

Total minimum credits for the Air Conditioning and Refrigeration major (A.A.S. Degree) = 67.

* For further explanation of English and social science course requirements for A.A.S. degrees, see the "A.A.S. Degree General Requirements" section.

AIR CONDITIONING AND REFRIGERATION

Certificate

Purpose: The certificate program is intended to prepare students for jobs in the refrigeration and air conditioning field. Upon successful completion of the program, the student is enabled to take full-time employment. The occupational objectives include: service, maintenance, repair and installation of refrigeration and air conditioning equipment.

		Credits	
		1st Semester	2nd Semester
AIR	101-102 Prin. of Refrigeration I-II.....	4	4
AIR	111 Air Cond. & Ref. Controls I.....	3	
AIR	134 Circuits & Controls I.....		3
AIR	155 Heating Systems.....	4	
AIR	211 Air Conditioning Controls I.....		4
AIR	199 Supervised Study.....		1
MTH	103-104 Basic Technical Math I-II.....	3	3
ENG	111 College Composition I.....		3
—	Social science elective.....	3	
Total Credits		17	18

Total minimum credits for the Air Conditioning and Refrigeration Certificate = 35.

ARCHITECTURAL DRAFTING

Certificate

Purpose: This program is designed to prepare the student for entry-level employment in an architectural firm or a construction office. The student who completes the certificate may continue study toward the A.A.S. Degree in Architecture. Occupational objectives include: architectural draftsman, engineering aide.

Special Curriculum Admission Requirements: Two years of high school algebra and geometry.

		Credits	
		1st Semester	2nd Semester
ARC	121-122 Architectural Drafting I-II	3	3
ARC	133-134 Materials and Methods of Construction	3	3
MTH	115 Technical Math. I	3	
DRF	231 Computer Aided Drafting I		3
ENG	111 College Composition I	3	
ARC	225 Site Planning and Technology		3
—	Social science elective	3	
ENG	115 Technical Writing		3
—	Technical elective		3
STD	100 Orientation	1	
Total Credits		16	18

Total minimum credits for the Architectural Drafting Certificate = 34.

ARCHITECTURE

Associate in Applied Science Degree Architectural and Construction Technology Degree Program

Purpose: This curriculum is designed to prepare students for employment in an architectural firm or a construction office. This program is also transferable to selected four year colleges. Occupational objectives include: architectural draftsman, design assistant, specifications assistant, junior architect, urban planning assistant.

Special Curriculum Admission Requirements: Two years of high school algebra and geometry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation	1	
ARC	121-122 Architectural Drafting I-II	3	3
ARC	133-134 Materials/Methods of Constr. I-II	3	3
MTH	115-116 Technical Math I-II	3	3
ENG	111 College Composition I	3	
ENG	115 Technical Writing		3
DRF	231 Computer Aided Drafting I		3
ARC	200 History of Architecture	4	
PED	101 Fund. of Physical Activity		1
SPD	127 Workshop in Interpersonal Skills		1
PED	Elective		1
Total Credits		17	18

		Credits	
		1st Semester	2nd Semester
EGR	130 Statics & Strength of Materials for Engineering Tech. or Tech. elect.	5	5
CIV	210 Structural Systems or Tech. elect. ...		5
ARC	225 Site Planning and Technology	3	
ARC	231-232 Adv. Architectural Drafting I-II	4	4
—	Social science electives	3	3
DRF	232 Computer Aided Drafting II	3	
ARC	243 Environmental Systems		4
—	Technical elective		2-3
Total Credits		18	18-19

Total minimum credits for the Architecture major (A.A.S. Degree) = 71.

ART EDUCATION

Associate in Science Degree Education Degree Program

Purpose: The Associate in Science in Art Education major curriculum is designed for students who plan to transfer to a four-year program in a

professional art school or to a college or university baccalaureate degree program in Art Education.

Special Curriculum Admission Requirements: Entry into the Art Education curriculum requires a satisfactory aptitude in visual art and applicants may be required to submit a portfolio for placement.

		Credits	
		1st Semester	2nd Semester
ART	101-102 Hist. & Appreciation of Art I-II	3	3
ART	121-122 Drawing I-II	4	4
ART	131-132 Fundamentals of Design I-II	4	4
ENG	111-112 College Composition I-II	3	3
STD	100 Orientation	1	
—	Social science electives	3	3
PED	101 Fundamentals of Physical Activity		1
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
² ART	253 Design III	4	
³ —	Studio/general elective	4	
MTH	151-152 Math for the Liberal Arts I-II	3	3
PED	Elective		1
⁴ ENG	Electives	3	3
⁵ —	Science/lab electives	4	4
SPD	110 Intro. to Speech Communication		3
HIS	121 U.S. History I		3
—	General elective		1
Total Credits		18	18

Total minimum credits for the Art Education major (A.S. Degree) = 72.

¹ Social science courses may be selected from the following: economics, geography, political science, history, psychology, social science or sociology (anthropology).

² Or approved studio elective

³ Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated.

⁴ 200-level literature course

⁵ Science courses may be selected from biology, chemistry, or geology.

AUTOMOTIVE BODY TECHNOLOGY

Certificate

Purpose: The curriculum is intended to prepare people for immediate employment in automotive body repair work. The curriculum provides experience in evaluation, repair and refinishing of automotive body damage. Occupational objectives include: automotive body refinisher, automotive sheet metal repairman, automotive frame repairman, damage estimator, auto body analyst.

		Credits	
		1st Semester	2nd Semester
AUT	195 Topics In: Shop Operations & Procedures	3	
AUB	106 Basic Sheet Metal Operations	4	
AUB	117 Automotive Frame Repair	4	
AUB	195 Topics In: Auto Body Welding	4	
ENG	/Speech elective		3
MTH	103 Basic Technical Math	3	
AUB	116 Auto Body Repair		4
AUB	118 Automotive Paint Preparation		4
AUB	119 Automotive Painting		4
PSY	120 Human Relations		3
Total Credits		18	18

Total minimum credits for the Automotive Body Technology Certificate = 36.

AUTOMOTIVE DIAGNOSIS & TUNE-UP

Certificate

Purpose: The curriculum is designed to provide current theory, experience and development for those who desire careers as diagnosticians and tune-up service technicians. Also includes recent technical innovations in

electronics, automatic engine controls, fuels management and emission controls. Occupational objectives include: automotive tune-up technicians, emission control technicians, and service technicians.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
AUT	195 Topics In: Shop Operations & Procedures	3	
AUT	111 Automotive Engines I	4	
AUT	121 Automotive Fuel Systems I	4	
AUT	122 Automotive Fuel Systems II		4
AUT	215 Emissions Systems Diagnosis & Repair.....		2
AUT	241 Auto. Electricity I	4	
AUT	161 Automotive Diagnosis I	3	
AUT	274 Auto. Driveability & Tune-Up II		3
MTH	103 Basic Tech. Math. I		3
ENG	111 College Composition I		3
—	Social science elective		3
Total Credits		18	18

Total minimum credits for the Automotive Diagnosis and Tune-Up Certificate = 36.

AUTOMOTIVE ELECTRICAL TECHNICIAN

Certificate

Purpose: This curriculum is designed for persons who seek full-time employment in automotive electrical specialty shops. The curriculum includes the necessary theory and shop experience to advance the student to a level of competency for immediate employment as an automotive electrical technician.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
AUT	195 Topics In: Shop Operations & Procedures	3	
AUT	217 Computerized Fuel Systems	3	
AUT	241 Auto. Electricity I	4	
AUT	242 Auto. Electricity II		4
AUT	245 Automotive Electronics.....		4
AUT	276 Shop Management.....		3
AUT	Elective		3
ENG	111 College Composition I	3	
—	Social science elective		3
MTH	103 Basic Tech. Math. I	3	
Total Credits		16	17

Total minimum credits for the Automotive Electrical Technician Certificate = 33.

AUTOMOTIVE MACHINIST

Certificate

Purpose: This curriculum includes the necessary theory and machine shop experience to bring the beginning students to a level of competency so that they are ready for full-time employment as beginning automotive machinists or heavy equipment machinists. The occupational objectives include: automotive machinist, motorcycle engine machinist, heavy equipment machinist.

Special Curriculum Admission Requirements: Two years of high school automotive shop program or equivalent and successfully complete the AUT ABE Exam. Students not meeting this requirement must complete AUT 195 Topics In: Shop Operations and Procedures.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education

program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
AUT	107 Auto. Disassembly & Insp. Tech.....	2	
AUT	108 Auto Shop Fabrication Techniques ..		2
AUT	111 Auto Engines I.....	4	
AUT	113 Cylinder Block Service.....		3
AUT	114 Cylinder Head Service.....	3	
AUT	116 Auto. Turning Operations		3
AUT	117 Crankshaft, Camshaft, & Conn. Rod Serv.		3
AUT	120 Intro. to Auto. Machine Shop.....	3	
MTH	103 Basic Tech. Math. I	3	
ENG	111 College Composition I		3
—	Social science elective		3
*WEL	Elective	3	
Total Credits		18	17

Total minimum credits for the Automotive Machinist Certificate = 35.

* AUB 195 Topics In: Auto Body Welding may be taken to meet this requirement.

AUTOMOTIVE MAINTENANCE AND TUNE-UP

Career Studies Certificate

Purpose: The curriculum is designed to train entry-level automotive service technicians in the basic service, tune-up and repair of today's automobile. Those completing this program will be knowledgeable and have basic working experience to prepare them for full-time employment as entry level automotive repair and preventative maintenance service technicians, with knowledge in engine tune-up, to include emission control systems.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
AUT	195 Topics In: Shop Operations & Procedures	3	
AUT	111 Automotive Engines I	4	
AUT	125 Anti-Pollution Systems	3	
AUT	241 Automotive Electricity I		4
AUT	161 Automotive Diagnosis I	3	
AUT	274 Automotive Driveability and Tune-Up II.....		3
ENG	/SPD elective		3
Total Credits		13	10

Total minimum credits for the Automotive Maintenance and Tune-Up Career Studies Certificate = 23.

AUTOMOTIVE TECHNOLOGY

Associate in Applied Science Degree Vehicle and Equipment Technology Degree Program

Purpose: This curriculum is designed to train technicians for the automotive field. Students completing this program will be ready for full-time employment as automotive technicians. The occupational objectives include: line technician, new car make-ready, customer service representative, and service manager.

Special Curriculum Admission Requirements: Two years of high school automotive shop program or equivalent and successful completion of the AUT 195, Topics In: Shop Operations and Procedures ABE exam. Students not meeting this requirement must take AUT 195, Topics In: Shop Operations and Procedures.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
—	Social science elective	3	
AUT	121-122 Auto Fuel Systems I-II.....	4	4
AUT	111 Auto Engines I.....		4
AUT	241-242 Auto Electricity I-II	4	4
ENG	111 College Composition I.....	3	
SPD	110 Intro. to Speech Communication....		3
STD	100 Orientation.....	1	
MTH	103 Basic Tech. Math I.....	3	
AUT	125 Anti-Pollution Systems		3
Total Credits		18	18

		Credits	
Second Year		1st Semester	2nd Semester
PED	101 Fund. of Physical Activity.....	1	
AUT	141-142 Auto Power Trains I-II	4	4
AUT	215 Emissions Sys. Diag. & Repair.....	2	
AUT	236 Automotive Climate Control	4	
AUT	266 Auto. Align., Susp. & Steering.....		4
AUT	267 Auto. Susp. & Braking Systems.....	4	
AUT	245 Automotive Electronics.....		4
AUT	276 Shop Management.....		3
PED	Elective		1
—	Social science elective	3	
Total Credits		18	16

Total minimum credits for the Automotive Technology major (A.A.S. Degree) = 70.

Diagnostic Specialization

Purpose: This curriculum is designed to train technicians for the automotive field. Students completing this program will be ready for full-time employment as automotive technicians. The occupational objectives include: new car make-ready, tune-up specialist, and customer service representative.

Special Curriculum Admission Requirements: Two years of high school automotive shop program or equivalent and successful completion of the AUT 195, Topics In: Shop Operations and Procedures ABLE exam. Students not meeting this requirement must take AUT 195, Topics In: Shop Operations and Procedures.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
—	Social science elective	3	
AUT	121-122 Auto Fuel Systems I-II.....	4	4
AUT	111 Auto. Engines I.....		4
AUT	241-242 Automotive Electricity I-II.....	4	4
ENG	111 College Composition I.....	3	
SPD	110 Intro. to Speech Comm.		3
STD	100 Orientation.....	1	
MTH	103 Basic Tech. Math. I.....	3	
AUT	125 Anti-Pollution Systems		3
Total Credits		18	18

		Credits	
Second Year		1st Semester	2nd Semester
PED	101 Fund. of Physical Activity.....	1	
AUT	215 Emissions Sys. Diagnosis & Repair..	2	
AUT	217 Computerized Fuel Systems.....		3
AUT	161 Automotive Diagnosis I.....	3	
AUT	295 Topics In: Emissions Inspection	1	
AUT	236 Automotive Climate Control	4	
AUT	266 Auto. Alignment, Suspension & Steering.....		4
AUT	267 Auto. Suspension & Braking Systems	4	
AUT	245 Automotive Electronics.....		4
AUT	274 Auto Driveability & Tune-Up II		3
PED	Elective		1
—	Social science elective	3	
Total Credits		18	15

Total minimum credits for the Automotive Technology major/Diagnostic Specialization (A.A.S. Degree) = 69.

Repair Specialization

Purpose: This curriculum is designed to train technicians for the automotive field. Students completing this program will be ready for full-time employment as automotive technicians. The occupational objectives include: line technician, new car make-ready, and customer service representative.

Special Curriculum Admission Requirements: Two years of high school automotive shop program or equivalent and successful completion of the AUT 195, Topics In: Shop Operations and Procedures ABLE exam. Students not meeting this requirement must take AUT 195, Topics In: Shop Operations and Procedures.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
—	Social science elective	3	
AUT	121-122 Automotive Fuel Systems I-II ...	4	4
AUT	111 Automotive Engines I.....		4
AUT	241-242 Automotive Electricity	4	4
ENG	111 College Composition I.....	3	
SPD	110 Intro. to Speech Communication....		3
STD	100 Orientation.....	1	
MTH	103 Basic Technical Math.....	3	
AUT	125 Anti-Pollution Systems.....		3
Total Credits		18	18

		Credits	
Second Year		1st Semester	2nd Semester
PED	101 Fund. of Physical Activity.....	1	
AUT	112 Automotive Engines II	4	
*AUT	251-252 Automatic Transmissions I-II....	4	4
AUT	236 Auto. Climate Control.....	4	
AUT	266 Auto. Alignment, Suspen. & Steering.....		4
AUT	267 Auto. Suspen. & Braking Systems...	4	
AUT	245 Auto. Electronics.....		4
PED	Elective		1
—	Social science elective		3
Total Credits		17	16

Total minimum credits for the Automotive Technology major/Repair Specialization (A.A.S. Degree) = 69.

* AUT 141-142 prerequisite.

AUTOMOTIVE TRANSMISSIONS AND POWER TRAINS

Certificate

Purpose: The curriculum is intended to prepare individuals for immediate employment in automotive transmissions and power trains work. The curriculum provides experience in evaluation, repair, overhaul, and rebuilding of automotive power train assemblies and subassemblies. Occupational objectives include: automatic and manual transmission re-builder, power train diagnostician, transmission and transaxle service and repair technicians.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
AUT	195 Topics In: Shop Operations & Procedures	3	
AUT	111 Auto. Engines I.....	4	
AUT	141-142 Auto. Power Trains I-II	4	4
AUT	251-252 Automatic Transmissions I-II....	4	4
MTH	103 Basic Technical Math.....	3	
ENG	111 College Composition I.....		3
—	Social science elective		3
AUT	Elective		3
Total Credits		18	17

Total minimum credits for the Automotive Transmissions and Power Trains Certificate = 35.

AVIATION TECHNOLOGY

Associate in Applied Science Degree Transportation Degree Program

Purpose: The curriculum is designed to prepare the graduate to enter the field of aviation with a broad base of aeronautical knowledge upon which to build a career. The occupational objectives include: transportation agent, reservation sales agent, station agent, passenger service agent, assistant airport manager, operations agent, airline dispatcher, airline office manager, airport security specialist, and other related jobs. Graduates will also have an advantage in taking the Civil Service examinations for appointment to positions with the Federal Aviation Administration as: air traffic controllers, flight service specialists, and tower operators.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
MTH	150 Topics in Geometry	3	
PED	101 Fund. of Physical Activity.....	1	
PED	Elective		1
ARO	130 History of Air Trans.....	3	
ARO	110 Fundamentals of Flight.....	3	
ARO	119 Primary Flight (Optional).....	(1)	
—	General elective	3	
ENG	111-112 College Composition I-II.....	3	3
ARO	100 Aviation in the U.S.....		3
ARO	220 Meteorology		3
PSY	120 Human Relations.....		3
BUS	or MKT elective		3
Total Credits		17-18	16

		Credits	
		1st Semester	2nd Semester
SPD	110 Intro. to Speech Communication.....	3	
ARO	140 Aviation Safety	3	
ARO	230 Air Navigation	3	
ARO	240 Aircraft Support Operations	3	
MTH	151-152 Math for the Liberal Arts I-II.....	3	3
PSY	105 Psychology of Personal Adjustment ...		3
GEO	298 Seminar & Project.....		3
ARO	210 Aviation Law		3
ARO	245 Airport Operations & Mgmt.....		3
BUS	or MKT elective		3
Total Credits		15	18

Total minimum credits for the Aviation Technology major (A.A.S. Degree) = 66.

VCCS Transfer Program

Purpose: The breakdown of this curriculum is done to accommodate students outside the Northern Virginia area. The first two semesters may be taken at any VCCS college and credited toward the A.A.S. Degree in Aviation Technology.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
PSY	105 Psychology of Personal Adjustment ...	3	
PED	101 Fund. of Physical Activity.....	1	
BUS	or MKT electives.....	3	3
MTH	150 Topics in Geometry	3	
ENG	111-112 College Composition I-II.....	3	3
MTH	151-152 Math for the Liberal Arts I-II....	3	3
PSY	120 Human Relations.....		3
SPD	110 Intro. to Speech Communication.....		3
PED	Elective		1
Total Credits		17	16

		Credits	
		1st Semester	2nd Semester
ARO	130 History of Air Transportation	3	
ARO	110 Fundamentals of Flight.....	3	
ARO	119 Primary Flight (Optional).....	(1)	
ARO	140 Aviation Safety	3	
ARO	230 Air Navigation	3	
ARO	240 Aircraft Support Operations.....	3	
ARO	100 Aviation in the U.S.....		3
ARO	220 Meteorology		3
ARO	210 Aviation Law		3
ARO	245 Airport Oper. & Management		3
GEO	298 Seminar & Project.....		3
—	General elective		3
Total Credits		15-16	18

Total minimum credits for the Aviation Technology major/VCCS Transfer Program (A.A.S. Degree) = 66.

Career Pilot Specialization

Purpose: This curriculum is designed to prepare the graduate to enter the aviation profession with commercial and instrument pilot ratings. This specialization will facilitate entry into all pilot related careers, including the field of air traffic control.

First Year		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
ENG	111-112 College Composition I-II.....	3	3
MTH	150 Topics in Geometry.....	3	
ARO	195 Topics In: Private Pilot Flight Training.....		2
ARO	121 Private Pilot Ground School.....	3	
ARO	130 History of Air Transportation.....	3	
PED	101 Fund. of Physical Activity.....	1	
ARO	195 Topics In: Instr. Pilot Flight Training.....		2
ARO	122 Instrument Pilot Ground School.....	3	
ARO	220 Meteorology.....	3	
ARO	100 Aviation in the U.S.....	3	
PED	Elective.....	1	
—	General elective.....	3	
Total Credits		16	18

Second Year		Credits	
		1st Semester	2nd Semester
SPD	110 Intro. to Speech Communication.....	3	
MTH	151-152 Math. for the Liberal Arts I-II.....	3	3
ARO	195 Topics In: Commercial Pilot Flight Training.....	2	
ARO	123 Comm. Pilot Ground School.....	3	
ARO	140 Aviation Safety.....	3	
ARO	230 Air Navigation.....	3	
PSY	120 Human Relations.....		3
GEO	298 Seminar & Project.....		3
ARO	210 Aviation Law.....		3
ARO	245 Airport Operations & Management.....		3
Total Credits		17	15

Total minimum credits for the Aviation Technology major/Career Pilot Specialization (A.A.S. Degree) = 66.

AVIATION TECHNOLOGY: FLIGHT ATTENDANT

Certificate

Purpose: This curriculum is designed to prepare students for highly competitive flight attendant positions as well as employment in customer relations and other service-related jobs in the airline industry.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
SPD	110 Intro. to Speech Communication.....	3	
ARO	110 Fundamentals of Flight.....	3	
ARO	140 Aviation Safety.....	3	
ARO	141 Flight Attendants Intro.....	3	
*	Language elective or ARO 130.....	3-5	
ENG	116 Writing for Business.....		3
PSY	120 Human Relations.....		3
HLT	100 First Aid & CPR.....		3
GEO	298 Seminar & Project.....		3
ARO	142 Flight Attendant's Duties & Responsibilities.....		3
*	Language elective or ARO 100.....		3
Total Credits		16-18	18

Total minimum credits for the Aviation Technology: Flight Attendant Certificate = 34.

* Students who have not taken a modern foreign language in high school are strongly encouraged to complete one year of a modern language.

BUSINESS ADMINISTRATION

Associate in Science Degree Business Administration Degree Program

Purpose: The Associate in Science Degree curriculum in Business Administration is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Business Administration.

Special Curriculum Admission Requirements: Satisfactory completion of the

following high school units or equivalent as a minimum: 4 units of English; 2 units of mathematics (algebra and geometry); 1 unit of laboratory science; 1 unit of social studies.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
—	Natural science/lab electives.....	4	4
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....	1	
² HIS	Electives.....	3	3
³ MTH	Electives.....	3-5	3-5
PED	101 Fund. of Physical Activity I.....		1
—	Speech and Drama elective.....	3	
⁴ —	General elective.....		3
Total Credits		17-19	17-19

Second Year		Credits	
		1st Semester	2nd Semester
ACC	211-212 Prin. of Accounting I-II.....	3	3
ECO	201-202 Prin. of Economics I-II.....	3	3
⁵ ENG	Electives.....	3	3
PED	Elective.....	1	
⁴ —	General electives.....	3	3
⁴ —	General electives.....	3	3
Total Credits		16	15

Total minimum credits for the Business Administration major (A.S. Degree) = 65.

¹ Science courses may be selected from biology, chemistry, physics, geology or the natural science 100 series courses.

² HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II.

³ MTH 165 and 271, College Algebra and Applied Calculus I or MTH 173-174, Calculus with Analytic Geometry I-II.

⁴ Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated.

⁵ ENG 241-242 Survey of American Lit. I-II, ENG 243-244 Survey of English Lit. I-II, ENG 251-252 Survey of World Lit. I-II, humanities (6 credits) or philosophy (6 credits).

BUSINESS MANAGEMENT

Associate in Applied Science Degree Business Management Degree Program

Purpose: The curriculum is designed for persons who seek employment in business management or for those presently in management who are seeking promotion. The occupational objectives include: administrative assistant, management trainee, department head, branch manager, office manager, manager of small business, supervisor.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ACC	211-212 Prin. of Accounting I-II.....	3	3
BUS	100 Intro. to Business.....	3	
BUS	150 Prin. of Management.....		3
ENG	111-112 College Composition I-II.....	3	3
MTH	120 Introduction to Math.....	3	
BUS	121 Business Math. I.....		3
*—	Social science elective.....	3	
CIS	100 Intro. to Information Systems.....		3
STD	100 Orientation.....	1	
PED	101 Fund. of Physical Activity.....	1	
MKT	100 Principles of Marketing.....		3
Total Credits		17	18

Second Year	Credits	
	1st Semester	2nd Semester
**BUS 241-242 Business Law I-II.....	3	3
PED Elective		1
**BUS 266 Production & Operations Management.....	3	
SPD 110 Intro. to Speech Communication.....	3	
ECO 120 Survey of Economics.....	3	
BUS 115 Organizational Behavior	3	
BUS 155 Applied Management Principles	3	
BUS 225 Applied Business Statistics.....		3
FIN 215 Financial Management		3
**BUS 205 Human Resource Mgt.		3
**BUS 226 Microcomputer Appl. in Business ...		3
Total Credits	18	16

Total minimum credits for the Business Management major (A.A.S. Degree) = 69.

* Substitutes for social science courses for A.A.S. degrees are listed in the "A.A.S. Degree General Requirements" section. At least one ECO course is required in the Business Management degree program.

** A business elective may be substituted for BUS 242 Business Law II, BUS 266 Production & Operations Management, BUS 205 Human Resource Management, and/or BUS 226 Microcomputer Application in Business, by petition in consultation with the faculty advisor.

CARDIAC CARE TECHNICIAN

Career Studies Certificate

Purpose: The Cardiac Care Technician is a level of competency in pre-hospital emergency care which is recognized by the Commonwealth of Virginia as an intermediate level of competency between the basic EMT and the paramedic. With certification as a CCT, individuals can fill the needs of their EMS system as well as work within their capabilities and desired levels of responsibilities. Commonwealth of Virginia certification is available at the completion of the didactic and clinical phase of the program. Students may apply these credits towards the completion of the two-year Associate in Applied Science Degree.

Special Curriculum Admission Requirements: The Cardiac Care Technician is certified through the Commonwealth of Virginia's Division of Emergency Medical Services. The Division has established certain criteria for this certification. In order for students to be properly certified prior to entering the CSC Program, they must meet the following prerequisites which parallel those of the Commonwealth:

1. Be at least 18 years of age
2. Be certified as an EMT/Ambulance for at least one year
3. Be affiliated with an EMS agency which provides advanced life support
4. Successfully complete the ABLE examination for EMT 106

	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I.....	3	
EMT 220 Introduction to Cardiology.....	2	
EMT 231 Paramedic Procedures I.....		5
EMT 225 Clinical Experiences for the CCT.....		3
HLT 143 Medical Terminology	3	
HLT 250 General Pharmacology		3
Total Credits	8	11

Total minimum credits for the Cardiac Care Technician Career Studies Certificate = 19.

CIVIL ENGINEERING

Associate in Applied Science Degree Civil Engineering Technology Degree Program

Purpose: This curriculum is designed to prepare the student for employment in the construction industry as an engineering technician or for those individuals already employed who seek to expand their knowledge or skills. Occupational objectives include: structural draftsman, construction supervisor or foreman, soils technician, civil engineering technician.

Special Curriculum Admission Requirements: Two years of high school algebra and geometry.

Cooperative Education: Students in this program are strongly encouraged to

gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year	Credits	
	1st Semester	2nd Semester
DRF 151-152 Engineering Drawing Fund. I-II or ARC 121-122 Architectural Drafting I-II.....	3	3
ARC 133-134 Mat./Meth. of Construction I-II.....	3	3
MTH 115-116 Technical Math. I-II.....	3	3
CIV 171-172 Surveying I-II.....	3	3
MEC 127 Computer Prog. for Engr. Tech.	3	
STD 100 Orientation.....	1	
DRF 231 Computer Aided Drafting I.....		3
ENG 111 College Composition I.....		3
PED 101 Fundamentals of Physical Activity... ..	1	
Total Credits	17	18

Second Year	Credits	
	1st Semester	2nd Semester
EGR 130 Statics & Strength of Materials.....	5	
CIV 228 Concrete Technology		2
CIV 229 Concrete Lab.		1
CIV 225 Soil Mechanics	2	
CIV 226 Soil Mechanics Lab.	1	
— Social science electives	3	
CIV 210 Structural Systems		5
CIV 217 Structural Drafting.....	2	
ENG 115 Technical Writing		3
SPD 127 Workshop in Interpersonal Skills		1
PED Elective	1	
DRF 232 Computer Aided Drafting II.....	3	
CIV 297 Cooperative Education/Tech. elec. ...		3
Total Credits	17	18

Total minimum credits for the Civil Engineering major (A.A.S. Degree) = 70.

Land Surveying Specialization

Purpose: The Land Surveying Specialization is designed to prepare students for employment as a civil engineering technician. Occupational objectives include: highway or building inspector, surveyor, civil engineering draftsman.

Special Curriculum Admission Requirements: Two years of high school algebra and geometry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year	Credits	
	1st Semester	2nd Semester
DRF 151-152 Engr. Drawing Fundamentals I-II.....	3	3
MTH 115-116 Technical Math. I-II.....	3	3
CIV 171-172 Surveying I-II.....	3	3
ENG 111 College Composition I.....	3	
ENG 115 Technical Writing		3
MEC 127 Computer Programming for Engr. Tech.	3	
DRF 231 Computer Aided Drafting I.....		3
STD 100 Orientation.....	1	
PED 101 Fundamentals of Physical Activity... ..	1	
PED Elective		1
— Technical elective/Cooperative Ed.....		2
Total Credits	17	18

Second Year		Credits	
		1st Semester	2nd Semester
CIV	261-262 Advanced Surveying I-II.....	3	3
CIV	201-202 Suburban Development I-II.....	3	3
DRF	232 Computer Aided Drafting II or CIV 115 Civil Engineering Drafting	3	
CIV	217 Structural Drafting or CIV 116 Topographic Drafting.....		2-3
—	Social science electives.....	3	3
CIV	225-226 Soil Mechanics/Soils Lab or CIV 241 Appl. Hydraulics & Drainage I.....		3
EGR	130 Statics/Strength of Materials.....	5	
SPD	127 Workshop in Interpersonal Skills		1
CIV	298/297 Sem. & Project/Coop. Educ.....		2
Total Credits		17	17-18

Total minimum credits for the Civil Engineering major/Land Surveying Specialization (A.A.S. Degree) = 69.

CIVIL ENGINEERING TECHNICIAN*

Certificate

Purpose: This program is designed to prepare drafting and technical professionals to serve in the building construction and civil engineering industries. Employment opportunities include: highway draftsman, surveyor, engineering aide. Transfer to the A.A.S. programs in Civil Engineering is also possible.

Special Curriculum Requirements: Two years of high school algebra.

		Credits	
		1st Semester	2nd Semester
CIV	171-172 Surveying I-II.....	3	3
DRF	151 Engineering Drawing Fund. I or ARC 121 Architectural Drafting I.....	3	
**MTH	103-104 Basic Technical Math I-II or MTH 115-116 Technical Math I-II.....	3	3
MEC	127 Comp. Programming for Engr. Tech.	3	
STD	100 Orientation.....		1
ENG	111 College Composition I.....	3	
CIV	201 Suburban Development I.....		3
CIV	145 Applied Soil Erosion/Sediment Control		2
DRF	231 Computer Aided Drafting I.....		3
CIV	115 Civil Engineering Drafting		3
ARC	133 Materials & Methods of Construction.....	3	
Total Credits		18	18

Total minimum credits for the Civil Engineering Technician Certificate = 36.

* VCCS approval pending.

** Students intending to pursue an A.A.S. degree are encouraged to take MTH 115-116.

COMMERCIAL ART

Associate in Applied Science Degree Graphic Communications Degree Program

Purpose: The curriculum is designed for persons who seek full-time employment in the commercial art field. The occupational objectives include graphic designer in the commercial art marketplace.

Special Curriculum Admission Requirements: Proficiency in high school English and a satisfactory aptitude for drawing. Applicants may be required to submit a portfolio before final admission is granted.

Equipment and supplies: Commercial Art students are required to purchase certain basic equipment and materials necessary to achieve professionally-oriented objectives. Most of the equipment is purchased in the beginning class (Introduction to Graphic Skills) and can be used throughout the two-year program.

Special Curriculum Completion Requirements: After completion of the first year, the student's work will be reviewed to ascertain that development is sufficient to enter the commercial art field. After this, the student will be permitted to complete the requirements for this degree program.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program.

For Communication Design Emphasis

First Year		Credits	
		1st Semester	2nd Semester
ART	121-122 Drawing I-II.....	4	4
ART	131-132 Fund. of Design I-II.....	4	4
ART	135 Visual Communications.....	4	
ART	140 Intro. to Graphic Skills	4	
ART	141 Typography I or ART 247 Painting Techniques for Illustrators		4
*ENG	111 College Composition I.....		3
STD	100 Orientation.....	1	
PED	101 Fund. of Physical Activity.....	1	
**MTH	151 Math for the Liberal Arts I.....		3
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
ART	142 Typography II.....	4	
ART	265 Graphic Techniques	4	
ART	250 History of Design	3	
ART	251-252 Communication Design I-II or ART 261-262 Illustration I-II.....	4	4
ART	288 Thesis: Illustration or ART 289 Thesis: Communication Design		3-4
PHT	101 Photography I.....		3
PED	Elective		1
—	Social science electives	3	3
SPD	110 Intro. to Speech Communication....		3
—	General elective		1
Total Credits		18	18-19

Total minimum credits for the Commercial Art major (A.A.S. Degree) = 72.

* For further explanation of English and social science course requirements for A.A.S. degrees, see the "A.A.S. Degree General Requirements" section.

**Or MTH 120. Departmental approval required.

Commercial Photography Specialization

Purpose: The curriculum is designed for persons who seek full-time employment in the commercial art field. The occupational objectives include commercial photographer in the commercial art marketplace.

Special Curriculum Admission Requirements: Proficiency in high school English and a satisfactory aptitude for drawing. Applicants may be required to submit a portfolio before final admission is granted.

Equipment and Supplies: Commercial Art students are required to purchase certain basic equipment and materials necessary to achieve professionally-oriented objectives.

Special Curriculum Completion Requirements: After completion of the first year, the student's work will be reviewed to ascertain that development is sufficient to enter the commercial art field. After this, the student will be permitted to complete the requirements for this degree program.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
PHT	101-102 Photography I-II.....	3	3
ART	121-122 Drawing I-II.....	4	4
ART	131-132 Fundamentals of Design I-II.....	4	4
PHT	110 History of Photography	3	
*ENG	111 College Composition I.....	3	
SPD	110 Intro. to Speech Communication....		3
STD	100 Orientation.....	1	
PED	101 Fund. of Physical Activity.....		1
**MTH	151 Math for the Liberal Arts I.....		3
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
PHT	211 Color Photography I	3	
PHT	221-222 Studio Lighting I-II	3	3
PHT	206 Large Format Photography	3	
PHT	226 Commercial Photography		3
ART	135 Visual Communications	4	
PHT	227 Photographic Marketing		3
ART	140 Intro. to Graphic Skills		4
PHT	299 Supervised Study		1
—	Social science electives	3	3
PED	Elective	1	
Total Credits		17	17

Total minimum credits for the Commercial Art major/Commercial Photography Specialization (A.A.S. Degree) = 70.

* For further explanation of English and social science course requirements for A.A.S. degrees, see the "A.A.S. Degree General Requirements" section.

** Or MTH 120. Departmental approval required.

Computer Graphics Design Specialization

Purpose: The curriculum is designed for persons who seek full-time employment in the commercial art field. The occupational objectives include graphic designer with applied computer skills in the commercial art marketplace.

Special Curriculum Admission Requirements: Proficiency in high school English and a satisfactory aptitude for drawing. Applicants may be required to submit a portfolio before final admission is granted.

Equipment and Supplies: Commercial Art students are required to purchase certain basic equipment and materials necessary to achieve professionally-oriented objectives. Most of the equipment is purchased in the beginning class (Introduction to Graphic Skills) and can be used throughout the two-year program.

Special Curriculum Completion Requirements: After completion of the first year, the student's work will be reviewed to ascertain that development is sufficient to enter the commercial art field. After this, the student will be permitted to complete the requirements for this degree program.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ART	121-122 Drawing I-II	4	4
ART	131-132 Fundamentals of Design I-II	4	4
ART	135 Visual Communications	4	
ART	140 Introduction to Graphic Skills	4	
ART	141 Typography I or ART 247 Painting Techniques for Illustrators		4
*ENG	111 College Composition I		3
STD	100 Orientation	1	
PED	101 Fund. of Physical Activity	1	
**MTH	151 Math for the Liberal Arts I		3
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
ART	142 Typography II	4	
ART	265 Graphic Techniques	4	
ART	250 History of Design	3	
ART	285 Computer Graphics I	4	
ART	295 Topics In: Computer Graphics II		4
ART	288 Thesis: Illustration or ART 289 Thesis: Communication Design		3-4
PHT	101 Photography I		3
PED	Elective		1
—	Social science electives	3	3
SPD	110 Intro. to Speech Communication		3
—	General elective		1
Total Credits		18	18-19

Total minimum credits for the Commercial Art major/Computer Graphics Design Specialization (A.A.S. Degree) = 72.

* For further explanation of English and social science course requirements for A.A.S. degrees, see the "A.A.S. Degree General Requirements" section.

** Or MTH 120. Departmental approval required.

Illustration Specialization

Purpose: The curriculum is designed for persons who seek full-time employment in the commercial art field. The occupational objectives include commercial illustrator in the commercial art marketplace.

Special Curriculum Admission Requirements: Proficiency in high school English and a satisfactory aptitude for drawing. Applicants may be required to submit a portfolio before final admission is granted.

Equipment and Supplies: Commercial Art students are required to purchase certain basic equipment and materials necessary to achieve professionally-oriented objectives. Most of the equipment is purchased in the beginning class (Introduction to Graphic Skills) and can be used throughout the two-year program.

Special Curriculum Completion Requirements: After completion of the first year, the student's work will be reviewed to ascertain that development is sufficient to enter the commercial art field. After this, the student will be permitted to complete the requirements for this degree program.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ART	121-122 Drawing I-II	4	4
ART	131-132 Fund. of Design I-II	4	4
ART	135 Visual Communications	4	
ART	140 Intro. to Graphic Skills	4	
ART	141 Typography I or ART 247 Painting Techniques for Illustrators		4
*ENG	111 College Composition I		3
STD	100 Orientation	1	
PED	101 Fund. of Physical Activity	1	
¹ MTH	151 Math for the Liberal Arts I		3
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
ART	265 Graphic Techniques	4	
ART	250 History of Design	3	
ART	221 Drawing III	4	
ART	261-262 Illustration I-II or ART 251-252 Communication Design I-II	4	4
ART	288 Thesis: Illustration or ART 289 Thesis: Communication Design		3-4
PED	Elective		1
—	Social science electives	3	3
SPD	110 Intro. to Speech Communication		3
**	General elective		3
Total Credits		18	17-18

Total minimum credits for the Commercial Art major/Illustration Specialization (A.A.S. Degree) = 71.

* For further explanation of English and social science course requirements for A.A.S. degrees, see the "A.A.S. Degree General Requirements" section.

¹ Drawing IV is recommended.

** Or MTH 120. Departmental approval required.

COMPLETE DENTURES

Career Studies Certificate

Purpose: The Career Studies Certificate in Complete Dentures will prepare the technician to function productively in the denture department of a private, commercial or Veterans Administration dental laboratory.

Special Curriculum Admission Requirements: An interview with the program head is required.

Special Requirement: This certificate program is intended for practicing technicians and those who would like to upgrade their skills in this specialty.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition or SPD 110 Intro. to Speech Communication		3
DNL	110 Dental Laboratory Materials	3	
DNL	120 Dental Anatomy & Physiology	3	
DNL	130 Introduction to Complete Dentures		6
Total Credits		6	9

Total minimum credits for the Complete Dentures Career Studies Certificate = 15.

COMPUTER INFORMATION SYSTEMS

Associate in Applied Science Degree Computer Information Systems Degree Program

Purpose: This curriculum is designed for persons who seek employment in the field of business computer information systems, for those who are presently in that field and who desire to increase their knowledge and update their skills, and for those who must augment their abilities in other fields with knowledge and skills regarding computer information systems. Occupational objectives include: computer programmer, information systems analyst, technical support specialist, and microcomputer user.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
CIS	100 Intro. to Information Systems	3	
CIS	125 Computer Program Design	3	
CIS	Programming elective		4
CIS	150 Intro. To Microcomputer Software ..		3
BUS	100 Introduction to Business	3	
BUS	150 Principles of Management		3
ENG	111 College Composition I	3	
ENG	115 Technical Writing or ENG 116 Writing for Business		3
MTH	120 Introduction to Mathematics	3	
STD	100 Orientation	1	
PED	101 Fundamentals of Physical Activity ..		1
—	Social science elective		3
Total Credits		16	17

In order to qualify for this degree, students must complete one of the four specializations.

Microcomputer Usage Specialization

Purpose: This specialization provides knowledge and skills regarding hardware, software, and application of microcomputers. Occupational objectives include: careers as information center microcomputer specialist, microcomputer training specialist, and microcomputer sales; and augmentation of non-computer careers which require the use and knowledge of microcomputers.

		Credits	
		1st Semester	2nd Semester
Second Year	CIS 228 Microcomputers: Op. Sys. Arch. and Hardware	3	
	CIS 157 Microcomputer Spreadsheet Sftwr... ..	3	
	CIS 230 Intro. to Telecommunications		3
	CIS 158 Microcomputer Database Mgmt. Sftwr.....		3
	CIS 225 Computer Info. System Development		3
	CIS Elective		3
	SPD 110 Intro. to Speech Communication.....	3	
	PED Elective	1	
	ACC 211 Principles of Accounting I.....	3	
	— Social science elective	3	
	— General elective		4
Total Credits		16	16

Total minimum credits for the Computer Information Systems major/Microcomputer Usage Specialization (A.A.S. Degree) = 65.

In order to qualify for this specialization, students must complete the first year curriculum, common to all specializations.

Programming Specialization

Purpose: This specialization provides knowledge and skills in computer programming. Occupational objectives include: computer programmer, microcomputer programmer, applications programmer, and programmer/analyst.

		Credits	
		1st Semester	2nd Semester
Second Year	¹ CIS Programming elective	4	
	² CIS Programming elective		4
	CIS 228 Microcomputers: Op. Sys. Arch. & Hardware or CIS 229 Mainframes: Op. Sys. Arch. & Hardware.....	3	
	CIS 225 Computer Info. System Develop.		3
	CIS 245 Database Management		3
	CIS Elective		3
	SPD 110 Intro. to Speech Communication.....	3	
	PED Elective	1	
	ACC 211 Principles of Accounting I.....	3	
	— Social science elective	3	
	— General elective		3
Total Credits		17	16

Total minimum credits for the Computer Information Systems major/Programming Specialization (A.A.S. Degree) = 66.

¹ Programming elective must be chosen from advanced level programming courses: CIS 231, 241, 251, 261, 275, and 276.

² Any additional programming courses may be chosen.

In order to qualify for this specialization, students must complete the first year curriculum, common to all specializations.

System Analyst Specialization

Purpose: This specialization provides knowledge and skills regarding the analysis and design of information systems, and the selection of hardware and software. Occupational objectives include: information systems analyst, programmer/analyst, hardware analyst, and hardware systems selection analyst.

		Credits	
Second Year		1st Semester	2nd Semester
CIS	230 Intro. to Telecommunications	3	
CIS	225 Computer Info. System Develop.	3	
CIS	227 Computer Systems Selection and Acquisition		3
CIS	287 System Development Project		3
CIS	245 Database Management		3
CIS	Elective		3
SPD	110 Intro. to Speech Communication	3	
PED	Elective	1	
ACC	211 Principles of Accounting I	3	
—	Social science elective	3	
—	General elective		4
Total Credits		16	16

Total minimum credits for the Computer Information Systems major/System Analyst Specialization (A.A.S. Degree) = 65.

In order to qualify for this specialization, students must complete the first year curriculum, common to all specializations.

Technical Support Specialization

Purpose: This specialization provides technical knowledge and skills regarding computer system components, functions, and capabilities. Occupational objectives include: information center specialist, database specialist, system programmer, and teleprocessing specialist.

		Credits	
Second Year		1st Semester	2nd Semester
CIS	161 Comp. Prog: Assembler I or CIS 265 Comp. Prog: Micro Assembler	4	
CIS	228 Microcomputers: Op. Sys. Arch. & Hardware or CIS 229 Mainframes: Op. Sys. Arch. and Hardware	3	
CIS	245 Database Management		3
CIS	230 Intro. to Telecommunications		3
CIS	225 Computer Info. System Develop.		3
CIS	Elective		3
SPD	110 Intro. to Speech Communication	3	
PED	Elective	1	
ACC	211 Principles of Accounting I	3	
—	Social science elective	3	
—	General elective		3
Total Credits		17	15

Total minimum credits for the Computer Information Systems major/Technical Support Specialization (A.A.S. Degree) = 65.

In order to qualify for this specialization, students must complete the first year curriculum, common to all specializations.

COMPUTER SCIENCE

Associate in Science Degree Computer and Information Sciences Degree Program

Purpose: The curriculum is designed primarily for students who wish to transfer to a four-year college or university to complete the baccalaureate degree in Computer Science. The curriculum emphasizes the study of the science of computing and the use of computing in a scientific setting.

Special Curriculum Admission Requirements: Satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English/4 units of college preparatory mathematics.

		Credits	
First Year		1st Semester	2nd Semester
ENG	111-112 College Composition I-II	3	3
STD	100 Orientation	1	
CSC	100 Intro. to Computer Usage	1	
CSC	201-202 Computer Science I-II	4	4
MTH	173-174 Calculus with Analytic Geom.	5	5
1	Social science electives	3	3
PED	101 Fundamentals of Physical Activity		1
Total Credits		17	16

		Credits	
Second Year		1st Semester	2nd Semester
SPD	110 Intro. to Speech Communication	3	
2	Math/computer science electives	3-4	3-4
PED	Elective		1
HIS	101 History of Western Civilization I or HIS 121 United States History I	3	
3	Humanities/Fine Arts elective		3
4	General electives	4	6
5	Natural science with lab	3-4	3-4
Total Credits		16-18	16-18

Total minimum credits for the Computer Science major (A.S. Degree) = 65.

¹ Two-semester social science course sequence may be selected from one of the disciplines of ECO, GEO, PLS, PSY, SOC, SSC. Social science electives should be selected in conjunction with an advisor and after examining the requirements at the transfer institution.

² Math/computer science electives should constitute 2 semester courses chosen from the following categories:

- a. Computer science courses numbered above 202.
- b. MTH 277 Multivariate Calculus and/or MTH 285 Linear Algebra
MTH 286 Discrete Mathematics
MTH 291 Ordinary Differential Equations
MTH 292 Topics in Differential Equations
- c. Mathematical Statistics (MTH 241, 242, 243, 244)

Math/computer science electives should be selected in conjunction with an advisor and after examining the requirements at the transfer institution.

³ Humanities/fine arts electives should be selected in conjunction with an advisor and after examining the requirements at the transfer institution.

⁴ General electives should be selected in conjunction with an advisor and after examining the requirements at the transfer institution.

⁵ Natural science with laboratory numbered 100 or above may be chosen from BIO, CHM (except 101-102), PHY (201 or above), or GOL.

CONSTRUCTION INSPECTION

Certificate

Purpose: The curriculum is designed for persons who seek full-time employment in areas of construction inspection or for those presently employed who are seeking advancement and further training in construction inspection.

		Credits	
		1st Semester	2nd Semester
BLD	100 Const. Inspec., Plan Rev. & Codes ..	4	
BLD	103 Prin. of Res. Building Const. Insp. ...	3	
BLD	104 Prin. of Concrete & Steel Frame Insp.		4
BLD	112 Prin. of Electrical Inspection		3
BLD	113 Prin. of Mechanical & Plumbing Insp.		4
BLD	165 Construction Field Operations	2	
ENG	111 College Composition I	3	
ENG	115 Technical Writing		3
FIR	117 Industrial Fire Protection	3	
FIR	221 Building Construction & Codes		4
MTH	115 Technical Mathematics I	3	
Total Credits		18	18

Total minimum credits for the Construction Inspection Certificate = 36.

CONSTRUCTION MANAGEMENT TECHNOLOGY

Associate in Applied Science Degree Architectural and Construction Technology Degree Program

Purpose: The curriculum is designed to qualify personnel in both engineering technology and management for employment in all areas of a construction firm. Occupational objectives include: engineering aide, construction project manager, construction supervisor, estimator, building maintenance supervisor.

Cooperative Education: Students in this program are strongly encouraged to

gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ARC	121-122 Architectural Drafting I-II	3	3
ARC	133-134 Mat. & Meth. of Const. I-II.....	3	3
BLD	101-102 Construction Management I-II..	3	3
ENG	111 College Composition I.....	3	
ENG	115 Technical Writing		3
MTH	115 Technical Mathematics I.....	3	
BLD	165 Construction Field Operations.....	2	
BLD	231 Construction Estimating I		3
—	Social science elective		3
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
ARC	225 Site Planning and Technology		3
ARC	243 Environmental Systems	4	
BLD	232 Construction Estimating II	3	
BLD	241-242 Construction Management I-II..	3	3
BLD	247 Construction Planning & Sched.		3
CIV	171 Surveying I.....	3	
PED	101 Fundamentals of Physical Activity...		1
PED	Elective		1
SPD	110 Intro. to Speech Communication.....	3	
STD	100 Orientation.....	1	
—	Social science elective		3
Total Credits		17	14

Total minimum credits for the Construction Management Technology major (A.A.S. Degree) = 66.

CORRECTIONS SCIENCE

Associate in Applied Science Degree Public Safety Degree Program

Purpose: The curriculum is designed to provide a broad foundation which will prepare the student to enter into full-time employment in any of the varied fields of corrections; i.e., adult, juvenile, institutional and community based corrections, and for those presently in a corrections position who are seeking a position as a federal corrections officer or probation and parole aide.

Special Curriculum Admission Requirements: Students are advised that many criminal justice agencies require excellent moral character and a written record of conduct prior to consideration for employment. This curriculum is included in the State Law Enforcement Officer's Education Program (SLEOEP). See a financial aid counselor for further details. Program adjustments may be made with faculty approval to facilitate a student's transfer to a four-year criminal justice program.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ADJ	100 Survey of Criminal Justice.....	3	
ADJ	105 The Juvenile Justice System.....		3
ADJ	107 Survey of Criminology	3	
ADJ	145 Corrections and the Community		3
ADJ	245 Management of Correctional Facilities	3	
STD	100 Orientation.....	1	
ENG	111-112 College Composition I-II.....	3	3
PSY	201-202 Intro. to Psychology I-II or SOC 201-202 Intro. to Sociology I-II.....	3	3
¹ MTH	Elective		3
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective		1
Total Credits		17	16

Second Year		Credits	
		1st Semester	2nd Semester
ADJ	200 Criminal Behavior.....		3
ADJ	211-212 Crim. Law, Ev. & Proc. I-II.....	3	3
ADJ	241 Correctional Law.....	3	
ADJ	246 Correctional Counseling	3	
ADJ	248 Probation, Parole & Treatment		3
ADJ	290/297 Coord. Intern. or Coop. Educ. ..	3	3
SPD	110 Introduction to Speech Communication.....	3	
PLS	211 U.S. Government I		3
² CIS	100 Intro. to Information Systems.....	3	
—	Approved elective		3
Total Credits		18	18

Total minimum credits for the Corrections Science major (A.A.S. Degree) = 69.

¹ Approved by faculty advisor.

² Or CIS elective approved by faculty advisor.

CORRECTIONS SCIENCE

Certificate

Purpose: The certificate curriculum is designed for those students who wish to take principal courses which relate directly to the corrections field. Courses taken in the certificate program can be applied to the A.A.S. Degree.

Special Curriculum Admission Requirements: The same admission requirements apply as stated for the Corrections Science A.A.S. Degree curriculum.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ADJ	100 Survey of Criminal Justice.....	3	
ADJ	105 The Juvenile Justice System.....		3
ADJ	107 Survey of Criminology		3
ADJ	245 Mgmt. of Correctional Facilities	3	
ADJ	211-212 Crim. Law, Ev. & Proc. I-II.....	3	3
ADJ	248 Probation, Parole & Treatment		3
STD	100 Orientation.....	1	
ENG	111 College Composition I.....	3	
ENG	112 College Composition II or SPD 110 Intro. to Speech Communication		3
PSY	201-202 Intro. to Psychology or SOC 201-202 Intro. to Sociology	3	3
Total Credits		16	18

Total minimum credits for the Corrections Science Certificate = 34.

DENTAL HYGIENE

Associate in Applied Science Degree Dental Hygiene Degree Program

Purpose: The curriculum is designed to prepare selected students to serve in a dynamic and growing health profession, as valuable members of the Dental Health team. At the successful completion of the program, students will be eligible to take the National Board and State Board Examinations in Dental Hygiene leading to licensure as a Registered Dental Hygienist (R.D.H.) The Program is also designed to accommodate those students who wish to transfer to a four-year college or university to complete the baccalaureate degree in a health related field.

Special Curriculum Admission Requirements: (1) high school courses: 1 unit each of algebra, biology, and chemistry (lecture and laboratory), with a minimum grade of "C"; deficiencies may be corrected in the Developmental Program before entering the Dental Hygiene curriculum. (2) Past academic achievement must reflect a "C" average or better. (3) Evidence of good physical and mental health which may need to be substantiated by a physician's report. The Dental Hygiene Program reserves the right

to determine the student's final acceptance. (4) Students majoring in Dental Hygiene are admitted in September; early application is desirable. Students may take specified support courses prior to entering the Dental Hygiene five semester sequence, and are encouraged to work directly with the Counseling Center in planning these courses.

Transfer or prerequisite credits in the natural and social sciences earned at another institution will be evaluated on an individual basis. Developmental work or testing may be advised for credits earned more than ten years ago.

Special Curriculum Completion Requirements: Satisfactory health must be maintained for continuance in the program. Any student who receives a final grade of less than "C" in any of the courses in the Dental Hygiene sequence must obtain permission from the program head to repeat the course and must earn a final grade of "C" or higher before taking the next course in the sequence. Student uniforms and accessories, Dental Hygiene Student Liability Insurance, and transportation to and from the college and the various health agencies utilized for extramural experiences are the responsibility of the individual student.

Readmission Policy: Any student who has withdrawn or who has been asked to withdraw due to unsatisfactory academic or clinical performance may apply for readmission to the program the following year. Acceptance will be based upon availability of space, fulfillment of contingencies outlined at the time of withdrawal, faculty approval, and a personal interview.

Special Accreditation Status: The curriculum has been accredited by the Commission on Dental Accreditation of the American Dental Association, a specialized accrediting body recognized by the Council on Postsecondary Accreditation and by the U.S. Department of Education.

First Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
DNH	112 Oral Anatomy & Tooth Morphology	3		
DNH	113 General & Oral Histology	2		
DNH	141-142 Dental Hygiene I-II	5	5	
STD	100 Orientation	1		
NAS	161-162 Health Science I-II	4	4	
ENG	111 College Composition I	3		
DNH	130 Oral Radiographic Techniques		3	
DNH	114 Head/Neck Anatomy		2	
DNH	145 General & Oral Pathology		2	
DNH	146 Periodontics for the Dental Hygienist		2	
DNH	143 Dental Hygiene III			4
DNH	150 Nutrition			2
DNH	198 Seminar & Project			1
MTH	Elective			2
CIS	116 Computers & Information Systems ..			1
Total Credits		18	18	10

Second Year		Credits	
		1st Semester	2nd Semester
DNH	244-245 Dental Hygiene IV-V	5	5
DNH	215 Dental Materials	3	
DNH	220 Community Dental Health	2	
DNH	216 Pharmacology	2	
DNH	147 Oral Microbiology	1	
PSY	201 Introd. to Psychology I	3	
PED	101 Fund. of Physical Activity	1	
DNH	230 Office Practice & Ethics		1
DNH	225 Community Dental Health Ed.		2
SPD	110 Introduction to Speech Communication		3
PED	Elective		1
SOC	201 Introd. to Sociology I		3
Total Credits		17	15

Total minimum credits for the Dental Hygiene major (A.A.S. Degree) = 78.

DENTAL LABORATORY TECHNOLOGY

Associate in Applied Science Degree Dental Laboratory Degree Program

Purpose: The curriculum is designed to prepare the individual to construct and repair all types of dental prosthetic appliances according to the dentist's prescription. The occupational objectives include: dental laboratory technician work in commercial or public dental laboratory or in a dental office.

Special Curriculum Admission Requirements: The student should perform a manual dexterity test and must participate in a personal interview with Counseling Services and the Dental Laboratory program head.

Special Curriculum Completion Requirements: Any student whose overall GPA falls below a 2.00 must obtain permission from the program head to continue the major in Dental Laboratory Technology.

Special Accreditation Status: The program has been accredited by the Commission on Dental Accreditation of the American Dental Association, a specialized accrediting body recognized by the Council on Postsecondary Accreditation and by the U.S. Department of Education.

First Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
DNL	110 Dental Lab Materials	3		
DNL	120 Dental Anatomy and Physiology	3		
DNL	130 Introduction to Complete Dentures ..	6		
STD	100 Orientation	1		
NAS	Elective	3		
CIS	116 Computers and Information Systems ..		1	
DNL	135 Intro. to Removable Partial Dentures ..		6	
DNL	137 Orthodontic/Pedodontic Appliances		3	
DNL	100 Prof. Ethics and Dental History		3	
ENG	111 College Composition I		3	
PED	101 Fund. of Physical Activity		1	
DNL	136 Prin. of Occlusion			3
DNL	205 Infection Control/Cross Contamination			3
DNL	138 Intro. to Fixed Prosthodontics			6
SPD	110 Intro. to Speech Communication			3
Total Credits		17	16	15

Second Year		Credits	
		1st Semester	2nd Semester
DNL	220 Introduction to Dental Ceramics	6	
DNL	210 Intro. to Maxillofacial Prosthetics	3	
DNL	231 Advanced Dental Lab. Tech. I	3	
SOC	201 Introduction to Sociology I	3	
PED	Elective	1	
DNL	215 Specialization in Dental Lab. Tech.		9
DNL	232 Advanced Dental Lab. Tech II		4
SOC	202 Intro. to Sociology II		3
MTH	Elective		2
Total Credits		16	18

Total minimum credits for the Dental Laboratory Technology major (A.A.S. Degree) = 82.

DIETARY MANAGER

Certificate

Purpose: The Dietary Manager Certificate Program is designed to provide upward mobility in the field of dietetics and to develop competency in food service management in such health care facilities as: hospitals, nursing homes, retirement homes, schools, meals-on-wheels, and day care centers. The occupational objectives include staff development for in-service personnel for positions as: assistants to registered dietitians, dietetic technicians, or food service directors in hospitals, nursing homes, schools or day care centers.

Special Curriculum Admission Requirements: A personal interview with a program faculty member or counselor. Good health, which may need to be substantiated by a physician's report.

		Credits	
		1st Semester	2nd Semester
*DIT	100 Introduction to Dietetics	1	
DIT	105 Dietetics & the Health Field		3
*DIT	120 Nutritional Care	3	
*DIT	130 Food Management Systems.....	3	
*DIT	190 Coordinated Practice.....		2
DIT	245 Quantity Food Production & Purchasing.....		3
*DIT	246 Training & Superv. of Food Serv. Pers.		3
ENG	111 College Composition I.....	3	
HRI	120 Principles of Food Preparation.....	4	
HRI	158 Sanitation and Safety	3	
MTH	Elective		3
—	Social science elective		3
STD	100 Orientation.....	1	
Total Credits		18	17

Total minimum credits for the Dietary Manager Certificate = 35.

* Minimum requirements for membership in the Dietary Managers Association (DMA).

DIETETIC TECHNICIAN

Associate in Applied Science Degree Dietetics Degree Program

Purpose: The curriculum is designed to provide upward career mobility in dietetics. The technician is the middle management and service person, working with both a registered dietitian and the dietary manager (food service supervisor) in a hospital or other health care facility. The technician may also direct the food service operations in a small hospital, nursing home, school, restaurant or any food service facility, under the supervision of a registered dietitian.

Special Curriculum Admission Requirements: A personal interview with a faculty member or counselor and good health, which may need to be substantiated by a physician's report.

		Credits	
		1st Semester	2nd Semester
DIT	100 Introduction to Dietetics	1	
DIT	105 Dietetics and the Health Field		3
DIT	121 Nutrition I.....	3	
DIT	122 Nutrition II.....		3
DIT	130 Food Management Systems.....	3	
DIT	190 Coordinated Practice.....	1	1
ENG	111 College Composition I.....		3
HRI	120 Principles of Food Preparation.....	4	
HRI	125 Principles of Commercial Food Prep.....		3
HRI	158 Sanitation and Safety	3	
PED	101 Fundamentals of Physical Activity... ..	1	
PED	Elective		1
—	Social science elective		3
STD	100 Orientation.....	1	
Total Credits		17	17

		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I.....		3
DIT	190 Coordinated Practice	1	
DIT	221 Therapeutic Nutrition I.....	4	
DIT	245 Quantity Food Production & Purch....	3	
DIT	246 Train. & Super. of Food Serv. Pers..		3
DIT	290 Coordinated Practice.....		3
DIT	298 Seminar & Project.....		3
HRI	251 Food & Beverage Cost Control I.....	3	
MTH	Elective	3	
SPD	110 Introduction to Speech Communication.....	3	
—	Social science elective		3
Total Credits		17	15

Total minimum credits for the Dietetic Technician major (A.A.S. Degree) = 66.

Students wishing to transfer to Virginia Polytechnic Institute and State University in dietetics may see the program head for substitutions in the above curriculum.

EARLY CHILDHOOD DEVELOPMENT

Associate in Applied Science Degree Educational Services Degree Program

Purpose: The curriculum is designed for persons who seek full-time employment involving the care and direction of young children, or for those persons presently employed in these situations who wish to update and enhance their competencies. Occupational objectives include: assistants, managers, and/or directors in day care and child development facilities.

Special Curriculum Admission Requirements: Students must successfully complete a personal interview with a program faculty member.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
EDU	100 Introduction to Education	1	
ENG	111-112 College Composition I-II.....	3	3
EDU	121-122 Childhood Educational Dev. I-II	3	3
PSY	231 Life Span Human Development I....	3	
EDU	118 Methods & Materials in the Language Arts for Children	3	
EDU	109 Methods in Movement and Music Education for Children		3
EDU	155 Parent Education	3	
EDU	125 Creative Activities for Children.....		3
EDU	126 Meth. & Mat. for Dev. Science & Math Concepts in Children		3
Total Credits		17	15

		Credits	
		1st Semester	2nd Semester
EDU	205 Guiding the Behavior of Children ...	3	
EDU	210 Introduction to Exceptional Children.....	3	
EDU	298 Seminar and Project.....		3
EDU	215 Models of Early Childhood Education Programs.....	3	
PSY	232 Life Span Human Development II... ..	3	
EDU	166 Infant and Toddler Programs	3	
SPD	110 Introduction to Speech Communication.....		3
EDU	235 Health, Safety and Nutrition Education.....		3
PED	101 Fundamentals of Physical Activity... ..		1
PED	Elective		1
HLT	100 First Aid and CPR		3
HLT	110 Concepts of Personal & Community Health.....	3	
MTH	151 Math for the Liberal Arts I.....		3
Total Credits		18	17

Total minimum credits for the Early Childhood Development major (A.A.S. Degree) = 67.

EARLY CHILDHOOD DEVELOPMENT ASSISTANT

Certificate

Purpose: The curriculum is designed to prepare individuals for employment in situations wherein care and maintenance of young children is the primary object. Occupational objectives include: aides in child development centers, day care centers, nursery school, residential facilities, family day care homes.

Special Curriculum Admission Requirements: Students must successfully complete a personal interview with a program faculty member.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
EDU	100 Introduction to Education.....	1	
SOC	216 Child-Parent Comm. Relations.....	3	
ENG	111 College Composition.....		3
PSY	231 Life Span Human Development I....		3
EDU	125 Creative Activities for Children.....		3
EDU	165 Observation & Participation in Early Childhood/Primary Settings.....	3	
EDU	298 Seminar and Project.....		3
EDU	121 Childhood Educational Dev. I.....	3	
EDU	118 Methods & Materials in the Language Arts for Children.....	3	
EDU	156 Single Parent Families.....		3
HLT	135 Child Health and Nutrition.....	3	
Total Credits		17	15

Total minimum credits for the Early Childhood Development Assistant Certificate = 32.

EARLY CHILDHOOD EDUCATION: CHILD HOME CARE (NANNY)

Certificate

Purpose: The Nanny Program trains the candidate for a career in private home settings to provide care and supervision of children of that family. A foundation in the theoretical bases of development and learning is provided. Because the Nanny is often a parent surrogate, the sociology/psychology of family, school and community are covered, as well as nutrition, physical and social development, learning skills and appropriate aspects of handicapped education, and perceptual motor development. Supervised practicum is required.

The Nanny Program awards a certificate and requires 34 credit hours plus a Red Cross First Aid Card, dated within one year of graduation.

Special Curriculum Admission Requirement: Students must successfully complete a successful interview with an Education faculty advisor.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I.....	3	
ECO	120 Survey of Economics.....		3
PSY	231 Life Span Human Development I....	3	
STD	100 Orientation.....	1	
EDU	100 Introduction to Education.....	1	
EDU	105 Interpersonal Skills for Nannies.....		4
EDU	106 Health Education for Nannies.....		4
EDU	118 Meth. & Mat. in Lang. Arts for Children.....	3	
EDU	121 Childhood Educational Development I.....	3	
EDU	165 Observation & Participation in Early Childhood/Primary Settings.....	3	
EDU	205 Guiding the Behavior of Children ...		3
EDU	298 Seminar & Project.....		3
Total Credits		17	17

Total minimum credits for the Early Childhood Education: Child Home Care (Nanny) Certificate = 34.

EDUCATION

Associate in Science Degree Education Degree Program

Purpose: The curriculum is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Teacher Education. The curriculum is designed to accommodate all teacher education majors or specialty areas of study—elementary and secondary.

Special Curriculum Admission Requirements: Satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English, 2 units of mathematics (algebra and geometry), 1 unit of laboratory science, and 1 unit of social science.

		Credits	
		1st Semester	2nd Semester
First Year			
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....	1	
HIS	121-122 U.S. History I-II.....	3	3
¹ MTH	Electives.....	3-5	3-5
² —	Natural science (with lab).....	4	4
³ —	General electives.....	3	3
PED	101 Fundamentals of Physical Activity...		1
Total Credits		17-19	17-19

		Credits	
		1st Semester	2nd Semester
Second Year			
⁴ ENG	Electives.....	3	3
—	Social science electives.....	3	3
PSY	201-202 Intro. to Psychology I-II.....	3	3
PED	Elective.....	1	
SPD	110 Introduction to Speech Communication.....		3
³ —	General electives.....	3	3
³ —	General electives.....	3	
Total Credits		16	15

Total minimum credits for the Education major (A.S. Degree) = 65.

¹ Mathematics, Engineering and Science Education majors may select MTH 173-174 or MTH 165 and MTH 271. Other Education majors may select from: MTH 150, 151, 152, 165, 166, 173, 174, 241, 242, 250, 271, or 272. Math Education majors must take MTH 250.

² Science courses may be selected from the following: biology, chemistry, physics, or geology.

³ Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated. One elective needs to be selected from courses that introduce the student to the computer.

⁴ ENG 241-242 Survey of American Lit. I-II, ENG 243-244 Survey of English Lit. I-II, or ENG 251-252 Survey of World Lit. I-II.

Industrial Education Specialization

Purpose: The curriculum is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Teacher Education with an Industrial Arts major. A transfer agreement is currently in effect with George Mason University.

Special Curriculum Admission Requirements: Satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English, 2 units of mathematics (algebra and geometry), 1 unit of laboratory science, and 1 unit of social science.

		Credits	
		1st Semester	2nd Semester
First Year			
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....	1	
HIS	121-122 United States History I-II.....	3	3
MTH	151-152 Math. for the Liberal Arts I-II...	3	3
PHY	111-112 Technical Physics I-II.....	4	4
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective.....		1
CIS	100 Intro. to Information Systems.....	3	
—	Technical elective.....		4
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
¹ ENG	Electives	3	3
² —	Social science electives	3	3
SPD	110 Intro. to Speech Communication.....	3	
[*] —	Technical electives.....	6	9
Total Credits		15	15

Total minimum credits for the Education major/Industrial Education Specialization (A.S. Degree) = 66.

¹ ENG 241-242 Survey of American Lit. I-II, ENG 243-244 Survey of English Lit. I-II, or ENG 251-252 Survey of World Lit. I-II.

² Social science courses may be selected from the following: economics, geography, political science, history, psychology, social science, or sociology.

^{*} Technical electives: Students enrolled in the Industrial Education Specialization whose career goals or interests are addressed in any of the following three areas, may wish to select courses listed under that respective area of concentration. For State certification in Industrial Education, the Department of Education recommends 6-9 semester hours in one field. Drafting is an exception and a student may select a maximum of 9 semester hours. Students are encouraged to work closely with a counselor or faculty advisor in selection of courses.

Communications

ARC	121-122 Architectural Drafting (6 cr.) or
DRF	151-152 Engr. Drawing Fundamentals (6 cr.)
ART	121-122 Drawing I-II (6 cr.)
ART	153-154 Ceramics I-II (8 cr.)
ART	140 Intro. to Graphic Skills (4 cr.)
ART	273 Silkscreen Printing I (4 cr.)
ART	275 Relief Printmaking (4 cr.)
ART	274 Silkscreen Printing II (4 cr.)
DRF	231 Computer Aided Drafting (3 cr.)
PHT	101-102 Photography I-II (6 cr.)

Manufacturing and Construction

BLD	100 Construction Inspection, Plan Review & Codes (4 cr.)
BLD	103 Princ. of Residential Building Constr. Inspection (3 cr.)
BLD	247 Construction Planning & Scheduling (3 cr.)
CIV	171-172 Surveying (6 cr.)
CIV	217 Structural Drafting (2 cr.)
MEC	112 Processes of Industry (3 cr.)
MEC	120 Principles of Machine Technology (3 cr.)
WEL	126 Pipe Welding I (3 cr.)
WEL	115 Arc & Gas Welding (3 cr.)

Power, Energy, Transportation

AIR	101-102 Principles of Refrigeration I-II (8 cr.)
AUT	135 Consumer Auto Repair (2 cr.)
AUT	156 Small Gasoline Engines (2 cr.)
MEC	133 Mechanics III - Dynamics for Engr. Tech. (2 cr.)
*EGR	130 Statics & Strength of Materials for Engr. Tech. (5 cr.)

* Students enrolling in this course should consult with the Engineering faculty advisor concerning appropriate math background.

ELECTRICITY

Career Studies Certificate

Purpose: The Career Studies Certificate in Electricity provides employment training which will acquaint the student with the vocabulary, manipulative skills, use of test equipment and technical knowledge necessary for a position in the residential or commercial electrical field. A graduate of this program may work with electrical contracting, residential wiring and electrical component wholesaling.

Special Curriculum Admission Requirements: Mechanical and/or electrical aptitude desired.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education

program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ELE	131 National Electrical Code I	4	
ELE	132 National Electrical Code II		4
ELE	157 Electricity	5	
*ENG	/SPD elective		3
Total Credits		9	7

Total minimum credits for the Electricity Career Studies Certificate = 16.

* If SPD is chosen, SPD 110 is recommended.

ELECTRONICS

Associate in Applied Science Degree Electrical/Electronics Technology Degree Program

Purpose: This curriculum is designed to prepare persons for employment in the electronics industry. In addition, the student who completes the program may choose to transfer to a four-year institution to pursue a bachelor's degree in Electronics Technology. Occupational objectives include: electronics technician, computer technician, telecommunications technician, radio and television technician, metrology technician, research and development technician, industrial control technician.

Special Curriculum Admission Requirements: Successful completion of high school algebra and geometry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ETR	113-114 D.C. & A.C. Fundamentals.....	4	4
ETR	144 Devices and Applications II.....		4
ETR	167 Logic Circuits and Systems I.....		4
MTH	115-116 Technical Math I-II	3	3
MEC	126 Computer Prog. for Technologists...	2	
ENG	111 College Composition I.....	3	
ENG	115 Technical Writing		3
STD	100 Orientation.....	1	
PHY	111 Technical Physics I	4	
PED	101 Fundamentals of Physical Activity...	1	
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
ETR	263 Microprocessor Appl. I.....	4	
ETR	241-242 Electronic Communications I-II.	4	4
ETR	221 Electronic Controls I		4
ETR	250 Intermediate Electronics	4	
ETR	284 Digital Communication or ETR 247 Display Systems		4-3
—	Social science electives.....	3	3
PED	Elective		1
MTH	213 Advanced Engineering Tech. Math I.....	3	
SPD	127 Workshop in Interpersonal Skills		1
Total Credits		18	17/16

Total minimum credits for the Electronics major (A.A.S. Degree) = 70.

Computer Technology Specialization

Purpose: This program is designed for students seeking to enter the field of computer technology as a maintenance and repair technician, or to receive additional training or expand skills already obtained if presently employed. Occupational objectives include: computer technician, micro-computer technician, bench technician, industrial electronics technician.

Special Curriculum Admission Requirements: Two years of high school algebra and geometry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
ETR	113-114 D.C. & A.C. Fundamentals.....	4	4
ETR	144 Devices and Applications II.....		4
MTH	115-116 Technical Math I-II.....	3	3
ETR	167 Logic Circuits & Systems I.....		4
MEC	126 Computer Programming for Tech....	2	
ENG	111 College Composition I.....	3	
ENG	115 Technical Writing.....		3
PHY	111 Technical Physics I.....	4	
STD	100 Orientation.....	1	
PED	101 Fundamentals of Physical Activity....	1	
Total Credits		18	18

		Credits	
Second Year		1st Semester	2nd Semester
ETR	263-264 Microprocessor Application I-II.	4	4
ETR	284 Digital Communication.....		4
ETR	221 Electronic Controls I.....		4
ETR	250 Intermediate Electronics.....	4	
ETR	298 Seminar and Project.....	2	
MTH	213 Advanced Engineering Tech. Math I.....	3	
—	Social science electives.....	3	3
ETR	277 Computer Interfacing.....		3
PED	Elective.....	1	
SPD	127 Workshop in Interpersonal Skills....	1	
Total Credits		18	18

Total minimum credits for the Electronics major/Computer Technology Specialization (A.A.S. Degree) = 72.

ELECTRONICS TECHNICIAN

Certificate

Purpose: The purpose of this certificate is to prepare graduates for entry-level employment in the field of electronics. Occupational objectives include: test technician, assembler, prototype fabricator, electronics draftsman. Students completing the certificate may continue their education toward the A.A.S. degree in Electronics. Persons with experience in the field who are seeking formal training, or who might wish to explore a career in electronics, may enroll in this certificate program.

Special Curriculum Admission Requirements: Successful completion of high school algebra and geometry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ETR	113-114 D.C. & A.C. Fundamentals.....	4	4
ETR	144 Devices and Applications.....		4
ETR	167 Logic Circuits and Systems.....		4
MTH	115-116 Technical Math I-II.....	3	3
ENG	111 College Composition I.....	3	
PHY	111 Technical Physics I.....	4	
MEC	126 Computer Prog. for Technologists...	2	
STD	100 Orientation.....	1	
DRF	245 Electronic Drafting.....		2
Total Credits		17	17

Total minimum credits for the Electronics Technician Certificate = 34.

EMERGENCY MEDICAL SERVICES TECHNOLOGY

Associate in Applied Science Degree Emergency Medical Services Degree Program

Purpose: The curriculum is designed to further develop the competency of the emergency medical services technologist. Upon successful completion of this curriculum, the student will be eligible to become certified as an emergency medical technician paramedic.

Special Curriculum Admission Requirements: Second year curriculum prerequisites:

1. Have completed the first year curriculum.
2. Have current certification by the American Heart Association in Basic Life Support.
3. Have evidence of both successful completion of a basic emergency medical training course and current certification as an Emergency Medical Technician (Ambulance).
4. Have current association with an Emergency Medical Service agency which provides pre-hospital care or will be equipped in the near future to provide advanced emergency care.
5. Have demonstrated the ability to function in an emergency situation for at least one year; that is, as an ambulance emergency medical technician, fire fighter, military corpsman, emergency department or intensive care unit technician, or a nurse. Documentation attesting to satisfactory experience and the degree of formal training in emergency care is expected.
6. Show evidence of negative tuberculosis screening.

NOTE: In order to obtain valid certification evidencing any advanced EMS certification pursuant to section 6:00 of the Rules and Regulations Governing Emergency Medical Services of the Commonwealth of Virginia, an individual must be affiliated with an EMS agency.

Special Advanced Placement Requirements: Individuals who desire advanced placement within the curriculum should also submit two letters attesting to the individual's levels of knowledge, skills, formal training, experience and level of EMS certification by the student's EMS agency and current medical director. Placement in the program will depend on the medical director's and program head's evaluations, school policy and the flexibility of the curriculum to fulfill student needs.

Special Accreditation Status: The program is accredited by the AMA Committee on Allied Health Education and Accreditation, CAHEA, in cooperation with the Joint Review Committee on Educational Programs for EMT-Paramedics.

		Credits	
First Year		1st Semester	2nd Semester
BIO	141-142 Human Anat. & Phys. I-II.....	4	4
EMT	106 Basic Emerg. Med. Tech./Amb.....	6	
EMT	215 Principles of Extrication.....		4
EMT	190 Coordinated Practice.....	1	
ENG	111 College Composition I.....	3	
STD	100 Orientation.....	1	
FIR	111-112 Hazardous Materials I-II.....	3	3
HLT	143 Medical Terminology I.....		3
MTH	Elective.....		2
CIS	116 Computers and Info. Systems.....		1
Total Credits		18	17

Second Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
EMT	220 Intro. to Cardiology	2		
EMT	231-232 Paramedic Procedures I-II	5	6	
EMT	225 Clin. Exper. for the Cardiac Care Tech.	3		
—	Social science electives	3	3	
PED	101 Fundamentals of Physical Activity... ..	1		
SPD	110 Intro. to Speech Communication.....	3		
EMT	235 Clin. Exper. for the Paramedic.....		4	
PED	Elective		1	
HLT	250 General Pharmacology		3	
EMT	290 Coordinated Practice			2
EMT	251 Adv. Cardiac Life Supp. Prov. Course			1
Total Credits		17	17	3

Total minimum credits for the Emergency Medical Services Technology major (A.A.S. Degree) = 72.

EMERGENCY MEDICAL SERVICES TECHNOLOGY

Certificate

Purpose: The EMT curriculum is designed to develop the competency of pre-service or inservice personnel in methods of basic emergency care. It provides the students with the knowledge about the acute critical differences in physiology, pathophysiology, and clinical symptoms as they pertain to the pre-hospital emergency care of the infant, child, adolescent, adult and geriatric patient. In addition to the didactic (classroom) phase of the program, the student will receive clinical experiences in a hospital and on a basic life support unit.

Upon successful completion of the program, the student will be eligible to take the Virginia State and National Registry examination leading to certification as an Emergency Medical Technician. Students successfully completing this examination may also be eligible to participate in the Emergency Medical Services Technology Associate in Applied Science Degree (Paramedic) program.

Students are advised that most Emergency Medical Services agencies require excellent moral character, a rigorous physical examination, fitness testing, and background investigation prior to consideration for employment.

Special Curriculum Admission Requirements: Satisfactory physical and mental health which is to be substantiated by a physician's report. The Emergency Medical Services Technology Program reserves the right to determine the student's final acceptance. Students may take support courses prior to entering the Emergency Medical Services Technology Program. Any student who receives a final grade of less than "C" in any of the courses in the EMT sequence must obtain permission from the program head to continue in EMT and must then repeat the course and earn a final grade of "C" or higher before taking the next course in the sequence. Students are totally responsible for transportation to and from the college and the various hospitals for clinical laboratory experiences. Student uniforms and accessories are the financial responsibility of the individual student.

		Credits	
		1st Semester	2nd Semester
BIO	141-142 Hum. Anat. & Phys. I-II.....	4	4
EMT	106 Basic Emer. Med. Tech./Ambulance ...	6	
EMT	190 Coordinated Practice	1	
ENG	111 College Composition I	3	
FIR	111-112 Hazardous Materials I-II	3	3
STD	100 Orientation	1	
HLT	143 Medical Terminology I		3
MTH	Elective		2
EMT	215 Principles of Extrication		4
CIS	116 Computers and Info. Systems		1
Total Credits		18	17

Total minimum credits for the Emergency Medical Services Technology Certificate = 35.

ENGINEERING

Associate in Science Degree Engineering Degree Program

Purpose: The curriculum is designed to prepare the student to transfer into a baccalaureate degree program in engineering fields such as: mechanical engineering, civil engineering, chemical engineering, aeronautical engineering and naval architecture/marine engineering.

Special Curriculum Admission Requirements: High school courses: 4 units of English, 2 units of algebra, 1 unit of geometry, 1 unit of trigonometry, 1 unit of laboratory science (chemistry or physics). Proficiency tests in mathematics, chemistry, physics and English are required prior to taking courses in these disciplines and engineering course sequences at NVCC. Developmental studies may be undertaken to satisfy these requirements.

Special Curriculum Completion Requirements: Grades of "C" and above are required in those courses in the program that are intended to be transferred for credit to a baccalaureate degree-granting college/university. The only courses to which this does not apply are PED and STD.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
ENG	111-112 College Composition I-II.....	3	3
CHM	111-112 College Chemistry I-II	4	4
MTH	173-174 Calculus with Analytic Geom. I-II	5	5
EGR	120 Introduction to Engineering	2	
EGR	115 Engineering Graphics.....	2	
EGR	126 Computer Programming for Engineers.....		3
PED	101 Fundamentals of Physical Activity... ..	1	
—	Social science elective		3
Total Credits		18	18

Second Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
MTH	277 Multivariable Calculus.....	4		
MTH	291 Ordinary Differential Equations		3	
MTH	292 Topics in Differential Equations			3*
MTH	285 Linear Algebra			3*
PHY	241-242 University Physics I-II	4	4	
SPD	Elective	3		
EGR	140 Engineering Mechanics—Statics	3		
EGR	245 Engineering Mechanics—Dynamics ..		3	
² EGR	Electives		2-3	2-3*
³ —	Technical electives.....		3-5	3-5*
¹ —	Social science elective	3		
PED	Elective	1		
Total Credits		18	15-18	11-14

Total minimum credits for the Engineering major (A.S. Degree) = 69.

¹ Must include one semester of history (American or Western Civilization) plus a second semester of history, economics, psychology, sociology or social science. A two semester sequence of courses is optimum for transfer.

² EGR 206 (2 credits) required at VPI and desirable elsewhere; EGR 246 (3 credits) required for ME and CE students; EGR 248 (3 credits) desirable for ME students; EGR 225 (3 credits) required at UMCP; EGR 250 (3 credits) and EGR 255 (1 credit) desirable for all non-EE students.

³ CIV 171 (3 credits) and CIV 172 (3 credits) desirable for CE students transferring to VPI; CHM 241 (3 credits) plus CHM 245 (2 credits), CHM 242 (3 credits) plus CHM 246 (2 credits) desirable for all CHEME students.

* These courses are not required for the A.S. Degree; however, completion of them is desirable for transfer as a junior in Engineering.

Electrical Engineering Specialization

Purpose: The curriculum is designed to permit the student to transfer into a baccalaureate degree program in Electrical Engineering. All B.S. (EE)

degree granting colleges/universities require specific preparation in the sophomore year for EE majors.

Special Curriculum Admission Requirements: High school courses: 4 units of English, 2 units of algebra, 1 unit of geometry, 1 unit of trigonometry, 1 unit of laboratory science (chemistry or physics). Proficiency tests in mathematics, chemistry, physics and English are required prior to taking courses in these disciplines and engineering course sequences at NVCC. Developmental studies may be undertaken to satisfy these requirements.

Special Curriculum Completion Requirements: Grades of "C" and above are required in those courses in the program that are intended to be transferred for credit to a baccalaureate degree-granting college/university. The only courses to which this does not apply are PED and STD.

First Year		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
ENG	111-112 College Composition I-II.....	3	3
CHM	111-112 College Chemistry I-II.....	4	4
MTH	173-174 Calculus with Analytic Geometry I-II.....	5	5
EGR	120 Introduction to Engineering.....	2	
EGR	115 Engineering Graphics.....	2	
EGR	126 Computer Programming for Engineers.....		3
PED	101 Fundamentals of Physical Activity...	1	
1__	Social science elective.....		3
Total Credits		18	18

Second Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
MTH	277 Multivariable Calculus.....	4		
MTH	291 Ordinary Differential Equations.....		3	
MTH	292 Topics in Differential Equations.....			3*
MTH	285 Linear Algebra.....			3*
PHY	241-242 University Physics I-II.....	4	4	
SPD	Elective.....	3		
EGR	140 Engineering Mechanics—Statics.....	3		
EGR	245 Engineering Mechanics—Dynamics.....		3	
EGR	251-252 Basic Electric Circuits I-II.....		3	3*
EGR	255 Electric Circuits Laboratory.....			1*
EGR	265 Digital Elec. & Logic Design.....			4*
2EGR	Electives.....		2-3	2-3*
1__	Social science elective.....	3		
PED	Elective.....		1	
Total Credits		17	16-17	16-17

Total minimum credits for the Engineering major/Electrical Engineering Specialization (A.S. Degree) = 69.

¹ Must include one semester of history (American or Western Civilization) plus a second semester of history, economics, psychology, sociology or social science. A two semester sequence of courses is optimum for transfer.

² EGR 206 (2 credits) required at VPI and desirable elsewhere; EGR 248 (3 credits) desirable for those transferring to UVA and UMCP; EGR 225 (3 credits) required at UMCP.

* These courses are not required for the A.S. Degree; however, completion of them is desirable for transfer as a junior in Electrical Engineering.

ENGINEERING DRAFTING

Certificate

Purpose: This program is designed to provide the student with the skills to obtain employment as a draftsman in any of the many engineering firms and other organizations requiring drafting and design professionals. This program will also transfer to the associate degree program in Mechanical Engineering. Occupational objectives include: mechanical draftsman, electronics draftsman, engineering aide, electromechanical draftsman, CAD operator.

		Credits	
		1st Semester	2nd Semester
DRF	151-152 Engineering Drawing Fund. I-II...	3	3
MEC	120 Principles of Machine Technology...	3	
MEC	112 Processes of Industry.....		3
DRF	231 Computer Aided Drafting I.....		3
MEC	127 Computer Prog. for Engr. Tech.	3	
ENG	111 College Composition I.....	3	
---	Social science elective.....		3
DRF	245 Electronic Drafting or Tech. Elec.		2
STD	100 Orientation.....	1	
MTH	103-104 Basic Technical Math I-II or MTH 115-116 Technical Math I-II.....	3	3
Total Credits		16	17

Total minimum credits for the Engineering Drafting Certificate = 33.

FINE ARTS

Associate in Arts Degree Visual and Performing Arts Degree Program

Purpose: The Associate in Arts in Fine Arts is designed for students who plan to transfer to a four-year program in a professional school or to a college or university baccalaureate degree program in Fine Arts.

Special Curriculum Admission Requirements: Entry into Fine Arts requires a satisfactory aptitude in visual art. Applicants may be required to submit a portfolio for placement.

First Year		Credits	
		1st Semester	2nd Semester
ART	101-102 Hist. & Appreciation of Art I-II.....	3	3
ART	121-122 Drawing I-II.....	4	4
ART	131-132 Fundamentals of Design I-II.....	4	4
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....	1	
PED	101 Fundamentals of Physical Activity...		1
1__	Social science electives.....	3	3
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
ART	221-222 Drawing III-IV.....	4	4
2__	Art Studio or general electives.....	4	4
ENG	Electives.....	3	3
PED	Elective.....		1
MTH	151 Math for the Liberal Arts I.....	3	
SPD	110 Intro. to Speech Communication.....		3
Total Credits		14	15

Total minimum credits for the Fine Arts major (A.A. Degree) = 65.

¹ Social science courses may be selected from the following: economics, geography, political science, history, psychology, social science or sociology (anthropology).

² Students may be required to take math, natural science or a foreign language by the college of transfer. Recommended studio electives: painting, sculpture, printmaking, ceramics. Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated.

Art/Fine Art Photography Specialization

Purpose: The Associate in Arts in Fine Art Photography is designed for students who plan to transfer to a four-year program in a professional school or to a college or university baccalaureate degree program in Fine Arts.

Special Admission Requirements: Entry into Fine Art Photography requires a satisfactory aptitude in visual art, and applicants may be required to submit a portfolio for placement.

		Credits	
First Year		1st Semester	2nd Semester
PHT	101-102 Photography I-II.....	3	3
ART	101-102 Hist. & Appreciation of Art I-II.....	3	3
ART	121-122 Drawing I-II.....	4	4
ART	131-132 Fundamentals of Design I-II.....	4	4
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....	1	
PED	101 Fundamentals of Physical Activity...		1
Total Credits		18	18

		Credits	
Second Year		1st Semester	2nd Semester
PHT	110 History of Photography.....	3	
¹ ENG	Electives.....	3	3
PED	Elective.....		1
² ---	Social science electives.....	3	3
MTH	151-152 Math for the Liberal Arts I-II....	3	3
SPD	110 Intro. to Speech Communication.....		3
³ HIS	Electives.....	3	3
Total Credits		15	16

Total minimum credits for the Fine Arts major/Art/Fine Art Photography Specialization (A.A. Degree) = 67.

¹ ENG 241-242 Survey of American Literature I-II, ENG 243-244 Survey of English Literature I-II, or ENG 251-252 Survey of World Literature I-II.

² Social science courses may be selected from the following: economics, geography, political science, history, psychology, social science or sociology (anthropology).

³ HIS 101-102 History of Western Civilization I-II or HIS 121-122 U. S. History I-II.

The Specialization in Art/Fine Art Photography is designed for students who expect to transfer to a four-year or liberal arts college. Because of the differences in transfer requirements between art and liberal arts colleges, second year electives should be carefully matched with programs of study at prospective transfer institutions.

FIRE PROTECTION TECHNOLOGY

Certificate

Purpose: The certificate curriculum is designed for those students who wish to take principal courses which relate directly to the Fire Protection Technology field. Courses taken in the certificate program can be applied to the A.A.S. Degree.

Special Curriculum Admission Requirements: The same admission requirements apply as stated for the Fire Protection Technology A.A.S. Degree curriculum.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
FIR	100 Introduction to Fire Science.....	3	
FIR	111 Hazardous Materials I.....	3	
FIR	116 Fire Prevention Fundamentals.....		3
FIR	205 Fire Hydraulics & Dist. Systems.....	4	
FIR	211 Auto. Sprinkler System Design I.....	3	
FIR	212 Auto. Sprinkler System Design II....		3
FIR	215 Fire Suppression & Det. Systems Design.....		3
ENG	111 College Composition I.....		3
STD	100 Orientation.....	1	
*MTH	Elective.....	3	
---	Science elective.....		4
Total Credits		17	16

Total minimum credits for the Fire Protection Technology Certificate = 33.

* Please consult your program head or faculty advisor before selecting your MTH course.

FIRE SCIENCE ADMINISTRATION

Associate in Applied Science Degree Public Safety Degree Program

Purpose: This curriculum is designed for persons seeking or currently holding employment in the fire protection field who desire to specialize in administration and management. The occupational objectives include national standards (NFPA 1021) for the position of fire officer, as well as insurance investigation/sales and service.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
FIR	100 Introduction to Fire Science.....	3	
FIR	106 Fire Suppression Methods & Oper. .		3
FIR	111 Hazardous Materials I.....	3	
FIR	112 Hazardous Materials II.....		3
FIR	116 Fire Prevention Fundamentals.....		3
FIR	125 Fire Service Administration.....	3	
STD	100 Orientation.....	1	
*MTH	Elective.....	3	
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective.....		1
RPK	200 Microcomputers in Public Service Agencies.....		3
Total Credits		17	16

		Credits	
Second Year		1st Semester	2nd Semester
BUS	205 Human Resource Management.....	3	
FIR	205 Fire Hydraulics and Distribution Sys.	4	
FIR	221 Building Construction & Codes.....		4
FIR	237 Emergency Service Supervision.....		3
FIR	245 Urban Fire and Risk Analysis.....		3
² ---	Science elective.....	3-4	
³ ---	Social science electives.....	3	3
SPD	110 Introduction to Speech Communication.....	3	
---	General elective.....		3
Total Credits		16-17	16

Total minimum credits for the Fire Science Administration major (A.A.S. Degree) = 65.

¹ Please consult your program head or faculty advisor before selecting your MTH course.

² Science elective may be selected from: CHM 101, CHM 111, PHY 201 or PHY 221.

³ Social science electives may be selected from: U.S. History, economics, political science, psychology, sociology, or social science.

Fire Protection Technology Specialization

Purpose: This curriculum is designed for persons seeking employment in the broad field of fire protection systems design. The occupational objectives include: design of automatic fire detection and suppression systems, fire prevention and insurance service, equipment sales, service and installation.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
ENG	111 College Composition I.....	3	
FIR	100 Introduction to Fire Science.....	3	
FIR	111 Hazardous Materials I.....	3	
FIR	112 Hazardous Materials II.....		3
FIR	116 Fire Prevention Fundamentals.....		3
FIR	125 Fire Service Administration.....	3	
STD	100 Orientation.....	1	
SPD	110 Introduction to Speech Communication.....		3
¹ MTH	Electives.....	3	3
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective.....		1
RPK	200 Microcomputers in Public Service Agencies.....		3
Total Credits		17	16

		Credits	
Second Year		1st Semester	2nd Semester
FIR	205 Fire Hydraulics and Distr. System...	4	
FIR	211 Auto. Sprinkler System Design I....	3	
FIR	212 Auto. Sprinkler System Design II....		3
FIR	215 Fire Suppression & Detection Sys. ...	3	
FIR	221 Building Construction & Codes.....		4
FIR	245 Urban Fire & Risk Analysis.....		3
² —	Science elective.....	3-4	
³ —	Social science electives.....	3	3
—	General elective.....		3
Total Credits		16-17	16

Total minimum credits for the Fire Science Administration major/Fire Protection Technology Specialization (A.A.S. Degree) = 65.

¹ Please consult your program head or faculty advisor before selecting your MTH courses.

² Science elective may be selected from: CHM 101, CHM 111, PHY 201 or PHY 221.

³ Social science electives may be selected from: U.S. History, economics, political science, psychology, sociology, or social science.

Fire Science Investigation Specialization

Purpose: This curriculum is designed for persons seeking employment or currently employed in the fire service, desiring to specialize in the areas of fire prevention and/or fire investigation. Course objectives include national standards for fire prevention and investigation officers, insurance investigation, and public education on fire safety.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
ENG	111 College Composition I.....	3	
FIR	100 Introduction to Fire Science.....	3	
FIR	111 Hazardous Materials I.....	3	
FIR	112 Hazardous Materials II.....		3
FIR	116 Fire Prevention Fundamentals.....		3
FIR	125 Fire Service Administration.....	3	
STD	100 Orientation.....	1	
¹ MTH	Electives.....	3	3
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective.....		1
RPK	200 Microcomputers in Public Service Agencies.....		3
SPD	110 Intro. to Speech Communication.....		3
Total Credits		17	16

		Credits	
Second Year		1st Semester	2nd Semester
ADJ	211 Criminal Law, Evid. & Proc. I.....	3	
ADJ	212 Criminal Law, Evid. & Proc. II.....		3
FIR	221 Building Construction & Codes.....		4
FIR	230 Investigation Procedures.....	3	
FIR	245 Urban Fire and Risk Analysis.....		3
² —	Science electives.....	4	4
³ —	Social science electives.....	3	3
—	General elective.....	3	
Total Credits		16	17

Total minimum credits for the Fire Science Administration major/Fire Science Investigation Specialization (A.A.S. Degree) = 66.

¹ Please consult your program head or faculty advisor before selecting your MTH electives.

² Science requirements may be selected from: CHM 101-102, or 111-112.

³ Social science electives may be selected from: U.S. History, economics, political science, psychology, sociology, or social science.

FIRE SCIENCE ADMINISTRATION

Certificate

Purpose: The certificate curriculum is designed for those students who wish to take principal courses which relate directly to the fire service administration field. Courses taken in the certificate program can be applied to the A.A.S. Degree.

Special Curriculum Admission Requirements: The same admission requirements apply as stated for the Fire Science Administration A.A.S. Degree curriculum.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
FIR	100 Introduction to Fire Science.....	3	
FIR	106 Fire Supp. Methods & Operations...		3
FIR	111 Hazardous Materials I.....	3	
FIR	116 Fire Prevention Fundamentals.....		3
FIR	125 Fire Service Administration.....	3	
FIR	221 Building Construction and Codes....		4
FIR	237 Emergency Service Supervision.....		3
ENG	111 College Composition I.....	3	
STD	100 Orientation.....		1
¹ MTH	Elective.....	3	
RPK	200 Microcomputers in Public Service Agencies.....		3
SPD	110 Intro. to Speech Communication.....	3	
Total Credits		18	17

Total minimum credits for the Fire Science Administration Certificate = 35.

¹ Please consult your program head or faculty advisor before selecting your MTH course.

FIRE SCIENCE INVESTIGATION

Certificate

Purpose: The certificate curriculum is designed for those students who wish to take principal courses which relate directly to the fire service investigation field. Courses in the certificate program can be applied to the A.A.S. Degree.

Special Curriculum Admission Requirements: The same admission requirements apply as stated for the Fire Science Investigation A.A.S. Degree curriculum.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
FIR	100 Introduction to Fire Science.....	3	
FIR	111 Hazardous Materials I.....	3	
FIR	116 Fire Prevention Fundamentals.....		3
FIR	125 Fire Service Administration.....	3	
FIR	221 Building Construction and Codes....		4
FIR	230 Investigation Procedures.....	3	
ENG	111 College Composition.....	3	
STD	100 Orientation.....		1
*MTH	Elective.....		3
RPK	200 Microcomputers in Public Service Agencies.....		3
—	Science elective.....		4
ADJ	211 Criminal Law Evidence & Proced. I.	3	
Total Credits		18	18

Total minimum credits for the Fire Science Investigation Certificate = 36.

* Please consult your program head or faculty advisor before selecting your MTH course.

GENERAL STUDIES

Associate in Science Degree General Studies Degree Program

Purpose: The curriculum is designed for persons who are considering transfer to a four-year college or university, and who wish the flexibility of either broadening or narrowing as much as possible their first two years of undergraduate study.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
PED	101 Fund. of Physical Activity.....	1	
PED	Elective.....		1
ENG	111-112 College Composition I-II.....	3	3
¹ HIS	Elective.....	3	
MTH	Elective.....		3
² CIS	/CSC elective.....	3	
SPD	Elective.....	3	
³ —	General electives.....	3-4	9
Total Credits		17-18	16

		Credits	
		1st Semester	2nd Semester
⁴ —	Social science electives.....	3	3
³ —	General electives.....	13	13
Total Credits		16	16

Total minimum credits for the General Studies major (A.S. Degree) = 65.

¹ HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II.

² This requirement may also be met by substituting a course which utilizes the computer in a specific discipline.

³ Humanities courses, if selected as general electives, may be selected from the following: speech, literature, art, drama, music, humanities, philosophy.

⁴ A two-semester social science sequence may be selected from the following: economics, political science, psychology, sociology, or history.

GERONTOLOGY

Associate in Applied Science Degree Human Services Degree Program

Purpose: The curriculum is designed to provide a broad base of knowledge, methods and skills which underlie comprehensive delivery of human services with options or specialties in the gerontology field. The occupational objectives include: gerontology assistant.

Special Curriculum Admission Requirements: In addition to requirements established for admission to the college, an interview with a faculty review committee is required. Any student who receives a final grade of less than "C" in any of the courses in the Human Services degree must obtain permission from the program head to continue the major in Gerontology, and must then repeat the course and earn a final grade of "C" or higher

before taking the next course in the program sequence.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
PSY	231-232 Life Span Human Dev. I-II.....	3	3
HMS	121-122 Basic Counseling Skills I-II.....	3	3
HMS	239 Community Services for the Elderly...	3	
HMS	237 Health & Well-Being of the Elderly .		3
HMS	109 Struc. Career Plan. in Human Serv. ...	3	
HMS	238 Selected Topics in Aging.....		3
SOC	246 Death and Society.....		3
STD	100 Orientation.....	1	
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective.....	1	
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
SPD	110 Intro. to Speech Communication.....	3	
MTH	151 Math for the Liberal Arts.....	3	
HMS	141-142 Group Dynamics I-II.....	3	3
HMS	228 Productive Problem-Solving.....	3	
HMS	231 Gerontology I.....	3	
HMS	232 Gerontology II.....		3
HMS	266 Counseling Psychology.....		3
HMS	225 Functional Family Intervention.....		3
HMS	227 The Helper as a Change Agent.....		3
HMS	297 Coop. Ed. or HMS 290 Coord. In- ternship.....	3	3
Total Credits		18	18

Total minimum credits for the Gerontology major (A.A.S. Degree) = 72.

GERONTOLOGY: GEORGE MASON TRANSFER

Associate in Applied Science Degree Human Services Degree Program

Purpose: The curriculum is designed for persons interested in gerontology and who plan to transfer to George Mason University to complete a Bachelor of Arts or a Bachelor of Science degree in Psychology with a Gerontology certificate.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
BIO	101-102 General Biology I-II.....	4	4
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....	1	
HMS	231-232 Gerontology I-II.....	3	3
PED	101 Fund. of Physical Activity.....	1	
PED	Elective.....		1
PSY	201-202 Intro. to Psychology I-II.....	3	3
SOC	201-202 Intro. to Sociology I-II.....	3	3
Total Credits		18	17

		Credits	
Second Year		1st Semester	2nd Semester
*ENG	Electives	3	3
HMS	265 Personality Theory.....	3	
HMS	266 Counseling Psychology		3
PSY	231-232 Life Span Human Dev. I-II.....	3	3
SOC	247 Death and Dying.....	3	
**MTH	151 Math for the Liberal Arts I.....	3	
SPD	110 Intro. to Speech Communication.....		3
—	General elective		3
Total Credits		15	15

Total minimum credits for the Gerontology: George Mason Transfer major (A.A.S. Degree) = 65.
 * ENG 241-242 Survey of American Lit. I-II, ENG 243-244 Survey of English Lit. I-II, or ENG 251-252 Survey of World Lit. I-II.
 ** To meet the transfer requirements for a Bachelor of Science degree in Psychology, either the MTH 151 or a higher level math is required.

HORTICULTURE TECHNOLOGY

Associate in Applied Science Degree Agricultural Business Degree Program

Purpose: The curriculum is designed to prepare students for full-time employment within the field of commercial horticulture as well as for those presently working who seek further knowledge and advancement.

Graduates of the program are prepared for managerial/supervisory level positions in areas which include: landscape design and installation, grounds maintenance, floristry, greenhouse and nursery management, garden center operation, and sales and marketing in related industries.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
CHM	135 Horticultural Chemistry.....	3	
CIS	150 Intro. to Microcomputer Software ...		3
ECO	120 Survey of Economics.....		3
ENG	111 College Composition I.....	3	
ENG	115 Technical Writing		3
HRT	100 Introduction to Horticulture	3	
HRT	115 Plant Propagation.....	3	
HRT	127 Horticultural Botany		3
HRT	245 Woody Plants		2
MTH	120 Introduction to Mathematics	3	
PED	101 Fundamentals of Physical Activity....		1
PSY	100 Princ. of Applied Psychology		3
STD	100 Orientation.....	1	
Total Credits		16	18

		Credits	
Second Year		1st Semester	2nd Semester
BUS	165 Small Business Management	3	
HRT	205 Soils	3	
HRT	207 Plant Pest Management.....	3	
HRT	231 Planting Design I.....	3	
HRT	246 Herbaceous Plants		2
HRT	269 Professional Turf Care.....		3
HRT	275 Landscape Construction & Maintenance		3
HRT	285 Management of a Horticultural Business		3
HRT	290 Internship or HRT 297 Cooperative Educ.		1-2
HRT	Elective		2
MKT	100 Principles of Marketing	3	
MKT	110 Principles of Selling		3
PED	Elective	1	
SPD	127 Workshop in Interpersonal Skills	1	
Total Credits		17	17-18

Total minimum credits for the Horticulture Technology major (A.A.S. Degree) = 68.

Floriculture Specialization

		Credits	
First Year		1st Semester	2nd Semester
CHM	135 Horticultural Chemistry.....	3	
CIS	150 Intro. to Microcomputer Software ...		3
ECO	120 Survey of Economics.....		3
ENG	111 College Composition I.....	3	
ENG	115 Technical Writing		3
HRT	100 Introduction to Horticulture	3	
HRT	115 Plant Propagation.....	3	
HRT	127 Horticultural Botany		3
HRT	247 Indoor Plants		2
MTH	120 Introduction to Mathematics	3	
PED	101 Fund. of Physical Activity.....		1
PSY	100 Principles of Applied Psychology		3
STD	100 Orientation.....	1	
Total Credits		16	18

		Credits	
Second Year		1st Semester	2nd Semester
BUS	165 Small Business Management	3	
HRT	205 Soils	3	
HRT	207 Plant Pest Management.....	3	
HRT	121 Greenhouse Crop Production I.....		3
HRT	246 Herbaceous Plants		2
HRT	260 Intro. to Floral Design	3	
HRT	266 Advanced Floral Design		3
HRT	285 Mgmt. of a Horticultural Business...		3
HRT	290 Internship or HRT 297 Coop. Educ. ...		1-2
HRT	Elective		2
SPD	127 Workshop in Interpersonal Skills	1	
MKT	100 Principles of Marketing	3	
MKT	110 Principles of Selling		3
PED	Elective	1	
Total Credits		17	17-18

Total minimum credits for the Horticulture Technology major/Floriculture Specialization (A.A.S. Degree) = 68.

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT

Associate in Applied Science Degree Business Management Degree Program

Purpose: The curriculum is designed to enable the student to enter executive training and management positions in the hospitality industry, and for those presently employed who desire updating in the field.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
ACC	211 Principles of Accounting I		3
ENG	111 College Composition I.....	3	
HRI	101-102 Hotel Restaurant Organization and Management I-II.....	3	3
HRI	120 Principles of Food Preparation.....	4	
HRI	125 Principles of Commercial Food Prep.....		3
HRI	158 Sanitation and Safety	3	
HRI	Elective		4
MTH	Elective	3	
PED	101 Fundamentals of Physical Activity I.		1
SPD	110 Intro. to Speech Communication.....		3
STD	100 Orientation.....	1	
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
HRI	245 Labor Cost Control.....	3	
HRI	251 Food and Beverage Cost Control I...	3	
HRI	255 Human Resources Management & Training for Hospitality & Tourism.....	3	
¹ HRI	256 Princ. & Applications of Catering....		3
HRI	275 Hospitality Law.....		3
² HRI	Electives	3	6
PED	Elective	1	
⁴ —	Social science electives.....	3	3
Total Credits		16	15

Total minimum credits for the Hotel, Restaurant and Institutional Management major (A.A.S. Degree) = 65.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² Preapproved electives can be selected from any course offered with the HRI, TRV, and DIT prefix. See your faculty advisor for alternative procedures.

³ If you are planning to transfer to another college or university, select a math course which is equivalent to the other school's requirement.

⁴ Select any 2 social science courses.

Food Service Management Specialization

Purpose: The curriculum is designed to enable the student to enter executive training and management positions in restaurants and food service operations in institutions, hotels, resorts, or private clubs. The curriculum specializes in the food service management phase of the hospitality industry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I.....		3
ENG	111 College Composition I.....	3	
HRI	101-102 Hotel-Restaurant Organization and Management I-II.....	3	3
¹ HRI	120 Principles of Food Preparation.....	4	
HRI	125 Principles of Commercial Food Prep.....		3
¹ HRI	³ 157 Advanced Principles of Food Prep. .		4
HRI	158 Sanitation and Safety	3	
² MTH	Elective	3	
PED	101 Fundamentals of Physical Activity...		1
SPD	110 Intro. to Speech Communication.....		3
STD	100 Orientation.....	1	
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
HRI	217 Equipment Layout & Design		3
HRI	225 Menu Planning & Dining Room Service	3	
HRI	245 Labor Cost Control	3	
HRI	251 Food & Beverage Cost Control I	3	
HRI	255 Human Resources Management & Training for Hospitality & Tourism	3	
¹ HRI	256 Princ. & Applications of Catering....		3
HRI	275 Hospitality Law.....		3
³ HRI	Elective		3
PED	Elective	1	
⁴ —	Social science electives.....	3	3
Total Credits		16	15

Total minimum credits for the Hotel, Restaurant and Institutional Management major/Food Service Management Specialization (A.A.S. Degree) = 65.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² If you are planning to transfer to another college or university, select a math course which is equivalent to the other school's requirement.

³ Preapproved electives can be selected from any course offered with the HRI, TRV, and DIT prefix. See your faculty advisor for alternative procedures.

⁴ Select any 2 social science courses.

Hotel Management Specialization

Purpose: The curriculum is designed to enable the student to enter executive training and management positions in hotels, motor inns, and clubs. The curriculum specializes in the hotel management phase of the hospitality industry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I.....		3
ENG	111 College Composition I.....	3	
HRI	101-102 Hotel Restaurant Organization and Management I-II.....	3	3
¹ HRI	120 Principles of Food Preparation.....	4	
HRI	125 Principles of Commercial Food Prep.....		3
HRI	158 Sanitation and Safety	3	
HRI	165 Hotel Housekeeping & Engineering Mgt.		4
² MTH	Elective	3	
PED	101 Fundamentals of Physical Activity...		1
SPD	110 Intro. to Speech Communication.....		3
STD	100 Orientation.....	1	
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
HRI	235 Marketing of Hospitality Services....		3
HRI	245 Labor Cost Control.....	3	
HRI	251 Food and Beverage Cost Control I...	3	
HRI	255 Human Resources Management & Training for Hospitality & Tourism	3	
¹ HRI	256 Princ. & Applications of Catering....		3
HRI	265 Hotel Front Office Operations	3	
HRI	275 Hospitality Law.....		3
³ HRI	Elective		3
PED	Elective	1	
⁴ —	Social science electives.....	3	3
Total Credits		16	15

Total minimum credits for the Hotel, Restaurant and Institutional Management major/Hotel Management Specialization (A.A.S. Degree) = 65.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² If you are planning to transfer to another college or university, select a math course which is equivalent to the other school's requirement.

³ Preapproved electives can be selected from any course offered with the HRI, TRV, and DIT prefix. See your faculty advisor for alternative procedures.

⁴ Select any 2 social science courses.

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT: FOOD SERVICE MANAGEMENT

Certificate

Purpose: The curriculum is designed for persons seeking employment in the food service industry and for those presently employed who desire updating in the food service industry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I.....	3	
HRI	101-102 Hotel-Restaurant Organization and Management I-II.....	3	3
¹ HRI	120 Principles of Food Preparation.....	4	
HRI	125 Principles of Commercial Food Prep.....		3
¹ HRI	157 Advanced Principles of Food Prep. .		4
HRI	158 Sanitation and Safety	3	
HRI	255 Human Resources Management & Training for Hospitality & Tourism		3
² __	Social science elective		3
STD	100 Orientation.....	1	
Total Credits		14	16

Total minimum credits for the Hotel, Restaurant and Institutional Management: Food Service Management Certificate = 30.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² Select any one social science course.

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT: HOTEL MANAGEMENT

Certificate

Purpose: The curriculum is designed for persons seeking employment in the hospitality industry and for those presently employed who desire updating in the lodging industry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I.....		3
HRI	101-102 Hotel-Rest. Organ. & Mgt. I-II.....	3	3
¹ HRI	120 Principles of Food Preparation.....	4	
HRI	165 Hotel Housekeeping & Engineering Mgt.		4
HRI	235 Marketing of Hospitality Services....		3
HRI	255 Human Resources Management & Training for Hospitality & Tourism	3	
HRI	265 Hotel Front Office Operations	3	
² __	Social science elective		3
STD	100 Orientation.....	1	
Total Credits		14	16

Total minimum credits for the Hotel, Restaurant & Institutional Management: Hotel Management Certificate = 30.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² Select any one social science course.

HUMAN SERVICES ASSOCIATE

Associate in Applied Science Degree Human Services Degree Program

Mental Health Specialization

Purpose: The curriculum is designed to provide a broad base of knowledge, methods and skills which underlie comprehensive delivery of human services in mental health. The occupational objectives include: mental health technicians and other associate professional positions in the helping field.

Special Curriculum Admission Requirements: In addition to requirements established for admission to the college, an interview with a faculty review committee is required. Any student who receives a final grade of less than

“C” in any of the courses in the Mental Health Specialization must obtain permission from the program head to continue the Specialization in Mental Health, and must then repeat the course and earn a final grade of “C” or higher before taking the next course in the program sequence.

Cooperative Education: Students in this curriculum will participate in at least 3 semester hours of Cooperative Education unless they already have equivalent experience. For further information, contact the Cooperative Education Office.

		Credits	
		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
PSY	231-232 Life Span Human Develop. I-II.....	3	3
HMS	121-122 Basic Counseling Skills I-II.....	3	3
HMS	251-252 Substance Abuse I-II	3	3
HMS	226 Helping Across Cultures.....		3
HMS	109 Struct. Career Plan. in Human Serv.	3	
HMS	195 Topics In: Effects of Psychoactive Drugs.....		3
STD	100 Orientation.....	1	
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective	1	
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
SPD	110 Intro. to Speech Communication.....	3	
MTH	151 Math for the Liberal Arts.....	3	
HMS	141-142 Group Dynamics I-II.....	3	3
HMS	228 Productive Problem-Solving	3	
HMS	231 Gerontology I	3	
HMS	232 Gerontology II		3
HMS	265 Personality Theory.....	3	
HMS	266 Counseling Psychology		3
HMS	225 Functional Family Intervention		3
HMS	227 The Helper as a Change Agent.....		3
HMS	297 Coop. Educ. or HMS 290 Intern.....		3
Total Credits		18	18

Total minimum credits for the Human Services Associate major/Mental Health Specialization (A.A.S. Degree) = 72.

INTERIOR DESIGN

Associate in Applied Science Degree Interior Design Degree Program

Purpose: The Interior Design program is intended to prepare the graduate to enter the interior design field at the technician's level. The program is designed to give the student a basic foundation in: (1) the visual presentation skills (2) a knowledge of elements of formal and special design and color coordination (3) a knowledge of the evolution of furniture and interior styles, and (4) a basic knowledge of the business procedures in the profession. A personal interview with the head of the Interior Design department is helpful to a new student.

After completing two years (4 semesters) of the program, the graduate will earn an Associate in Applied Science Degree. Electives within the program enable the student to specialize in areas of interest and future potential employment. Career opportunities exist in the retail market, furniture, fabric or interior accessories, and in interior space planning and drafting with architectural firms.

Coordinated Internship/Cooperative Education: Each student, when he/she reaches the end of the curriculum, is required to spend 24 hours per week under the direct supervision of an interior designer, interior design firm or architectural design firm, for one semester. The student will apply for the internship as if he/she were applying for a full-time job. This program is most beneficial to the student in learning the practical side of the interior design business.

First Year	Credits	
	1st Semester	2nd Semester
ART 101-102 Hist. & Apprec. of Art I-II	3	3
ART 131-132 Fund. of Design I-II	4	4
IDS 100 Theory & Tech. of Int. Design	3	
IDS 109 Styles of Furniture & Interiors	3	
ENG 111 College Composition	3	
PSY 100 Prin. of Applied Psychology		3
IDS 105 Arch. Drft. for Int. Design		3
STD 100 Orientation	1	
PED 101 Fund. of Physical Activity	1	
PED Elective		1
SPD 110 Intro. to Speech Communication		3
Total Credits	18	17

Second Year	Credits	
	1st Semester	2nd Semester
IDS 106 Three Dimen. Drawing & Rendering	3	
IDS 225 Business Procedures	3	
IDS 206 Lighting & Furnishings	3	
HRT 107 Landscaping for Interior Des.		2
*IDS 290 Coord. Internship		3
MTH 151 Math for the Liberal Arts I	3	
IDS 205 Materials and Sources		3
IDS 215 Theory & Research in Comm. Des. .		3
— Social science elective	3	
IDS 221 Design. Comm. Interiors		4
¹ IDS Electives	3	3
Total Credits	18	18

Total minimum credits for the Interior Design major (A.A.S. Degree) = 71.

¹ Areas of electives may also be selected from the following curricula which offer complimentary areas to Interior Design: Architecture, Commercial Art, Art History, Business Administration, Horticulture Technology/Floriculture, Hotel Management, Marketing.

* For those students interested in transfer, an IDS elective may be substituted (with divisional approval) for the internship.

LEGAL ASSISTING

Associate in Applied Science Degree Business and Office Degree Program

Purpose: The curriculum is designed to provide an individual with a sufficient level of knowledge, understanding and proficiency to perform the tasks in meeting a client's needs which can be performed by a trained, non-lawyer assistant working under the direction and supervision of a lawyer. A legal assistant will have a basic understanding of the general processes of American law, and will have the knowledge and proficiency to perform specific tasks under the supervision of a lawyer in the fields of civil and criminal law. The occupational objectives include: employment in public and in private, both individual and corporate, law-related activities, organizations and agencies.

Special Curriculum Admission Requirements: Proficiency in high school English. Within practical limits, the curriculum will accommodate students with diverse educational backgrounds.

Special Curriculum Completion Requirements: To remain in the program, students must complete each of the legal courses in the program with a "C" or better.¹

Cooperative Education: Students in this curriculum will participate in at least 3 semester hours of Cooperative Education unless they already have equivalent experience. For further information, contact the Cooperative Education Office.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111-112 College Composition I-II	3	3
STD 100 Orientation	1	
PHI 115 Practical Reasoning	3	
PED 101 Fund. of Physical Activity	1	
PED Elective		1
LGL 110 Intro. to Law & the Legal Assistant.	3	
LGL 125 Legal Research	3	
LGL 116 Domestic Relations & Consumer Law	3	
LGL 126 Legal Writing		3
LGL 218 Criminal Law		3
LGL 215 Torts		3
MTH 151 Mathematics for the Liberal Arts		3
Total Credits	17	16

Second Year	Credits	
	1st Semester	2nd Semester
CIS 100 Intro. to Information Systems	3	
LGL 217 Trial Pract. & the Law of Evidence ..	3	
LGL 235 Legal Aspects of Business Organ. ...	3	
LGL 115 Real Estate Law	3	
LGL 230 Legal Transactions		3
LGL 227 Admin. of Decedent's Estates		3
LGL 297 Cooperative Education		3
SPD 110 Intro. to Speech Communication		3
PSY 201-202 Intro. to Psychology I-II or SOC 201-202 Intro. to Sociology I-II	3	3
— Approved electives	3	3
Total Credits	18	18

Total minimum credits for the Legal Assisting major (A.A.S. Degree) = 69.

LIBERAL ARTS

Associate in Arts Degree Liberal Arts Degree Program

Purpose: The Associate in Arts degree major in Liberal Arts is designed for persons who plan to transfer to a four-year institution to complete a bachelor's degree program in any of the humanities or social science areas.

Special Curriculum Admission Requirements: Satisfactory completion of the following high school units or equivalent: 4 of English, 2 of mathematics (algebra and geometry), 1 of laboratory science and 1 of history. Two units of foreign language are recommended.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111-112 College Composition I-II	3	3
STD 100 Orientation	1	
¹ HIS Electives	3	3
² MTH 151-152 Math for the Liberal Arts I-II	3	3
³ — Natural science/lab electives	4	4
⁴ — Foreign language	3-5	3-5
Total Credits	17-19	16-18

		Credits	
Second Year		1st Semester	2nd Semester
⁵ ENG	Electives	3	3
⁴ —	Foreign language	3	3
⁶ —	Social science electives	3	3
PED	101 Fund. of Physical Activity		1
PED	Elective		1
SPD	110 Intro. to Speech Communication.....	3	
⁷ —	General electives.....	5	4
Total Credits		17	15

Total minimum credits for the Liberal Arts major (A.A. Degree) = 65.

¹ HIS 121-122 U.S. History or HIS 101-102 History of Western Civ. I-II.

² MTH 151-152 meets general education requirements: a math course and knowledge of the computer.

³ Science courses may be selected from biology, chemistry, physics, geology or the natural science 100 series courses.

⁴ See "Foreign Language Requirement for A.A. Degrees in Liberal Arts" in "A.A. and A.S. Degrees General Requirements and Electives". If foreign language requirements are met, general electives may be selected.

⁵ ENG 241-242 Survey of American Lit., ENG 243-244 Survey of English Lit., or ENG 251-252 Survey of World Lit.

⁶ Two semester sequence social science courses may be selected from one of the following disciplines: economics, geography, political science, psychology, social science or sociology (anthropology).

⁷ Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated.

Art History Specialization

Purpose: The Art History Specialization is designed for students who plan to transfer to a college or university for a Bachelor of Arts Degree in Art History.

		Credits	
First Year		1st Semester	2nd Semester
ART	101-102 Hist. & Appreciation of Art I-II.....	3	3
—	Natural science/lab electives.....	4	4
ENG	111-112 College Composition I-II.....	3	3
¹ —	Foreign language	3-5	3-5
PED	101 Fundamentals of Physical Activity.....		1
MTH	151-152 Math for the Liberal Arts I-II.....	3	3
STD	100 Orientation.....	1	
Total Credits		17-19	17-19

		Credits	
Second Year		1st Semester	2nd Semester
² ART	211-212 Hist. of American Art I-II or approved Art History elective	3	3
SPD	110 Introduction to Speech Communication.....	3	
ENG	Electives	3	3
³ —	Social science electives	3	3
PED	Elective		1
HIS	Electives	3	3
—	General elective		2
⁴ —	Art History or studio electives	3	3
Total Credits		18	18

Total minimum credits for the Liberal Arts major/Art History Specialization (A.A. Degree) = 70.

¹ See "Foreign Language Requirement for A.A. Degree in Liberal Arts". Italian, French, or German is recommended.

² Art History electives: Introduction to Primitive Art, History of Far Eastern Art, History of Printmaking, Aesthetics (Philosophy), Art in World Culture, Seminar and Project in Art History, Gallery Management, History of Design (other, as approved).

³ Social science courses may be selected from the following: economics, geography, political science, history, psychology, social science or sociology (anthropology).

⁴ Design, Drawing, or Painting Materials and Techniques recommended for studio electives.

Whatever the student's ultimate career objectives, the International Studies Specialization will broaden the student's education to include more emphasis on other cultures and countries in recognition of the increasing interdependence of today's world.

		Credits	
First Year		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....	1	
HIS	101-102 History of Western Civ. I-II.....	3	3
*MTH	151-152 Math for the Liberal Arts I-II....	3	3
¹ —	Natural science/lab electives.....	4	4
**—	Foreign language	3-5	3-5
Total Credits		17-19	16-18

		Credits	
Second Year		1st Semester	2nd Semester
ENG	251-252 Survey of World Literature I-II .	3	3
**—	Foreign language	3	3
ECO	201-202 Principles of Economics I-II.....	3	3
² —	Non-western requirement	3	3
PED	101 Fundamentals of Physical Activity... ..		1
PED	Elective		1
SPD	110 Introduction to Speech Communication.....	3	
³ —	General electives.....	3	3
Total Credits		18	17

Total minimum credits for the Liberal Arts major/International Studies Specialization (A.A. Degree) = 68.

* Math 151-152 meets general education requirements: math course and knowledge of the computer.

** See "Foreign Language Requirement for A.A. Degree in Liberal Arts" under "A.A. and A.S. Degrees General Requirements and Electives". If foreign language requirements are met, electives may be selected.

¹ Science courses may be selected from biology, chemistry, physics, geology, or the natural science 100 series courses.

² Students may choose from: ART 103-104, History of Far Eastern Art; HIS 253-254, History of Asian Civilizations; HIS 255, History of Chinese Culture and Institutions; HIS 256, History of Japanese Culture and Institutions; HIS 251-252, History of Middle Eastern Civilization; HIS 241-242, History of Russia; HIS 231-232, History of Latin American Civilizations; REL 231-232, Religions of the World; HIS 203-204, History of African Civilizations; HUM 231-232, Survey of Asian Culture.

³ Electives should be chosen carefully and after investigation of transfer requirements of the institutions to which transfer is contemplated. Highly recommended electives are: ENG 243-244, Survey of English Literature; GEO 221-222, Regions of the World; PLS 241-242, International Relations; HIS 211-212, History of England; HIS 111-112, History of World Civilization; HIS 271-272, Intellectual History; ART 101-102, History and Appreciation of Art; ART 105, Art in World Culture; ART 106, History of Modern Art; HUM 111-112, Great Books; HUM 201-202, Survey of Western Culture; MUS 221-222, History of Music; HUM 256, Mythology in Literature and the Arts; HUM 260, Survey of Twentieth-Century Culture; SPD 229, Intercultural Communication; PHI 211-212, History of Western Philosophy; SOC 211-212, Principles of Anthropology; SSC 211-212, Survey of Urbanization.

Music Specialization

Purpose: The Associate in Arts Degree with a specialization in Music may be used by students who wish to transfer to a four-year college or university to complete the Bachelor of Arts Degree.

		Credits	
First Year		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....	1	1
¹ HIS	Electives	3	3
MUS	111-112 Music Theory I-II.....	4	4
MUS	Applied music	1	1
MUS	Ensemble.....	1	1
² —	Foreign language	3-5	3-5
*MUS	Elective or general elective		1
PED	Elective	1	
Total Credits		16-18	17-19

International Studies Specialization

Purpose: The Liberal Arts A.A. Degree with a specialization in International Studies is designed to prepare students who intend to transfer to a four-year institution to complete a bachelor's degree program in International Studies or in any discipline of the humanities or social sciences.

Second Year	Credits	
	1st Semester	2nd Semester
MTH 151-152 Math for the Liberal Arts	3	3
MUS Applied music	1	1
MUS Ensemble	1	
SPD 110 Intro. to Speech Communication		3
ENG Electives	3	3
³ Social science electives	3	3
⁴ Natural science/lab electives	4	4
PED 101 Fundamentals of Physical Activity	1	
* General elective	2	
**MUS Elective or general elective		1
Total Credits	18	18

Total minimum credits for the Liberal Arts major/Music Specialization (A.A. Degree) = 69.

¹ HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II.

² See "Foreign Language Requirement for A.A. Degree in Liberal Arts". Italian, French, or German is recommended.

³ Social science courses may be selected from the following: economics, geography, political science, history, psychology, social science or sociology (anthropology).

⁴ Science courses may be selected from biology, chemistry, physics or geology.

* Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated. If majoring in piano, two semesters of class voice are recommended; if majoring in voice, two semesters of class piano are recommended.

** Ensemble is recommended.

Philosophy Specialization

Purpose: The Liberal Arts Degree with the specialization in Philosophy is designed for students who wish to study philosophy at the college level or who wish to transfer to a four-year institution for a baccalaureate degree.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111-112 College Composition I-II	3	3
STD 100 Orientation	1	
HIS 101-102 History of Western Civ. or HIS 111-112 History of World Civ.	3	3
¹ Foreign language	3-5	3-5
PHI 101-102 Introduction to Philosophy	3	3
PHI 111 Logic	3	
PED 101 Fundamentals of Physical Activity		1
SPD ² 110 Intro. to Speech Communication or SPD 228 Persuasion		3
Total Credits	16-18	16-18

Second Year	Credits	
	1st Semester	2nd Semester
² ENG Electives: American, English, or World Lit. or Great Books or any literature of the Bible	3	3
³ MTH 151-152 Math for the Liberal Arts I-II	3	3
⁴ Natural science with lab electives	4	4
⁵ PHI Electives	3	3
PHI /REL electives	3	3
PED Elective	1	
Total Credits	17	16

Total minimum credits for the Liberal Arts major/Philosophy Specialization (A.A. Degree) = 65.

¹ Any foreign language sequence may be selected. Latin or Greek is recommended. Students should investigate transfer requirements of the institution to which they plan to transfer.

² Any two courses in literature: ENG 241-242 Survey of American Literature I-II; ENG 243-244 Survey of English Literature I-II; ENG 251-252 Survey of World Literature; HUM 111-112 Great Books I-II; or any literature of the Bible.

³ MTH 151-152 meets general education requirements: a math course and knowledge of the computer. Any higher math with computer course is also acceptable.

⁴ Science courses may be selected from biology, chemistry, physics, geology, or the natural science 100 series for 2 semesters.

⁵ To be selected from PHI or REL courses not used to fulfill specialization requirements. All electives should be chosen carefully, after investigation of transfer requirements.

Religion Specialization

Purpose: The Liberal Arts major with the specialization in Religion is designed for students who wish to study religion at the college level or who wish to transfer to a four-year institution for a baccalaureate degree.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111-112 College Composition I-II	3	3
STD 100 Orientation	1	
HIS 101-102 History of West. Civ. or HIS 111-112 History of World Civ.	3	3
¹ Foreign language	3-5	3-5
² MTH 151-152 Math for the Liberal Arts I-II	3	3
³ PHI /REL elective	3	
PED 101 Fundamentals of Physical Activity		1
SPD 110 Intro. to Speech Communication or SPD 228 Persuasion		3
Total Credits	16-18	16-18

Second Year	Credits	
	1st Semester	2nd Semester
⁴ Natural Science/lab electives	4	4
⁵ ENG Electives: American, English or World Lit., or Great Books or any literature of the Bible	3	3
⁶ REL Electives	3	3
REL Electives	3	3
PHI /REL electives	3	3
PED Elective	1	
Total Credits	17	16

Total minimum credits for the Liberal Arts major/Religion Specialization (A.A. Degree) = 65.

¹ Any foreign language sequence may be selected. Latin or Greek is recommended. Students should investigate transfer requirements of the institution to which they plan to transfer.

² MTH 151-152 meets general education requirements: a math course and knowledge of the computer. Any higher math with computer course is also acceptable.

³ REL 100 and REL 230 or PHI 101 and 102.

⁴ Science courses may be selected from biology, chemistry, physics, geology, or the natural science 100 series for 2 semesters.

⁵ Any two courses in literature: ENG 241-242, ENG 243-244, ENG 251-252, HUM 111-112, or any literature of the Bible.

⁶ REL and PHI electives to be selected from PHI or REL courses not used to fulfill specialization requirements. Carefully investigate transfer requirements on all electives.

Speech Communication Specialization

Purpose: The Liberal Arts major with the specialization in Speech Communication is designed for students who wish to study speech communication at the college level or who wish to transfer to a four-year institution for a baccalaureate degree.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111-112 College Composition I-II	3	3
STD 100 Orientation	1	
¹ HIS Electives	3	3
² Social science electives	3	3
PED 101 Fund. of Physical Activity	1	
PED Elective		1
SPD 110 Intro. to Speech Communication or SPD 126 Interpersonal Communication ..	3	
SPD 100 Principles of Public Speaking		3
Foreign language	3-5	3-5
Total Credits	17-19	16-18

		Credits	
Second Year		1st Semester	2nd Semester
³ ENG	Electives	3	3
⁴ MTH	151-152 Math for the Liberal Arts I-II....	3	3
—	Natural science/lab electives.....	4	4
SPD	115 Small Group Communication	3	
SPD	111 Voice & Diction I.....		3
⁵ —	General electives.....	3	3
Total Credits		16	16

Total minimum credits for the Liberal Arts major/Speech Communication Specialization (A.A. Degree) = 65.

- ¹ HIS 101-102 History of Western Civilization I-II, or HIS 121-122 U.S. History I-II.
- ² Two semester sequence social science courses may be elected from one of the following disciplines: economics, geography, political science, history, psychology, social science, or sociology (anthropology).
- ³ ENG 241-242 Survey of American Literature I-II, ENG 243-244 Survey of English Literature I-II, or ENG 251-252 Survey of World Literature I-II.
- ⁴ Math 151-152 meets general education requirements: a math course and knowledge of the computer.
- ⁵ Electives should be chosen carefully, after investigation of transfer requirements of the institution to which the student plans to transfer.

MACHINE TOOL OPERATION

Certificate

Purpose: This program is designed to prepare the student for industrial employment as a machinist or draftsman in any of the many industrial firms or small machine shops. Students may also choose to pursue the degree in Mechanical Engineering upon completion of the certificate program. Occupational objectives include: machine operator, mechanical draftsman, drill press or lathe operator, NC operator.

Special Curriculum Admission Requirements: For MTH 115-116, two years of high school algebra and geometry are necessary.

		Credits	
		1st Semester	2nd Semester
MEC	120 Principles of Machine Technology ...	3	
MEC	136 Advanced Machine Technology		3
DRF	151-152 Engineering Drawing Fund. I-II....	3	3
ENG	111 College Composition I.....	3	
MEC	112 Processes of Industry		3
DRF	231 Computer Aided Drafting I.....		3
MEC	127 Computer Programming for Engr. Tech.	3	
MEC	118 Automated Manufacturing Technology.....		3
STD	100 Orientation.....	1	
MTH	103-104 Basic Technical Math I-II or MTH 115-116 Technical Math I-II.....	3	3
Total Credits		16	18

Total minimum credits for the Machine Tool Operation Certificate = 34.

MARKETING

Associate in Applied Science Degree Business Management Degree Program

Purpose: The curriculum is designed for persons who seek full-time employment in areas involving the marketing and distribution of goods and for those presently in these fields who are seeking promotion. The occupational objectives include: store manager, assistant manager, sales supervisor, department manager, sales representative, buyer, assistant buyer. The Marketing curriculum offers a specialization in Fashion. This specialization is designed for the second year of the curriculum after a common first year.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

For Retail Emphasis

		Credits	
First Year		1st Semester	2nd Semester
BUS	100 Introduction to Business	3	
BUS	121 Business Mathematics I		3
BUS	150 Principles of Management.....		3
CIS	100 Intro. to Information Systems.....		3
ENG	111-112 College Composition I-II.....	3	3
MKT	100 Principles of Marketing	3	
MKT	110 Principles of Selling		3
MKT	115 Retail Organization & Management.	3	
MKT	200 Consumers, Marketing & Society ...		3
MTH	120 Intro. to Mathematics.....	3	
PED	101 Fund. of Physical Activity.....	1	
STD	100 Orientation.....	1	
Total Credits		17	18

		Credits	
Second Year		1st Semester	2nd Semester
ACC	211 Principles of Accounting I.....	3	
—	Business elective		3
BUS	115 Organizational Behavior	3	
BUS	205 Human Resource Management.....		3
BUS	241 Business Law I.....	3	
ECO	120 Survey of Economics.....	3	
MKT	227 Merchandise Buying and Control....		3
MKT	228 Promotion	3	
PED	Elective		1
SPD	110 Introduction to Speech Communication.....		3
—	Social science elective		3
Total Credits		15	16

Total minimum credits for the Marketing major (A.A.S. Degree) = 66.

Fashion Specialization

		Credits	
First Year		1st Semester	2nd Semester
BUS	100 Introduction to Business	3	
BUS	121 Business Mathematics I		3
BUS	150 Principles of Management.....		3
CIS	100 Intro. to Information Systems.....		3
ENG	111-112 College Composition I-II.....	3	3
MKT	100 Principles of Marketing	3	
MKT	110 Principles of Selling		3
MKT	115 Retail Organization & Management.	3	
MKT	200 Consumers, Marketing & Society....		3
MTH	120 Intro. to Mathematics.....	3	
PED	101 Fund. of Physical Activity.....	1	
STD	100 Orientation.....	1	
Total Credits		17	18

		Credits	
Second Year		1st Semester	2nd Semester
ACC	211 Principles of Accounting I.....	3	
BUS	115 Organizational Behavior	3	
BUS	205 Human Resource Management.....		3
BUS	241 Business Law I.....	3	
ECO	120 Survey of Economics.....	3	
MKT	120 Fundamentals of Fashion.....	3	
MKT	228 Promotion	3	
MKT	236 Color, Line and Design Application ...		3
MKT	238 Fashion Merchandising		3
PED	Elective		1
SPD	110 Introduction to Speech Communication.....		3
—	Social science elective		3
Total Credits		18	16

Total minimum credits for the Marketing major/Fashion Specialization (A.A.S. Degree) = 69.

MECHANICAL ENGINEERING

Associate in Applied Science Degree Mechanical Technology Degree Program

Purpose: This curriculum is designed to prepare the student for employment as a mechanical engineering technician or for transfer to a four-year college to seek a bachelor's degree. Occupational objectives include: mechanical draftsman, engineering technician, research and development technician, engineering equipment inspector, engineering plant operator or estimator.

Special Curriculum Admission Requirements: Two years of high school algebra and geometry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year	Credits	
	1st Semester	2nd Semester
MTH 115-116 Technical Math I-II	3	3
DRF 151-152 Engineering Draw. Fund. I-II ...	3	3
MEC 120 Principles of Machine Technology ...	3	
MEC 118 Automated Manufacturing Technology		3
MEC 127 Comp. Programming for Engr. Tech.	3	
MEC 112 Processes of Industry		3
DRF 231 Computer Aided Drafting I.....		3
STD 100 Orientation.....	1	
PED 101 Fundamentals of Physical Activity...	1	
PED Elective		1
SPD 127 Workshop in Interpersonal Skills ...		1
ENG 111 College Composition I.....	3	
Total Credits	17	17

Second Year	Credits	
	1st Semester	2nd Semester
MEC 255 Thermodynamics.....	3	
MEC 265 Fluid Mechanics.....	3	
MEC 225 Metallurgy.....	3	
— Social science electives.....	3	3
EGR 130 Statics and Strength of Materials.....	5	
MEC 133 Mechanics III-Dynamics for Engr. Tech.		2
MEC 210 Machine Design		3
MEC 245 Robotics.....		3
ENG 115 Technical Writing		3
— Technical elective.....		3
Total Credits	17	17

Total minimum credits for the Mechanical Engineering major (A.A.S. Degree) = 68.

Computer-Aided Drafting and Manufacturing Specialization

Purpose: This program is designed to prepare the student for employment as a CAD operator or automated manufacturing technician. Occupational objectives include: CAD operator, mechanical engineering technician, numerical control programmer, robotics technician, research and development technician, mechanical draftsman.

Special Curriculum Admission Requirements: Two years of high school algebra and geometry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year	Credits	
	1st Semester	2nd Semester
DRF 151-152 Engineering Drawing Fund. I-II...	3	3
MTH 115-116 Technical Math I-II	3	3
MEC 120 Principles of Machine Technology ...	3	
MEC 136 Advanced Machine Technology		3
MEC 118 Automated Manufacturing Technology		3
ENG 111 College Composition I.....	3	
ENG 115 Technical Writing		3
MEC 127 Comp. Programming for Engr. Tech.	3	
DRF 231 Computer Aided Drafting I.....		3
STD 100 Orientation.....	1	
PED 101 Fundamentals of Physical Activity...	1	
Total Credits	17	18

Second Year	Credits	
	1st Semester	2nd Semester
MEC 155 Mechanisms	2	
MEC 245 Robotics.....		3
MEC 210 Machine Design		3
MEC 265 Fluid Mechanics	3	
EGR 130 Statics and Strength of Materials for Engineering Technology.....	5	
DRF 232-233 Computer Aided Drafting II-III. — Social science electives.....	3	3
DRF 245 Electronic Drafting.....	3	2
PED Elective		1
MEC 298 Seminar and Project/tech elective ...		3
SPD 127 Workshop in Interpersonal Skills ...	1	
Total Credits	17	18

Total minimum credits for the Mechanical Engineering major/Computer-Aided Drafting and Manufacturing Specialization (A.A.S. Degree) = 70.

Electro-Mechanical Technology Specialization

Purpose: This program is designed to prepare the student for employment as an electro-mechanical technician, where the job skills require both electronic and mechanical training. Occupational objectives include: electro-mechanical technician, electro-mechanical draftsman, research and development technician, electronics draftsman.

Special Curriculum Admission Requirements: Two years of high school algebra and geometry.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year	Credits	
	1st Semester	2nd Semester
ETR 113-114 DC and AC Fundamentals.....	4	4
ETR 144 Devices and Applications II.....		4
DRF 151 Engr. Drawing Fundamentals I.....	3	
MEC 127 Computer Programming For Engr. Tech.	3	
MTH 115-116 Technical Math I-II	3	
MEC 118 Automated Manufacturing Technology or ETR 167 Logic Circuits and Systems I		3
ENG 111 College Composition I.....		3-4
STD 100 Orientation.....	1	
PED 101 Fundamentals of Physical Activity...	1	
MEC 120 Principles of Machine Technology ...	3	
Total Credits	18	17-18

		Credits	
Second Year		1st Semester	2nd Semester
EGR	130 Statics and Strength of Materials.....	5	
—	Social science electives.....	3	3
DRF	231 Computer Aided Drafting I.....		3
MEC	245 Robotics.....		3
MEC	265 Fluid Mechanics.....	3	
MEC	255 Thermodynamics or ETR 263 Microprocessor Application I.....	3-4	
MEC	210 Machine Design or ETR 221 Electronic Controls I.....		3-4
ENG	115 Technical Writing.....	3	
DRF	245 Electronic Drafting.....		2
SPD	127 Workshop in Interpersonal Skills....		1
PED	Elective.....		1
Total Credits		17-18	16-17

Total minimum credits for the Mechanical Engineering major/Electro-Mechanical Technology Specialization (A.A.S. Degree) = 68.

MEDICAL LABORATORY TECHNOLOGY

Associate in Applied Science Degree Medical Laboratory Degree Program

Purpose: The curriculum is designed to prepare the students for employment, upon graduation and certification, as medical laboratory technicians in hospital laboratories, private laboratories, physician's office laboratories, health department laboratories, and industrial medical laboratories.

Special Curriculum Admission Requirements: (1) High School courses: 2 units of mathematics, 1 unit of biology, 1 unit of chemistry. Deficiencies may be corrected in the developmental program before entering the Medical Laboratory Technology program. (2) Past achievement must reflect a "C" average. (3) Good physical and mental health may need to be substantiated by a physician's report. (4) Satisfactory interview with the program head. (5) The Medical Laboratory Technology program reserves the right to determine the student's final acceptance. (6) Students are admitted into the program in September; early application through the counselor is necessary. Students may take support courses prior to entering the five-semester program.

Transfer credits earned at another institution will be evaluated on an individual basis. Developmental work or testing may be advised for credits earned more than ten (10) years ago.

Special Curriculum Completion Requirements: (1) Students must maintain a "C" in all courses in the Medical Laboratory sequence to remain in the program. (2) Students are responsible for transportation to the hospital laboratories. (3) Student liability insurance and uniforms are the financial responsibility of the student. (4) Laboratory placement may require students to spend varying hours in the clinical affiliates.

Special Accreditation Status: The program is accredited by the AMA Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

		Credits		
First Year		1st Sem.	2nd Sem.	3rd Sem.
BIO	100 Basic Human Biology or BIO 141 Human Anatomy & Phys.....	3-4	4	
BIO	150 Intro. to Microbiology.....		4	
CHM	101 General Chemistry I or CHM 111 College Chem. I.....	4		
CHM	102 General Chemistry II or CHM 112 College Chem. II.....		4	
ENG	111 College Composition I.....	3		
MDL	101 Intro. to Med. Lab Tech.....	3		
MDL	110 Urinalysis & Body Fluids.....	3		
MDL	120 Principles of Hematology.....		4	
MDL	215 Immunology.....		2	
PED	101 Fund. of Physical Activity.....		1	
SPD	110 Intro. to Speech Communication....		3	
STD	100 Orientation.....	1		
MDL	135 Clin. Microbiology Tech.....			5
MDL	262 Clin. Chem. and Instrumentation ...			5
MTH	Elective.....			2
1	Social science elective.....			3
Total Credits		17-18	18	15

		Credits	
Second Year		1st Semester	2nd Semester
MDL	216 Blood Banking.....	4	
MDL	255 Diagnostic Microbiology.....	3	
MDL	265 Advanced Clin. Chemistry.....		2
MDL	266 Clin. Chemistry Techniques.....		4
MDL	276 Clin. Hematology Techniques.....	4	
MDL	277 Clin. Immunohematology/Immuno. Tech.....		4
MDL	278 Clin. Microbiology Techniques II....		4
MDL	298 Seminar and Project.....		2
PED	Elective.....	1	
1	Social science elective.....	3	
Total Credits		15	16

Total minimum credits for the Medical Laboratory Technology major (A.A.S. Degree) = 81.

¹ For further explanation of social science course requirements for A.A.S. Degrees, see the "A.A.S. Degree General Requirements" section.

MEDICAL OFFICE ASSISTING

Career Studies Certificate

Purpose: The Career Studies Certificate in Medical Office Assisting is designed to prepare personnel to perform administrative and clinical functions in physicians' offices and clinics. Some examples of these functions include administering first aid, performing sterilization procedures, checking vision and hearing, having a working knowledge of laboratory procedures on blood and urine, scheduling appointments, maintaining health records, responding to requests for information, coding clinical data and completing health insurance forms. The curriculum includes learning experiences in on-campus laboratories.

Special Curriculum Requirements: 1. High school diploma, biology and typing desirable. 2. Current certification in CPR (may be taken at beginning of course sequence). 3. Good physical and mental health substantiated by a physician's report.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I or SPD 110 Intro. to Speech Communication.....	3	
HLT	143-144 Medical Terminology I-II.....	3	3
MDL	105 Phlebotomy.....	3	
MDR	100 Intro. to the Health Care Del. Syst..	1	
MDR	226 Legal Aspects of Health Record Doc.....		2
NUR	105 Elementary Nursing Skills.....		4
Total Credits		10	9

Total minimum credits for the Medical Office Assisting Career Studies Certificate = 19.

MEDICAL RECORD TECHNOLOGY

Associate in Applied Science Degree Medical Records Degree Program

Purpose: The curriculum is designed to prepare students to work as medical record technicians in a health record service located in hospitals, consulting firms, health centers, pharmaceutical companies, medical research institutions, and other health-related facilities.

The health record—a written account of medications, treatment and care given to a patient—is as necessary to the practice of medicine as medications are to the effective treatment. Information in the health record is also important for planning patient care. It is the source of medical research data, and a medical/legal document.

Some of the important functions a medical record specialist performs as a key member of the health care team are:

- (1) Works with physicians and other health care providers to insure health records are complete and accurate.
- (2) Protects patient confidentiality by knowing the legal aspects of patient rights—an issue of increasing concern in the medical field.
- (3) Prepares special studies and tabulates health record data for research purposes important to the health facility.
- (4) Designs procedures and systems to insure that records are complete, accurate, and available for patient care activities.
- (5) Reviews and abstracts information from health records using knowledge of medical conditions, disease processes, surgical procedures, and medications.

Graduates are eligible to apply to take the national accreditation examination administered by the American Medical Record Association.

Special Curriculum Admission Requirements: (1) High school courses: 1 unit each of algebra and science (biology or chemistry recommended). Deficiencies may be corrected in the Developmental Program before entering the technical program. Transfer credits in the natural sciences earned at another institution will be evaluated on an individual basis. (2) Good physical and mental health, which may need to be substantiated by a physician's report.

Special Curriculum Completion Requirements: Any student whose final average falls below a "C" in any MDR prefixed course must obtain permission from the program head to repeat the course and must earn a final grade of "C" or higher before taking the next course in the sequence. Students are totally responsible for transportation to and from the college and the various hospitals and other health agencies which are utilized for clinical practical experience. In addition, students are responsible for purchasing laboratory jackets and accessories prior to beginning their practical experience.

Special Accreditation Status: The program is accredited by the AMA Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with the American Medical Record Association.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I.....	3	
BIO	141 Human Anatomy & Physiology I....	4	
BIO	142 Human Anatomy & Physiology II...		4
STD	100 Orientation.....	1	
SSC	201 Contemporary American Civ. I.....	3	
SSC	202 Contemporary American Civ. II.....		3
MDR	113 Med. Term. & Disease Processes I..	3	
MDR	114 Med. Term. & Disease Processes II..		3
MDR	100 Intro. to the Health Care Del. Syst..		1
SPD	110 Intro. to Speech Communication.....		3
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective		1
CIS	150 Intro. to Microcomputer Software ...		3
MTH	Elective	2	
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
MDR	141 Fund. of Health Inform. Systems I..	3	
MDR	142 Fund. of Health Inform. Systems II..	3	
MDR	241 Fund. of Health Inform. Systems III...		3
MDR	220 Health Statistics	2	
MDR	226 Legal Aspects of Health Record Doc.....	2	
MDR	231 Health Record Applications I.....	3	
MDR	232 Health Record Applications II.....		3
MDR	225 Quality Assurance in Health Care...		2
MDR	215 Health Data Classification Systems..		5
MDR	251 Clinical Practice I.....		4
BUS	111 Principles of Supervision	3	
Total Credits		16	17

Total minimum credits for the Medical Record Technology major (A.A.S. Degree) = 68.

MICROCOMPUTER REPAIR

Career Studies Certificate

Purpose: This certificate is designed to prepare students for employment in the electronics industry as microcomputer repair maintenance and repair technicians. Jobs for which students are eligible include field service technician, test technician, computer repair technician. Individuals already employed in industry who would benefit from formal education, as well as high school graduates, or anyone interested in exploring a career in electronics, are encouraged to investigate this program.

Special Curriculum Admissions Requirements: High school algebra.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ENG	/SPD elective		3
MEC	126 Computer Programming for Technologists.....	2	
ETR	158 Electronic Circuits for Computers....	4	
ETR	229 Digital Logic and Microprocessor Fundamentals.....	4	
ETR	285 Fund. of Microcomputer Repair		4
ETR	159 Computer Peripherals		4
Total Credits		10	11

Total minimum credits for the Microcomputer Repair Career Studies Certificate = 21.

MICROCOMPUTER USAGE

Career Studies Certificate

Purpose: The Microcomputer Usage Career Studies Certificate provides those students already employed with the necessary microcomputer background needed to adapt to their field's increasing use of and dependency on microcomputers.

Special Admission Requirements: High school degree or equivalent.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I.....	3	
CIS	125 Computer Program Design	3	
CIS	150 Intro. to Microcomputer Software ...	3	
CIS	228 Microcomputers: Op. Sys., Arch. and Hardware		3
¹ CIS	Electives		6
Total Credits		9	9

Total minimum credits for the Microcomputer Usage Career Studies Certificate = 18.

¹ Electives may be chosen from CIS 121, 141, 155, 157, 158, 159, 166, 259 or ACC 215.

MUSIC

Associate in Arts Degree Visual and Performing Arts Degree Program

Purpose: The Associate in Arts Degree curriculum in Music offers emphasis in three different areas of musical interest. These are designed for the second year of the curriculum after a common first year. The Associate in Arts Degree curriculum may be used by students who wish to transfer to a four-year college or university to complete the baccalaureate degree in Music or Music Education.

Special Curriculum Admission Requirements: An interview with the Music faculty may be required before admission to the program.

Special Curriculum Completion Requirements: Applied Music students: Tuition fees are payable to the college. Studio charges are payable to Applied Music instructors. Applied proficiency requirements must be met in order for students to advance to the 200-level of Applied Music courses. Piano proficiency skills are required of all Music majors.

For Fine Arts Emphasis

		Credits	
		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
¹ HIS	Electives	3	3
MTH	151 Math for the Liberal Arts I.....		3
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective		1
MUS	111-112 Music Theory I-II.....	4	4
MUS	Applied Music (Major).....	2	2
² MUS	Applied Music (Minor)	1	1
MUS	Chorus/Band/Orchestra/Ensemble.....	1	1
STD	100 Orientation.....	1	
Total Credits		16	18

		Credits	
		1st Semester	2nd Semester
MUS	211-212 Advanced Music Theory I-II.....	4	4
MUS	221-222 History of Music I-II	3	3
MUS	Applied Music (Major).....	2	2
² MUS	Applied Music (Minor)	1	1
MUS	Chorus/Band/Orchestra/Ensemble.....	1	1
³ ENG	Elective		3
SPD	110 Intro. to Speech Communication.....		3
⁴ —	Natural science/lab elective	4	
Total Credits		15	17

Total minimum credits for the Music major (A.A. Degree) = 66.

¹ HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II.

² Class instruction such as Class Voice or Class Piano may be substituted.

³ ENG 241 Survey of American Literature I, ENG 243 Survey of English Literature I, or ENG 251 Survey of World Literature I.

⁴ Science courses may be selected from biology, chemistry, physics, or geology.

Jazz/Popular Music Specialization

		Credits	
		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
¹ HIS	Electives	3	3
MTH	151 Math for the Liberal Arts I.....		3
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective		1
MUS	111-112 Music Theory I-II.....	4	4
MUS	Applied Music (Major).....	2	2
² MUS	Applied Music (Minor)	1	1
MUS	Chorus/Band/Orchestra/Ensemble.....	1	1
STD	100 Orientation.....	1	
Total Credits		16	18

		Credits	
		1st Semester	2nd Semester
MUS	159 Improvisational Techniques.....	3	
MUS	259 Advanced Improvisational Techniques		3
MUS	225 The History of Jazz		3
MUS	213-214 Composition I-II.....	3	3
MUS	Applied Music (Major).....	2	2
² MUS	Applied Music (Minor)	1	1
MUS	Chorus/Band/Orchestra/Ensemble.....	1	1
³ ENG	Elective		3
SPD	110 Intro. to Speech Communication.....	3	
⁴ —	Natural science/lab elective	4	
Total Credits		17	16

Total minimum credits for the Music major/Jazz/Popular Music Specialization (A.A. Degree) = 67.

¹ HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II.

² Class instruction such as Class Voice or Class Piano may be substituted.

³ ENG 241 Survey of American Literature I, ENG 243 Survey of English Literature I, or ENG 251 Survey of World Literature I.

⁴ Science courses may be selected from biology, chemistry, physics, or geology.

Sacred Music Specialization

		Credits	
		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
¹ HIS	Electives	3	3
MTH	151 Math for the Liberal Arts I.....		3
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective		1
MUS	111-112 Music Theory.....	4	4
MUS	Applied Music (Major).....	2	2
² MUS	Applied Music (Minor)	1	1
MUS	Chorus/Band/Orchestra/Ensemble.....	1	1
STD	100 Orientation.....	1	
Total Credits		16	18

		Credits	
		1st Semester	2nd Semester
MUS	120 Hymnology		3
MUS	243 Liturgical Mus. & Service Playing I .		3
MUS	Applied Music (Major).....	2	2
MUS	214 Composition II	3	
MUS	221-222 History of Music I-II	3	3
MUS	Chorus/Band/Orchestra/Ensemble.....	1	1
³ ENG	Elective	3	
MUS	123-124 Organizing & Directing Choral Activities I-II	2	2
SPD	110 Intro. to Speech Communication.....		3
⁴ —	Natural science/lab elective	4	
Total Credits		18	17

Total minimum credits for the Music major/Sacred Music Specialization (A.A. Degree) = 69.

¹ HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II.

² Class instruction such as Class Voice or Class Piano may be substituted.

³ ENG 241 Survey of American Literature I, ENG 243 Survey of English Literature I, or ENG 251 Survey of World Literature I.

⁴ Science courses may be selected from biology, chemistry, physics, or geology.

MUSIC RECORDING TECHNOLOGY

Certificate

Purpose: The Music Recording Technology curriculum is designed for persons who seek employment as music recording technicians. Occupational objectives include: development for positions as assistants and aides in recording studios, broadcast studios, television studios, a myriad of other recording enterprises, (i.e. Musak) and countless private studios in the recording industry.

Special Curriculum Admission Requirements: Students must successfully complete a personal interview with a program faculty member.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		1st Sem.	Credits 2nd Sem.	3rd Sem.
ENG	111-112 College Composition I-II.....	3	3	
MTH	103 Basic Technical Math I.....	3		
PSY	120 Human Relations.....		3	
BUS	165 Small Business Management.....		3	
STD	100 Orientation.....	1		
MUS	130 Overview of the Recording Ind.....	1		
MUS	140 Intro. to Recording Tech.....	3		
MUS	157 Sound Studio Design.....	3		
MUS	158 Recording Studio Electronics: Theory and Maintenance.....	3		
MUS	179 Music Copyright Law.....		1	
MUS	227 Editing & Mixdown Tech.....		3	
MUS	235 Advanced Recording Tech.....		3	
MUS	288 Recording Problems Seminar.....		2	
MUS	290 Coordinated Internship.....			3
Total Credits		17	18	3

Total minimum credits for the Music Recording Technology Certificate = 38.

NURSING

Associate in Applied Science Degree Nursing Degree Program

Purpose: To prepare students as contributing members of the health team, rendering direct patient care as beginning practitioners of nursing in a variety of health service facilities. Upon graduation, students will be eligible to take the National Council Licensure Examination (NCLEX) leading to licensure as a Registered Nurse (R.N.).

Special Curriculum Admission Requirements: (1) High school courses: 1 unit each of biology and chemistry. Deficiencies may be corrected in the Developmental Program before entering the Nursing curriculum. (2) Past achievement should reflect a "C" average, (3) CPR Certification, (4) Completion of a basic first aid course, (5) Good physical and mental health substantiated by a physician's report. The Nursing program reserves the right to determine the student's final acceptance, (6) Students majoring in Nursing are admitted in September; early application is desirable. Students may take support courses prior to entering the Nursing five semester sequence.

Transfer or prerequisite credits in the natural and social sciences earned at another institution will be evaluated on an individual basis. Developmental work or testing may be advised for credits earned more than ten years ago.

Students requesting advanced placement in the nursing sequence by means of transfer from another nursing program will be evaluated on an individual basis.

Advanced placement examinations are available for licenced practical nurses wishing to enter this major with advanced standing. See the program head or Nursing counselor for details.

Special Curriculum Completion Requirements: Satisfactory health must be maintained for continuance in the program. Any student who receives a final grade of less than "C" in any of the courses in the nursing and/or the

natural science sequence may be disenrolled from the program. In order to re-enter the program, the course must be repeated and a final grade of "C" or better must be earned before the next course in the sequence may be taken. Students are totally responsible for transportation to and from the college and the various hospitals and other health agencies which are utilized for clinical laboratory experiences. The autotutorial method of learning will necessitate that the student utilize additional individual time in the campus nursing skills laboratory and the library. Student uniforms and accessories, and malpractice insurance are the financial responsibility of the individual student.

Readmission Policy: Readmission to the Nursing program is based upon the following:

1. Availability of student space in the Nursing program.
2. Fulfillment of contingencies such as:
 - a. Cumulative G.P.A. of 2.00 or above
 - b. Satisfactory health report
3. Completion of support or other course work as may be detailed on the Nursing Program Withdrawal Form (NVCC 125-34)
3. Faculty recommendation for readmission.
4. Satisfactory personal interview.
5. Approval of program head for Nursing. Because of the rapid changes in technology and in nursing practice and nursing theory, students seeking reentry into the Nursing program may be expected to start the entire nursing sequence over from the beginning. Experience has shown that many students who enter the Nursing program more than once do not do well on the NCLEX examination. Therefore, students may not be encouraged to apply for readmission.

Special Accreditation Status: The program is approved by the Virginia State Board of Nursing and accredited by the National League for Nursing, Council of Associate Degree Programs.

		1st Sem.	Credits 2nd Sem.	3rd Sem.
ENG	111 College Composition I.....	3		
PSY	201 Intro. to Psychology I.....	3		
STD	100 Orientation.....	1		
NAS	161 Health Science I.....	4		
NUR	111 Nursing I.....	8		
PSY	202 Intro. to Psychology II.....		3	
NAS	162 Health Science II.....		4	
NUR	112 Nursing II.....		8	
MTH	126 Math for Allied Health.....		2	
*SPD	Elective.....			3
NUR	211 Nursing III.....			8
Total Credits		19	17	11

		Credits	
		1st Semester	2nd Semester
**	Social science elective.....	3	
NUR	212 Nursing IV.....	9	
PED	Elective.....	1	
**	Social science elective.....		3
NUR	213 Nursing V.....		9
NUR	295 Topics In: Nursing Perspectives.....	1	
NUR	220 Nursing Dimensions.....		2
Total Credits		14	14

Total minimum credits for the Nursing major (A.A.S. Degree) = 75.

* Students may choose either SPD 110 Introduction to Speech Communication or SPD 126 Interpersonal Communication.

** For further explanation of social science course requirements for A.A.S. Degrees, see the "A.A.S. Degree General Requirements" section of the college Catalog.

OCCUPATIONAL SAFETY ASSISTANT

Career Studies Certificate

Purpose: The certificate curriculum is designed to provide students with an understanding of the fundamental principles of occupational safety and health programs for industry, construction, public institutions and gov-

ernment activities. The curriculum is especially appropriate for individuals assigned part-time or collateral safety responsibilities.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I or SPD 110 Intro. to Speech Communication	3	
FIR	116 Fire Prevention Fundamentals	3	
SAF	120 Safety & Health Standards: Regs. and Codes	3	
SAF	135 Safety Prog. Organ. & Admin	3	
SAF	131 Materials Handling, Machinery, Handtools & Control I		3
SAF	140 Intro. to Industrial Hygiene		3
SAF	235 Manufacturing Process Analysis		3
Total Credits		12	9

Total minimum credits for the Occupational Safety Assistant Career Studies Certificate = 21.

OFFICE ADMINISTRATION AND MANAGEMENT

Associate in Applied Science Degree Business and Office Degree Program

Purpose: The curriculum is designed to prepare students in the administration and supervision of a large office in terms of selection, interviewing, hiring, training, and coordinating of office, secretarial, and clerical personnel; to provide to individuals currently employed in secretarial and clerical fields an opportunity to upgrade their skills and enhance their careers by enabling them to enter into an administrative/management area.

Special Curriculum Admission Requirements: Proficiency in high school English and mathematics.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation	1	
ENG	111 College Composition I	3	
SPD	110 Introduction to Speech Communication		3
BUS	100 Introduction to Business	3	
BUS	125 Applied Business Mathematics		3
CIS	100 Introduction to Information Systems		3
MTH	120 Introduction to Mathematics	3	
ECO	120 Survey of Economics		3
—	Social science elective		3
OFT	111 Keyboarding I	3	
OFT	137 Filing & Records Management	3	
OFT	107 Editing/Proofreading Skills		3
Total Credits		16	18

		Credits	
		1st Semester	2nd Semester
ACC	211-212 Principles of Accounting I-II	3	3
BUS	241 Business Law I	3	
BUS	205 Human Resource Management		3
OFT	251-252 Office Systems & Proc. I-II	3	3
OFT	230 Introduction to Office Automation ..	3	
OFT	231 Microcomputer Office App. I or OFT 235 Specialized Software Appl.		3
BUS	150 Principles of Management	3	
PED	101 Fund. of Physical Activity	1	
PED	Elective	1	
* —	Business elective		3
Total Credits		17	15

Total minimum credits for the Office Administration and Management major (A.A.S. Degree) = 66.

For further explanation of English and social science course requirements for A.A.S. Degrees, see the "A.A.S. Degree General Requirements" section.

* Preferred electives from OFT program.

OFFICE SYSTEMS TECHNOLOGY

Associate in Applied Science Degree Business and Office Degree Program

Purpose: The curriculum is designed to prepare persons for initial full-time employment in the secretarial, word processing, and administrative areas of business or to enhance and further develop job related competencies for those presently employed.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation	1	
ENG	111 College Composition I	3	
SPD	110 Intro. to Speech Communication		3
BUS	100 Introduction to Business	3	
CIS	100 Introduction to Information Systems	3	
—	Social science elective		3
MTH	120 Introduction to Mathematics		3
OFT	111-112 Keyboarding I-II	3	3
OFT	137 Filing & Records Management	3	
OFT	107 Editing/Proofreading Skills		3
* —	Business elective		3
Total Credits		16	18

		Credits	
		1st Semester	2nd Semester
ECO	120 Survey of Economics	3	
ACC	211 Principles of Accounting I	3	
ACC	212 Principles of Accounting II or BUS 241 Business Law I		3
OFT	241 Machine Transcription I	3	
OFT	251-252 Office Systems and Procedures ..	3	3
OFT	230 Introduction to Office Automation ..	3	
OFT	231 Microcomputer Office App. I or OFT 236 Word Proc. Oper. & Syst. Oper.		3
BUS	150 Principles of Management		3
* —	Business elective		3
PED	101 Fundamentals of Physical Activity ..	1	
PED	Elective		1
Total Credits		16	16

Total minimum credits for the Office Systems Technology major (A.A.S. Degree) = 66.

For further explanation of English and social science course requirements for A.A.S. degrees, see the "A.A.S. Degree General Requirements" section.

* Preferred electives from OFT courses.

Executive Secretary Specialization

Purpose: The curriculum is designed to prepare students for initial employment or advancement in present employment in an executive secretarial position.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
ENG	111 College Composition I.....	3	
SPD	110 Intro. to Speech Communication.....		3
BUS	100 Introduction to Business.....	3	
MTH	120 Introduction to Mathematics.....		3
CIS	100 Introduction to Information Systems.....	3	
OFT	111-112 Keyboarding I-II.....	3	3
OFT	121-122 Shorthand I-II.....	3	3
OFT	107 Editing/Proofreading Skills.....		3
Total Credits		16	15

Second Year		Credits	
		1st Semester	2nd Semester
ECO	120 Survey of Economics.....	3	
—	Social science elective.....		3
ACC	211 Principles of Accounting I.....	3	
OFT	137 Filing and Records Management.....	3	
OFT	251-252 Office Systems and Proc. I-II.....	3	3
OFT	230 Introduction to Office Automation.....	3	
OFT	231 Microcomputer Office Application I.....		3
OFT	241 Machine Transcription I.....		3
BUS	150 Principles of Management.....		3
PED	101 Fundamentals of Physical Activity.....	1	
PED	Elective.....	1	
* —	Business elective.....		3
Total Credits		17	18

Total minimum credits for the Office Systems Technology major/Executive Secretary Specialization (A.A.S. Degree) = 66.

For further explanation of English and social science course requirements for A.A.S. degrees, see the "A.A.S. Degree General Requirements" section.

* Suggested elective OFT 221, Advanced Shorthand and Transcription I.

Word Processing Specialization

Purpose: The curriculum is designed to prepare students for initial full-time employment or advancement in present employment in a word processing position.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
ENG	111 College Composition I.....	3	
SPD	110 Intro. to Speech Communication.....		3
BUS	100 Introduction to Business.....	3	
CIS	100 Intro. to Information Systems.....	3	
MTH	120 Intro. to Mathematics.....		3
—	Social science elective.....		3
OFT	111-112 Keyboarding I-II.....	3	3
OFT	137 Filing & Records Management.....	3	
OFT	107 Editing/Proofreading Skills.....		3
OFT	230 Intro. to Office Automation.....		3
Total Credits		16	18

Second Year		Credits	
		1st Semester	2nd Semester
ECO	120 Survey of Economics.....	3	
ACC	211 Principles of Accounting I.....	3	
OFT	241 Machine Transcription I.....	3	
OFT	251-252 Office Systems & Proc. I-II.....	3	3
OFT	231 Microcomputer Office Application I.....	3	
OFT	232 Microcomputer Office Appl. II or OFT 236 Word Proc. Oper. & Syst. Oper.....		3
OFT	235 Specialized Software Applications.....		3
BUS	150 Principles of Management.....		3
PED	101 Fundamentals of Physical Activity.....	1	
PED	Elective.....		1
* —	Business elective.....		3
Total Credits		16	16

Total minimum credits for the Office Systems Technology major/Word Processing Specialization (A.A.S. Degree) = 66.

For further explanation of English and social science course requirements for A.A.S. degrees, see the "A.A.S. Degree General Requirements" section.

* Preferred electives from OFT courses.

OFFICE SYSTEMS TECHNOLOGY

Certificate

Purpose: The one-year certificate program is designed to prepare students for entry-level office work. Upon completion of the program, students will be able to secure positions as clerk typists, file clerks, receptionists, or general office workers. Additionally, students will have basic word processing experience.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation.....	1	
ENG	111 College Composition I.....	3	
OFT	111-112 Keyboarding I-II.....	3	3
OFT	137 Filing & Records Management.....	3	
OFT	107 Editing/Proofreading Skills.....		3
CIS	100 Introduction to Information Systems.....	3	
OFT	251 Office Systems & Procedures I or OFT 130 Office Procedures.....	3	
OFT	136 Office Recordkeeping or ACC 211 Principles of Accounting I.....		3
OFT	230 Introduction to Office Automation.....		3
OFT	231 Microcomputer Office App. I or OFT 235 Specialized Software Applications.....		3
* —	Elective.....		3
Total Credits		16	18

Total minimum credits for the Office Systems Technology Certificate = 34.

* Must be selected from humanities, social science or mathematics electives.

PHLEBOTOMY

Career Studies Certificate

Purpose: The Career Studies Certificate in Phlebotomy is designed to prepare personnel who collect and process blood and other samples for medical laboratory analysis. Phlebotomists work in hospitals, medical clinics, commercial laboratories and in other settings where blood is collected from patients. The curriculum includes learning experiences both in on-campus laboratories and at affiliated clinical laboratories.

Special Curriculum Admission Requirements: An interview with a faculty member in the Medical Laboratory Technology program is required. Students must pass the ENG 111 placement test before they can be admitted to this certificate program.

Advanced Standing for Practicing Phlebotomists: Persons who have been certified by a national agency as a phlebotomist or who have extensive experience in phlebotomy may seek advanced standing for MDL 190 Coordinated Practice in Phlebotomy.

		Credits	
		1st Semester	
ENG	111 College Composition I or SPD 110 Intro. to Speech Comm.....	3	
MDL	105 Phlebotomy	3	
PSY	100 Prin. of Applied Psychology.....	3	
MDL	190 Coord. Practice-Phlebotomy	2	
MDR	100 Intro. to the Health Care Deliv. Syst.	1	
Total Credits		12	

Total minimum credits for the Phlebotomy Career Studies Certificate = 12.

PHYSICAL SECURITY

Career Studies Certificate

Purpose: This curriculum is a response to the short-term educational needs of experienced security practitioners who wish to extend their knowledge and skills in physical security, mid-career transition persons who wish to gain insight into physical security and possibly decide on a career alternative in the security field, and security personnel with little formal education who need an initial boost. This certificate is applicable toward the two-year associate degree in Security Administration at this college.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ADJ	159 Physical Security	3	
ADJ	256 Information Security		3
¹ ADJ	Electives	3	3
² ENG	/SPD elective	3	
Total Credits		9	6

Total minimum credits for the Physical Security Career Studies Certificate = 15.

¹ Select two from the following: ADJ 150 Intro. to Security Administration, ADJ 156 Legal Aspects of Security, ADJ 236 Principles of Crim. Invest.

² Select one from the following: ENG 111 College Composition I, SPD 110 Intro. to Speech Communication, SPD 100 Prin. of Public Speaking, SPD 200 Advanced Public Speaking.

PHYSICAL THERAPIST ASSISTANT

Associate in Applied Science Degree Physical Therapy Degree Program

Purpose: This curriculum is designed to prepare students as skilled technical health workers who possess the knowledge and abilities that are necessary to assist the professional physical therapist in providing specific patient services for the prevention or alleviation of physical impairments. Upon successful completion of the program, students are eligible to take the Virginia State Licensing Examination leading to licensure as a physical therapist assistant.

Special Curriculum Admission Requirements: (1) Past achievement reflects a "C" average (2) good physical and mental health which may need to be substantiated by a physician's report (3) personal interview with the program head (4) clinic visitation (5) The Physical Therapist Assistant program reserves the right to determine the student's final acceptance. Early application is desirable. Students may take support courses prior to entering the five semester sequence of physical therapy courses. Transfer credits or prerequisites in the natural and social sciences earned at another institution will be evaluated on an individual basis. Developmental work or testing may be advised for credits earned more than ten years ago.

Special Curriculum Completion Requirements: Satisfactory health must be maintained for continuance in the program. Any student who receives a final grade of less than "C" in any of the courses in the Physical Therapist Assistant program sequence must obtain permission from the program head to repeat the course and earn a final grade of "C" or higher before taking the next course in the sequence. Students are totally responsible for transportation to and from the college and the various hospitals and other

health agencies which are utilized for clinical laboratory experiences. Uniform and accessories, and PTA Student Liability Insurance are the financial responsibility of the individual student.

		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
First Year				
¹ BIO	141-142 Human Anatomy & Phys. I-II ..	4	4	
ENG	111 College Composition I	3		
SPD	110 Intro. to Speech Communication.....		3	
MTH	Elective			2
STD	100 Orientation.....	1		
PTH	100 Intro. to Phys. Therapy Assist.	1		
PTH	106 Emergency Situations & Proced.	1		
PTH	121-122 Therapeutic Proc. I-II	8		5
PTH	115 Kinesiology for the Physical Therapist Assistant		5	
PTH	131 Clinical Education I.....		3	
PTH	110 Medical Reporting			1
PTH	210 Psych. Aspects of Therapy.....			2
PED	101 Fund. of Physical Activity.....		1	
Total Credits		18	16	10

		Credits	
		1st Semester	2nd Semester
Second Year			
PED	Elective	1	
PTH	225 Rehab. Procedures.....	5	
PTH	231-232 Clinical Education II-III.....	7	8
² PSY	201-202 Intro. to Psych. I-II	3	3
PTH	227 Pathological Conditions		2
PTH	245 Professional Issues.....		3
Total Credits		16	16

Total minimum credits for the Physical Therapist Assistant major (A.A.S. Degree) = 76.

¹ NAS 161-162 may be substituted for BIO 141-142.

² PSY 231-232 may be substituted for PSY 201-202.

PLANNING

Career Studies Certificate

Purpose: To provide the non-professional with studies useful in upgrading their skills for jobs in the urban planning field and related fields.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
PLN	100 Intro. to Planning Development.....	3	
PLN	106 Real Estate Planning & Development	3	
*PLN	Electives		6
**ENG	111 College Composition I or SPD elective		3
DRF	120 Intro. to Graphic Representation.....	3	
Total Credits		9	9

Total minimum credits for the Planning Career Studies Certificate = 18.

* PLN electives may be chosen from PLN 107, PLN 110, PLN 125, PLN 126, or PLN 127.

** If SPD is chosen, then SPD 110 is recommended.

POLICE SCIENCE

Associate in Applied Science Degree Public Safety Degree Program

Purpose: The curriculum is designed to provide a broad foundation which will prepare the student to enter any of the varied fields of law enforcement or prepare for professional advancement. The occupational objectives include: local, state and federal enforcement officer, police officer, private or government investigator.

Special Curriculum Admission Requirements: Students are advised that many criminal justice agencies require excellent moral character and a written record of conduct prior to consideration for employment. Adjustments in the curriculum may be made with faculty approval to enable a student to transfer to a four-year criminal justice program. This program is included under the Safe Streets Act of 1968 for S.L.E.O.E.P. grants and loans. See a financial aid counselor for details.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
ADJ	100 Survey of Criminal Justice.....	3	
ADJ	107 Survey of Criminology	3	
ADJ	105 The Juvenile Justice System.....		3
ADJ	111-112 Law Enf. Org. & Admin. I-II....	3	3
STD	100 Orientation.....	1	
ENG	111-112 College Composition I-II.....	3	3
PSY	201-202 Intro. to Psych. I-II or SOC		
	201-202 Intro. to Sociology I-II	3	3
¹ MTH	Elective		3
PED	101 Fund. of Physical Activity.....	1	
PED	Elective		1
Total Credits		17	16

		Credits	
Second Year		1st Semester	2nd Semester
ADJ	116 Special Enforcement Topics.....		3
ADJ	150 Introd. to Security Admin.....	3	
ADJ	216 Organized Crime and Corruption ...	3	
ADJ	229 Law Enforcement & the Commu- nity.....		3
ADJ	215 Report Writing.....		3
ADJ	236-237 Criminal Invest. (Prin. & Adv.)...	3	3
ADJ	211-212 Crim. Law, Evid. & Proc. I-II ...	3	3
SPD	110 Introduction to Speech Communica- tion.....	3	
PLS	211 U.S. Government I.....		3
² CIS	100 Introduction to Information Sys.....	3	
Total Credits		18	18

Total minimum credits for the Police Science major (A.A.S. Degree) = 69.

¹ Math elective approved by faculty advisor.

² Or CIS elective approved by faculty advisor.

POLICE SCIENCE

Certificate

Purpose: The certificate curriculum in Police Science is designed for those students who wish to take only those courses which relate directly to the law enforcement field. Courses taken in the certificate program can be applied to the A.A.S. Degree.

Special Curriculum Admission Requirements: The same requirements apply as stated for the A.A.S. curriculum.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ADJ	100 Survey of Criminal Justice.....	3	
ADJ	105 The Juvenile Justice System.....		3
ADJ	111 Law Enforcement Org. & Admin. I.	3	
ADJ	150 Introduction to Sec. Admin.....	3	
ADJ	215 Report Writing.....		3
ADJ	211-212 Crim. Law, Evid. & Pro. I-II....	3	3
STD	100 Orientation.....		1
ENG	111 College Composition I.....	3	
¹ CIS	100 Intro. to Infor. Systems		3
—	Social science electives.....	3	3
Total Credits		18	16

Total minimum credits for the Police Science Certificate = 34.

¹ Or CIS elective approved by faculty advisor.

RADIOGRAPHY

Associate in Applied Science Degree Radiography Degree Program

Purpose: The curriculum is designed to prepare students to produce diagnostic images of the human body through safe-application of x-radiation. The radiographer is a central member of the health care team and assists the radiologist, a physician specialized in body image interpretation. Upon successful completion of degree requirements, the student will be eligible to take The American Registry of Radiologic Technologists examination leading to certification as a registered technologist in radiography: A.S., R.T. (R)

Special Curriculum Admission Requirements: (1) High school graduate with the following courses: 2 units of science (physics, chemistry or biology) and 1 unit of mathematics (algebra or geometry) with a minimum grade of "C". Deficiencies may be corrected in the Developmental Program before entering the curriculum. (2) Past achievement should reflect a "C" average. (3) Good physical and mental health which may need to be substantiated by a physician's report. (4) Selection of students shall be made by an admissions committee in cooperation with the Radiography Program. (5) Students majoring in Radiography are admitted in September; early application is desirable. Students may take support courses prior to entering the Radiography sequence. Transfer or prerequisite credits in natural and social sciences earned at another institution will be evaluated on an individual basis. Developmental work or testing may be advised for credits earned more than ten years ago.

Special Curriculum Completion Requirements: An interview with a faculty member in the Radiography program is required. Students must pass the ENG 111 placement test prior to admission to the program. Any student who receives a final grade of less than "C" in any of the courses in the Radiography sequence must obtain permission from the program head to continue the major in Radiography. Students are totally responsible for transportation to and from the college and the various hospitals and other health agencies which are utilized for clinical experience. Student uniform and accessories and liability insurance are the financial responsibility of the individual student. Satisfactory health must be maintained for continuance in the program.

Special Accreditation Status: The program is accredited by the AMA Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with The Joint Review Committee on Education in Radiologic Technology.

		Credits		
First Year		1st Sem.	2nd Sem.	3rd Sem.
BIO	141-142 Human Anatomy & Phys. I-II ..	4	4	
MTH	Elective	3		
PED	101 Fundamentals of Phys. Activity			1
STD	100 Orientation.....	1		
—	Social science elective			3
RAD	100 Intro. to Radiology and Protection ..	2		
RAD	111 Radiologic Science I		4	
RAD	121-221 Radiographic Procedures I-II	4	4	
RAD	125 Patient Care Procedures	2		
RAD	131-132 Elem. Clinical Procedures I-II ...		3	3
Total Credits		16	15	7

		Credits		
Second Year		1st Sem.	2nd Sem.	3rd Sem.
ENG	111 College Composition I.....	3		1
PED	Elective			
SPD	110 Intro. to Speech Communication.....		3	
—	Social science elective		3	
RAD	112 Radiologic Science II	4		
RAD	205 Radiation Prot. & Radiobiology.....	3		
RAD	231-232 Adv. Clinical Procedures I-II	5	5	
RAD	240 Radiographic Pathology.....		3	
RAD	246 Special Procedures.....			2
RAD	255 Radiographic Equipment		3	
RAD	290 Coordinated Practice.....			3
RAD	299 Supervised Study			1
Total Credits		15	17	7

Total minimum credits for the Radiography major (A.A.S. Degree) = 77.

REAL ESTATE

Associate in Applied Science Degree Business Management Degree Program

Purpose: The curriculum is designed for persons who seek full-time employment in the real estate field or for those presently in the field who are seeking promotion. The occupational objectives include: real estate salesman, real estate broker, apartment house manager, real estate office manager, real estate loan officer, real estate sales manager, county urban planner.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
ACC	211-212 Princ. of Accounting I-II.....	3	3
BUS	100 Introduction to Business.....	3	
BUS	150 Principles of Management.....		3
CIS	100 Intro. to Information Systems.....		3
ECO	120 Survey of Economics.....		3
ENG	111-112 College Composition I-II.....	3	3
MTH	120 Intro. to Mathematics.....	3	
REA	100 Principles of Real Estate	3	
REA	105 Real Estate Math (or Bus. Math I) ...		3
STD	100 Orientation.....	1	
PED	101 Fund. of Physical Activity.....	1	
Total Credits		17	16

		Credits	
Second Year		1st Semester	2nd Semester
ACC	261 Prin. of Federal Taxation	3	
BUS	241 Business Law I.....	3	
PED	Elective		1
REA	110 Real Estate Sales.....	3	
REA	216 Real Estate Appraisal	3	
REA	217 Real Estate Finance.....	3	
REA	215 Real Estate Brokerage.....		3
REA	225 Real Property Management.....		3
REA	245 Real Estate Law.....		3
REA	247 Real Estate Investments.....		3
—	Social science elective	3	
SPD	110 Intro. to Speech Communication.....		3
Total Credits		18	16

Total minimum credits for the Real Estate major (A.A.S. Degree) = 69.

REAL ESTATE

Certificate

Purpose: The curriculum is designed for present or future practitioners in the profession who wish to improve or acquire understanding and knowledge of essential real estate subjects.

Special Curriculum Admission Requirements: Proficiency in high school English and background in basic arithmetic operations.

		Credits	
		1st Semester	2nd Semester
BUS	100 Introduction to Business.....	3	
ENG	111 College Composition I.....	3	
REA	100 Principles of Real Estate	3	
REA	105 Real Estate Math (or Bus. Math I) ...	3	
REA	217 Real Estate Finance.....	3	
REA	215 Real Estate Brokerage.....		3
REA	216 Real Estate Appraisal		3
REA	245 Real Estate Law.....		3
REA	Elective		3
—	Social science elective		3
STD	100 Orientation.....	1	
Total Credits		16	15

Total minimum credits for the Real Estate Certificate = 31.

RECREATION AND PARKS

Associate in Applied Science Degree Parks and Recreation Degree Program

Purpose: The curriculum is designed with three purposes:

1. To prepare students for entry level into the field of recreation and parks in both private and public agencies.
2. To provide those already employed in this field an opportunity to improve and upgrade their skills.
3. To guide students who wish to transfer to a 4-year institution in Recreation and Parks. The occupational objectives include: recreation leader, assistant recreation supervisor, park ranger, assistant park manager, park manager.

Special Curriculum Admission Requirements: Proficiency in high school English and background in basic arithmetic operation.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
First Year		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
—	Social science electives.....	3	3
STD	100 Orientation.....	1	
PED	101 Fund. of Physical Activity.....	1	
PED	Elective		1
MTH	120 Introduction to Math.....	3	
RPK	100 Introduction to the Field of Recreation & Parks.....	3	
RPK	110 Arts Activities in Rec. & Parks.....	3	
RPK	120 Outdoor Recreation		3
RPK	136 Org. & Mgmt. of Rec. Social & Phys. Act.....		3
RPK	200 Microcomputers in Public Service Agencies.....		3
*—	Approved recreation elective		1
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
SPD	110 Intro. to Speech Communication.....	3	
RPK	135 Prog. Plan, Org. & Group Leadership.....	3	
RPK	145 Hort. & Turf Practices in Rec. & Parks.....	3	
RPK	146 Fac. & Landscap. Plan. for Rec. & Parks.....		3
RPK	155 Therapeutic Recreation.....		3
RPK	165 Risk Mgmt. on Recreation in Recreation & Parks.....	3	
RPK	201-202 Rec. & Parks Mgmt. I-II.....	3	3
RPK	125 Outdoor Ed. & Interp. Serv.		3
—	Approved recreation electives.....	1-3	3-5
Total Credits		16-18	15-17

Total minimum credits for the Recreation and Parks major (A.A.S. Degree) = 65.

* All courses in the RPK and FOR listing in this catalog will be considered approved recreation electives.

RECREATION VEHICLE: MARINE MECHANICS

Career Studies Certificate

Purpose: This curriculum is designed to train the student to be a safe, knowledgeable and competent powerboat mechanic with the basic skills and knowledge necessary for full-time employment as a technician, installer, or tune-up specialist. Complete theory and lab experiences for all powerboat systems are included.

Special Curriculum Admission Requirements: One year of high school automotive shop or equivalent. Students not meeting this requirement must complete AUT 130-Introduction to Auto Mechanics.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
AUT	156 Small Gasoline Engines.....	2	
RVH	105 Motorcycle Machine Laboratory.....	3	
RVH	115 Marine Cooling, Fuels and Electrical Systems.....		3
RVH	116 Outboard Engines.....	3	
RVH	117 Inboard/Outdrives.....		3
ENG ^{1/2}	/SPD elective.....		3
Total Credits		8	9

Total minimum credits for the Recreation Vehicle: Marine Mechanics Career Studies Certificate = 17.

RECREATION VEHICLE: MOTORCYCLE MECHANICS

Career Studies Certificate

Purpose: The curriculum is designed to train the student to be a safe, knowledgeable motorcycle mechanic with basic working experience so that the individual is prepared for full-time employment as a mechanic, set-up or tune-up specialist. Complete theory and lab experiences for all motorcycle systems are included.

Special Curriculum Admission Requirements: One year of high school automotive shop or equivalent. Students not meeting this requirement must complete AUT 130-Introduction to Auto Mechanics.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
RVH	105 Motorcycle Machine Laboratory.....		3
RVH	100 Introduction to Motorcycle Mechanics.....	3	
RVH	101 Motorcycle Engines I.....	2	
RVH	102 Motorcycle Engines II.....		3
RVH	106 Motorcycle Fuel Systems.....	2	
RVH	107 Motorcycle Electrical Systems.....		3
RVH	125 Motorcycle Drive Trains, Brakes & Suspensions.....		4
ENG	/SPD elective.....	3	
Total Credits		10	13

Total minimum credits for the Recreation Vehicle: Motorcycle Mechanics Career Studies Certificate = 23.

RESPIRATORY THERAPY

Associate in Applied Science Degree Respiratory Therapy Degree Program

Purpose: The curriculum is designed to prepare students as effective members of the health care team in assisting with diagnosis, treatment, management, and preventive care of patients with cardio-pulmonary problems. Upon successful completion of the program and specific employment experiences, students may be eligible to take the registry examination leading to registration as a Registered Respiratory Therapist (R.R.T.).

Special Curriculum Completion Requirements: Satisfactory health must be maintained for continuance in the major. Any student who receives a final grade of less than "C" in any of the courses in the respiratory therapy or support science sequences must obtain permission from the program head to continue in the major and must then repeat the course and earn a final grade of "C" or higher before taking the next course in either of the sequences. Students are totally responsible for transportation to and from the college and the various hospitals and other health agencies which are utilized for clinical laboratory experiences. Student uniforms and accessories, and Respiratory Therapy Student Liability Insurance are the financial responsibility of the individual student.

Advanced Standing: The program considers advanced standing for work experience and previous education on an individual basis.

Special Curriculum Admission Requirements: (1) High School courses: 1 unit each of algebra, biology, and chemistry or physics, with a minimum grade of "C". Developmental work or testing may be advised for credits earned more than ten years ago. Transfer credits in the support sciences earned at another institution will be evaluated on an individual basis (2) Achievement must reflect a "C" average or better (3) Good physical and mental health, which may need to be substantiated by a physician's report. (4) C.P.R. certification.

Special Accreditation Status: The program is accredited by the AMA Committee on Allied Health Education and Accreditation (CAHEA), in cooperation with the Joint Review Committee for Respiratory Therapy Education.

First Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
BIO	141-142 Hum. Anat. & Phys. I-II.....	4	4	
SPD	110 Intro. to Speech Communication.....	3		
MTH	126 Math for Allied Health.....	2		
CIS	116 Comp. & Information Systems.....	1		
STD	100 Orientation.....	1		
RTH	131-132 Resp. Care Theory & Proced. I-II.....	4	4	
RTH	121-222 Cardiopulmonary Science I-II ...	3	3	
PED	101 Fundamentals of Physical Activity...		1	
PED	Elective.....			1
RTH	145 Pharmacology for Respiratory Care I.....		1	
RTH	151-152 Fundamental Clinical Proc. I-II .		4	
ENG	111 College Composition I.....			3
PSY	201 Introduction to Psychology I.....			3
RTH	135 Diagnostic and Therapeutic Proced. I.....			2
Total Credits		18	17	13

Second Year		Credits	
		1st Semester	2nd Semester
CHM	101 General Chemistry.....	4	
RTH	235 Diagnostic and Therapeutic Proced. II.....	3	
RTH	245 Pharmacology for Resp. Care II.....	2	
RTH	223 Cardiopulmonary Science III.....	2	
RTH	253 Advanced Clinical Proc. III.....	4	
RTH	254 Adv. Clinical Proc. IV.....		4
BIO	150 Introductory Microbiology.....		4
PSY	202 Introduction to Psychology II.....		3
RTH	226 Theory of Neonatal & Pediat. Resp. Care.....		2
RTH	265 Current Issues in Respiratory Care..		2
Total Credits		15	15

Total minimum credits for the Respiratory Therapy major (A.A.S. Degree) = 78.

RESPIRATORY THERAPY

Certificate

Purpose: The curriculum is designed to prepare students as effective members of the health care team in assisting with diagnosis, treatment, management, and preventive care of patients with cardio-pulmonary problems. Upon successful completion of the program and specific employment experiences, students may be eligible to take the national entry level examination leading to credentialing as a Certified Respiratory Therapy Technician (C.R.T.T.). Classroom and clinical work completed in the certificate program may be transferred into the associate degree program.

Special Curriculum Completion Requirements: Satisfactory health must be maintained for continuance in the major. Any student who receives a final grade of less than "C" in any of the courses in the respiratory therapy or support science sequences must obtain permission from the program head to continue in the major and must then repeat the course and earn a final grade of "C" or higher before taking the next course in either of the sequences. Students are totally responsible for transportation to and from the college and the various hospitals and other health agencies which are utilized for clinical laboratory experiences. Student uniforms and accessories, and Respiratory Therapy Student Liability Insurance are the financial responsibility of the individual student.

Advanced Standing: The program considers advanced standing for work experience and previous education on an individual basis.

Special Curriculum Admission Requirements: (1) High School courses: 1 unit each of algebra and biology, with a minimum grade of "C". Developmental work or testing may be advised for credits earned more than ten years ago. Transfer credits in the support sciences earned at another institution will be evaluated on an individual basis (2) Achievement must reflect a "C" average or better (3) Good physical and mental health, which may need to be substantiated by a physician's report. (4) C.P.R. certification.

Special Accreditation Status: The program is accredited by the AMA Com-

mittee on Allied Health Education and Accreditation (CAHEA), in cooperation with the Joint Review Committee for Respiratory Therapy Education.

		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
BIO	141-142 Hum. Anat. & Phys. I-II.....	4	4	
MTH	126 Math for Allied Health.....	2		
CIS	116 Comp. & Information Systems.....	1		
RTH	131-132 Resp. Care Theory & Proced. I-II.....	4	4	
RTH	121-222 Cardiopulmonary Science I-II ...	3	3	
PED	101 Fundamentals of Physical Activity...		1	
RTH	145 Pharmacology for Respiratory Care I.....		1	
RTH	151-152 Fundamental Clinical Proc. I-II .		4	4
ENG	111 College Composition I.....	3		
PSY	201 Introduction to Psychology I.....			3
RTH	135 Diagnostic and Therapeutic Proced. I.....			2
RTH	195 Topics In: Respiratory Care.....			2
Total Credits		17	17	11

Total minimum credits for the Respiratory Therapy Certificate = 45.

SAFETY TECHNICIAN

Certificate

Purpose: The Safety Technician curriculum covers the basics of on-the-job safety management and supervision and is appropriate for persons who have additional duty or part-time safety responsibilities. The curriculum includes fundamental courses in safety management, standards, hazard recognition and control, occupational safety, industrial hygiene, and occupational environment, as well as electives in fire prevention or emergency medical technology.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I.....		3
MTH	115 Technical Mathematics I.....		3
*EMT	106 Basic Emerg. Med. Technician/ Amb.	6	
FIR	116 Fire Prevention Fundamentals.....	3	
SAF	120 Safety & Health Stand.: Regs. & Codes.....	3	
SAF	135 Safety Program Organ. & Admin. ...		3
SAF	131 Materials Handling, Machinery, Handtools and Control I.....		3
Total Credits		12	12
Second Year		Credits	
		1st Semester	2nd Semester
SPD	110 Intro. to Speech Communication.....	3	
PSY	201 Intro. to Psychology I.....		3
SAF	235 Manufacturing Process Analysis.....		3
SAF	241 Occupational Environment I.....	3	
SAF	140 Intro. to Industrial Hygiene.....	3	
Total Credits		9	6

Total minimum credits for the Safety Technician Certificate = 39.

* Substitution for this course can be made subject to divisional approval.

SCIENCE

Associate in Science Degree Physical and Natural Sciences Degree Program

Purpose: The curriculum is designed for persons who are interested in a professional or scientific program and who plan to transfer to a four-year

college or university to complete a baccalaureate degree program with a major in one of the following fields: agriculture, biology, chemistry, pre-dentistry, forestry, geology, home economics, nursing, oceanography, pharmacy, physics, physical therapy, pre-medicine, science education, mathematics.

Special Curriculum Admission Requirements: Satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English, 3 units of college preparatory mathematics, 1 unit of laboratory science, 1 unit of social science.

First Year	Credits		
		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....		1
¹ HIS	Electives	3	3
² MTH	271-272 Applied Calculus I-II or 173-174 Calc. with Analytic Geometry I-II....	3-5	3-5
^{3,6} __	Science (with laboratory)	4	4
CSC	110 Introduction to Computing	3	
PED	101 Fundamentals of Physical Activity...		1
PED	Elective		1
Total Credits		16-18	16-18

Second Year	Credits		
		1st Semester	2nd Semester
⁴ ENG	Electives	3	3
³ __	Science (with laboratory)	4-5	4-5
³ __	Science electives	4	4
⁵ __	Social science electives	3	3
SPD	110 Introduction to Speech Communication.....		3
__	General elective	3	
Total Credits		17-18	17-18

Total minimum credits for the Science major (A.S. Degree) = 66. Twenty of these credits must be taken in laboratory science courses for transfer to a four-year institution with a major in Science.

Students are advised to work closely with the faculty and counseling staff for program and course scheduling. Electives should be chosen carefully after investigation of transfer requirements of the institution to which transfer is contemplated. The burden of responsibility for proper course selection rests with the student.

¹ HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II. Students with a good background in mathematics and science may take two beginning laboratory science courses the first year and history the second year.

² MTH 173-174 is required for students planning a four-year major in Physics or Chemistry. MTH 181-182 may be taken by four-year Biology majors with division approval. Students not adequately prepared for MTH 173 may be required to take MTH 166.

³ Sciences (with laboratories) may be selected from the following: BIO 101-102, CHM 111-112, PHY 201-202, PHY 241-242, PHY 243, GOL 105-106, or any 200-level biology, chemistry, geology or physics course.

⁴ ENG 241-242 Survey of American Lit. I-II, ENG 243-244 Survey of English Lit. I-II, or ENG 251-252 Survey of World Lit. I-II.

⁵ Two semester sequence social science courses may be selected from one of the following disciplines: economics, geography, political science, history, psychology, social science, or sociology (anthropology).

⁶ Chemistry majors should elect CHM 111-112 and CHM 241-242 or CHM 245-246 plus 2 years consisting of BIO 101-102, GOL 105-106 or any 200-level biology, chemistry, geology or physics course.

Mathematics Specialization

Purpose: The curriculum is designed for persons who are interested in a professional or mathematics program and who plan to transfer to a four-year college or university to complete a baccalaureate degree program with a major in Mathematics, Economics, Statistics, or Mathematics Education.

Special Curriculum Admission Requirements: Satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English, 4 units of college preparatory mathematics, 1 unit of laboratory science, 1 unit of social science.

First Year	Credits		
		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
STD	100 Orientation.....		1
¹ HIS	Electives	3	3
MTH	173-174 Calc. with Analytic Geometry I-II.....	5	5
CSC	110 Introduction to Computing	3	
CSC	130 Scientific Programming.....		3
² __	Social science electives	3	3
Total Credits		17	18

Second Year	Credits		
		1st Semester	2nd Semester
³ ENG	Electives	3	3
MTH	277 Multivariable Calculus.....	4	
⁴ MTH	Electives	3-4	4
⁵ __	Natural science/lab electives.....	4	4
PED	101 Fund. of Physical Activity.....	1	
PED	Elective	1	
SPD	110 Introd. to Speech Communication...		3
Total Credits		16-17	14

Total minimum credits for the Science major/Mathematics Specialization (A.S. Degree) = 65. Twenty of these credits must be taken in MTH courses for transfer to a four-year institution with a major in Science.

¹ HIS 101-102 History of Western Civilization I-II or HIS 121-122 United States History I-II.

² Two semester sequence social science courses may be selected from one of the following disciplines: economics, geography, political science, history, psychology, social science or sociology (anthropology).

³ ENG 241-242 Survey of American Lit. I-II, ENG 243-244 Survey of English Lit. I-II, or ENG 251-252 Survey of World Lit. I-II.

⁴ Math electives should be chosen carefully from 200-level courses and after investigation of transfer requirements of the institution to which transfer is contemplated.

⁵ Science courses (with laboratories) may be selected from the following: BIO 101-102 General Biology I-II, CHM 111-112 College Chemistry I-II, PHY 201-202 General College Physics I-II, PHY 241-242 University Physics I-II, PHY 243 Modern Physics, GOL 105-106 Physical Geology & Historical Geology, or any 200-level biology, chemistry, geology or physics course.

SECURITY ADMINISTRATION

Associate in Applied Science Degree Public Safety Degree Program

Purpose: The curriculum in Security Administration is designed to prepare students to enter any of the varied fields of security administration and to improve the competencies of in-service personnel. The occupational objectives include: security administrator, director & manager, loss prevention director, classification manager, personnel clearance administrator.

Special Curriculum Admission Requirements: Students are advised that many employees in private industry and criminal justice agencies require excellent moral character and a written record of conduct prior to consideration for employment.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year	Credits		
		1st Semester	2nd Semester
ADJ	150 Intro. to Sec. Administration.....	3	
ADJ	156 Legal Aspects of Security.....		3
ADJ	159 Physical Security		3
BUS	100 Introduction to Business	3	
FIR	115 Fundamentals of Fire Prevention	3	
STD	100 Orientation.....	1	
ENG	111-112 College Composition I-II.....	3	3
PSY	201-202 Intro. to Psychology I-II.....	3	3
¹ MTH	Elective		3
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective		1
Total Credits		17	16

Second Year		Credits	
		1st Semester	2nd Semester
ADJ	215 Report Writing.....		3
ADJ	236-237 Crim. Invest. (Prin. & Adv.) ...	3	3
ADJ	211-212 Crim. Law, Evid. & Proc. I-II ...	3	3
ADJ	255 Security Management.....		3
ADJ	256 Information Security		3
ADJ	258 Substance Abuse in Security	3	
BUS	150 Principles of Management.....	3	
FIR	111 Hazardous Materials		3
SPD	110 Intro. to Speech Communication.....	3	
² CIS	100 Intro. to Information Systems.....	3	
Total Credits		18	18

Total minimum credits for the Security Administration major (A.A.S. Degree) = 69.

¹ Math elective approved by faculty advisor.

² Or CIS elective approved by faculty advisor.

SMALL BUSINESS MANAGEMENT

Certificate

Purpose: The one-year certificate program is designed to acquaint present and potential small business owners and employees with the business fundamentals essential to starting a small business.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

Second Year		Credits	
		1st Semester	2nd Semester
ENG	116 Writing for Business or ENG 111 College Composition I	3	
BUS	125 Applied Business Math	3	
ECO	120 Survey of Economics	3	
BUS	111 Principles of Supervision I		3
ACC	211 Principles of Accounting I	3	
BUS	241 Business Law I	3	
BUS	165 Small Business Management		3
FIN	215 Financial Management	3	
BUS	226 Microcomputer Application in Business		3
MKT	100 Prin. of Marketing or MKT 115 Retail Organization & Management.....	3	
MKT	110 Principles of Selling		3
STD	100 Orientation.....		1
Total Credits		18	16

Total minimum credits for the Small Business Management Certificate = 34.

SUBSTANCE ABUSE REHABILITATION

Associate in Applied Science Degree Human Services Degree Program

Purpose: The curriculum is designed to provide a broad base of knowledge, methods and skills which underlie comprehensive delivery of human services with options or specialties in the substance abuse rehabilitation field.

Special Curriculum Admission Requirements: In addition to requirements established for admission to the college, an interview with a faculty review committee is required. Any student who receives a final grade of less than "C" in any of the courses in the Substance Abuse Rehabilitation major must obtain permission from the program head to continue the major in Substance Abuse Rehabilitation, and must then repeat the course and earn a final grade of "C" or higher before taking the next course in the program sequence.

Cooperative Education: Students in this curriculum will participate in at least 3 semester hours of Cooperative Education unless they already have

equivalent experience. For further information, contact the Cooperative Education Office.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111-112 College Composition I-II.....	3	3
PSY	231-232 Life Span Human Devel. I-II ...	3	3
HMS	121-122 Basic Counseling Skills I-II.....	3	3
HMS	251-252 Substance Abuse I-II	3	3
HMS	226 Helping Across Cultures.....		3
HMS	109 Structured Career Planning in Human Services	3	
HMS	195 Topics In: Effects of Psychoactive Drugs.....		3
STD	100 Orientation.....	1	
PED	101 Fundamentals of Physical Activity...	1	
PED	Elective	1	
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
SPD	110 Intro. to Speech Communication....	3	
MTH	151 Math for the Liberal Arts	3	
HMS	141-142 Group Dynamics I-II	3	3
HMS	228 Productive Problem-Solving	3	
HMS	255 Adolescent Alcohol Use & Abuse....	3	
HMS	265 Personality Theory.....	3	
HMS	266 Counseling Psychology		3
HMS	225 Functional Family Intervention		3
HMS	227 The Helper as a Change Agent.....		3
HMS	258 Case Management & Substance Abuse		3
HMS	297 Cooperative Educ./or HMS 290 Internship.....		3
Total Credits		18	18

Total minimum credits for the Substance Abuse Rehabilitation major (A.A.S. Degree) = 72.

SUBSTANCE ABUSE REHABILITATION COUNSELOR

Certificate

Purpose: This curriculum is designed to fulfill the Virginia state educational requirements for the certification of substance abuse counselors. To meet substance abuse counselor certification requirements, the applicant is expected to meet specific education requirements including didactic and experiential learning with a supervised internship required.

Individuals desiring skills and knowledge in this career field, but not seeking State Certification may also enroll. Courses taken in the Substance Abuse Certificate Program can be applied to the A.A.S. Degree in Substance Abuse Rehabilitation.

Cooperative Education: Students in this curriculum will participate in at least 3 semester hours of Cooperative Education unless they already have equivalent experience. For further information, contact the Cooperative Education Office.

Second Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I or SPD 110 Intro. to Speech Communication	3	
PSY	231-232 Life Span Human Dev. I-II.....	3	3
HMS	195 Topics In: Effects of Psychoactive Drugs.....		3
HMS	141-142 Group Dynamics I-II	3	3
HMS	251-252 Substance Abuse I-II	3	3
HMS	266 Counseling Psychology	3	
HMS	258 Case Management & Substance Abuse		3
HMS	290 Coord. Intern. or HMS 297 Coop. Education		3
HMS	298 Seminar & Project.....	3	
Total Credits		18	18

Total minimum credits for the Substance Abuse Rehabilitation Counselor Certificate = 36.

TECHNICAL ILLUSTRATION

Career Studies Certificate

Purpose: To provide drafting students and career drafting professionals with skills to further their career goals.

Special Curriculum Admission Requirements: DRF 152 or equivalent.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
*ENG	111 College Composition I or SPD elective	3	
DRF	153 Technical Illustration I.....	3	
DRF	231 Computer Aided Drafting I.....	3	
DRF	154 Technical Illustration II.....		3
DRF	232 Computer Aided Drafting II.....		3
Total Credits		9	6

Total minimum credits for the Technical Illustration Career Studies Certificate = 15.

* If SPD is chosen, SPD 110 is recommended.

TRAVEL & TOURISM

Associate in Applied Science Degree Business Management Degree Program

Purpose: The curriculum is designed to enable students to enter management training positions within the travel industry, and to prepare industry employees to assume managerial responsibility. This includes a diversity of career opportunities in areas such as airline sales and marketing, travel agency management, cruise and tour operations, and meeting and conference planning.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year ^{1,2}	Credits	
	1st Semester	2nd Semester
ENG	111 College Composition I.....	3
HRI	255 Human Resources Management & Training for Hospitality & Tourism.....	3
¹ MTH	Elective	3
PED	101 Fundamentals of Physical Activity...	1
PED	Elective	1
SPD	110 Intro. to Speech Communication.....	3
STD	100 Orientation.....	1
TRV	100 Introduction to the Travel Industry .	3
TRV	111-112 Geography of Tourism I-II	3
² TRV	115 Ground Transportation, Tours, Cruises, & Services Planning	3
² TRV	116 Air Travel Planning	4
² TRV	125 Principles of Travel Selling & Counseling.....	3
Total Credits		17

		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I.....	3	
³ —	Social science electives.....	3	3
² TRV	211 Airline Comp. Reserv. Sys. I.....	4	
² TRV	220 Princ. of Group Travel & Tour Operations	3	
² TRV	230 Marketing & Manag. of Travel Services.....	3	
TRV	235 Principles of Meeting Planning		3
⁴ TRV	290 Coordinated Internship or TRV/HRI elective.....		3
⁴ TRV	Elective		3
⁴ TRV	Elective		3
Total Credits		16	15

Total minimum credits for the Travel and Tourism major (A.A.S. Degree) = 65.

¹ If you are planning to transfer to another college or university, select a math course which is equivalent to the transfer institution's requirement.

² Check course descriptions for applicable prerequisites.

³ Select any two social science courses.

⁴ Preapproved electives can be selected from any non-required course with a TRV or HRI prefix. See your faculty advisor for alternative procedures.

TRAVEL & TOURISM

Certificate

Purpose: The curriculum is designed for persons seeking careers in the field of travel and tourism and to develop and update the skills of present travel industry employees. Career opportunities for graduates exist in travel agencies, airlines and other transportation companies, as well as in hotels and other businesses serving the traveling public.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I.....	3	
¹ —	Social science elective	3	
STD	100 Orientation.....	1	
TRV	100 Introduction to the Travel Industry .	3	
TRV	111-112 Geography of Tourism I-II	3	3
² TRV	115 Ground Transportation, Tours, Cruises, & Services Planning		3
² TRV	116 Air Travel Planning		4
² TRV	125 Princ. of Travel Selling & Counseling.....		3
³ TRV	211 Airline Computer Reservation Systems		4
Total Credits		13	17

Total minimum credits for the Travel and Tourism Certificate = 30.

¹ Select any course with the prefix ECO, GEO, HIS, PLS, PSY, SOC, or SSC.

² Prerequisite for this course is TRV 100.

³ Prerequisite for this course is completion of, or concurrent enrollment in TRV 116.

TURF AND GROUNDS MANAGEMENT

Career Studies Certificate

Purpose: This curriculum prepares the student for employment in the turf care industry. Theory is combined with laboratory and field experience to prepare graduates for entry level or supervisory positions with golf courses, lawn services, athletic fields, parks, and companies that install and maintain irrigation systems.

Special Curriculum Admission Requirements: Entry into the Turf and Grounds Management curriculum requires an interview by the program head.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education

program. For further information, see the Cooperative Education program section.

		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
ENG	111 College Composition I or SPD 110 Intro. to Speech Communication			3
HRT	117 Tools and Equipment		2	
HRT	118 Turf Pests	2		
HRT	119 Irrigation Systems for Turf & Ornamentals		3	
HRT	197 Cooperative Education			3
HRT	206 Pesticides in Horticulture		2	
HRT	269 Professional Turf Care	3		
Total Credits		5	7	6

Total minimum credits for the Turf and Grounds Management Career Studies Certificate = 18.

VETERINARY TECHNOLOGY

Associate in Applied Science Degree Animal Science Degree Program

Purpose: The curriculum will prepare the student for a career as a veterinary technician. Satisfactory completion of the curriculum will make the student eligible to take State Board and National Board examinations for certification as a veterinary technician. The curriculum is broad-based and includes both practical and theoretical course work which prepares the student for employment in various areas of animal health care, including veterinary hospitals and research and diagnostic laboratories.

Special Curriculum Admission Requirements: Entry into the Veterinary Technology curriculum requires an interview by the program head. This curriculum accepts 30 students each year. Preference is given to Virginia residents.

Satisfactory completion of the following high school units or equivalent is desired: one unit of algebra, one unit of biology, one unit of chemistry, and proficiency in high school English.

Special Curriculum Completion Requirements: Because of the eventual certification process, it is necessary for students to maintain satisfactory progress in their course work. Periodic evaluation of each student will be made by the program head.

		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
AGR	215 Animal Nutrition			2
CHM	121 Health Science Chemistry I		4	
CIS	150 Intro. to Microcomputer Software ...		3	
ENG	111 College Composition I	3		
MTH	126 Mathematics for Allied Health	2		
SPD	110 Intro. to Speech Communication			3
STD	100 Orientation	1		
VET	105 Intro. to Veterinary Technology	3		
VET	111 Anatomy & Phys. of Domestic Animals		4	
VET	116 Animal Breeds & Behavior	3		
VET	121-122 Clinical Practices I-II		4	4
VET	131-132 Clinical Pathology I-II		3	3
VET	135 Anesthesia of Domestic Animals		2	
VET	211 Animal Diseases I			2
VET	225 Parasitology of Domestic Animals ...		2	
Total Credits		16	18	14

		Credits	
		1st Semester	2nd Semester
PED	101 Fundamentals of Physical Activity...		1
—	Social science electives	3	3
VET	133 Clinical Pathology III	3	
VET	212 Animal Diseases II	2	
VET	216 Animal Pharmacology	2	
VET	217 Intro. to Lab., Zoo & Wildlife Medicine		2
VET	221 Advanced Clinical Practices III	4	
VET	235 Animal Hosp. Manag. & Client Relations		3
VET	290 Internship		4
VET	298 Seminar & Project		2
PED	Elective		1
Total Credits		14	16

Total minimum credits for the Veterinary Technology major (A.A.S. Degree) = 78.

WELDING

Certificate

Purpose: This curriculum is designed to prepare students for industrial employment as welders, quality control inspectors, welding equipment salesmen and welding laboratory assistants, as well as leading to careers as welding instructors and structural steel inspectors.

		Credits	
		1st Semester	2nd Semester
STD	100 Orientation	1	
WEL	116 Welding I (Oxyacetylene)	2	
WEL	121 Arc Welding	2	
WEL	150 Welding Drawing & Interpretation ..	2	
ENG	100 Basic Occup. Communication	3	
MTH	103 Basic Tech. Math I	3	
WEL	122 Welding II (Elec. Arc)		3
WEL	141 Weld. Qual. Tests I		3
PSY	120 Human Relations		3
BUS	116 Entrepreneurship		3
MTH	104 Basic Tech. Math. II		3
Total Credits		13	15

		Credits	
		1st Semester	
WEL	160 Semi-Auto. Weld. Proc.	3	
WEL	126 Pipe Welding I	3	
WEL	130 Inert Gas Welding	3	
Total Credits		9	

Total minimum credits for the Welding Certificate = 37.

WELDING: ADVANCED TECHNIQUES

Career Studies Certificate

Purpose: This Career Studies Certificate is designed to prepare students for career advancement as quality control inspectors, metallurgy laboratory technicians, as well as structural steel inspectors and welding instructors.

Special Curriculum Admission Requirements: Welding certificate or equivalent relevant practical experience. Departmental approval required.

		Credits	
		1st Semester	
WEL	127 Pipe Welding II	3	
WEL	142 Welder Qualification Tests II	3	
WEL	145 Welding Metallurgy	3	
WEL	146 Welding Quality Control	3	
ENG	Speech elective	3	
Total Credits		15	

Total minimum credits for the Welding: Advanced Techniques Career Studies Certificate = 15.

WELDING: BASIC TECHNIQUES

Career Studies Certificate

Purpose: This curriculum is designed for persons wishing to obtain fundamental skills for immediate entry-level positions in the welding trade as welding apprentices or welding laboratory assistants. Its structure allows students to pursue these courses on a part-time basis. All courses will apply to the Welding Certificate program.

First Year		Credits	
		1st Semester	2nd Semester
WEL	116 Welding I (Oxyacetylene).....	2	
WEL	121 Arc Welding.....	2	
ENG	/Speech elective.....	3	
WEL	122 Welding II (Electric Arc).....		3
Total Credits		7	3

Second Year		Credits
		1st Semester
WEL	130 Inert Gas Welding.....	3
WEL	160 Semi-Automatic Welding Processes.	3
Total Credits		6

Total minimum credits for the Welding: Basic Techniques Career Studies Certificate = 16.

WOODWORKING

Career Studies Certificate

Purpose: The curriculum is designed to train students to become competent woodworkers and cabinetmakers and to provide a broad range of experience in all aspects of woodworking.

Special Curriculum Admission Requirements: Interest in and aptitude for woodworking.

Cooperative Education: Students in this program are strongly encouraged to gain career-related work experience through the Cooperative Education program. For further information, see the Cooperative Education program section.

First Year		Credits	
		1st Semester	2nd Semester
WOD	100 Introd. to Woodworking.....	2	
WOD	101 Woodworking I Hand and Power Tools.....	3	
WOD	102 Woodworking II Adv. Power Tools.		3
WOD	116 Special Woodworking Techniques...		3
Total Credits		5	6

Second Year		Credits
		1st Semester
WOD	120 Cabinetmaking.....	3
ENG	Or SPD elective.....	3
Total Credits		6

Total minimum credits for the Woodworking Career Studies Certificate = 17.



International Day



Commercial Art

Course Numbers

Courses numbered 001-009 are developmental courses (see "Developmental Studies Program"). The credits earned in these courses are not applicable toward a degree or a certificate.

Courses numbered 010-099 are freshman level courses which may apply to certificate programs. The credits earned in these courses are not applicable toward an associate degree.

Courses numbered 100-299 are applicable toward an associate degree and certificate programs.

Course Credits

The credit for each course is indicated in parentheses after the title in the course description. One credit is equivalent to one collegiate semester-hour credit.

Course Hours

The number of lecture hours in class each week (including lecture, seminar and discussion hours) and/or the number of laboratory hours in each week (including laboratory shop, supervised practice, and cooperative work experiences) are indicated for each course in the course description. The number of lecture and laboratory hours in class each week are also called "contact" hours because it is time spent under the direct supervision of a faculty member. In addition to the lecture and laboratory hours in class each week, each student must spend some time on out-of-class assignments under his own direction. Usually each credit per course requires an average of three hours of in-class and out-of-class work each week.

Prerequisites and Corequisites

If any prerequisites are required before enrolling in a course, they will be identified in the course description. Courses in sequences (usually identified by the numerals I-II) require that the preceding course in the sequence (or equivalent) be completed before one can enroll in the next course in the sequence. Usually corequisites must be taken at the same time. The prerequisites or their equivalent must be completed satisfactorily before enrolling in a course unless special permission is obtained from the division. The NVCC *Schedule of Classes* lists additional information on special enrollment requirements.

Frequency of Offerings

The college is not obligated to offer, nor can it offer, all courses every semester. Courses are usually offered in the semesters indicated in the degree or certificate outline given in the Instructional Programs chapter of this catalog. The NVCC *Schedule of Classes* lists the courses being offered for the respective semester.

General Usage Courses

The following "General Usage Courses" apply to multiple curricula and may carry a variety of prefix designations. The de-

scriptions of the courses are identical for each different prefix and are as follows:

090-190-290 Coordinated Practice (1-5 CR.)

Supervised practice in selected health agencies coordinated by the college. Credit/practice ratio maximum 1:5 hrs. May be repeated for credit. Variable hrs.

090-190-290

Coordinated Internship (1-5 CR.)

Supervised on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/work ratio maximum 1:5 hrs. May be repeated for credit. Variable hrs.

095-195-295 Topics In: (1-5 CR.)

Exploration of topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hrs.

096-196-296 On-Site Training In: (1-5 CR.)

Career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the college. Credit/work ratio not to exceed 1:5 hrs. May be repeated for credit. Variable hrs.

097-197-297

Cooperative Education (1-6 CR.)

Supervised on-the-job training for pay in approved business and government organizations coordinated by the college's Cooperative Education Office, applicable to all curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hrs. May be repeated for credit. Variable hrs.

098-198-298 Seminar and Project (1-5 CR.)

Completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hrs.

099-199-299 Supervised Study (1-5 CR.)

Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hrs.

ACCOUNTING

ACC 115 APPLIED ACCOUNTING (3 CR.)

Presents practical accounting procedures for retail stores, professional individuals in firms, and personal service occupations. Covers the accounting cycle, journals, ledgers, preparation of financial statements and payrolls, and checking account management. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ACC 211-212 PRINCIPLES OF ACCOUNTING I-II (3 CR.) (3 CR.)

Presents accounting principles and their application to various businesses. Covers income determination, asset valuation, and financial reporting. Studies services, merchandising, and manufacturing operation, including internal controls, analysis of finan-

cial statements, cost accounting systems, and managerial concepts. Lecture 3 hours per week.

ACC 215 COMPUTERIZED ACCOUNTING (3 CR.)

Prerequisite or corequisite ACC 211 or equivalent. Introduces the computer in solving accounting problems. Focuses on operation of computers. Presents the accounting cycle and financial statement preparation in a computerized system and other applications for financial and managerial accounting. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ACC 219 GOVERNMENTAL AND NOT-FOR-PROFIT ACCOUNTING (3 CR.)

Prerequisite ACC 212 or equivalent. Introduces fund accounting as used by governmental and nonprofit entities. Stresses differences between accounting principles of for-profit and not-for-profit organizations. Lecture 3 hours per week.

ACC 221-222 INTERMEDIATE ACCOUNTING I-II (3 CR.) (3 CR.)

Prerequisite ACC 212 or equivalent. Analyzes principal elements of accounting systems and statements. Lecture 3 hours per week.

ACC 231-232 COST ACCOUNTING I-II (3 CR.) (3 CR.)

Prerequisite ACC 212 or equivalent. Presents cost accounting methods and reporting as applied to job order, process, and standard cost accounting systems. Includes cost control, profit analysis, and other topics. Lecture 3 hours per week.

ACC 241-242 AUDITING I-II (3 CR.) (3 CR.)

Prerequisite ACC 212 or equivalent. Presents techniques of investigating, interpreting, and appraising accounting records and assertions. Studies internal control design and evaluation, evidence-gathering techniques and other topics. Lecture 3 hours per week.

ACC 261-262 PRINCIPLES OF FEDERAL TAXATION I-II (3 CR.) (3 CR.)

Presents the study of federal taxation as it relates to individuals and other tax entities. Includes tax planning, compliance and reporting. Lecture 3 hours per week.

ACC 297 COOPERATIVE EDUCATION (1-6 CR.) (see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ACQUISITIONS

ACQ 121 INTRODUCTION TO PROCUREMENT AND ACQUISITION MANAGEMENT I (3 CR.)

Emphasizes contracting with the government. Covers entire government/industry contracting cycle including funding, procurement methods, types of contracts, source selection, negotiations, and contract admin-

istration. Satisfies requirements of the mandatory Department of Defense course: Management of Defense Acquisition Contracts (Basic) when combined with DOD materials. Lecture 3 hours per week.

ADMINISTRATION OF JUSTICE

ADJ 100 SURVEY OF CRIMINAL JUSTICE (3 CR.)

Presents an overview of the United States criminal justice system; introduces the major system components—law enforcement, judiciary, and corrections. Lecture 3 hours per week.

ADJ 105 THE JUVENILE JUSTICE SYSTEM (3 CR.)

Presents the evolution, philosophy, structures and processes of the American juvenile delinquency system; surveys the rights of juveniles, dispositional alternatives, rehabilitation methods and current trends. Lecture 3 hours per week.

ADJ 106 CRIME AND JUSTICE IN AMERICA (3 CR.)

Examines current issues and trends of crime and responses (attitudes, behaviors, structures—both private and public) to crime. Lecture 3 hours per week.

ADJ 107 SURVEY OF CRIMINOLOGY (3 CR.)

Surveys the volume and scope of crime; considers a variety of theories developed to explain the causation of crime and criminality. Lecture 3 hours per week.

ADJ 110 INTRODUCTION TO LAW ENFORCEMENT (3 CR.)

Studies the philosophy and history of law enforcement, presenting an overview of the crime problem and policy response issues. Surveys the jurisdictions and organizations of local, state, and federal law enforcement agencies. Examines the qualification requirements and career opportunities in the law enforcement profession. Lecture 3 hours per week.

ADJ 111-112 LAW ENFORCEMENT ORGANIZATION AND ADMINISTRATION I-II (3 CR.) (3 CR.)

Prerequisite for ADJ 112, divisional approval or ADJ 111. Teaches the principles of organization and administration of law enforcement agencies. Studies the management of line operations, staff and auxiliary services, investigative and juvenile units. Introduces the concept of data processing; examines policies, procedures, rules, and regulations pertaining to crime prevention. Surveys concepts of protection of life and property, detection of offenses, and apprehension of offenders. Lecture 3 hours per week.

ADJ 116 SPECIAL ENFORCEMENT TOPICS (3 CR.)

Considers contemporary issues, problems, and controversies in modern law enforcement. Lecture 3 hours per week.

ADJ 117 POLICE COMMUNICATIONS AND RECORDS (3 CR.)

Introduces the principles for the organization and administration of law enforcement communications and records. Examines relationships of custody, central services, and agency logistics to the communications and records operation. Lecture 3 hours per week.

ADJ 118 CRISIS INTERVENTION AND CRITICAL ISSUES (3 CR.)

Addresses basic problems involved in crisis intervention and current critical issues in law enforcement and the administration of justice; emphasizes practical approaches to discover and implement solutions. Lecture 3 hours per week.

ADJ 120 INTRODUCTION TO COURTS (3 CR.)

Presents an overview of the American judiciary—the federal and 50 state judicial systems—with emphasis on criminal court structures, functions, and personnel; surveys the judicial system in the Commonwealth of Virginia. Lecture 3 hours per week.

ADJ 127 FIREARMS AND MARKSMANSHIP (3 CR.)

Prerequisite permission of instructor. Surveys lethal weapons in current use and current views on weapon types and ammunition design. Examines the legal guidelines as to use of deadly force, safety in handling of weaponry, and weapon care and cleaning; marksmanship instruction under standard range conditions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ADJ 129 TRAFFIC ADMINISTRATION (3 CR.)

Studies various traffic problems encountered by the law enforcement field administrator. Emphasizes selective enforcement, responsibilities in special situations, test and measurement requirements, and practical exercises. Lecture 3 hours per week.

ADJ 138 DEFENSIVE TACTICS (2 CR.)

Surveys and demonstrates the various types of non-lethal force tools and tactics for use by criminal justice personnel in self-defense, arrest, search, restraint and transport of those in custody. Lecture 2 hours per week.

ADJ 139 PRIVATE DETECTIVES/ INVESTIGATORS (3 CR.)

Instructs the student in investigative techniques, criminal law and procedure, rules of evidence, the techniques and mechanics of arrest. Meets state certification requirements for private investigators licensing. Lecture 3 hours per week.

ADJ 140 INTRODUCTION TO CORRECTIONS (3 CR.)

Focuses on societal responses to the offender. Traces the evolution of practices based on philosophies of retribution, deterrence, and rehabilitation. Reviews contemporary correctional activities and their relationships to other aspects of the criminal justice system. Lecture 3 hours per week.

ADJ 145 CORRECTIONS AND THE COMMUNITY (3 CR.)

Studies and evaluates the relationships and interactions between correctional organizations and free society. Focuses on the shared responsibility of the community and corrections agencies to develop effective programs for management and treatment of criminal offenders. Lecture 3 hours per week.

ADJ 147 LOCAL ADULT DETENTION FACILITIES (3 CR.)

Studies security procedures in adult detention facilities, the criteria for effective supervision of inmates, the correctional aspects of inmate discipline, and the handling of "special inmates." Presents concepts, programs, and planning considerations for jail management and the operation of adult detention facilities. Lecture 3 hours per week.

ADJ 150 INTRODUCTION TO SECURITY ADMINISTRATION (3 CR.)

Introduces the student to the field of private security—its history, structures, functions, and personnel; surveys the principles and practices of security administration. Lecture 3 hours per week.

ADJ 154 SPECIAL SECURITY TOPICS (3 CR.)

Considers contemporary issues, problems, trends and controversies in the modern private security field. Lecture 3 hours per week.

ADJ 155 SECURITY INVESTIGATION (3 CR.)

Studies the various techniques, procedures, resources, and technical aids used in security investigation. Lecture 3 hours per week.

ADJ 156 LEGAL ASPECTS OF SECURITY (3 CR.)

Exposes the student to the legal guidelines and restrictions the modern security officer must operate within; examines liability concerns arising from private security job performance. Lecture 3 hours per week.

ADJ 157 COMPUTER SECURITY (3 CR.)

Examines security concerns with access controls, shutdown alternatives, hardware and software protection, and data encryption. Lecture 3 hours per week.

ADJ 158 PERSONNEL SECURITY (3 CR.)

Studies personnel security processes in all types of security operations; emphasizes the development and implementation of comprehensive security personnel systems. Lecture 3 hours per week.

ADJ 159 PHYSICAL SECURITY (3 CR.)

Studies the various forms of perimeter barriers which impact upon security operations; examines insurance considerations, underwriters licensing certification, fire prevention and fire code regulations, and the general health and safety requirements for all employees and contact persons within the organization. Lecture 3 hours per week.

ADJ 200 CRIMINAL BEHAVIOR (3 CR.)

Introduces and evaluates the concepts of normal and abnormal behavior; focuses on the psychological and sociological aspects of

criminal and other deviant behavior patterns. Lecture 3 hours per week.

ADJ 211-212 CRIMINAL LAW, EVIDENCE AND PROCEDURES I-II (3 CR.) (3 CR.)

Teaches the elements of proof for major and common crimes and the legal classification of offenses. Studies the kinds, degrees and admissibility of evidence and its presentation in criminal proceedings with emphasis on legal guidelines for methods and techniques of evidence acquisition. Surveys the procedural requirements from arrest to final disposition in the various American court systems with focus on the Virginia jurisdiction. Lecture 3 hours per week.

ADJ 215 REPORT WRITING (3 CR.)

Introduces the basic mechanics and procedures of report writing; emphasizes clear, concise and accurate writing of communications as they relate to law enforcement records, investigations, and research. Lecture 3 hours per week.

ADJ 216 ORGANIZED CRIME AND CORRUPTION (3 CR.)

Addresses judicial efforts against and involvement in corruption, drug, vice, and white-collar crimes, both individual and organized. Lecture 3 hours per week.

ADJ 217 EXPLOSIVE DEVICES (3 CR.)

Surveys bombs, explosive devices, non-explosive devices and booby traps. Emphasizes the chemistry of combustion—the types, composition, behavior and effects of chemical explosives, booby trap explosives and explosive trains. Lecture 3 hours per week.

ADJ 227 CONSTITUTIONAL LAW FOR JUSTICE PERSONNEL (3 CR.)

Surveys the basic guarantees of liberty described in the U. S. Constitution and the historical development of these restrictions on government power, primarily through U. S. Supreme Court decisions. Reviews rights of free speech, press, assembly, as well as criminal procedure guarantees (to counsel, jury trial, habeas corpus, etc.) as they apply to the activities of those in the criminal justice system. Lecture 3 hours per week.

ADJ 228 NARCOTICS AND DANGEROUS DRUGS (3 CR.)

Surveys the historical and current usage of narcotics and dangerous drugs. Teaches the identification and classification of such drugs and emphasizes the symptoms and effects on their users. Examines investigative methods and procedures utilized in law enforcement efforts against illicit drug usage. Lecture 3 hours per week.

ADJ 229 LAW ENFORCEMENT AND THE COMMUNITY (3 CR.)

Considers current efforts by law enforcement personnel to achieve an effective working relationship with the community. Surveys and analyzes various interactive approaches of law enforcement agencies and the citizenry they serve. Lecture 3 hours per week.

ADJ 236 PRINCIPLES OF CRIMINAL INVESTIGATION (3 CR.)

Surveys the fundamentals of criminal investigation procedures and techniques. Examines crime scene search, collecting, handling and preserving of evidence. Lecture 3 hours per week.

ADJ 237 ADVANCED CRIMINAL INVESTIGATION (3 CR.)

Prerequisite ADJ 236 or divisional approval. Introduces specialized tools and scientific aids used in criminal investigation. Applies investigative techniques to specific situations and preparation of trial evidence. Lecture 3 hours per week.

ADJ 241-242 CORRECTIONAL LAW I-II (3 CR.) (3 CR.)

Studies the legal rights and obligations of the convict-probationer, inmate, and parolee. Surveys methods of enforcing both rights and obligations and the responsibilities of corrections agencies and personnel under correctional law (constitutional, statutory, and regulatory provisions). Lecture 3 hours per week.

ADJ 245 MANAGEMENT OF CORRECTIONAL FACILITIES (3 CR.)

Describes management options and operational implications for staffing, security, safety, and treatment. Considers impact of changes in public policy on corrections. Lecture 3 hours per week.

ADJ 246 CORRECTIONAL COUNSELING (3 CR.)

Presents concepts and principles of interviewing and counseling as applied in the correctional setting. Lecture 3 hours per week.

ADJ 248 PROBATION, PAROLE, AND TREATMENT (3 CR.)

Surveys the philosophy, history, organization, personnel and functioning of traditional and innovative probation and parole programs; considers major treatment models for clients. Lecture 3 hours per week.

ADJ 254 EMERGENCY PLANNING (3 CR.)

Analyzes the predicting, planning, design, preparation, and implementation of various types of emergency procedures in a variety of security settings. Lecture 3 hours per week.

ADJ 255 SECURITY MANAGEMENT (3 CR.)

Examines the major management operations of planning, organizing, staffing, directing and controlling the private security unit. Reviews the functions of management, implementation of institutional programs and development of staff. Lecture 3 hours per week.

ADJ 256 INFORMATION SECURITY (3 CR.)

Studies the means of protecting both government classified and private business information. Surveys techniques of storing, transmitting, destroying and controlling access to sensitive information. Lecture 3 hours per week.

ADJ 257 LOSS PREVENTION (3 CR.)

Studies internal and external theft that affects all private and public operations, with focus on retail businesses. Examines and evaluates major loss prevention programs used by security operations, again with focus on retail security. Lecture 3 hours per week.

ADJ 258 SUBSTANCE ABUSE IN SECURITY (3 CR.)

Reviews the use and abuse of prescription and non-prescription drugs and their impact on security operations. Teaches the student to recognize the symptoms of drug abuse and what response techniques security can utilize for internal and external occurrences. Lecture 3 hours per week.

ADJ 289 COMPARATIVE SYSTEMS OF CRIMINAL JUSTICE (3 CR.)

Surveys administration of justice in a variety of nations, comparing workings and results of different law enforcement, judicial, and correctional components. Lecture 3 hours per week.

ADJ 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AGRICULTURE

AGR 215 ANIMAL NUTRITION (2 CR.)

Emphasizes the principles of nutrition and feeding practices for small and large animal species. Lecture 2 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AIR CONDITIONING AND REFRIGERATION

AIR 101 PRINCIPLES OF REFRIGERATION I (4 CR.)

Presents refrigeration principles and systems, characteristics of refrigerants, temperatures and pressure. Teaches basic theory of compressors, evaporators, condensers and refrigerant flow controls; the use and care of refrigeration tools, tubing and equipment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 102 PRINCIPLES OF REFRIGERATION II (4 CR.)

Prerequisite AIR 101. Presents charging and evaluation of systems and leak detection. Explores servicing the basic system. Uses and applies refrigeration controls (temperature, low pressure, high pressure, oil pressure, etc.). Explains use and care of oils and additives and troubleshooting of small commercial systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 111 AIR CONDITIONING AND REFRIGERATION CONTROLS I (3 CR.)

Presents electron theory, magnetism, Ohm's Law, resistance, current flow, instruments for electrical measurement, A.C. motors, power distribution controls and their application. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 134 CIRCUITS AND CONTROLS I (3 CR.)

Prerequisite AIR 111. Presents circuit diagrams for heating units, reading and drawing of circuit diagrams, types of electrical controls, house wiring circuits. Includes analysis of heating circuits, components, analysis and characteristics of circuits and controls, testing and servicing. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 155 HEATING SYSTEMS II (4 CR.)

Studies commercial gas and oil boilers to include troubleshooting, preventive maintenance and servicing. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 205 HYDRONICS AND ZONING (4 CR.)

Presents installation, servicing, troubleshooting, and repair of hydronic systems for heating and cooling. Includes hot water and chilled water systems using forced circulation as the transfer medium. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

AIR 207 HEAT LOADS AND PSYCHOMETRICS (4 CR.)

Prerequisite AIR 102. Studies air and its properties, characteristics and measurements as they apply to human comfort. Considers control of temperature, humidity and distribution of air and air mixtures. Studies heat loss and heat gain factors. Considers the effect, the selection and layout of residential air conditioning and refrigeration systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 211-212 AIR CONDITIONING CONTROLS I-II (4 CR.) (4 CR.)

Prerequisite AIR 134. Introduces electrical, pneumatic and electronic control circuits as applied to year-round air conditioning systems. Teaches reading wiring and schematic diagrams, troubleshooting, and designing high and low voltage control systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 238 ADVANCED TROUBLESHOOTING & SERVICE (3 CR.)

Prerequisite AIR 251. Presents advanced service techniques on wide variety of equipment used in refrigeration, air conditioning, and phases of heating and ventilation and controls. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 239 ADVANCED ELECTRONIC CONTROLS FOR HVAC (2 CR.)

Studies electronic controls, load shedding controls, computer interaction controls, and programmable controls. Covers set-up of devices. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AIR 245 ELECTRIC HEAT AND HEAT PUMPS (4 CR.)

Prerequisites AIR 102 and AIR 134. Studies electric heating, basic constructions, application, calculation, installation wiring, troubleshooting and repair. Introduces the operating principles, installation, servicing, problem isolation, and repair of packaged and split heat pump systems. Stresses troubleshooting and repair of these units. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 246 SYSTEM BALANCING AND TESTING (3 CR.)

Presents solutions to field problems experienced by test and balance engineers in the prevention of post-installation problems. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 251 AIR CONDITIONING SYSTEMS I (4 CR.)

Prerequisite AIR 102. Studies equipment used in air component sizing, selection, and application, servicing, repairing of coils and compressors. Includes troubleshooting the cooling system. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 252 AIR CONDITIONING SYSTEMS II (4 CR.)

Prerequisite AIR 251. Studies piping design and sizing, installation, condensers and water towers. Includes valves, strainers and accessories, duct systems and air distribution design and their relationship with volume, static pressure and velocity. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 297 COOPERATIVE EDUCATION (1-6 CR.) (see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ARCHITECTURE**ARC 106 INTRODUCTION TO MODERN ARCHITECTURE (2 CR.)**

Outlines history and impact of architecture. Emphasizes dynamics and social aspects of architecture and society, focusing on Western architectural forms. Lecture 2 hours per week.

ARC 115 ARCHITECTURAL GRAPHICS (2 CR.)

Covers various types of presentation techniques associated with architecture, including rendered plans and elevations, pictorial drawings and perspectives, and the use of drawing media. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

ARC 121 ARCHITECTURAL DRAFTING I (3 CR.)

Introduces techniques of architectural drafting, including lettering, dimensioning, and symbols. Requires production of plans, sections, and elevations of a simple building. Studies use of common reference material and the organization of architectural working

drawings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ARC 122 ARCHITECTURAL DRAFTING II (3 CR.)

Prerequisite ARC 121 or equivalent. A continuation of Architectural Drafting I. Requires development of a limited set of working drawings, including a site plan and related details, and pictorial drawings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ARC 133 MATERIALS AND METHODS OF CONSTRUCTION I (3 CR.)

Studies materials used in construction of buildings, covering foundations to structural framing systems. Includes appropriate use of materials for various construction types. Lecture 3 hours per week.

ARC 134 MATERIALS AND METHODS OF CONSTRUCTION II (3 CR.)

Studies materials and systems for building construction. Includes specification of materials and installation procedures; types of specifications and writing procedures; bidding procedures, contract documents. Lecture 3 hours per week.

ARC 140 PRINCIPLES OF CONSTRUCTION SAFETY (2 CR.)

Covers construction industry operations and hazards control. Includes principles and practices of accident prevention, cost analysis, investigation techniques, reporting, first aid, protection equipment and general safety principles. Lecture 2 hours per week.

ARC 165 SPECIFICATION WRITING FOR GENERAL CONSTRUCTION (2 CR.)

Presents relationship of specifications to design and working drawings, relating trades and materials, quality control for labor materials. Introduces types of specifications, format and writing procedures, and general conditions. Includes aspects of bonds and insurance, bidding procedures, types of legal contracts, and pre-bid documents. Lecture 2 hours per week.

ARC 200 HISTORY OF ARCHITECTURE (4 CR.)

Surveys architecture from ancient times to the 20th century, with emphasis on philosophy of design, form and structure. Lecture 4 hours per week.

ARC 210 INTRODUCTION TO COMPUTER AIDED DRAFTING (2 CR.)

Gives overview of use of computers as applied to architectural drawing. Covers software capability of the system by generating, moving, editing, or deleting the basic elements. Uses CRT keyboard, table/menu, and other items that make up the system. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

ARC 215 ARCHITECTURAL DRAFTING VI (3 CR.)

Prerequisites ARC 122 and EGR 130. Introduces basics of construction methods for reinforced concrete for commercial buildings. Uses concrete design table to size structural members and determine amount and placement of steel reinforcement. Requires draft-

ing of working drawings for a reinforced concrete commercial building. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

ARC 216 ARCHITECTURAL RENDERING AND PRESENTATION (3 CR.)

Prerequisite ARC 122 or equivalent. Presents techniques of rendering and principles of art as related to architectural presentation. Covers architectural lettering and layout, free-hand sketching, and perspective drawing in various media, including pencil, ink and tempera. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

ARC 225 SITE PLANNING AND TECHNOLOGY (3 CR.)

Studies the impact of building codes and zoning ordinances on site design; storm drainage, grading design, erosion and flood control; site materials for paving and retaining walls; site utilities. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ARC 231 ADVANCED ARCHITECTURAL DRAFTING I (4 CR.)

Prerequisite ARC 122 or equivalent. Provides fundamental knowledge of the principles and techniques of architectural drawing procedures. Familiarizes student with design process. Provides a better understanding of the relation between architectural design and structural systems. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

ARC 232 ADVANCED ARCHITECTURAL DRAFTING II (4 CR.)

Prerequisite ARC 231 or equivalent. Requires development of complete set of working drawings and details according to principles and techniques of architectural drawings and procedures used in professional firms. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

ARC 243 ENVIRONMENTAL SYSTEMS (4 CR.)

Studies energy sources and strategies for use in buildings; heat loss and heat gain; heating and cooling equipment and system; water supply, distribution and waste systems and equipment; principles of electricity, electrical systems and equipment. Lecture 4 hours per week.

ARC 259 CONSTRUCTION (PLANNING AND CRITICAL PATH METHODS) (3 CR.)

Covers preparation of material and labor quantity surveys for plans and specifications; approximate and detailed estimates of costs, and bid and contract procedures. Uses working knowledge of critical path methods programming and its implication for the building industry as a vehicle for control of project construction. Lecture 3 hours per week.

ARC 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ARTS

ART 100 ART APPRECIATION (3 CR.)

Introduces art from prehistoric times to the present day. Describes architectural styles, sculpture, photography, printmaking, and painting techniques. Lecture 3 hours per week.

ART 101-102 HISTORY AND APPRECIATION OF ART I-II (3 CR.) (3 CR.)

Presents the history and interpretation of architecture, sculpture, and painting. Begins with prehistoric art and follows the development of western civilization to the present. Lecture 3 hours per week.

ART 103-104 HISTORY OF FAR EASTERN ART I-II (3 CR.) (3 CR.)

Surveys the history of Far Eastern art from the prehistoric period to the present. Part I focuses on the art of India and Southeast Asia. Part II focuses on the art of China, Japan, and Korea. Emphasizes architecture, painting and sculpture with some instruction in printmaking and decorative arts. Lecture 3 hours per week.

ART 105 ART IN WORLD CULTURE (3 CR.)

Approaches the visual arts conceptually rather than historically. Develops a non-technical understanding of spatial arts such as architecture and industrial design. Includes painting, sculpture, and graphics. Lecture 3 hours per week.

ART 106 HISTORY OF MODERN ART (3 CR.)

Surveys the history of modern architecture, sculpture, painting, and graphic arts in representational and non-representational forms. Focuses on the periods and movements that influenced the arts of the twentieth century. Emphasizes contemporary art forms, particularly the interaction between art and society, industry, and design. Lecture 3 hours per week.

ART 107 MUSEUM SURVEY (1 CR.)

Assigns visits to museums and art galleries locally and statewide. Requires completion of a critical paper on selected exhibited works. Laboratory 3 hours per week.

ART 108 HISTORY OF PRINTMAKING (3 CR.)

Surveys the chronological development of printmaking from medieval period to the present. Presents techniques of woodcut, etching, engraving, lithography, and serigraphy. Emphasizes the relationship of printmaking techniques to visual arts. Lecture 3 hours per week.

ART 109 HISTORY OF WOMEN ARTISTS (3 CR.)

Surveys the work of women artists through history, with emphasis on the role of women artists. Lecture 3 hours per week.

ART 121-122 DRAWING I-II (4 CR.) (4 CR.)

Develops basic drawing skills and understanding of visual language through studio instruction/lecture. Introduces concepts such

as proportion, space, perspective, tone and composition as applied to still life, landscape and the figure. Uses drawing media such as pencil, charcoal, ink wash and color media. Includes field trips and gallery assignments as appropriate. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ART 126 PERSPECTIVE DRAWING (4 CR.)

Teaches isometric, one-point, and two-point perspective with emphasis on architectural illustration. Includes fine art and commercial art applications. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 131-132 FUNDAMENTALS OF DESIGN I-II (4 CR.) (4 CR.)

Explores the concepts of two- and three-dimensional design and color. May include field trips as required. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ART 135 VISUAL COMMUNICATIONS (4 CR.)

Prerequisite ART 131. Studies intermediate design concepts applicable to all fields of communication arts. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 140 INTRODUCTION TO GRAPHIC SKILLS (4 CR.)

Teaches basic studio skills necessary for communication arts students. Emphasizes use of drafting equipment and materials such as knives, pencils, pens, brushes, glues and papers. Includes introductory production skills. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ART 141-142 TYPOGRAPHY I-II (4 CR.) (4 CR.)

Prerequisite ART 140 or divisional approval. Studies the history of letter forms and typefaces and examines their uses in contemporary communications media. Emphasizes applications to specific design problems. Includes identification and specification of type, copy fitting and hands-on typesetting problems. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 143-144 CALLIGRAPHY I-II (4 CR.) (4 CR.)

Teaches use of the broad nib pen for various styles of lettering based on historical models. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ART 153-154 CERAMICS I-II (4 CR.) (4 CR.)

Presents problems in the design and production of functional and non-functional ceramic works. Includes handbuilding the potter's wheel and clays and glazes. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 161-162 GALLERY MANAGEMENT I-II (3 CR.) (3 CR.)

Surveys the history and development of museums. Discusses problems of museum administration, connoisseurship, accessioning, cataloging, conservation, installation, and educational services. Requires field trips to galleries and museums. May participate in

the management of the school gallery and/or in professional galleries under instructor's supervision. Lecture 3 hours per week.

ART 171-172 AIRBRUSH (4 CR.) (4 CR.)

Prerequisites ART 121, ART 131, ART 140, or divisional approval. Teaches concepts and use of the airbrush in a variety of applications. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 175 PHOTOGRAPHY WORKSHOP (4 CR.)

Introduces basic camera operations and darkroom techniques. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 200 INTRODUCTION TO PRIMITIVE ART (3 CR.)

Surveys the visual arts and crafts of pre-historic and early cultures. Includes primitive civilizations in Africa, the Americas, Oceania, and Australia. Lecture 3 hours per week.

ART 206 MUSEUM RESOURCES (3 CR.)

Prerequisite divisional approval. Surveys museums and architectural landmarks in the local area. Focuses not only on artworks but also on museum departments, services and libraries. Lecture 1 hour. In-field instruction 4 hours. Total 5 hours per week.

ART 210 THE GROWTH OF AMERICAN ART (3 CR.)

Surveys the development of fine arts in the United States from the Colonial era to the present. Emphasizes the relationship between crafts and fine arts and the influence of historical events and economic ideals on art. Lecture 3 hours per week.

ART 211-212 HISTORY OF AMERICAN ART I-II (3 CR.) (3 CR.)

Surveys the history of American art from the 1600's to the present. Emphasizes architecture, sculpture, and painting. Includes crafts, decorative arts, and photography. Lecture 3 hours per week.

ART 213-214 ITALIAN ART I-II (3 CR.) (3 CR.)

Surveys Italian art from Cimabue to Canaletto. Includes sculpture, painting, and architecture. Lecture 3 hours per week.

ART 215 FOLK ART IN AMERICA (3 CR.)

Surveys folk art of America from Colonial times to the present. Discusses traditions, regionalism and inventiveness. Lecture 3 hours per week.

ART 221-222 DRAWING III-IV (4 CR.) (4 CR.)

Introduces advanced concepts and techniques of drawing as applied to the figure, still life and landscape. Gives additional instruction in composition, modeling, space and perspective. Encourages individual approaches to drawing. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ART 223-224 ETCHING I-II (4 CR.) (4 CR.)

Prerequisite ART 131. Develops skills in etching processes including aquatint, drypoint, and color printing. Includes field trips where applicable. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 231-232 SCULPTURE I-II (4 CR.) (4 CR.)

Prerequisite ART 131. Introduces sculptural concepts and methods of production in traditional and contemporary media. Includes clay, plaster, wood, stone, metal, plastics and terra cotta. May include field trips. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ART 235 FUNCTIONAL CERAMICS (4 CR.)

Prerequisite ART 154 or divisional approval. Explores the design and production of functional ceramics, including handbuilding and use of the wheel. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 236 SCULPTURAL CERAMICS (4 CR.)

Prerequisite ART 154 or divisional approval. Explores the design and production of sculptural ceramics, including handbuilding and use of the wheel. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 237 CERAMIC DECORATION (4 CR.)

Prerequisite ART 154 or divisional approval. Explores ceramic decoration techniques used in functional and non-functional ceramics. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 241-242 PAINTING I-II (4 CR.) (4 CR.)

Prerequisites ART 122 or divisional approval. Introduces abstract and representational painting in acrylic and/or oil with emphasis on color composition and value. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ART 243-244 WATERCOLOR I-II (4 CR.) (4 CR.)

Prerequisite ART 131, or divisional approval. Presents abstract and representational painting in watercolor with emphasis on design, color, composition, technique and value. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 247 PAINTING TECHNIQUE FOR ILLUSTRATORS (4 CR.)

Prerequisite ART 121 or divisional approval. Introduces materials and techniques used by the illustrator. Includes water-soluble paints (watercolor, acrylic, gouache), oil-based paints, and mixed media. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 250 HISTORY OF DESIGN (3 CR.)

Surveys the development of graphic design and illustration with emphasis on the 19th and 20th centuries. Analyzes the work of outstanding designers and illustrators. Lecture 3 hours per week.

ART 251-252 COMMUNICATION DESIGN I-II (4 CR.) (4 CR.)

Prerequisites ART 131, ART 140, and ART 141. Studies the principles of visual communications as applied to advertising in newspapers, magazines, direct mail advertising, house organs, etc. Analyzes the influence of contemporary art on design. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 253-254 DESIGN III-IV (4 CR.) (4 CR.)

Prerequisites ART 132 or divisional approval. Applies basic design concepts to complex problems. Introduces related research as appropriate. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ART 255 MAGAZINE DESIGN (4 CR.)

Prerequisites ART 131, ART 140 and ART 141. Examines the concept, design, and production of visual or literary arts publications. Presents theory of magazine design. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 257 DESIGN STUDIO (4 CR.)

Prerequisites ART 121, ART 131, and ART 251. Focuses on advanced communication design in a studio situation. Teaches design concepts based on client needs. Includes art direction, contract writing, client contact. Also explores the inter-relationship of design, illustration and photography. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 258 LITHOGRAPHY (4 CR.)

Prerequisites Drawing I and Fundamentals of Design I or divisional permission. Introduces lithographic processes and techniques with emphasis on stone lithography. Includes field trips where applicable. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 261-262 ILLUSTRATION I-II (4 CR.) (4 CR.)

Prerequisites ART 122, 132, 135, and 140. Studies of methods and materials used in various types of illustration, including editorial, institutional, and advertising. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 265 GRAPHIC TECHNIQUES (4 CR.)

Prerequisite ART 140. Applies the study of printing processes to the preparation of art work. Teaches printing processes, terminology, and related materials. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 273-274 SILKSCREEN PRINTING I-II (4 CR.) (4 CR.)

Develops skills in silkscreen stencil techniques with emphasis on design. Includes field trips when applicable. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 275 RELIEF PRINTMAKING (4 CR.)

Introduces relief printmaking techniques including woodcut, linocut, and collograph. Includes field trips when applicable. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 277 ADVANCED PRINTMAKING (4 CR.)

Provides additional opportunity for individual exploration in selected printmaking processes. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 285 COMPUTER GRAPHICS (4 CR.)

Introduces microcomputers and software used to produce computer graphics. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 287 PORTFOLIO AND RESUME PREPARATION (4 CR.)

Requires instructor's approval. Focuses on portfolio preparation, resume writing, and job interviewing for students. Recommended for final semester program students. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 288 THESIS: ILLUSTRATION (3 CR.)

Focuses on an individual comprehensive portfolio project culminating in a formal presentation. Recommended for final semester with approval of instructor. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

ART 289 THESIS: COMMUNICATION DESIGN (4 CR.)

Focuses on an individual comprehensive portfolio project culminating in a formal presentation. Recommended for final semester with approval of instructor. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AUTO BODY**AUB 106 BASIC SHEET METAL OPERATIONS (4 CR.)**

Teaches the use of metal straightening tools, basic straightening operations, shrinking, filling, sheet metal damage and repair procedures. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 116 AUTO BODY REPAIR (4 CR.)

Teaches collision straightening procedures and use of equipment, planning repair procedures, disassembly techniques, body fastening systems, glass removal and replacement and panel repair and alignment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 117 AUTOMOTIVE FRAME REPAIR (4 CR.)

Teaches frame and unit design and construction straightening processes and equipment used for measuring, pushing and pulling to obtain frame alignment and body checking. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 118 AUTOMOTIVE PAINT PREPARATION (4 CR.)

Teaches auto body preparation for painting, using the materials, processes, and equipment required to prepare metal and old finishes. Includes sanding, cleaning, sol-

vents, special materials, fillers and primers. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 119 AUTOMOTIVE PAINTING (4 CR.)

Teaches theory and application of painting and the use of painting equipment and materials including paints, thinners, primers, rubbing compounds and cleaners. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AUTOMOTIVE**AUT 100 INTRODUCTION TO AUTOMOTIVE SHOP PRACTICES (2 CR.)**

Introduces shop practices for automotive laboratory and shop safety, identification and use of hand tools, general power equipment and maintenance of automotive shop. Explains basic operation procedures of standard shop equipment. Presents Occupational Safety and Health Act standards pertaining to the automotive field. Lecture 2 hours per week.

AUT 107 AUTOMOTIVE DISASSEMBLY AND INSPECTION TECHNIQUES (2 CR.)

Studies disassembly procedures, cleaning methods, and inspection techniques, including use of measuring devices. Emphasizes familiarization with shop manuals and specification requirements along with proper parts identification and ordering. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUT 108 AUTOMOTIVE SHOP FABRICATION TECHNIQUES (2 CR.)

Presents methods of fabricating equipment and fixtures for automotive repair and machine shop. Includes project planning, layout work, gas welding, arc welding, fasteners, and tool and fixture making. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUT 111-112 AUTOMOTIVE ENGINES I-II (4 CR.) (4 CR.)

Presents analysis of power, cylinder condition, valves and bearings in the automotive engine to establish the present condition, repairs or adjustments. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 113 CYLINDER BLOCK SERVICE I (3 CR.)

Studies basic cylinder block reconditioning, including boring, resleeving, line-boring and deck resurfacing. Includes repair techniques for damaged block and cylinder head castings to include cold welding, brazing, welding and epoxy. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 114 CYLINDER HEAD SERVICE II (3 CR.)

Studies cylinder head reconditioning, including valve seat grinding, refacing valves, servicing valve guides, valve seat inserts, cutting for valve seals and spring, thread repair

and resurfacing mating surfaces. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 116 AUTOMOTIVE TURNING OPERATIONS (3 CR.)

Presents principles and methods of lathe operations for fabrication, modifications and tool making. Includes brake drum and disc lathes. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 117 CRANKSHAFT, CAMSHAFT, & CONNECTING ROD SERVICE (3 CR.)

Studies techniques of crankshaft and camshaft reconditioning to include grinding, polishing, straightening, welding and balancing. Teaches connecting rod service to include installing and reaming bushings, straightening, aligning, and balancing. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 120 INTRODUCTION TO AUTOMOTIVE MACHINE SHOP (3 CR.)

Prerequisite or corequisite for all other machinist courses. Introduces automotive machining operations emphasizing shop safety and the safe use of machine shop tools. Surveys basic machining operations and specialized auto machining techniques necessary for reconditioning engine and chassis components. Requires basic set of machinist's hand tools. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 121-122 AUTOMOTIVE FUEL SYSTEMS I-II (4 CR.) (4 CR.)

Analyzes major domestic and foreign automotive fuel systems to include carburetors and fuel injection systems. Includes detailed inspection and discussion of fuel tanks, connecting lines, instruments, filters, fuel pumps, superchargers, and turbo charger. Also includes complete diagnosis, troubleshooting, overhaul and factory adjustment procedures of all major carbureted and fuel injection systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 125 ANTI-POLLUTION SYSTEMS (3 CR.)

Studies various anti-pollution systems used on modern automobiles, installation, inspection, repair and service. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 130 INTRODUCTION TO AUTO MECHANICS (2 CR.)

Introduces auto mechanics, covering auto shop safety, tool identification and use. Explains automobile system theory and function. Stresses quality work practices and job opportunities. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUT 135 CONSUMER AUTO REPAIR (2 CR.)

Introduces basic study and practice of home maintenance and repair of automotive vehicles. Includes basic theory of the automobile, hand tool selection and use, and repair tasks able to be accomplished in the home garage without power equipment. Designed for non-automotive degree and certificate students only. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

AUT 141-142 AUTO POWER TRAINS I-II (4 CR.) (4 CR.)

Presents operation, design, construction and repair of power train components, standard and automatic transmission. Includes clutches, propeller shaft, universal joints, rear axle assemblies, fluid couplings, torque converters as well as 2, 3, and 4 speed standard, overdrive and automatic transmissions. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

AUT 156 SMALL GASOLINE ENGINES (2 CR.)

Studies small gasoline engine operating principles, construction, design, variety, and their many purposes. Gives instruction on two-cycle and four-cycle small gas engines, their construction, design, fuel system, ignition system, and lubricating systems. Demonstrates disassembly, reconditioning, overhaul and reassembly in the lab. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUT 161 AUTOMOTIVE DIAGNOSIS I (3 CR.)

Introduces principles of automotive maintenance using modern diagnostic methods. Uses theory and laboratory experiments designed to explain and illustrate scientific basis of modern electronic and mechanical diagnostic procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 215 EMISSIONS SYSTEMS DIAGNOSIS AND REPAIR (2 CR.)

Presents logical diagnostic paths to identify vehicle HC-CO failure areas. Teaches a progression of failure detection from most likely to more complex causes. Emphasizes use of infrared analyzer and manufacturer's specified adjustments. Lecture 2 hours per week.

AUT 217 COMPUTERIZED FUEL SYSTEMS (3 CR.)

Introduces devices which sense the engine condition and control fuel mixture to produce economical fuel consumption. Teaches theory of operation, testing, adjustment and repair or replacement of these devices. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 236 AUTOMOTIVE CLIMATE CONTROL (4 CR.)

Introduces principles of refrigeration, air conditioning controls, and adjustment and general servicing of automotive air conditioning systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 241-242 AUTOMOTIVE ELECTRICITY I-II (4 CR.) (4 CR.)

Introduces electricity and magnetism, symbols and circuitry as applied to the alternators, regulators, starters, lighting systems, instruments and gauges. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 245 AUTOMOTIVE ELECTRONICS (4 CR.)

Introduces field of electronics as it applies to the modern automobile. Emphasizes basic circuit operation, diagnosis and repair of dig-

ital indicator and warning systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 251-252 AUTOMATIC TRANSMISSIONS I-II (4 CR.) (4 CR.)

Studies several types of automatic transmissions, torque converters, and their principles of operation. Includes adjustment, maintenance, and rebuilding. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

AUT 266 AUTO ALIGNMENT, SUSPENSION AND STEERING (4 CR.)

Introduces use of alignment equipment in diagnosing, adjusting, and repairing front and rear suspensions. Deals with repair and servicing of power and standard steering systems. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

AUT 267 AUTOMOTIVE SUSPENSION AND BRAKING SYSTEMS (4 CR.)

Presents the operation, design, construction, repair and servicing of braking and suspension systems. Explains use of tools and test equipment, evaluation of test results, estimation and repair cost, front and rear suspension alignment, power and standard steering, and power, standard and disc brakes. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 273-274 AUTOMOTIVE DRIVEABILITY AND TUNE-UP I-II (3 CR.) (3 CR.)

Presents diagnostic and service procedures for automatic electrical and mechanical systems. Teaches use of tools and test equipment, evaluation of test results, estimation of repair cost. Emphasizes performance of required service. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 276 SHOP MANAGEMENT (3 CR.)

Studies shop layout, personnel and management, cost analysis, record keeping and quality control. Discusses shop manager, service salesman, and service writer's roles in customer relations. Lecture 3 hours per week.

AUT 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AVIATION**ARO 100 AVIATION IN THE UNITED STATES (3 CR.)**

Presents a study of evolution of air transportation in the United States. Includes study of growth of American aviation and the national airspace system and increasing role of government in aviation. Includes Air Commerce Act of 1926 to the present FAA. Lecture 3 hours per week.

ARO 110 FUNDAMENTALS OF FLIGHT (3 CR.)

Introduces the basic principles of flight, including applications of aerophysics, theory of flight, air craft standards and specifications, basic airplane construction, weight and balance fundamentals. Lecture 3 hours per week.

ARO 111 FLIGHT I (1 CR.)

Commences flight training. Teaches aeronautical skills necessary to meet the requirements for private pilot certificate. Consists of thirty-two hours of flight training. Requires a special fee. Laboratory 2 hours per week.

ARO 112 FLIGHT II (1 CR.)

Continues flight training for attaining private pilot certificate. Commences flight training toward the instrument rating. Consists of thirty-two hours of flight training. Laboratory 2 hours per week.

ARO 113 FLIGHT III (1 CR.)

Continues flight training toward the time instrument rating. Consists of thirty-two hours of flight training. Laboratory 2 hours per week.

ARO 114 FLIGHT IV (1 CR.)

Continues ARO 113. Consists of thirty-two hours of flight training. Laboratory 2 hours per week.

ARO 115 FLIGHT V (1 CR.)

Continues flight training toward instrument rating and Commercial Pilot Certificate. Consists of thirty-two hours of flight training. Laboratory 2 hours per week.

ARO 116 FLIGHT VI (1 CR.)

Continues flight training toward attainment of Commercial Pilot Certificate. Consists of thirty-two hours of flight training. Laboratory 2 hours per week.

ARO 119 PRIMARY FLIGHT (1 CR.)

Introduces flight through actual flying experience. Provides sixteen hours of instruction, 10 hours of dual flight and 6 hours of oral instruction and briefing. Laboratory 1 hour per week.

ARO 121 PRIVATE PILOT GROUND SCHOOL (3 CR.)

Presents the fundamental principles of flight including theory of flight, aircraft standards and specifications, basic aircraft construction, weight and balance, navigation, meteorology, principles of radio communication and application of aerophysics. Prepares students for the FAA examination for private pilot rating. Lecture 3 hours per week.

ARO 122 INSTRUMENT PILOT GROUND SCHOOL (3 CR.)

Covers principles applicable to instrument aviation requirements. Includes study of aerodynamics pertaining to instrument flight, flight instruments and airways. Prepares students for the FAA examination for instrument pilot rating. Lecture 3 hours per week.

ARO 123 COMMERCIAL PILOT GROUND SCHOOL (3 CR.)

Presents advanced theory of flight covering navigation, meteorology, radio communication, aerophysics and performance. Studies

federal aviation regulations. Prepares students for the FAA Examination for the commercial pilot rating. Lecture 3 hours per week.

ARO 130 HISTORY OF AIR TRANSPORTATION (3 CR.)

Studies the history of manned flight, development of aircraft, milestones in aviation, noted pioneers, and socio-economic impact of flight upon modern civilization. Lecture 3 hours per week.

ARO 140 AVIATION SAFETY (3 CR.)

Presents fundamentals essential to safe flight, instruments used and the evaluation and interpretation of their indications. Deals with weight and balance problems. Discusses federal aviation regulations pertaining to safe flight. Lecture 3 hours per week.

ARO 141 FLIGHT ATTENDANT'S INTRODUCTION (3 CR.)

Introduces the flight attendant's role in aviation from the beginning to the present day. Includes the advantages and disadvantages of the career. Discusses environment including bidding and scheduling, food and beverage service, emergency procedures, and post-flight responsibilities. Lecture 3 hours per week.

ARO 142 FLIGHT ATTENDANT'S DUTIES AND RESPONSIBILITIES (3 CR.)

Presents study of the flight attendant's image. Emphasizes health and appearance. Provides instruction and practice in interview preparation and communication skills. Lecture 3 hours per week.

ARO 210 AVIATION LAW (3 CR.)

Provides insight into federal agencies, as well as international, federal and local laws forming the present structure of aviation law. Lecture 3 hours per week.

ARO 220 METEOROLOGY (3 CR.)

Presents an introduction to interpretation of meteorological phenomena affecting flight. Studies basic concepts of aviation meteorology: temperature, pressure, moisture, stability, clouds, air masses, fronts, thunderstorms, icing, fog. Analyzes the weather data for flight planning and safe flying. Teaches interpretation of national weather service maps, reports, and forecast. Lecture 3 hours per week.

ARO 230 AIR NAVIGATION (3 CR.)

Covers basic elements of air navigation, fundamentals and practical application of pilotage and dead reckoning, including use of plotter, computer, aerial charts and navigation systems. Lecture 3 hours per week.

ARO 240 AIRCRAFT SUPPORT OPERATIONS (3 CR.)

Presents logistics and services necessary to insure and support safe, efficient flight operations. Discusses aviation supply and maintenance, loading and unloading, preflight checks and services, and logistical support en route. Lecture 3 hours per week.

ARO 245 AIRPORT OPERATIONS AND MANAGEMENT (3 CR.)

Studies airports as integral parts of the national airspace system. Includes major functions of airport management, organization,

financing, operations, safety and airport and airline security. Discusses role of governments in airport construction, modernization, certification and operation, and the airport and its socio-economic effect on the community. Lecture 3 hours per week.

ARO 255 MULTI-ENGINE CLASS RATING (3 CR.)

Prerequisite FAA Pilot Certificate. Provides instruction and flight training in preparation for the multi-engine rating. Includes transition to multi-engine aircraft systems and operations, emergency procedures, and will provide the aeronautical knowledge and skill to meet requirements for the addition of a multi-engine land class rating to an existing pilot certificate. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

ARO 256 CERTIFIED FLIGHT INSTRUCTOR—INSTRUMENT (3 CR.)

Prerequisite FAA Certified Flight Instructor Certificate Airplane. Provides instruction and flight training in preparation for flight instructor certification instrument rating. Principles and methods for instrument flying instruction, comprehensive coverage of instrument flight maneuvers, and aeronautical knowledge and skill necessary for instructing instrument flight. Lab fee required. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

ARO 257 CERTIFIED FLIGHT INSTRUCTOR—AIRPLANE (5 CR.)

Prerequisite FAA Commercial Pilot Certificate and Instrument Airplane Rating. Provides instruction and flight training in preparation for flight instructor certification. Includes training syllabus and lesson plan development, teaching methods, flight instruction methods, performance evaluation, instructor responsibilities, and instructing private and commercial flight students. Lecture 3 hours. Laboratory 4 hours. Total 7 hours per week.

ARO 258 CERTIFIED FLIGHT INSTRUCTOR—MULTI-ENGINE (3 CR.)

Prerequisite FAA Commercial Pilot Certificate and FAA Certified Flight Instructor Certificate Airplane. Provides instruction and flight training in preparation for flight instructor certification multi-engine rating. Includes principles and methods for multi-engine flight instruction, comprehensive coverage of multi-engine flight maneuvers, and aeronautical knowledge and skill necessary for instructing instrument flight. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

ARO 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

BIOLOGY

BIO 001 FOUNDATIONS OF BIOLOGY (4 CR.)

Develops a basic understanding of plant and animal form, function, and relationships. Prepares students who have a deficiency in high school biology. May be repeated for credit. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

BIO 100 BASIC HUMAN BIOLOGY (3 CR.)

Presents basic principles of human anatomy and physiology. Discusses cells, tissues, and selected human systems. Lecture 3 hours per week.

BIO 101-102 GENERAL BIOLOGY I-II (4 CR.) (4 CR.)

Explores fundamental characteristics of living matter from the molecular level to the ecological community with emphasis on general biological principles. Introduces the diversity of living organisms, their structure, function and evolution. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 110 GENERAL BOTANY (4 CR.)

Emphasizes plant life cycles, anatomy, morphology, taxonomy, and evolution. Considers the principles of genetics, ecology, and physiology. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 120 GENERAL ZOOLOGY (4 CR.)

Presents basic biological principles, and emphasizes structure, physiology and evolutionary relationships of invertebrates and vertebrates. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 141-142 HUMAN ANATOMY AND PHYSIOLOGY I-II (4 CR.) (4 CR.)

Integrates anatomy and physiology of cells, tissues, organs, and systems of the human body. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 146 HUMAN HEREDITY (3 CR.)

Surveys basic principles of classical and molecular genetics as applied to humans. Lecture 3 hours per week.

BIO 150 INTRODUCTORY MICROBIOLOGY (4 CR.)

Studies the general characteristics of microorganisms. Emphasizes their relationships to individual and community health. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 205 GENERAL MICROBIOLOGY (4 CR.)

Prerequisites one year of college biology and one year of college chemistry or divisional approval. Examines morphology, genetics, physiology, ecology, and control of microorganisms. Emphasizes application of microbiological techniques to selected fields. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 206 CELL BIOLOGY (4 CR.)

Prerequisite one year of college biology or one year of college chemistry. Introduces the ultrastructure and functions of cells. Empha-

sizes cell metabolism, cell division, and control of gene expression. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 225
INVERTEBRATE ZOOLOGY (4 CR.)**

Prerequisites BIO 101-102 or equivalent. Focuses on structure, embryology, function, ecology, classification and evolution of invertebrate animals. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 226 VERTEBRATE ZOOLOGY (4 CR.)

Prerequisites BIO 101-102. Focuses on structure, embryology, function, ecology, classification, and evolution of vertebrate animals. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 231-232 HUMAN ANATOMY
AND PHYSIOLOGY I-II (4 CR.) (4 CR.)**

Prerequisites one year of college biology and one year of college chemistry or divisional approval. Integrates the study of gross and microscopic anatomy with physiology, emphasizing the analysis and interpretation of physiological data. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 245 COMPARATIVE
ANATOMY OF VERTEBRATES (4 CR.)**

Prerequisites BIO 101-102 or equivalent. Compares the gross morphology of larger taxonomic groups of chordates with emphasis on their evolution. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 246
VERTEBRATE EMBRYOLOGY (4 CR.)**

Prerequisites BIO 101-102 or equivalent. Describes and analyzes developmental processes in higher vertebrates including laboratory study of the frog, chick, and pig. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 256 GENERAL GENETICS (4 CR.)

Prerequisites BIO 101-102 or equivalent. Explores the principles of genetics ranging from classical Mendelian inheritance to the most recent advances in the biochemical nature and function of the gene. Includes experimental design and statistical analysis. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 265 BIOLOGY OF
NON-VASCULAR PLANTS (4 CR.)**

Prerequisites BIO 101-102 or equivalent. Covers lower plants and fungi. Studies major taxonomic groups, their morphology, life cycles, ecology, physiology, and economic importance. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 266 BIOLOGY OF
VASCULAR PLANTS (4 CR.)**

Prerequisites BIO 101-102 or equivalent. Covers higher plants—nonflowering and flowering. Studies major taxonomic groups, their morphology, life cycles, ecology, phys-

iology and economic importance. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 270 GENERAL ECOLOGY (4 CR.)

Prerequisites BIO 101-102 or divisional approval. Studies interrelationships between organisms and their natural and cultural environments with emphasis on populations, communities, and ecosystems. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 275 MARINE ECOLOGY (4 CR.)

Prerequisites BIO 101-102 or divisional approval. Applies ecosystem concepts to marine habitats. Includes laboratory and field work. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 276 FRESHWATER ECOLOGY (4 CR.)

Prerequisites BIO 101-102 or divisional approval. Applies ecosystem concepts to freshwater habitats. Includes laboratory and field work. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 277 REGIONAL FLORA (3 CR.)

Stresses family characteristics of vascular plants including identification and classification of local flora. Lecture 2 hours. Recitation and laboratory 3 hours. Total 5 hours per week.

**BIO 297
COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

BUILDING

**BLD 100 CONSTRUCTION INSPECTION,
PLAN REVIEW AND CODES (4 CR.)**

Introduces the construction inspection profession, qualifications of the inspector, methods and procedures for field report writing, records on public relations, safety on construction sites, and the legal aspects governing the construction inspector. Includes study and interpretation of the basic building codes as they relate to construction of residential, commercial, and public facilities. Interprets working drawings and construction specifications for compliance with basic building codes. Lecture 4 hours per week.

**BLD 101 CONSTRUCTION
MANAGEMENT I (3 CR.)**

Presents overviews of all phases of construction project management. Introduces students to philosophy, responsibilities, methodology, and techniques of the construction process. Introduces topics related to the construction and design industries, organizations, construction contracts, bidding procedures, insurance, taxes, bonding, cost accounting, business methods, including basic computer usage, safety and general project management procedures. Lecture 3 hours per week.

**BLD 102 CONSTRUCTION
MANAGEMENT II (3 CR.)**

Emphasizes advanced management techniques and methodology. Includes engineering economics, accounting principles, life cycle costing, value engineering, systems analysis with computer applications, work improvement, quality control, and a broad overview of the construction management profession. Lecture 3 hours per week.

**BLD 103 PRINCIPLES OF RESIDENTIAL
BUILDING CONSTRUCTION
INSPECTION (3 CR.)**

Corequisite BLD 100. Introduces general principles of residential building inspection including materials, foundations, framing, finishing, and building codes. Lecture 3 hours per week.

**BLD 104 PRINCIPLES OF CONCRETE
AND STEEL FRAME INSPECTION (4 CR.)**

Introduces fundamentals of concrete and new developments that directly apply to modern construction technology. Develops an understanding of the ingredients of concrete, properties of concrete, mix proportions and testing procedures which result in quality controlled product, concrete form use and removal. Teaches fundamentals of modern steel framing methods and non-destructive testing methods. Introduces principles, techniques and materials used in the fireproofing of steel structural elements utilized in construction projects to comply with national fire protection standards and local codes. Lecture 4 hours per week.

**BLD 112 PRINCIPLES OF ELECTRICAL
INSPECTION (3 CR.)**

Teaches fundamentals of electrical wiring systems used in residential, commercial and industrial buildings. Introduces principles of computing loads on circuits, services and feeders, and the use and procedures of using measuring and testing equipment. Includes national and local electrical codes for safe installation of wiring systems. Lecture 3 hours per week.

**BLD 113 PRINCIPLES OF MECHANICAL
AND PLUMBING INSPECTION (4 CR.)**

Presents fundamentals and theory of heating, cooling and refrigeration terminology and the fundamentals of sanitary plumbing systems terminology and symbols as used in layout of the various systems. Introduces the code and inspections problems for commercial, industrial and residential public and private sanitary systems. Lecture 4 hours per week.

**BLD 164 CONSTRUCTION
LEADERSHIP AND MOTIVATION (2 CR.)**

Presents the functions, responsibilities, and leadership of a construction supervisor, including office and field management, construction labor laws, labor relations, safety, and construction laws. Lecture 2 hours per week.

**BLD 165 CONSTRUCTION FIELD
OPERATIONS (2 CR.)**

Introduces areas of construction field management which relate directly to on-the-job requirements of construction operations

viewed from the construction superintendent's standpoint. Includes theories of project management and field supervision; utilization of equipment, labor and material; construction site development; requirements of field scheduling; management input requirements; job recording and documentation; supervision responsibility. May include field trips to project sites. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

BLD 166 CONSTRUCTION LAW (2 CR.)

Prerequisite divisional approval. Presents general principles of construction law pertaining to contract documents, general conditions, changes in specifications, pricing of claims, arbitration, design responsibility, mechanic's liens, delays, and construction management. Lecture 2 hours per week.

BLD 167 PROBLEM-SOLVING AND DECISION-MAKING (2 CR.)

Applies problem-solving and decision-making techniques to the problems encountered by the construction foreman or superintendent. Lecture 2 hours per week.

BLD 168 CONTRACT DOCUMENTS (2 CR.)

Interprets and integrates specifications and drawings into the construction supervision process. Identifies interrelationships of authority and legal and social implications of supervisor's role as an agent of the contractor. Lecture 2 hours per week.

BLD 169 COST AWARENESS AND PRODUCTION CONTROL (2 CR.)

Introduces the construction cycle and the preparation estimate, cost reports, and work schedules for commercial construction. Emphasizes techniques for controlling construction costs and evaluating past projects. Lecture 2 hours per week.

BLD 170 INTRODUCTION TO PROJECT MANAGEMENT (2 CR.)

Teaches fundamentals of basic techniques such as applied planning, organizing and staffing a construction project. Emphasizes techniques for purchasing and receiving materials and monitoring subcontractor work. Lecture 2 hours per week.

BLD 175 CONSTRUCTION PRODUCTIVITY IMPROVEMENT (2 CR.)

Introduces techniques used to improve productivity including planning, communications, motivation, time management and an analysis of work methods. Lecture 2 hours per week.

BLD 177 PLANNING SCHEDULING TECHNIQUES (2 CR.)

Introduces principles and use of modern planning, scheduling and control techniques. Includes graph preparation, updating and analysis of arrow-diagrams, project progress and manpower reports. Lecture 2 hours per week.

BLD 210 BUILDING STRUCTURES (3 CR.)

Introduces analysis and design of steel, wood, and reinforced concrete structural members including loads, reactions, bending moments, stresses, and deflection for selection of beam and column sizes. Considers

bolted and welded connections in steel design. Introduces determination of reinforcing steel sizes and arrangements in concrete members. Lecture 3 hours per week.

BLD 231 CONSTRUCTION ESTIMATING I (3 CR.)

Focuses on materials take-off and computing quantities from working drawings and specifications. Includes methods for computing quantities of concrete, steel, masonry, roofing, excavation. Deals with pricing building components, materials and processes, as well as transportation and handling costs, mark-up discount procedures, equipment cost and labor rates. Lecture 3 hours per week.

BLD 232 CONSTRUCTION ESTIMATING II (3 CR.)

Prerequisite BLD 231. Presents an introduction to computer programs for construction estimating. Produces a cost estimate for a major project with the aid of a computer program. Lecture 3 hours per week.

BLD 241 CONSTRUCTION MANAGEMENT I (3 CR.)

Presents fundamentals of construction supervision including responsibilities of the construction superintendent, operations manager, general superintendent and project engineer, with factors relating to their work and that of their subordinates, aspects of job leadership and effective human relations as related to efficient supervision. Lecture 3 hours per week.

BLD 242 CONSTRUCTION MANAGEMENT II (3 CR.)

Presents a comprehensive overview of all aspects of construction law and labor relations, exposing the students to responsibilities and requirements. Includes history of labor relations in the United States, trade unionism, federal labor laws and their direct effect on construction, OSHA (Occupational Safety and Health Act) laws and regulations that apply. Lecture 3 hours per week.

BLD 247 CONSTRUCTION PLANNING AND SCHEDULING (3 CR.)

Introduces principles of planning and scheduling of a construction project. Includes sequence of events and processes on a construction site. Studies scheduling techniques including the critical path method. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

BUSINESS MANAGEMENT AND ADMINISTRATION

BUS 100 INTRODUCTION TO BUSINESS (3 CR.)

Presents a broad introduction to the functioning of business enterprise within the U.S. economic framework. Introduces economic systems, essential elements of business organization, finance, marketing, production,

and risk and human resource management. Lecture 3 hours per week.

BUS 111 PRINCIPLES OF SUPERVISION I (3 CR.)

Teaches the fundamentals of supervision, including the primary responsibilities of the supervisor. Introduces factors relating to the work of supervisor and subordinates. Covers aspects of leadership, job management, work improvement, training and orientation, performance evaluation, and effective employee/supervisor relationships. Lecture 3 hours per week.

BUS 115 ORGANIZATIONAL BEHAVIOR (3 CR.)

Presents a behaviorally oriented course combining the functions of management with the psychology of leading and managing people. Focuses on the effective use of human resources through understanding human motivation and behavior patterns, conflict management and resolution, group functioning and process, the psychology of decision-making, and the importance of recognizing and managing change. Lecture 3 hours per week.

BUS 116 ENTREPRENEURSHIP (3 CR.)

Presents the various steps considered necessary when going into business. Includes areas such as product-service analysis, market research evaluation, setting up books, ways to finance startup, operations of the business, development of business plans, buyouts versus starting from scratch, and franchising. Uses problems and cases to demonstrate implementation of these techniques. Lecture 3 hours per week.

BUS 121 BUSINESS MATHEMATICS I (3 CR.)

Prerequisite MTH 120. Applies mathematics to business processes and problems such as checkbook records and bank reconciliation, simple interest notes, present value, bank discount notes, wage and payroll computations, depreciation, sales and property taxes, commercial discounts, markup and markdown, and inventory turnovers and valuation. Lecture 3 hours per week.

BUS 122 BUSINESS MATHEMATICS II (3 CR.)

Applies mathematical operations to business problems, such as insurance, distribution of profit and loss in partnerships, distribution of corporate dividend; overhead, financial statements and ratios, sinking funds, compound interest, amortization, annuities, present value, basic statistics, break-even analysis, and multiple payment plans. Lecture 3 hours per week.

BUS 125 APPLIED BUSINESS MATHEMATICS (3 CR.)

Prerequisite MTH 120. Applies mathematics to business process and problems such as checkbook records and bank reconciliation, simple interest, present value, bank discount notes, depreciation, commercial discounts, markup and markdown, distribution of profit and loss in partnerships, distribution of corporate dividends, sinking funds, compound

interest, amortization, annuities, and multiple payment plans. Lecture 3 hours per week.

BUS 145 GOVERNMENT REGULATION OF BUSINESS (3 CR.)

Introduces federal, state, and local government rules and regulations, and their effect on private business and industry. Covers (but is not limited to) EEO, Affirmative Action, OSHA, EPA, DOT, and Hazardous Materials Regulations. Emphasizes effect these regulations have on business activities and profits and their importance to all levels of management. Lecture 3 hours per week.

BUS 146 INTRODUCTION TO LABOR RELATIONS (3 CR.)

Examines history of the labor unions, labor contracts, bargaining processes, philosophy of unionism; use of bargaining techniques for nonwage issues; legal, social, and economic context of labor-management relations; responsibilities and duties of unions and management; analysis of public policy, and current state of the labor movement. May apply simulation and cases of arbitration and collective bargaining procedures. Lecture 3 hours per week.

BUS 150 PRINCIPLES OF MANAGEMENT (3 CR.)

Prerequisite BUS 100. Teaches management and the management functions of planning, organizing, directing and controlling. Focuses on application of management principles to realistic situations managers encounter as they attempt to achieve organizational objectives. Lecture 3 hours per week.

BUS 155 APPLIED MANAGEMENT PRINCIPLES (3 CR.)

Prerequisite BUS 150. Focuses on management practices and issues. May use case studies and/or management decision models to analyze and develop solutions to management problems. Lecture 3 hours per week.

BUS 157 WOMEN IN MANAGEMENT (3 CR.)

Introduces responsibilities, functions and decisions required in or preparing for a management position, and impact of these decisions on women. Presents a comprehensive view of how women may establish and maintain their effectiveness as managers at all levels within an organization. Lecture 3 hours per week.

BUS 165 SMALL BUSINESS MANAGEMENT (3 CR.)

Identifies management concerns unique to small businesses. Introduces the requirements necessary to initiate a small business, and identifies the elements comprising a business plan. Presents information establishing financial and administrative controls, developing a marketing strategy, managing business operations, and the legal and government relationships specific to small businesses. Lecture 3 hours per week.

BUS 205 HUMAN RESOURCE MANAGEMENT (3 CR.)

Introduces employment, selection, and placement of personnel, usage levels and methods, job descriptions, training methods and programs, and employee evaluation systems.

Includes procedures for management of human resources and uses case studies and problems to demonstrate implementation of these techniques. Lecture 3 hours per week.

BUS 206 PUBLIC RELATIONS IN MANAGEMENT (3 CR.)

Presents public relations as a management responsibility and introduces the theory of public relations. Focuses on public relations techniques and their application to gaining and maintaining understanding and support for an organization from the employee, community, customer, supplier, and stockholder. Uses lectures, demonstrations, and case problems. Lecture 3 hours per week.

BUS 215 PURCHASING AND MATERIALS MANAGEMENT (3 CR.)

Prerequisite ACC 211. Teaches the principles of effective purchasing and management of materials and equipment. Includes determination of requirements, source selection, pricing, value analysis, contracting, inventory management, and equipment requisition decisions. Lecture 3 hours per week.

BUS 221 BUSINESS STATISTICS I (3 CR.)

Prerequisite MTH 165 or divisional approval. Focuses on statistical methodology in the collection, organization, presentation, and analysis of data; concentrates on measures of central tendency, dispersion, probability concepts and distribution, sampling, statistical estimation, normal and T distribution and hypotheses for means and proportions. Lecture 3 hours per week.

BUS 222 BUSINESS STATISTICS II (3 CR.)

Prerequisite BUS 221 or divisional approval. Continues study of inferential statistics and application of statistical techniques and methodology in business. Includes analysis of variance, regression and correlation measurement of business and economic activity through the use of index numbers, trend, cyclical, and seasonal effects and the Chi-Square distribution and other non-parametric techniques. Lecture 3 hours per week.

BUS 225 APPLIED BUSINESS STATISTICS (3 CR.)

Introduces statistics as a tool in decision making. Emphasizes ability to collect, present, and analyze data. Employs measures of central tendency and dispersion, statistical inference, index number, and time series analysis. Lecture 3 hours per week.

BUS 226 MICROCOMPUTER APPLICATION IN BUSINESS (3 CR.)

Prerequisite keyboarding competence. Provides a practical application of software packages. Offers a working knowledge of spreadsheets, word processing, database management, outlining and graphics. Includes the use of programs in accounting techniques, word processing, and management science application. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

BUS 241 BUSINESS LAW I (3 CR.)

Presents a broad introduction to legal environment of U.S. business. Develops a basic

understanding of contract law and agency and government regulation. Lecture 3 hours per week.

BUS 242 BUSINESS LAW II (3 CR.)

Prerequisite BUS 241 or divisional approval. Develops a basic understanding of the uniform commercial code relating to business organization bankruptcy, and personal and real property. Lecture 3 hours per week.

BUS 265 ETHICAL ISSUES IN MANAGEMENT (3 CR.)

Examines the legal, ethical, and social responsibilities of management. May use cases to develop the ability to think and act responsibly. Lecture 3 hours per week.

BUS 266 PRODUCTION AND OPERATIONS MANAGEMENT (3 CR.)

Examines the process by which both goods and services producing businesses, many not-for-profit institutions, and governmental agencies transform resources into an end product to meet the demands of customers or clients. Includes a survey of some of the quantitative methods involved in the process. Lecture 3 hours per week.

BUS 280 INTRODUCTION TO INTERNATIONAL BUSINESS (3 CR.)

Studies the problems, challenges, and opportunities which arise when business operations or organizations transcend national boundaries. Examines the functions of international business in the economy, international and transnational marketing, production, and financial operations. Lecture 3 hours per week.

BUS 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

CHEMISTRY

CHM 001 CHEMISTRY I (1-5 CR.)

Presents basic inorganic and organic principles to students with little or no chemistry background. Can be taken in subsequent semesters as necessary until course objectives are completed. Variable hours per week.

CHM 101-102 GENERAL CHEMISTRY I-II (4 CR.) (4 CR.)

Designed for the non-science major. Emphasizes experimental and theoretical aspects of inorganic, organic, and biological chemistry. Discusses general chemistry concepts as they apply to issues within our society and environment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHM 111-112 COLLEGE CHEMISTRY I-II (4 CR.) (4 CR.)

Requires a strong background in mathematics. Designed primarily for science and engineering majors. Explores the fundamental laws, theories, and mathematical concepts of chemistry. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**CHM 121-122 HEALTH SCIENCE
CHEMISTRY I-II (4 CR.) (4 CR.)**

Introduces the health science student to concepts of inorganic, organic, and biological chemistry as applicable to the allied health profession. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**CHM 135 HORTICULTURAL
CHEMISTRY (3 CR.)**

Introduces inorganic and organic structures and the pH concept. Applies these principles to selected topics in horticulture. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**CHM 140 SURVEY OF ORGANIC
CHEMISTRY (3 CR.)**

Prerequisite high school chemistry or equivalent. Introduces fundamentals of organic chemistry for students not intending to specialize in chemistry. Focuses on nomenclature, classification, and reactions of organic compounds. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**CHM 241-242 ORGANIC
CHEMISTRY I-II (3 CR.) (3 CR.)**

Corequisite CHM 243-244 or CHM 245-246. Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Lecture 3 hours per week.

**CHM 243-244 ORGANIC CHEMISTRY
LABORATORY I-II (1 CR.) (1 CR.)**

Is taken concurrently with CHM 241 and CHM 242. Laboratory 3 hours per week.

**CHM 245-246 SPECIAL ORGANIC
CHEMISTRY****LABORATORY I-II (2 CR.) (2 CR.)**

Is taken concurrently with CHM 241 and CHM 242 by chemistry and chemical engineering majors. Includes qualitative organic analysis. Laboratory 6 hours per week.

**CHM 251-252 QUANTITATIVE
ANALYSIS I-II (4 CR.) (4 CR.)**

Prerequisite CHM 112 or equivalent. Develops the theory and methods of volumetric and gravimetric analysis. Teaches specific analytical procedures involving instrumental methods of analysis. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

**CHM 255
INSTRUMENTAL ANALYSIS (3 CR.)**

Prerequisite CHM 112 or equivalent. Introduces general principles and applications of specific instrumental methods. Emphasizes practical analysis of everyday and/or industrial substances. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**CHM 260 INTRODUCTORY
BIOCHEMISTRY (3 CR.)**

Prerequisite CHM 112 or divisional approval. Explores fundamentals of biological chemistry. Includes study of macromolecules, metabolic pathways, and biochemical genetics. Lecture 3 hours per week.

**CHM 297
COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

CHINESE**CHI 101-102 BEGINNING SPOKEN
CHINESE I-II (5 CR.) (5 CR.)**

Introduces beginning student to spoken Chinese (Mandarin) with major emphasis on learning to comprehend and speak the Chinese language within a limited context of vocabulary and structure. Lecture 5 hours per week.

**CHI 111-112 BEGINNING CHINESE
READING AND WRITING I-II (3 CR.) (3 CR.)**

Introduces the reading and writing of modern standard Chinese. Emphasizes vocabulary build-up and practice in reading and writing. May be taken in conjunction with Beginning Spoken Chinese. Lecture 3 hours per week.

**CHI 201-202 CONVERSATIONAL
CHINESE (MANDARIN) I-II (3 CR.) (3 CR.)**

Prerequisite CHI 102. Offers intensive practice in comprehending and speaking Chinese, with emphasis on developing structure and fluency. Lecture 3 hours per week.

**CHI 211-212 INTERMEDIATE CHINESE
READING AND WRITING I-II (3 CR.) (3 CR.)**

Prerequisite CHI 112. Continues the study of the reading and writing of modern standard Chinese, including word combinations, syntax, and the writing of short compositions. May be taken in conjunction with Conversational Chinese. Lecture 3 hours per week.

**CIVIL ENGINEERING
TECHNOLOGY****CIV 115 CIVIL ENGINEERING
DRAFTING (3 CR.)**

Introduces terminology and drafting procedures related to civil engineering. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**CIV 116
TOPOGRAPHIC DRAFTING (3 CR.)**

Focuses on the development of techniques for topographic data computation, topographic map preparation and interpretation. Includes preparation of maps from survey field data, terrestrial and aerial photography, and techniques for the use of color in topographic presentations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**CIV 145 APPLIED SOIL EROSION AND
SEDIMENT CONTROL (2 CR.)**

Focuses on the implementation of erosion and sediment control plans and inspection of construction sites based on local programs in accordance with Virginia law and the Virginia Erosion and Sediment Control Handbook. Lecture 2 hours per week.

CIV 171 SURVEYING I (3 CR.)

Introduces surveying equipment, procedures and computations including adjustment of instruments, distance measurement, leveling, angle measurement, traversing, traverse adjustments, area computations and introduction to topography. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 172 SURVEYING II (3 CR.)

Introduces surveys for transportation systems including the preparation and analysis of topographic maps, horizontal and vertical curves, earthwork and other topics related to transportation construction. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**CIV 201
SUBURBAN DEVELOPMENT I (3 CR.)**

Presents the preparation of preliminary plans, subdivision computations and preparation of record plats for residential areas. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**CIV 202
SUBURBAN DEVELOPMENT II (3 CR.)**

Focuses on calculating flow quantities, design of sanitary sewer laterals, street grades and storm sewers pertinent to Virginia "3-B" land surveyor registration laws. Teaches preparation of plans and profiles, preparation of residential development plans and commercial site plans, and flood plain studies. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIV 210 STRUCTURAL SYSTEMS (5 CR.)

Prerequisite EGR 130 or equivalent. Introduces the application of the principles of mechanics and strength of materials to the analysis and design of civil engineering structures, specifically in the areas of building and highway construction, timber, steel and concrete structures. Lecture 5 hours per week.

**CIV 217
STRUCTURAL DRAFTING (2 CR.)**

Presents the fundamentals of structural drafting including the design and fabrication of frame connections, column detailing, welding connections, shop details, and general drafting room procedure. Laboratory includes drawings of timber, steel, and reinforced concrete structures. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

CIV 225 SOIL MECHANICS (2 CR.)

Focuses on soil in its relationship to engineering construction. Includes soil composition and structure, weight-volume relationships, sampling procedures, classification systems, water in soil, stresses, strains, bearing capacity, settlement and expansion, compaction, stabilization, and introduction to foundations and retaining walls. Lecture 2 hours per week.

**CIV 226 SOIL MECHANICS
LABORATORY (1 CR.)**

Introduces practical soil sampling; classification of unified, ASTM and ASSHTO specifications; laboratory testing of soils to predict engineering performance. Laboratory 2 hours per week.

CIV 227 CONCRETE AND SOIL TECHNOLOGY (3 CR.)

Teaches properties of portland cement concrete, methods of mix design, use and placement of concrete, soil and its relationship to engineering construction. Includes properties of soil with introduction to retaining walls, piles, underground conduits, and earth dams. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 228 CONCRETE TECHNOLOGY (2 CR.)

Introduces properties of portland cement concrete, methods of mix design and adjustment, transportation, placement and curing in accordance with ACI and PCA recommended procedures. Lecture 2 hours per week.

CIV 229 CONCRETE LABORATORY (1 CR.)

Focuses on mixing, curing, testing and quality control of concrete. Laboratory 2 hours per week.

CIV 241-242 APPLIED HYDRAULICS AND DRAINAGE I-II (3 CR.) (3 CR.)

Presents the basic fundamentals of hydrology and hydraulics to the practical problems of drainage design. The use of design aids with supportive theory is stressed to insure an understanding of the background, the theory of development, basic assumptions and limitations of the various methods of estimating storm water run off and hydraulic structure design. Lecture 3 hours per week.

CIV 261 ADVANCED SURVEYING I (3 CR.)

Prerequisite CIV 172 or equivalent. Introduces layout of curves under complex field conditions. Explores route surveying, vertical curves, slope boundaries, legal aspects of surveying, original surveys and resurveys, public land surveys. Discusses topics in surveying, astronomy, and celestial observations. Provides drills in the use of theodolite and electronic equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 262 ADVANCED SURVEYING II (3 CR.)

Presents topics in surveying astronomy and celestial observations, precise leveling and triangulation, introduction to photogrammetry and electronic surveying, and use of related surveying equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 265 CURVES AND EARTHWORK (3 CR.)

Studies computations of simple, compound and transition curves; grades and vertical curves; earthwork and haul quantities. Lecture 3 hours per week.

CIV 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

COMPUTER INFORMATION SYSTEMS**CIS 100 INTRODUCTION TO INFORMATION SYSTEMS (3 CR.)**

Introduces students to general concepts of processing data on computer information systems. Presents terminology and effects of computers on daily life. Discusses available hardware and software as well as their applications. Exposes students to the system development process. May include "hands on" experience. Lecture 3 hours per week.

CIS 106 INTRODUCTION TO INTERACTIVE COMPUTING (1 CR.)

Introduces time sharing for the Virginia Community College System computer network. Includes procedures for signing on and off, creating, compiling, debugging and executing programs, entering and updating files, and directing output to a printer. Provides knowledge of editor and batch concepts. Lecture 1 hour per week.

CIS 116 COMPUTERS AND INFORMATION SYSTEMS (1 CR.)

Introduces terminology, concepts and methods of using computers in information systems. Is a computer literacy course, not intended for Computer Information System majors. Lecture 1 hour per week.

CIS 121 COMPUTER PROGRAMMING: BASIC I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing BASIC programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 125 COMPUTER PROGRAM DESIGN (3 CR.)

Corequisite MTH 120 or divisional approval. Teaches design of programming solutions to common processing problems in information systems. Surveys methods and styles of structured modular design, using recognized design tools. May include "hands-on" experience. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 126 COMPUTER SYSTEM ARCHITECTURE (3 CR.)

Prerequisite CIS 100. Teaches number systems and data storage formats of computers, leading to ability to read computer "dumps." Includes matching language instructions and their format, components and operation of the CPU and overload processing of the CPU and I/O equipment. Includes the interrupt architecture of IBM mainframe and other systems. Lecture 3 hours per week.

CIS 131 COMPUTER PROGRAMMING: COBOL I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing COBOL programs from stated problems or specifications and applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing

programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 141 COMPUTER PROGRAMMING: PASCAL I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing Pascal programs from stated problems or specifications and applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 145 COMPUTER APPLICATIONS (1 CR.)

Introduces design, coding, testing, and debugging of application programs. Includes "hands on" use of computers and a high-level computer language. Lecture 1 hour per week.

CIS 150 INTRODUCTION TO MICROCOMPUTER SOFTWARE (3 CR.)

Provides a working introduction to microcomputer software, fundamentals, and applications. Includes operating systems, word processing spreadsheet and database software. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 151 COMPUTER PROGRAMMING: FORTRAN I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing FORTRAN programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 155 MICROCOMPUTER WORD PROCESSING SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides hands-on introduction to microcomputer word processing software. Teaches creation, modification, reformatting, and printing of text. Offers a working knowledge of a commercial word processing package. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 157 MICROCOMPUTER SPREADSHEET SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides hands-on introduction to microcomputer spreadsheet software. Includes creating a spreadsheet for data analysis, integrating information from database, displaying results in graphic format, techniques for "what if" analyses, and introduction to macros. Offers a working knowledge of a commercial spreadsheet package. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 158 MICROCOMPUTER DATABASE MANAGEMENT SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides hands-on introduction to microcomputer software for database management. Teaches planning, defining, and using a database; performing queries; producing reports; working with multiple files; and concepts of database programming. Offers a working knowledge of a commercial database

package. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 159 BUSINESS GRAPHICS SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides a working knowledge of several microcomputer business graphics packages. Includes techniques for evaluation and selection of graphics software. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 161 COMPUTER PROGRAMMING: ASSEMBLER I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing ASSEMBLER programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 166 MICROCOMPUTER INTEGRATED SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides hands-on introduction to integrated software packages for microcomputers. Teaches integration of spreadsheet database management with word processing and telecommunication software. Includes import/export facilities. Offers working knowledge of an integrated software package. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 173 COMPUTER PROGRAMMING: PL/1 (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing PL/1 programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 175 COMPUTER PROGRAMMING: ADA I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing ADA programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 176 COMPUTER PROGRAMMING: "C" I (4 CR.)

Prerequisite CIS 125 and knowledge of a high-level computer language or divisional approval. Teaches writing "C" programs from stated problems or specifications and applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 197 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

CIS 205 JOB CONTROL LANGUAGE (3 CR.)

Prerequisite CIS 125 or divisional approval. Focuses on task flow, job flow and operating systems communication through use of Job Control Language. Teaches the JCL statements, catalog procedures, symbolics and load module/file interfaces. Lecture 3 hours per week.

CIS 225 COMPUTER INFORMATION SYSTEM DEVELOPMENT (3 CR.)

Prerequisite CIS 100 or divisional approval. Presents a structured approach to defining needs, creating specifications, and implementing new information systems. Emphasizes business-oriented, computer-based systems. Defines common processes and procedures. Includes data modelling, report generation, life cycle methodology, and traditional and structured tools for development. Lecture 3 hours per week.

CIS 227 COMPUTER SYSTEMS SELECTION AND ACQUISITION (3 CR.)

Prerequisite CIS 225 or divisional approval. Provides a study of selection and acquisition of a computer system's hardware and software components. Compares features and capabilities of available hardware and software. Studies selection criteria and methods of acquisition and procurement. Lecture 3 hours per week.

CIS 228 MICROCOMPUTERS: OPERATING SYSTEMS, ARCHITECTURE, AND HARDWARE (3 CR.)

Prerequisite or corequisite a high-level programming language or divisional approval. Focuses on microcomputer architecture, operating systems, internal functions, and peripheral equipment interfaces. Teaches memory segmentation, instruction and data formats, and interaction with user software. Lecture 3 hours per week.

CIS 229 MAINFRAMES: OPERATING SYSTEMS ARCHITECTURE AND HARDWARE (3 CR.)

Prerequisite or corequisite a high-level programming language or divisional approval. Focuses on mainframe computer operating systems and their interaction with user programs. May include interrupt handling, virtual storage, dynamic address translation, dump reading, task management, performance considerations, and basic operating system control blocks. Lecture 3 hours per week.

CIS 230 INTRODUCTION TO TELECOMMUNICATIONS (3 CR.)

Prerequisite CIS 100 or divisional approval. Surveys data transmission systems, communication lines, data sets, network, modes of transmission. Emphasizes multiplexing in a network structure. Focuses on both intelligent and non-intelligent terminals. Lecture 3 hours per week.

CIS 231 COMPUTER PROGRAMMING: COBOL II (4 CR.)

Prerequisite CIS 131 or divisional approval. Emphasizes advanced structured programming techniques and procedures for more

complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 233-234 EDUCATIONAL COMPUTER APPLICATIONS I-II (3 CR.) (3 CR.)

Emphasizes computer assisted instruction (CAI), specialized software, and their incorporation in the classroom. Requires developing a lesson using CAI and an authoring language. Includes a discussion of microcomputer hardware. Designed for individuals who need to locate, evaluate, and use educational software. Lecture 3 hours per week.

CIS 235 TELECOMMUNICATION SOFTWARE (3 CR.)

Prerequisite CIS 230 or divisional approval. Surveys components, functions and relationships of telecommunication software. Introduces network control programs, network architecture, line protocols and communication access methods. Lecture 3 hours per week.

CIS 241 COMPUTER PROGRAMMING: PASCAL II (4 CR.)

Prerequisite CIS 141. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 245 DATABASE MANAGEMENT (3 CR.)

Prerequisite a course in a high-level language. Focuses on the basic models and capabilities of standard database management systems (DBMS) packages. Teaches database principles, file-level models, data-level models, operation implementation, maintenance, and security of database systems. Covers methods of DBMS selection and evaluation. Lecture 3 hours per week.

CIS 251 COMPUTER PROGRAMMING: FORTRAN II (4 CR.)

Prerequisite CIS 151 or divisional approval. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 259 MICROCOMPUTER GRAPHICS (4 CR.)

Prerequisite a high-level programming language or divisional approval. Teaches the programming of computer graphics using a high level language. Includes low resolution graphics with demonstrations on simple figures, "ball-bouncing" programs and bar charts, refinements over low resolution programs, use of animation, setting up binary-shaped tables and x-y graphics. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 261 COMPUTER PROGRAMMING: ASSEMBLER II (4 CR.)

Prerequisite CIS 161 or divisional approval. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 265 COMPUTER PROGRAMMING: MICRO ASSEMBLER (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing and debugging of programs in a manufacturer's assembly language for microcomputer. Focuses on the principles of debugging and core-dump reading. Uses a micro-assembly language in a total programming system. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 270 NON-PROCEDURAL AND FOURTH GENERATION LANGUAGES (4 CR.)

Teaches writing non-procedural fourth generation language programs from stated problems or specifications. Includes specific skills for modifying and maintaining existing programs. Involves hands-on experiences with the language. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 275 COMPUTER PROGRAMMING: ADA II (4 CR.)

Prerequisite CIS 175 or divisional approval. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 276 COMPUTER PROGRAMMING: "C" II (4 CR.)

Prerequisite CIS 176 or divisional approval. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 285 DATA PROCESSING MANAGEMENT (3 CR.)

Focuses on management of data processing functions. Offers various techniques involved in planning, estimating and analyzing requirements and selecting systems. Includes costing of benefits, contractual considerations and lease/purchase studies. Lecture 3 hours per week.

CIS 286 COMPUTER PROGRAMMING APPLICATIONS (4 CR.)

Prerequisite 2 semesters of a high-level programming language or divisional approval. Uses a previously mastered higher level language to develop a computerized solution to business applications. Requires the implementation of valid techniques used in systems analysis, programming, and documentation. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 287 SYSTEM DEVELOPMENT PROJECT (3 CR.)

Prerequisite CIS 225 or divisional approval. Applies life cycle system development methodologies in a case study. Incorporates feasibility study, system analysis, system design, program specification, and implementation planning. Involves assigning project to students as members of system development teams. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

COMPUTER SCIENCE**CSC 100 INTRODUCTION TO COMPUTER USAGE (1 CR.)**

Corequisites CSC 201 and MTH 173 or equivalent or divisional approval. Teaches fundamental skills of computer operation. Examines hardware (processor, keyboard, disk drives, and printers) and operating systems and editors. Lecture 1 hour per week.

CSC 110 INTRODUCTION TO COMPUTING (3 CR.)

Introduces problem solving via a programming language. Examines development of computers, social and ethical implications of computers, and properties of programming languages. Covers input, storage, data manipulation, software and hardware. Lecture 3 hours per week.

CSC 130 SCIENTIFIC PROGRAMMING (3 CR.)

Prerequisite CSC 110 or permission of the instructor. Introduces a science-oriented, high level programming language. Studies the language and its application. Lecture 3 hours per week.

CSC 201 COMPUTER SCIENCE I (4 CR.)

Corequisite CSC 100 or equivalent and MTH 173 or equivalent or divisional approval. Introduces algorithm and problem solving methods. Emphasizes structured programming concepts, elementary data structures and the study and use of a high level programming language. Lecture 4 hours per week.

CSC 202 COMPUTER SCIENCE II (4 CR.)

Prerequisite CSC 201. Corequisite MTH 174. Examines data structures and algorithm analysis. Covers data structures (including sets, strings, stacks, queues, arrays, records, files, linked lists, and trees), abstract data types, algorithm analysis (including searching and sorting methods), and file structures. Lecture 4 hours per week.

CSC 205 COMPUTER ORGANIZATION (3 CR.)

Prerequisite CSC 202. Examines the hierarchical structure of computer architecture. Focuses on multi-level machine organization used with a simple assembler language. Includes processors, instruction execution, addressing techniques, data representation and digital logic. Lecture 3 hours per week.

CSC 206 ASSEMBLY LANGUAGE (3 CR.)

Prerequisite CSC 205 or permission of instructor. Examines assembly language programming. Includes the use of macros, linkers, loaders, assemblers and interfacing of assembly language with hardware components. Lecture-3 hours per week.

CSC 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

DECORATING**DEC 100 INTRODUCTION TO INTERIOR DECORATING (3 CR.)**

Presents the elements and principles of residential design with emphasis on space planning, color, lighting, materials, furnishings and costing. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

DENTAL HYGIENE**DNH 112 ORAL ANATOMY AND TOOTH MORPHOLOGY (3 CR.)**

Studies the anatomy, morphology and functions of the oral structures, including primary and permanent dentition. Laboratory procedures include identification, eruption sequence, tooth drawings or carvings, principles of occlusion and intra-arch relationships. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DNH 113 GENERAL AND ORAL HISTOLOGY (2 CR.)

Studies minute structure of the tissues of the body with particular reference to the teeth and the supporting tissues. Explains morphology of different tissues, early embryonic development, histologic features of the structures of the oral cavity. Lecture 2 hours per week.

DNH 114 HEAD AND NECK ANATOMY (2 CR.)

Studies the anatomy and physiology of the structures of the head and neck. Lecture 2 hours per week.

DNH 130 ORAL RADIOGRAPHIC TECHNIQUES (3 CR.)

Studies the nature, physics, biologic effects, methods of control and safety precautions and techniques for exposing, processing, mounting, and interpretation of intra- and extra-oral radiographs. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNH 141 DENTAL HYGIENE I (5 CR.)

Introduces clinical knowledge and skills for the performance of dental hygiene services; basic skill components, lab manikins, and patient practice. Lecture 3 hours. Clinic 6 hours. Total 9 hours per week.

DNH 142 DENTAL HYGIENE II (5 CR.)

Prerequisite DNH 141. Exposes students to instrument sharpening, time management, and patient education techniques and methods. Provides supervised clinical practice in the dental hygiene clinic with emphasis on developing patient treatment and instrument skills. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

DNH 143 DENTAL HYGIENE III (4 CR.)

Introduces dental health care for patients with special needs. Includes introduction to computer concepts and applications. Provides supervised clinical practice in the dental hygiene clinic with emphasis on refining patient treatment and instrumentation skills, including oral radiographs. Lecture 2 hours. Clinic 6 hours. Total 8 hours per week.

DNH 145 GENERAL AND ORAL PATHOLOGY (2 CR.)

Introduces general pathology with consideration of the common diseases affecting the human body. Particular emphasis is given to the study of pathological conditions of the mouth, teeth and their supporting structures. Lecture 2 hours per week.

DNH 146 PERIODONTICS FOR THE DENTAL HYGIENIST (2 CR.)

Introduces the theoretical and practical study of various concepts and methods used in describing, preventing, and controlling periodontal disease. Presents etiology, microbiology, diagnosis, treatment and prognosis of diseases. Lecture 2 hours per week.

DNH 147 ORAL MICROBIOLOGY (1 CR.)

Presents the microbiology of various dental diseases. Lecture 1 hour per week.

DNH 150 NUTRITION (2 CR.)

Studies nutrition as it relates to dentistry and general health. Emphasizes the principles of nutrition as applied to the clinical practice of dental hygiene. Lecture 2 hours per week.

DNH 215 DENTAL MATERIALS (3 CR.)

Studies the physical and chemical properties of the materials used in dentistry. Laboratory experiences emphasize proper manipulation of materials. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNH 216 PHARMACOLOGY (2 CR.)

Studies the chemical and therapeutic agents used in dentistry, including their preparation, effectiveness, and specific application. Lecture 2 hours per week.

DNH 220 COMMUNITY DENTAL HEALTH (2 CR.)

Introduces the student to community health problems, public health, and related institutions. Lecture 2 hours per week.

DNH 225 COMMUNITY DENTAL HEALTH EDUCATION (2 CR.)

Exposes students to the principles, practices, methods, and audiovisual materials used for group dental health instruction. Laboratory experience provides an opportunity for students to assume responsibility for designing, implementing and assessing community dental health programs. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

DNH 230 OFFICE PRACTICE AND ETHICS (1 CR.)

Studies the principles of dental ethics and economics as they relate to the dental hygienist. The course also includes a study of jurisprudence and office procedures. Lecture 1 hour per week.

DNH 244 DENTAL HYGIENE IV (5 CR.)

Prerequisite DNH 143. Introduces advanced skills and the dental hygienist's role in dental specialties. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasizes treatment of patients demonstrating periodontal involvement, stressing application and correlation of knowledge and skills from previous semesters. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

DNH 245 DENTAL HYGIENE V (5 CR.)

Prerequisite DNH 244. Exposes student to dental assisting skills and current advances in dentistry. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasis is placed on synthesis of knowledge from previous semesters, treatment of patients with moderate to advanced periodontal involvement and improving clinical speed while maintaining quality in preparation for practice. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

DENTAL LABORATORY**DNL 100 PROFESSIONAL ETHICS AND DENTAL HISTORY (3 CR.)**

Introduces students to dental profession and supporting personnel; history and development of dentistry; the role of the dental auxiliaries in clinical settings and to members of dental laboratory craft and others of the dental health team; dental ethics and jurisprudence; professional and educational opportunities. Lecture 3 hours per week.

DNL 110 DENTAL LABORATORY MATERIALS (3 CR.)

Studies the chemical composition, physical properties, and uses of metallic and non-metallic dental materials, dentures and tooth resins, porcelain, waxes and duplicating materials. The laboratory exercises are designed to illustrate the properties and uses of the materials studied, including their inherent limitations. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNL 120 DENTAL ANATOMY AND PHYSIOLOGY (3 CR.)

Introduces students to human anatomy and physiology. Emphasizes regions of the head and neck and the primary and permanent teeth. Laboratory exercises include accurate scale drawings of the permanent teeth and tooth carvings of the permanent teeth. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNL 130 INTRODUCTION TO COMPLETE DENTURES (6 CR.)

Introduces the student to the basic principles, knowledge, and skills involved in the proper construction of complete dentures. Includes introduction to articulation and occlusal harmony followed by repair, relining, and reconstruction techniques. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

DNL 135 INTRODUCTION TO REMOVABLE PARTIAL DENTURES (6 CR.)

Introduces students to the principles of surveying and designing of removable partial denture frameworks followed by the fabrication and repair of removable partial dentures. Students will observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

DNL 136 PRINCIPLES OF OCCLUSION (3 CR.)

Provides a general overview of the masticatory system and the dynamics of mandibular movement. Occlusal restorations are fabricated in wax on a semi-adjustable articulator according to functional criteria. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNL 137 ORTHODONTIC AND PEDODONTIC APPLIANCES (3 CR.)

Develops the student's ability to fabricate and repair pedodontic and orthodontic appliances. This laboratory-didactic course utilizes programmed instruction augmented by individualized assistance and demonstration. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNL 138 INTRODUCTION TO FIXED PROSTHODONTICS (6 CR.)

Introduces students to fixed prosthodontic restorations. The student practices the techniques of die preparation and the fabrication of inlays, crowns, and fixed partial dentures utilizing gold alloy, shaded acrylic and composite materials. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

DNL 140 JURISPRUDENCE AND ETHICS (2 CR.)

Studies the laws and ethical principles which regulate the working dental technician. The Certified Dental Laboratory Program sponsored by the National Association of Dental Laboratories is also presented. Lecture 2 hours per week.

DNL 205 INFECTION CONTROL AND CROSS CONTAMINATION (3 CR.)

Studies infection control as applied to dental personnel and dental appliances. Discusses the wide variety of microorganisms in blood and saliva. Demonstrates techniques for preventing cross contamination by Hepatitis B, Acquired Immune Deficiency Syndrome, and other highly contagious diseases in a clinical and laboratory environment. Lecture 3 hours per week.

DNL 210 INTRODUCTION TO MAXILLOFACIAL PROSTHETICS (3 CR.)

Introduces maxillofacial design and production. Emphasizes maxillofacial procedures and techniques commonly utilized in health care institutions. Lecture 3 hours per week.

DNL 215 SPECIALIZATION IN DENTAL LABORATORY TECHNOLOGY (9 CR.)

Provides advanced instruction in laboratory specialty techniques, including fabrication of fixed prosthodontic appliances, removable prosthodontic appliances (partial and complete dentures), orthodontic/pedodontic appliances and dental ceramics. Written authorization form, clinical responsibility, and experience are emphasized. Lecture 5 hours. Laboratory 12 hours. Total 17 hours per week.

DNL 220 INTRODUCTION TO DENTAL CERAMICS (6 CR.)

Introduces students to ceramic and porcelain-fused-to-metal dental restorations. Includes techniques of design and fabrication of metal substructures followed by ceramic firing techniques. Discusses various ceramic alloy techniques. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

DNL 231 ADVANCED DENTAL LABORATORY TECHNIQUES I (3 CR.)

Introduces the theory of advanced dental laboratory techniques and new technological developments that are currently used in dentistry. Lecture 3 hours per week.

DNL 232 ADVANCED DENTAL LABORATORY TECHNIQUES II (4 CR.)

Studies theory and laboratory application of advanced techniques and current technological developments in dentistry. Students fabricate prostheses such as precision attachments, light-cured composite restorations and other advanced appliances. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

DNL 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

DIETETICS**DIT 100 INTRODUCTION TO DIETETICS (1 CR.)**

Orients the student to the field of dietetics, role responsibilities and relationships within the professions, and interrelationships with other health professionals. Explains standards and ethics of professional conduct. Lecture 1 hour per week.

DIT 105 DIETETICS AND THE HEALTH FIELD (3 CR.)

Studies the role of dietetics in the health care field, the history of the profession, and the techniques of effective interaction with patients and other healthcare team members. Explains ethics and standards of professional conduct. Addresses the use of computers in dietetics and educational and career opportunities. Lecture 3 hours per week.

DIT 120 NUTRITIONAL CARE (3 CR.)

Studies nutritional principles of normal and basic modified diets in a variety of food service facilities. Covers nutritional care throughout the life cycle and the application of such diet modifications as high/low calorie, bland, fat controlled, low sodium, and diabetic. Uses the computer to analyze nutrient intakes. Lecture 3 hours per week.

DIT 121 NUTRITION I (3 CR.)

Studies food composition, dietary guidelines, and nutrients essential to healthy human life. Analyzes nutrient function and metabolism. Lecture 3 hours per week.

DIT 122 NUTRITION II (3 CR.)

Includes current topics such as fad diets, preventive nutrition, weight control, and exercise. Lecture 3 hours per week.

DIT 125 CURRENT CONCEPTS IN DIET AND NUTRITION (3 CR.)

Studies the importance of diet to health and well-being in daily life. Addresses current controversies over food practices and information, food facts and fiction, fad diets, vegetarianism, diet and heart disease, and sound guidelines for maintaining good health with wise food choices. Applies computer technology for nutritional analysis. Intended especially for the non-Dietetics major. Lecture 3 hours per week.

DIT 126 NUTRITION FOR CHILDREN (3 CR.)

Teaches basic principles of nutrition applied to child feeding. Covers educational techniques to assist in the development of wholesome eating habits for children. Discusses National School Lunch Program and menu planning guidelines. Lecture 3 hours per week.

DIT 130 FOOD MANAGEMENT SYSTEMS (3 CR.)

Studies the principles of food service delivery systems in institutional and other health care facilities. Includes fundamentals of menu planning, recipe standardization, food preparation, equipment, sanitation and safety, role of computers in food service, and concepts of food service management. Lecture 3 hours per week.

DIT 140 PRINCIPLES OF QUANTITY FOOD PREPARATION (4 CR.)

Studies principles, standards, techniques, and practices of quantity food preparation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

DIT 205 FOOD SERVICE COMPUTER APPLICATIONS (3 CR.)

Applies computer technology to the effective operation of a food service department. Presents the care of clients at different stages of the life cycle and in various disease states. Addresses management and nutritional care applications as well as computer hardware, software, and terminology. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DIT 210 NUTRITIONAL ASSESSMENT (3 CR.)

Studies the principles of nutritional assessment; procedures used in identifying individuals and groups at risk; and the planning, implementation, monitoring, and evaluation of activities required to institute a successful nutritional intervention program. Presents quality assurance requirements and program implementation. Lecture 3 hours per week.

DIT 215 COMMUNITY NUTRITION (3 CR.)

Explores the relationship between community nutrition programs and the health, well-being, and productivity of individuals and families. Focuses on community nutrition programs, nutrition problems needing intervention, nutrition education techniques, and current issues. Lecture 3 hours per week.

DIT 221-222 THERAPEUTIC NUTRITION I-II (4 CR.) (4 CR.)

Applies nutrition principles to the treatment of persons with special dietary needs. Lecture 4 hours per week.

DIT 245 QUANTITY FOOD PRODUCTION AND PURCHASING (3 CR.)

Studies principles of quality control in the production of large quantities of foods through the use of standard recipes, accurate measuring techniques, food purchasing and storage, and quantity food production. Lecture 3 hours per week.

DIT 246 TRAINING AND SUPERVISION OF FOOD SERVICE PERSONNEL (3 CR.)

Applies principles of training and supervision to health care institutions and food service operations. Discusses problems and methods in training and directing activities related to food production, service, and equipment. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

DRAFTING**DRF 120 INTRODUCTION TO GRAPHIC REPRESENTATION (3 CR.)**

Teaches use of instruments, lettering, sketching, and drawing conventions. Emphasizes legible drawings and the value of pre-

sentation. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**DRF 127
GEOMETRIC TOLERANCING (1 CR.)**

Teaches use of a positional tolerance system, its relationship to coordinate tolerance systems, and other aspects of U.S. standard drafting practices. Lecture 1 hour per week.

**DRF 136 DESCRIPTIVE GEOMETRY
FOR DRAFTING (2 CR.)**

Prerequisite DRF 151. Gives analysis and graphic presentation of the space relationship of fundamental geometric elements as point, line, plane, curved surfaces, development and vectors. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**DRF 151-152 ENGINEERING DRAWING
FUNDAMENTALS I-II (3 CR.) (3 CR.)**

Introduces technical drafting from the fundamentals through advanced drafting practices. Includes lettering, geometric construction, technical sketching, orthographic projection, sections, intersections, development, fasteners. Teaches theory and application of dimensioning and tolerances, pictorial drawing, and preparation of drawings. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

**DRF 153-154 TECHNICAL
ILLUSTRATION I-II (3 CR.) (3 CR.)**

Prerequisite DRF 152 or equivalent. Teaches the development of axonometric pictorial projections, perspectives, exploded illustrations, industrial shading, inking techniques, and instrument lettering. Includes use of CAD and other advanced presentations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**DRF 165 ARCHITECTURAL
BLUEPRINT READING (3 CR.)**

Emphasizes reading, understanding and interpreting standard types of architectural drawings including plans, elevation, sections and details. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**DRF 225 MACHINE DRAWING
AND DESIGN (3 CR.)**

Prerequisites DRF 151 and DRF 152. Teaches design of basic machine elements and the analysis of linear and geometric tolerancing including the preparation of complete design and production drawings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**DRF 231
COMPUTER AIDED DRAFTING I (3 CR.)**

Prerequisite DRF 151 or divisional approval. Teaches computer aided drafting concepts and equipment. Designed to develop a general understanding of components and the operation of a typical CAD system. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**DRF 232
COMPUTER AIDED DRAFTING II (3 CR.)**

Prerequisite DRF 231. Teaches advanced operation in computer aided drafting. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**DRF 233
COMPUTER AIDED DRAFTING III (3 CR.)**

Prerequisite DRF 232. Introduces programming skills and exposes student to geometric modeling. Focuses on proficiency in production drawing using a CAD system. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DRF 245 ELECTRONIC DRAFTING (2 CR.)

Presents fundamental principles, practices and methods of electro-mechanical information through the graphic language principle of projection fastening, materials and finishes, electronic symbology, schematic diagrams, printed circuit drawings and checking of electronic drawings. Explains CAD applications. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**DRF 297
COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)**

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ECONOMICS

**ECO 110
CONSUMER ECONOMICS (3 CR.)**

Fosters understanding of American economic system and the individual's role as a consumer. Emphasizes application of economic principles to practical problems encountered. Alerts students to opportunities, dangers, and alternatives of consumers. Lecture 3 hours per week.

**ECO 120
SURVEY OF ECONOMICS (3 CR.)**

Presents a broad overview of economic theory, history, development, and application. Introduces terms, definitions, policies, and philosophies of market economies. Provides some comparison with other economic systems. Includes some degree of exposure to microeconomic and macroeconomic concepts. Lecture 3 hours per week.

**ECO 201-202 PRINCIPLES OF
ECONOMICS I-II (3 CR.) (3 CR.)**

Introduces macroeconomic and microeconomic principles and considers their bearing on present conditions. Describes structural and functional aspects of the economy. Analyzes the organization of business, labor, and governmental institutions and their economic stability and growth. Presents measures of economic activity. Discusses private enterprise, economic growth and stabilization policies, monetary and fiscal policy. Considers international economic relationships and alternative economic systems. Lecture 3 hours per week.

**ECO 230 SURVEY OF MONEY AND
BANKING (3 CR.)**

Reviews history of American banking institutions, principles, and practices. Emphasizes the relationship of finances to business structure, operation, and organization. Ex-

amines present-day financial structures, agents, problems and institutions. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

EDUCATION

**EDU 100 INTRODUCTION TO
EDUCATION (1 CR.)**

Provides an overview of teaching as a career with orientation to theories, practices, responsibilities, guidelines, current trends and issues in education. Lecture 1 hour per week.

**EDU 105 INTERPERSONAL SKILLS FOR
NANNIES (4 CR.)**

Introduces fundamental concepts of nannyship: family dynamics, multi-cultural awareness, legal aspects of child care, family communications, home life skills, etiquette, and dress. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**EDU 106 HEALTH EDUCATION FOR
NANNIES (4 CR.)**

Develops skills and attitudes for creating a healthy and safe home atmosphere. Topics include sick child care, safety of the young child, nutrition, cardio-pulmonary resuscitation, first aid, and sanitation practices in the home. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**EDU 109 METHODS IN MOVEMENT
AND MUSIC EDUCATION FOR
CHILDREN (3 CR.)**

Emphasizes theory and practice in movement and music education and the integration of these skills in a curriculum. Designed for teachers and aides in child care, preschool, nursery, or primary schools. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**EDU 118 METHODS AND MATERIALS
IN THE LANGUAGE ARTS FOR
CHILDREN (3 CR.)**

Presents techniques and methods for encouraging the development of language and perceptual skills in young children. Stresses improvement of vocabulary, speech and methods to stimulate discussion. Surveys children's literature, examines elements of quality story telling and story reading, and stresses the use of audiovisual materials. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**EDU 121-122 CHILDHOOD
EDUCATIONAL
DEVELOPMENT I-II (3 CR.) (3 CR.)**

Focuses attention on the observable characteristics of children from birth through adolescence. Concentrates on cognitive, physical, social, and emotional changes that occur. Emphasizes the relationship between development and child's interactions with parents, siblings, peers, and teachers. Lecture 3 hours per week.

EDU 125 CREATIVE ACTIVITIES FOR CHILDREN (3 CR.)

Prepares individuals to work with young children in the arts and other creative age-appropriate activities. Investigates effective classroom experiences and open-ended activities. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EDU 126 METHODS AND MATERIALS FOR DEVELOPING SCIENCE AND MATHEMATICAL CONCEPTS IN CHILDREN (3 CR.)

Teaches selecting developmentally appropriate learning activities using materials to develop logical thinking skills in the child. Lecture 3 hours per week.

EDU 155 PARENT EDUCATION (3 CR.)

Focuses on an introduction to effective parent/child communication and interaction, with special emphasis on listening skills, responsibility, encouragement, growth, problem solving process, and discipline. Lecture 3 hours per week.

EDU 156 SINGLE PARENT FAMILIES (3 CR.)

Discusses issues surrounding single-parent families and the causal factor including: separation, divorce, death, and teenage pregnancies. Explores the effects on both the parent and the child. Familiarizes students with services available in the community which support the single-parent family. Lecture 3 hours per week.

EDU 160 TECHNIQUES OF OBSERVATION IN EARLY EDUCATION (3 CR.)

Introduces formal and informal methods of gathering data on children. Emphasis on understanding developmental patterns and implications for diagnostic teaching. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EDU 165 OBSERVATION AND PARTICIPATION IN EARLY CHILDHOOD/ PRIMARY SETTINGS (3 CR.)

Observes and participates in early childhood settings such as child care centers, preschools, Montessori schools or public school settings. Kindergarten through 3rd grade. Students spend one hour each week in a seminar session in addition to 60 clock hours in the field. May be taken again for credit. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

EDU 166 INFANT AND TODDLER PROGRAMS (3 CR.)

Examines the fundamentals of infant and toddler development, including planning and implementing programs in group care. Emphasizes meeting physical, social, emotional, and cognitive needs: scheduling, preparing age-appropriate activities, health and safety policies, record keeping, and reporting to parents. Lecture 3 hours per week.

EDU 205 GUIDING THE BEHAVIOR OF CHILDREN (3 CR.)

Explores positive ways to build self-esteem in children and help them develop self-control. Presents practical ideas for encour-

aging pro-social behavior in children and emphasizes basic skills and techniques in classroom management. Lecture 3 hours per week.

EDU 210 INTRODUCTION TO EXCEPTIONAL CHILDREN (3 CR.)

Reviews the history of education for exceptional children. Studies the characteristics associated with exceptional children. Explores positive techniques for managing behavior and adapting materials for classroom use. Lecture 3 hours per week.

EDU 215 MODELS OF EARLY CHILDHOOD EDUCATION PROGRAMS (3 CR.)

Studies and discusses the various models and theories of early childhood education programs including current trends and issues. Presents state licensing and staff requirements. Lecture 3 hours per week.

EDU 235 HEALTH, SAFETY, AND NUTRITION EDUCATION (3 CR.)

Focuses on the physical needs of children and explores strategies to meet these needs. Emphasizes positive health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety. Places emphasis on the development of food habits and concerns in food and nutrition. Describes symptoms and reporting procedures for child abuse. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EDU 297 COOPERATIVE EDUCATION (1-6 CR.) (see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ELECTRICAL TECHNOLOGY**ELE 131-132 NATIONAL ELECTRICAL CODE I-II** (4 CR.) (4 CR.)

Provides comprehensive study of the purpose and interpretations of the National Electric Code as well as familiarization and implementation of various charts, code rulings and wiring methods including state and local regulations. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ELE 157 ELECTRICITY (5 CR.)

Teaches the theories and laws of the flow of electricity, magnetism, inductance, capacitance, and the fundamentals of direct and alternating currents. Provides practical application by the use of test and measuring equipment, circuitry, electrical apparatus, and rotating machinery. May require preparation of a report as an out-of-class activity. Lecture 2 hours. Laboratory 8 hours. Total 10 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ELECTRONICS TECHNOLOGY**ETR 113-114 D.C. AND A.C. FUNDAMENTALS I-II** (4 CR.) (4 CR.)

For ETR 113, prerequisite or corequisite is MTH 115. For ETR 114, prerequisite is ETR 113 and the prerequisite or corequisite is MTH 116. Studies D.C. and A.C. circuits, basic electrical components, instruments, network theorems, and techniques used to predict, analyze and measure electrical quantities. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 115 D.C. AND A.C. FUNDAMENTALS (4 CR.)

Studies current flow in direct and alternating current circuits with emphasis upon practical problems. Reviews the mathematics used in circuit calculations. Introduces concepts of resistance, capacitance, inductance and magnetism. Lecture 4 hours per week.

ETR 144 DEVICES AND APPLICATIONS II (4 CR.)

Teaches theory of active devices and circuits such as diodes, power supplies, transistors (BJT'S), amplifiers and their parameters, fets, and op amps. May include UJT'S, oscillators, RF amplifiers, thermionic devices, and others. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 158 ELECTRONIC CIRCUITS FOR COMPUTERS (4 CR.)

Studies the basic electrical and electronic principles used in repair and troubleshooting of computer systems. Includes Ohm's and Kirchoff's laws, capacitor and diode circuit analysis, power supply circuits, and transistor fundamentals. Use of the laboratory equipment (oscilloscope and DMM) is stressed. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 159 COMPUTER PERIPHERALS (4 CR.)

Prerequisites ETR 158 and ETR 229. Provides the student with basic knowledge of the typical peripheral devices found in a micro-computer system. The devices covered are printer, disk drive, CRT monitor, and keyboard. Emphasis is placed on troubleshooting techniques. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 167 LOGIC CIRCUITS AND SYSTEMS I (4 CR.)

Studies digital switching and logic circuits, number systems, Boolean algebra, logic gates and families. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 168 DIGITAL CIRCUIT FUNDAMENTALS (3 CR.)

Covers the fundamentals of digital logic and the study of digital circuits and their applications. Lecture 3 hours per week.

ETR 221 ELECTRONIC CONTROLS I (4 CR.)

Prerequisites or corequisites ETR 250 or ETR 263. Discusses characteristics and performance of linear control systems with one or more feedback loops. Includes functions

and properties of various components encountered in control systems including servo-amplifiers and error detectors, machine synchronization for automatic operations. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 225
DATA COMMUNICATIONS (4 CR.)**

Studies computer communication devices including configurations and protocols. May include modems multiplexing, teletex and interfacing with telecommunication systems such as local and area networks, microwave and satellite and delivery systems, fiber optic systems and packet systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**ETR 228
COMPUTER TROUBLESHOOTING AND REPAIR (4 CR.)**

Prerequisites ETR 158 and ETR 229. Provides the student with a basic knowledge of each of the functional units of the microcomputer system. Emphasis is placed on troubleshooting and repair techniques. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 229 DIGITAL LOGIC & MICROPROCESSOR FUNDAMENTALS (4 CR.)

Prerequisite or corequisite ETR 158. Teaches digital logic fundamentals and microcomputer operation. Emphasis is placed on troubleshooting techniques. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 232 PRINCIPLES OF LASERS AND FIBER OPTICS (4 CR.)

Studies the theory and application of lasers and fiber optics. Includes optics, fiber optic cables and connectors, photo detectors, optical pulse generation, sensors, multiplexers, and laser safety. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 241-242 ELECTRONIC COMMUNICATIONS I-II (4 CR.) (4 CR.)

Prerequisite or corequisite for ETR 241 is ETR 250. Prerequisite for ETR 242 is ETR 241. Studies noise, information and bandwidth, modulation and demodulation, transmitters and receivers, wave propagation, antennas and transmission lines. May include broad band communication systems, microwave, both terrestrial and satellite, fiber optics, multiplexing and associated hardware. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 247 DISPLAY SYSTEMS (3 CR.)

Prerequisite or corequisite ETR 242. Teaches principles, circuits, and devices for producing, transmitting, receiving, storing, reproducing, processing and displaying video and other visual information. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ETR 250
INTERMEDIATE ELECTRONICS (4 CR.)**

Prerequisites ETR 144 and MTH 116. Teaches theory and application of amplifiers and oscillators. Includes amplifier circuit configurations, amplifier classes, operational am-

plifiers, power amplifiers, bandwidth distortion, and principles of feedback. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 263-264 MICROPROCESSOR APPLICATION I-II (4 CR.) (4 CR.)

Prerequisite ETR 167. Provides an intensive study of fundamentals of microprocessors including architecture, internal operations, memory, I/O devices machine level programming and interfacing. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 269 ASSEMBLY LANGUAGE (2 CR.)

Prerequisite MEC 126. Corequisite or prerequisite ETR 167. Introduces assembly language programming including the basic concepts, machine language, CPU architecture, and an overview of instruction sets, memory maps and practical programming. Lecture 2 hours per week.

**ETR 277
COMPUTER INTERFACING (3 CR.)**

Studies computer peripherals and serial and parallel interfaces. May require preparation of a report as out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ETR 284
DIGITAL COMMUNICATION (4 CR.)**

Prerequisite ETR 167. A study of information theory, pulse communication A/D and D/A conversion, coding and error detection and interconnection requirements of digital techniques to voice, video and data communication. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 285 FUNDAMENTALS OF MICROCOMPUTER REPAIR (4 CR.)

Provides the student with an exposure to the various techniques and procedures used to troubleshoot a microcomputer. May include an overview of a particular microprocessor system, use of isolation flow charts, test point charts, prints, diagnostic routines, component testing and fault isolation labs. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 286 PRINCIPLES AND APPLICATIONS OF ROBOTICS (3 CR.)

Provides an overview of terminology, principles, practices, and applications of robotics. Studies development, programming; hydraulic, pneumatic, electronic controls; sensors, and system troubleshooting. May require preparation of a report as an out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ETR 297
COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

EMERGENCY MEDICAL TECHNOLOGY

EMT 106 BASIC EMERGENCY MEDICAL TECHNICIAN/AMBULANCE (6 CR.)

Prepares student for certification as a Virginia and National Registry EMT/A. Includes all aspects of pre-hospital basic life support as defined by the Department of Transportation's National Curriculum for Basic Emergency Medical Technicians/Ambulance. Lecture 4 hours. Laboratory 4 hours. Total 8 hours per week.

EMT 215 PRINCIPLES OF EXTRICATION (4 CR.)

Prerequisite EMT/A certification. Focuses on the practical evolutions utilized for vehicle extrication, basic and light duty rescue. Includes techniques of vehicle, water, vertical, and trench rescue, as well as electrical emergencies, bus, aircraft, and subway crashes, radiation hazards, and elevator accidents. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

EMT 220 INTRODUCTION TO CARDIOLOGY (2 CR.)

Prerequisites EMT/A certification or equivalent. Focuses on anatomy and physiology of the cardiovascular system including structure, function, and electrical conduction of the heart. Includes assessment of cardiac patient and pathophysiology of cardiovascular dysfunction, interpretation of normal electrocardiogram, and recognition and treatment of basic dysrhythmias. Required for Virginia certification as an EMT-cardiac and/or paramedic. Lecture 2 hours per week.

EMT 225 CLINICAL EXPERIENCES FOR THE CARDIAC CARE TECHNICIAN (3 CR.)

Runs concurrent with EMT 231. Deals with in-hospital clinical rotations in emergency department, intensive and coronary care units, operating and recovery rooms, level one trauma center, and intravenous team. Required for certification as Virginia EMT-cardiac and/or paramedic. Laboratory 6 hours per week.

EMT 231 PARAMEDIC PROCEDURES I (5 CR.)

Corequisite EMT 220. Prepares for functioning as advanced life support provider defined by Department of Transportation's National Paramedic Curriculum. Includes assessment, pathophysiology and treatment for shock, calculation of drug dosages and drip rates, and respiratory emergencies. Required for Virginia certification as EMT-cardiac and paramedic. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

**EMT 232
PARAMEDIC PROCEDURES II (6 CR.)**

Prerequisites EMT 231, EMT 225. Continues DOT's National Paramedic Curriculum from EMT 231. Includes pathophysiology, assessment, and management of neurological, musculoskeletal, psychiatric, and obstetrical/gynecological emergencies. Required for cer-

tification as Virginia and/or National Registry paramedic. Lecture 5 hours. Laboratory 2 hours. Total 7 hours per week.

EMT 235 CLINICAL EXPERIENCES FOR THE PARAMEDIC (4 CR.)

Runs concurrent with EMT 232. Deals with in-hospital clinical rotations in labor and delivery, newborn nursery, pediatric unit, burn center, psychiatric unit or mobile crisis team, and pathology. Required for certification as a Virginia and National Registry paramedic. Laboratory 8 hours per week.

EMT 251 ADVANCED CARDIAC LIFE SUPPORT PROVIDER COURSE (1 CR.)

Prerequisite EMT-cardiac certification, RN or equivalent. Prepares for certification as an Advanced Cardiac Life Support Provider. Follows course as defined by the American Heart Association. Lecture 1 hour per week.

EMT 252 ADVANCED CARDIAC LIFE SUPPORT INSTRUCTOR COURSE (1 CR.)

Prerequisite current certification as ACLS Provider. Prepares for certification as Advanced Cardiac Life Support Provider Course Instructor. Follows course as defined by the American Heart Association. Lecture 1 hour per week.

EMT 255 EMT-CARDIAC/PARAMEDIC REFRESHER (3 CR.)

Prerequisite current EMT-cardiac and/or paramedic certification. Reviews material covered in EMT-cardiac and/or paramedic courses. Emphasizes recent developments in the area of pre-hospital advanced life support. Required for Virginia and National Registry recertification as a Paramedic, and Virginia recertification as an EMT-Cardiac. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ENGINEERING

EGR 111-112 ENGINEERING GRAPHICS I-II (2 CR.) (2 CR.)

Introduces the principles of orthographic projection and conventional drawing practices. Analyzes points, lines, planes, solids and rotations. Presents section views, dimensioning and an introduction to computer graphics. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

EGR 115 ENGINEERING GRAPHICS (2 CR.)

Applies principles of orthographic projection and multi-view drawings. Teaches descriptive geometry including relationships of points, lines, planes and solids. Introduces sectioning, dimensioning and computer graphic techniques. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

EGR 120 INTRODUCTION TO ENGINEERING (2 CR.)

Corequisites MTH 173 and ENG 111. Introduces the engineering profession, professional concepts, ethics, and responsibility.

Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer, operating systems and processing; engineering problem solving; and graphic techniques. Lecture 2 hours per week.

EGR 126 COMPUTER PROGRAMMING FOR ENGINEERS (3 CR.)

Prerequisites MTH 173 and EGR 120. Introduces computers, their architecture and software. Teaches program development using flowcharts. Solves engineering problems involving programming in languages such as FORTRAN and Pascal. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EGR 130 STATICS AND STRENGTH OF MATERIALS FOR ENGINEERING TECHNOLOGY (5 CR.)

Presents principles and applications of free-body diagrams of force systems in equilibrium. Analyzes frames and trusses. Presents principles and applications to problems in friction, centroids and moments of inertia. Includes properties of materials, stress, strain, elasticity, design of connections, shear and bending in statically determinate beams, and axially loaded columns. Lecture 5 hours per week.

EGR 140 ENGINEERING MECHANICS—STATICS (3 CR.)

Corequisites MTH 277 and PHY 241. Introduces mechanics of vector forces and space, scalar mass and time, including S.I. and U.S. customary units. Teaches equilibrium, free-body diagrams, moments, couples, distributed forces, centroids, moments of inertia analysis of two-force and multi-force members. Lecture 3 hours per week.

EGR 206 ENGINEERING ECONOMY (2 CR.)

Presents economic analysis of engineering alternatives. Studies economic and cost concepts, calculation of economic equivalence, comparison of alternatives, replacement economy, economic optimization in design and operation, depreciation, and after tax analysis. Lecture 2 hours per week.

EGR 225 NUMERICAL METHODS IN ENGINEERING (3 CR.)

Prerequisites MTH 277, PHY 241, EGR 126 and EGR 140. Teaches numerical methods using main frame and/or personal computers, applied to engineering problems such as kinematics, space mechanics, vibrations and electric circuit analysis. Applies matrix algebra, Gaussian elimination, differential equation and curve fitting techniques. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EGR 245 ENGINEERING MECHANICS-DYNAMICS (3 CR.)

Prerequisites MTH 277 and EGR 140. Presents approach to kinematics of particles in linear and curvilinear motion. Includes kinematics of rigid bodies in plane motion. Teaches Newton's second law, work-energy and power, impulse and momentum, and problem solving using computers. Lecture 3 hours per week.

EGR 246 MECHANICS OF MATERIALS (3 CR.)

Prerequisite EGR 140. Teaches concepts of stress, strain, deformation, internal equilibrium, and basic properties of engineering materials. Analyzes axial loads, torsion, bending, shear and combined loading. Studies stress transformation and principle stresses, column analysis and energy principles. Lecture 3 hours per week.

EGR 248 THERMODYNAMICS FOR ENGINEERING (3 CR.)

Prerequisites MTH 277 and PHY 241. Studies formulation of the first and second law of thermodynamics. Presents energy conversion, concepts of energy, temperature, entropy, and enthalpy, equations of state of fluids. Covers reversibility and irreversibility in processes, closed and open systems, cyclical processes and problem solving using computers. Lecture 3 hours per week.

EGR 250 ELECTRICAL THEORY (3 CR.)

Corequisites MTH 285 and MTH 292. Designed for non-electrical engineering majors. Presents fundamentals of electric circuits; circuit laws and network theorems; response of first- and second-order circuits; feedback; two-part network. Lecture 3 hours per week.

EGR 251-252 BASIC ELECTRIC CIRCUITS I-II (3 CR.) (3 CR.)

Prerequisite MTH 291. Corequisites MTH 285 and MTH 292 and PHY 242. Teaches fundamentals of electric circuits. Includes circuit quantities of charge, current, potential, power and energy. Teaches resistive circuit analysis; Ohm's and Kirchoff's laws; nodal and mesh analysis; network theorems; RC, RL and RLC circuit transient response with constant forcing functions. Teaches AC steady-state analysis, power, three-phase circuits. Presents frequency domain analysis, resonance, Fourier series, inductively coupled circuits, Laplace transform applications, and circuit transfer functions. Introduces problem solving using computers. Lecture 3 hours per week.

EGR 255 ELECTRIC CIRCUITS LABORATORY (1 CR.)

Prerequisite EGR 250 or EGR 251. Teaches principles and operation of laboratory instruments such as VOM, electronic voltmeters, digital multimeters, oscilloscopes, counters, wave generators and power supplies. Presents application to circuit measurements, including transient and steady-state response of simple networks with laboratory applications of laws and theories of circuits plus measurement of AC quantities. Laboratory 3 hours per week.

EGR 265 DIGITAL ELECTRONICS AND LOGIC DESIGN (4 CR.)

Prerequisite EGR 250 or EGR 251 or departmental approval. Teaches number representation in digital systems; Boolean algebra; design of digital circuits, including gates, flip-flops, counters, registers, architecture, microprocessors, input-output devices. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

EGR 297
COOPERATIVE EDUCATION (1-6 CR.)
 (see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ENGLISH

ENG 001 PREPARING FOR COLLEGE WRITING I (1-6 CR.)

Helps students discover and develop writing processes needed to bring their proficiency to the level necessary for entrance into their respective curricula. Guides students through the process of starting, composing, revising, and editing. Variable hours per week.

ENG 002 SPELLING AND VOCABULARY STUDY (1-6 CR.)

Helps students to improve spelling and develop vocabulary. Reviews common spelling patterns. Familiarizes the student with basic prefixes, suffixes, root words, and other word formations. Teaches effective use of the dictionary and thesaurus. Stresses recognizing words in reading context and using them effectively in writing. Variable lecture/laboratory hours per week.

ENG 003 PREPARING FOR COLLEGE WRITING II (1-6 CR.)

Emphasizes strategies within the writing process to help students with specific writing situations. Develops techniques to improve clarity of writing and raise proficiency to the level necessary for entrance into particular curricula. Variable hours per week.

ENG 004 READING IMPROVEMENT I (1-6 CR.)

Helps students improve their reading processes to increase their understanding of reading materials. Includes word forms and meanings, comprehension techniques, and ways to control reading pace. Variable hours per week.

ENG 005 READING IMPROVEMENT II (1-6 CR.)

Helps students read critically and increase appreciation of reading. Guides students in making inferences, drawing conclusions, detecting relationships between generalizations and supporting details. Includes interpreting graphic aids and basic library skills. Variable hours per week.

ENG 006 READING IN THE CONTENT AREAS (1-3 CR.)

Presents reading methods and study skills appropriate for specific courses to increase students' reading and studying efficiency. Must be taken with a content area course. Course content may be planned jointly by faculty in English and related discipline. Variable hours per week.

ENG 007 WRITING AND READING IMPROVEMENT I (6-12 CR.)

Provides an integrated approach to developing students' writing and reading processes. Prepares students to complete college

assignments successfully by providing them with reading and writing strategies. Variable hours per week.

ENG 008 WRITING AND READING IMPROVEMENT II (6-12 CR.)

Emphasizes strategies within the writing and critical reading processes to help students with specific writing and reading assignments. Encourages an appreciation for clear writing and practical reading applications. Variable hours per week.

ENG 009 INDIVIDUALIZED INSTRUCTION IN WRITING (1-3 CR.)

Focuses on individual writing needs as determined by student and instructor. Provides support for students simultaneously enrolled in other courses or who want additional writing instruction in a tutorial setting. Variable hours per week.

ENG 100 BASIC OCCUPATIONAL COMMUNICATION (3 CR.)

Develops ability to communicate in occupational situations. Involves writing, reading, speaking, and listening. Builds practical skills such as handling customer complaints, writing various types of letters, and preparing for a job interview. (Intended for certificate and diploma students.) Lecture 3 hours per week.

ENG 105 COMMUNICATION IN BUSINESS AND INDUSTRY (1-6 CR.)

Develops ability to communicate effectively in business and industry, emphasizing gathering, organizing, and transmitting information. Primarily for noncurricular, on-site use in business and industry. Variable hours per week.

ENG 106 SPEED READING (3 CR.)

Emphasizes reading faster with comprehension. Includes controlling pace through scanning for specific details, skimming for main ideas, and reading quickly but completely. Presents common ways reading material is organized and techniques for processing information rapidly. Lecture 3 hours per week.

ENG 107 CRITICAL READING (3 CR.)

Helps students refine their reading processes. Emphasizes applying and synthesizing ideas. Includes ways to detect organization, make inferences, draw conclusions, evaluate generalizations, recognize differences between facts and opinions, and other advanced comprehension, strategies. May include comprehensive library skills. Lecture 3 hours per week.

ENG 108 CRITICAL READING AND STUDY SKILLS (3 CR.)

Helps students improve their reading and learning processes. Includes advanced comprehension strategies and study skills such as time management, note-taking, studying from textbooks and other reading materials, taking examinations, and using the library. Lecture 3 hours per week.

ENG 111-112 COLLEGE COMPOSITION I-II (3 CR.) (3 CR.)

Develops writing ability for study, work, and other areas of writing based on experi-

ence, observation, research, and reading of selected literature. Guides students in learning writing as a process: understanding audience and purpose, exploring ideas and information, composing, revising, and editing. Supports writing by integrating experiences in thinking, reading, listening, and speaking. Lecture 3 hours per week.

ENG 115 TECHNICAL WRITING (3 CR.)

Develops ability in technical writing through extensive practice in composing technical reports and other documents. Guides students in achieving voice, tone, style, and content in formatting, editing, and graphics. Introduces students to technical discourse through selected reading. Lecture 3 hours per week.

ENG 116 WRITING FOR BUSINESS (3 CR.)

Develops ability in business writing through extensive practice in composing business correspondence and other documents. Guides students in achieving voice, tone, style, and content appropriate to a specific audience and purpose. Includes instruction in formatting and editing. Introduces students to business discourse through selected readings. Lecture 3 hours per week.

ENG 117 COMMUNICATION FOR THE JUSTICE SYSTEM (3 CR.)

Develops proficiency in presenting oral and written reports. Stresses techniques of narration, description, and taking statements. Helps students apply the conventions of effective communication. Lecture 3 hours per week.

ENG 118 ENGLISH FOR COURT REPORTERS (3 CR.)

Highlights principles to be followed in preparing accurately transcribed court records. Stresses the application of conventions practiced by the profession. Lecture 3 hours per week.

ENG 120 SURVEY OF MASS MEDIA (3 CR.)

Examines radio, television, newspapers, magazines, books and motion pictures. Emphasizes the nature of change in, and the social implications of, communications media today. Lecture 3 hours per week.

ENG 121-122 INTRODUCTION TO JOURNALISM I-II (3 CR.) (3 CR.)

Prerequisite ENG 111 or 112 or divisional approval. Introduces students to all news media, especially news gathering and preparation for print. Lecture 3 hours per week.

ENG 131 TECHNICAL REPORT WRITING I (3 CR.)

Offers a review of organizational skills including paragraph writing and basic forms of technical communications, various forms of business correspondence, and basic procedures for research writing. Includes instruction and practice in oral communication skills. Lecture 3 hours per week.

ENG 132 TECHNICAL REPORT WRITING II (2 CR.)

Completes technical report writing sequence. Presents report and letter writing

skills appropriate for presenting somewhat complex technical ideas clearly and concisely. Stresses editing and proofreading skills. Offers instruction and practice in advanced forms of oral communication. Lecture 2 hours per week.

ENG 135 APPLIED GRAMMAR (3 CR.)

Develops ability to edit and proofread correspondence and other documents typically produced in business and industry. Instructs the student in applying conventions of grammar, usage, punctuation, spelling, and mechanics. Lecture 3 hours per week.

ENG 141-142 LANGUAGES AND CULTURES I-II (3 CR.) (3 CR.)

Examines the cultural bases and significance of the varieties of human language. Explores some features of different languages and dialects. Introduces questions about the nature of human languages, their meaning and structure. Lecture 3 hours per week.

ENG 150 CHILDREN'S LITERATURE (3 CR.)

Surveys the history of children's literature, considers learning theory and developmental factors influencing reading interests, and uses bibliographic tools in selecting books and materials for recreational interests and educational needs of children. Lecture 3 hours per week.

ENG 197 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

ENG 210 ADVANCED COMPOSITION (3 CR.)

Prerequisite ENG 112 or divisional approval. Helps students refine skills in writing non-fiction prose. Guides development of individual voice and style. Introduces procedures for publication. Lecture 3 hours per week.

ENG 211-212 CREATIVE WRITING I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Introduces the student to the fundamentals of writing imaginatively. Students write in forms to be selected from poetry, fiction, drama, and essays. Lecture 3 hours per week.

ENG 220 THEORIES OF GRAMMAR (3 CR.)

Surveys traditional, structural, and transformational grammar. Includes syntax, morphology, and phonology. Lecture 3 hours per week.

ENG 221-222 ADVANCED JOURNALISM I-II (3 CR.) (3 CR.)

Prerequisite ENG 122. Provides instruction in news and feature writing and other aspects of journalism. Lecture 3 hours per week.

ENG 231-232 SURVEY OF DRAMA I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major works of dramatic literature. Considers plays as literary and as staged works. Involves critical reading and writing. Lecture 3 hours per week.

ENG 235 INTRODUCTION TO THE NOVEL (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected novels emphasizing the history of the genre. Involves critical reading and writing. Lecture 3 hours per week.

ENG 236 INTRODUCTION TO THE SHORT STORY (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected short stories emphasizing the history of the genre. Involves critical reading and writing. Lecture 3 hours per week.

ENG 237 INTRODUCTION TO POETRY (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected poetry, emphasizing the history of the genre. Involves critical reading and writing. Lecture 3 hours per week.

ENG 241-242 SURVEY OF AMERICAN LITERATURE I-II (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines American literary works from colonial times to the present, emphasizing the ideas and characteristics of our national literature. Involves critical reading and writing. Lecture 3 hours per week.

ENG 243-244 SURVEY OF ENGLISH LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies major English works from the Anglo-Saxon period to the present, emphasizing ideas and characteristics of the British literary tradition. Involves critical reading and writing. Lecture 3 hours per week.

ENG 245 MAJOR ENGLISH WRITERS (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major writers in English literary history. Involves critical reading and writing. Lecture 3 hours per week.

ENG 246 MAJOR AMERICAN WRITERS (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major writers of American literary history. Involves critical reading and writing. Lecture 3 hours per week.

ENG 247 SURVEY OF POPULAR CULTURE (3 CR.)

Prerequisite ENG 112 or divisional approval. Analyzes familiar aspects of American culture, as seen through popular literature, with additional emphasis on television, film, and popular art. Lecture 3 hours per week.

ENG 251-252 SURVEY OF WORLD LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major works of world literature. Involves critical reading and writing. Lecture 3 hours per week.

ENG 253-254 SURVEY OF AFRO-AMERICAN LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected works by Black American writers from the colonial period to

the present. Involves critical reading and writing. Lecture 3 hours per week.

ENG 255 MAJOR WRITERS IN WORLD LITERATURE (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major writers selected from a variety of literary traditions. Involves critical reading and writing. Lecture 3 hours per week.

ENG 256 LITERATURE OF SCIENCE FICTION (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines the literary and social aspects of science fiction, emphasizing development of ideas and techniques through the history of the genre. Involves critical reading and writing. Lecture 3 hours per week.

ENG 257 MYTHOLOGY (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies selected mythologies of the world, emphasizing their common origins and subsequent influence on human thought and expression. Involves critical reading and writing. Lecture 3 hours per week.

ENG 261-262 ADVANCED CREATIVE WRITING I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Guides the student in imaginative writing in selected genres on an advanced level. Lecture 3 hours per week.

ENG 265 THE MODERN SHORT STORY (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies the modern short story as a literary form. Emphasizes appreciation and interpretation of selected stories. Requires critical reading and writing. Lecture 3 hours per week.

ENG 266 MODERN POETRY (3 CR.)

Studies modern poetry. Emphasizes appreciation and interpretation of selected poems. Requires critical reading and writing. Lecture 3 hours per week.

ENG 267 THE MODERN NOVEL (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies the modern novel. Emphasizes appreciation and interpretation of selected novels. Requires critical reading and writing. Lecture 3 hours per week.

ENG 268 THE MODERN DRAMA (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies the modern drama. Emphasizes the understanding and enjoyment of dramatic literature. Requires critical reading and writing. Lecture 3 hours per week.

ENG 271-272 THE WORKS OF SHAKESPEARE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected works of Shakespeare. Involves critical reading and writing. Lecture 3 hours per week.

ENG 273-274 WOMEN IN LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines literature by and about women. Involves critical reading and writing. Lecture 3 hours per week.

ENG 275 INTRODUCTION TO HUMOROUS LITERATURE (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines various forms of humor in literature, emphasizing the history of the type. Involves critical reading and writing. Lecture 3 hours per week.

ENG 276 SOUTHERN LITERATURE (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines the themes and techniques of selected writers dealing with the American South as a distinctive cultural entity. Involves critical reading and writing. Lecture 3 hours per week.

ENG 277 LITERATURE OF VIRGINIA (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines literature written by Virginia authors. Involves critical reading and writing. Lecture 3 hours per week.

ENG 279 FILM AND LITERATURE (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines the translation of literature into film viewing and writing. Lecture 3 hours per week.

ENG 281-282 AMERICAN FOLKLORE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines traditional spoken, written and musical examples of American folklore from various regional and ethnic groups. Involves critical reading and writing. Lecture 3 hours per week.

ENG 291-292 WRITING FOR THE COLLEGE NEWSPAPER I-II (3 CR.) (3 CR.)

Prerequisite ENG 111 or 112 or divisional approval. Provides instruction in news and feature writing and other aspects of journalism. Lecture 3 hours per week.

ENG 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ENGLISH AS A SECOND LANGUAGE**ESL 001 ENGLISH AS A SECOND LANGUAGE I (9-20 CR.)**

Provides intensive instruction at the beginning level. Includes (1) listening comprehension, pronunciation and oral production of basic grammatical structure (2) reading and vocabulary development (3) introduction to the writing process. Variable hours per week.

ESL 002 ENGLISH AS A SECOND LANGUAGE II (9-20 CR.)

Provides intensive instruction and practice at the low intermediate level. Provides an introduction to the sound system, stress, intonational and rhythmic patterns of English through listening and speaking exercises. Includes individualized instruction to improve

basic reading comprehension. Requires practice in writing with emphasis on building basic sentence structures, grammar and sentence-level writing. Variable hours per week.

ESL 003 ENGLISH AS A SECOND LANGUAGE III (9-20 CR.)

Provides intensive instruction and practice at the intermediate level. Includes (1) practice in oral communication skills needed in common situations (2) instruction to increase reading comprehension and vocabulary (3) practice in the writing process, emphasizing sentence structure, grammar and paragraph writing. Variable hours per week.

ESL 004 ENGLISH AS A SECOND LANGUAGE IV (9-20 CR.)

Provides instruction at the high intermediate level. Emphasizes reading and writing skills needed for successful completion of college work. Includes instruction to improve reading comprehension, study skills and reading rate. Introduces written academic English through practice in the writing process emphasizing summary writing, short essays and advanced language patterns. Variable hours per week.

ESL 005 ENGLISH AS A SECOND LANGUAGE: READING I (3-6 CR.)

Helps students improve word attack skills and basic comprehension. Variable hours per week.

ESL 006 ENGLISH AS A SECOND LANGUAGE: READING II (3-6 CR.)

Helps students improve their reading process by building such skills as finding and remembering facts, making inferences, drawing conclusions and getting meaning from context. Variable hours per week.

ESL 007 ENGLISH AS A SECOND LANGUAGE: ORAL COMMUNICATION (3-6 CR.)

Helps students master the skills needed for functioning successfully in academic and professional settings. Emphasizes clear communication in large or small groups through formal and informal presentations. Variable hours per week.

ESL 008 ENGLISH AS A SECOND LANGUAGE: PRONUNCIATION (3-6 CR.)

Provides individualized instruction and practice to improve speaking ability. Includes assessment of students' oral skills. Provides exercises and other types of practice to overcome specific problems in pronunciation. Variable hours per week.

ESL 011 ENGLISH AS A SECOND LANGUAGE: COMPOSITION I (3-6 CR.)

Provides instruction and practice in the writing process, emphasizing development of fluency in sentence level and paragraph writing and competence in structural and grammatical patterns of written English. Variable hours per week.

ESL 012 ENGLISH AS A SECOND LANGUAGE: COMPOSITION II (3-6 CR.)

Provides further instruction and practice in the writing process, emphasizing writing summaries and short essays, and introducing

advanced language patterns. Includes practice in developing and improving writing strategies. Variable hours per week.

ESL 013 ENGLISH AS A SECOND LANGUAGE: COMPOSITION III (3-6 CR.)

Prepares for college-level writing by practice in the writing process, emphasizing development of thought in essays of greater length and complexity. Variable hours per week.

ESL 014 ENGLISH AS A SECOND LANGUAGE: ORAL AND WRITTEN COMMUNICATIONS I (3-6 CR.)

Provides practice in the sound, stress, intonation, structural patterns, grammar, vocabulary, and idioms of beginning-level English in frequently encountered situations. Variable hours per week.

ESL 015 ENGLISH AS A SECOND LANGUAGE: ORAL AND WRITTEN COMMUNICATIONS II (3-6 CR.)

Provides practice in the sound, stress, intonation, structural patterns, grammar, vocabulary, and idioms of intermediate-level English in frequently encountered situations. Variable hours per week.

ESL 016 ENGLISH AS A SECOND LANGUAGE: ORAL AND WRITTEN COMMUNICATIONS III (3-6 CR.)

Provides practice in the sound, stress, intonation, structural patterns, grammar, vocabulary, and idioms of advanced-level English in frequently encountered situations, with an emphasis on preparation for college-level English proficiency. Variable hours per week.

ENVIRONMENTAL SCIENCE**ENV 040 BASIC CERTIFICATION PREPARATION— WASTEWATER (1 CR.)**

Prerequisite divisional approval. Reviews materials which are normally associated with the Wastewater Treatment Plant Operator's Class IV or Class III level certification examinations. Utilizes lecture, audiovisual, and workshop sessions to review required materials and to prepare the trainee to complete the wastewater operator examinations. Laboratory 2 hours per week.

ENV 146 ADVANCED CERTIFICATION PREPARATION— WASTEWATER (1 CR.)

Prerequisite divisional approval. Reviews the materials associated with the Wastewater Treatment Plant Operator's Class II or Class I level certification examinations. Consists of lecture, audiovisual, and workshop sessions to review the required material and to prepare the trainee to complete the wastewater operator's examination. Laboratory 2 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

FINANCIAL SERVICES

FIN 100 DEPOSIT OPERATIONS (3 CR.)

Focuses on a comprehensive treatment of current and future state of U.S. payments system. Examines deposit-taking activities, considers how banks manage deposited funds, and explores shifting of U.S. payments mechanisms to electronic funds and what this shift will mean to banks. Lecture 3 hours per week.

FIN 107 PERSONAL FINANCE (3 CR.)

Presents a framework of personal money management concepts, including establishing values and goals, determining sources of income, managing income, preparing a budget, developing consumer buying ability, using credit, understanding savings and insurance, providing for adequate retirement, and estate planning. Lecture 3 hours per week.

FIN 108 PRINCIPLES OF SECURITIES INVESTMENT (3 CR.)

Presents a broad survey of stocks and bonds. Introduces mechanics of stock exchanges, types of securities, kinds of orders, and specific investment objectives. Covers different investment theories and focuses on management and evaluation of investment portfolios. Lecture 3 hours per week.

FIN 130 INTRODUCTION TO SAVINGS ASSOCIATION BUSINESS (3 CR.)

Examines the origins, nature, and development of the savings association and its place in the economic fabric of the U.S. Explores environment for financial intermediaries, emphasizing savings associations. Analyzes major institutions competitive with savings associations in field of finance and investment. Describes organization, chartering, and function of savings associations, and identifies problems and trends in the current business world. Lecture 3 hours per week.

FIN 134 TELLER OPERATIONS (2 CR.)

Prerequisite FIN 130 or divisional approval. Examines the role of the teller in creation and maintenance of good customer relations. Describes routine and special teller procedures. Summarizes requirements of check negotiability and acceptability. Identifies the various types of savings instruments and ownership. Outlines recommended procedures in event of fire, robbery, or other emergencies. Lecture 2 hours per week.

FIN 140 INTRODUCTION TO CREDIT UNIONS (3 CR.)

Explores such facets of the credit union as history, operation, powers, and nature of credit union services. Covers role and programs developed by unions. Lecture 3 hours per week.

FIN 141 PRINCIPLES OF CREDIT UNION OPERATIONS I (3 CR.)

Prerequisite FIN 140 or divisional approval. Presents functions of teller transactions, loan

approval, financial counseling, and collection procedures and systems. Addresses such topics as delinquency control and current regulations and policies governing credit unions. Lecture 3 hours per week.

FIN 142 PRINCIPLES OF CREDIT UNION OPERATIONS II (3 CR.)

Prerequisite FIN 141 or divisional approval. Examines the financial management skills necessary to operate a credit union. Emphasizes implications of risk management and insurance. Explores investment procedures and teaches use of sound accounting principles. Lecture 3 hours per week.

FIN 160 INTRODUCTION TO COMMERCIAL LENDING (3 CR.)

Presents an overview of the commercial lending function. Explores such topics as characteristics of the business loan customer and fundamentals of commercial loan products, pricing, decision-making, support, and documentation. Examines commercial loans, portfolio management, legal and regulatory requirements, and the overall management of the commercial lending function. Lecture 3 hours per week.

FIN 168 MORTGAGE LOAN SERVICING (3 CR.)

Prerequisite FIN 130 or divisional approval. Presents an overview of the scope of the mortgage loan market. Examines mortgage loan processing and role of mortgage loan officer in overall portfolio management. Covers loan servicing procedures for conventional, FHA, and VA loans. Explores the differences between whole loans and participations. Studies procedures for role and servicing of mortgage loans. Lecture 3 hours per week.

FIN 215 FINANCIAL MANAGEMENT (3 CR.)

Introduces the process of identifying and solving financial problems confronting the business enterprise. Includes topics such as the basic tools of financial analysis, working capital, capital budgeting, and long-term financing. Uses problems and cases to enhance skills in financial planning and decision making. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

FIRE SCIENCE

FIR 100 INTRODUCTION TO FIRE SCIENCE (3 CR.)

Introduces basic concepts involved in fire suppression including fire behavior, building codes, built-in protection systems and the life safety code. Discusses the history and philosophy of the fire service at the national, state, and local levels and analyzes the overall fire problem. Lecture 3 hours per week.

FIR 106 FIRE SUPPRESSION METHODS AND OPERATIONS (3 CR.)

Prerequisite FIR 100 or divisional permission. Introduces the concepts of emergency management and incident command. Dis-

cusses basic concepts of fire suppression and incident control, including the establishment of priorities, size-up, strategic goals and tactical objectives. Lecture 3 hours per week.

FIR 111 HAZARDOUS MATERIALS I (3 CR.)

Introduces the chemistry of hazardous materials including solids, liquids, gases, and methods used in their identification. Examines the use, handling, transportation and environmental problems associated with hazardous materials. Lecture 3 hours per week.

FIR 112 HAZARDOUS MATERIALS II (3 CR.)

Prerequisite FIR 111. Studies hazardous materials storage, standards, and applicable laws designed to protect the public and emergency personnel. Discusses specific methods and techniques used by the emergency worker in the abatement of hazardous materials incidents. Lecture 3 hours per week.

FIR 115 FUNDAMENTALS OF FIRE PREVENTION (3 CR.)

Introduces fire safety through study of fire causes, inspections and investigation procedures. Familiarizes students with laws, ordinances and codes which influence the field of fire prevention and studies the legal aspects of fire prevention and related problems. Lecture 3 hours per week.

FIR 116 FIRE PREVENTION FUNDAMENTALS (3 CR.)

Examines the functions and objectives of a fire safety organization. Focuses on recognition and correction of fire hazards and necessary control procedures for a preventive maintenance program. Lecture 3 hours per week.

FIR 117 INDUSTRIAL FIRE PROTECTION (3 CR.)

Prerequisite FIR 100 or divisional permission. Studies industrial fire protection that fits needs of business, industry, educational and health care facilities. Deals with organizing for fire safety, hazard control and pre-fire planning, as well as fire detection, alarm and suppression systems. Lecture 3 hours per week.

FIR 125 FIRE SERVICE ADMINISTRATION (3 CR.)

Studies fire service organization and management, administrative procedures and methods, budgeting and reporting, control of resources, and the maintenance of records. Discusses managerial attitudes and decisions, general organizational planning and career development. Lecture 3 hours per week.

FIR 135 METHODS OF INSTRUCTION (3 CR.)

Emphasizes development of teaching methods and aids, including role-playing, small group discussion and development of individual learning methods and materials. Requires students to develop lesson plans and make presentations on appropriate topics. Meets (or exceeds) requirements for certification as listed in NFPA #1041 "LEVEL II" instructor, as well as appropriate "LEVEL III" state of Virginia Fire Training Program requirements. Lecture 3 hours per week.

FIR 140**FIRE OFFICER STANDARDS (4 CR.)**

Presents an overview of fire protection, prevention and suppression with emphasis on hazards and dangers due to construction procedures and hazardous materials, as well as importance of fire investigation and proper methods of detection and control. Lecture 4 hours per week.

FIR 205 FIRE HYDRAULICS AND DISTRIBUTION SYSTEMS (4 CR.)

Teaches mathematics, laws and formulas as applied to fire service hydraulics, including the development of mental ability to solve fire flow requirements and water supply needs. Emphasizes the principles, techniques, and application of water distribution systems used for fire suppression. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

FIR 211 AUTOMATIC SPRINKLER SYSTEM DESIGN I (3 CR.)

Presents a comprehensive study of treatment of automatic sprinkler systems including a study of sprinkler standards, design features, water supply adequacy, sprinkler limitations, and appropriate building and fire code applications. Lecture 3 hours per week.

FIR 212 AUTOMATIC SPRINKLER SYSTEM DESIGN II (3 CR.)

Prerequisite FIR 211. Continues the study of sprinkler system design, implementation and installation. Includes the use of appropriate computer applications in the design of various types of sprinkler systems. Lecture 3 hours per week.

FIR 215 FIRE SUPPRESSION AND DETECTION SYSTEMS (3 CR.)

Introduces fire suppression and detection systems. Includes design of smoke, heat, and flame detectors, as well as the design and operation of basic control and annunciator panels and multiplex command and control systems. Lecture 3 hours per week.

FIR 221 BUILDING CONSTRUCTION AND CODES (4 CR.)

Considers effect of fire on structures and inherent dangers of failure due to fire attack as well as ways various types and methods of building construction can influence the tactics and strategy of fire fighting. Discusses the importance of corrective building and fire prevention codes and control of hazards within current legal framework. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

FIR 230 INVESTIGATION PROCEDURES (3 CR.)

Introduces the development and philosophy of fire investigation and detection, including inspection techniques, gathering of evidence and development of a criminal procedure to conform to judicial requirements. Lecture 3 hours per week.

FIR 237 EMERGENCY SERVICE SUPERVISION (3 CR.)

Teaches the history of modern management theories, including scientific management and behavioral scientist approach. Introduces concepts of group dynamics, leadership, communication, stress and time management, and personnel evaluation tech-

niques. Discusses the legal and ethical considerations of personnel management in the emergency service. Lecture 3 hours per week.

FIR 245 URBAN FIRE AND RISK ANALYSIS (3 CR.)

Prerequisite FIR 100 or divisional permission. Presents a study of current urban fire problems with emphasis on solutions based upon current available technology. Includes master planning, as well as methods of identifying, analyzing and measuring accompanying risk and loss possibilities. Lecture 3 hours per week.

FIR 260 INTRODUCTION TO FIRE RESEARCH (3 CR.)

Prerequisites FIR 100 and approved mathematics and English. Presents a basic survey of research methodology, a study of resource allocation, and a study of selected current research topics, for students who intend to transfer to a four-year program. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

FIR 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

FORESTRY**FOR 100 INTRODUCTION TO FORESTRY (4 CR.)**

Develops the general concepts of forestry and forest resource use in the United States. Laboratory sessions introduce the student to the protection, management, and use of forest resource. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

FOR 105 FOREST AND WILDLIFE ECOLOGY (4 CR.)

Studies the interrelationships of organisms and the natural and cultural environments with emphasis on human influences, ecological structures, survey of populations, communities, and ecosystems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

FOR 115 DENDROLOGY (4 CR.)

Studies trees and shrubs botanically and commercially important to the forests of the eastern United States. Emphasizes field characteristics of trees and common shrubs of the eastern United States. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

FOR 125 FOREST FIRE CONTROL (1 CR.)

Examines forest fire behavior. Includes factors causing ignition and spread, methods of fire prevention and suppression, and forest fire control organizations. Lecture 1 hour per week.

FOR 135 WILDLIFE AND FISHERIES MANAGEMENT (4 CR.)

Introduces the principles of wildlife and fisheries management. Emphasizes practices in the eastern United States. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

FOR 211 WILDLIFE INVESTIGATIONAL TECHNIQUES I (3 CR.)

Teaches techniques used in wildlife management research including the capturing, sexing, aging and marking of wild animals. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

FOR 212 WILDLIFE INVESTIGATIONAL TECHNIQUES II (3 CR.)

Presents techniques used in the study of wildlife including an introduction to map use, observation and record keeping, and the capturing, sexing and aging of wild animals. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

FOR 236 MANAGING THE BACKYARD WILDLIFE HABITAT (2 CR.)

Emphasizes the improvement of the backyard habitat through the application of applied wildlife management and landscaping principles for the purpose of increasing the presence of wildlife. Lecture 2 hours per week.

FOR 246 URBAN FORESTRY (4 CR.)

Examines the care, maintenance, establishment and management of trees and related plants in an urban environment. Emphasizes non-commodity values of trees in an urban environment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

FRENCH**FRE 016 FRENCH FOR BUSINESS (1-3 CR.)**

Introduces the student to French used in business transactions. Lecture 1-3 hours per week.

FRE 017 FRENCH FOR THE TOURIST (1-3 CR.)

Introduces spoken French to people intending to travel in a French-speaking country. Lecture 1-3 hours per week.

FRE 018 FRENCH FOR READING KNOWLEDGE (1-3 CR.)

Develops the ability to translate French texts. Lecture 1-3 hours per week.

FRE 101-102 BEGINNING FRENCH I-II (5 CR.) (5 CR.)

Introduces understanding, speaking, reading, and writing skills and emphasizes basic French sentence structure. Lecture 5 hours per week.

FRE 103-104 BASIC SPOKEN FRENCH I-II (3 CR.) (3 CR.)

Teaches oral communication and introduces cultural mores and customs to students with no prior instruction in the language. Lecture 3 hours per week.

FRE 111-112 CONVERSATION IN FRENCH I-II (3 CR.) (3 CR.)

Prerequisite FRE 102. Emphasizes the spoken language, stressing fluency and correct-

ness of structure, pronunciation, and vocabulary. Lecture 3 hours per week.

FRE 201-202 INTERMEDIATE FRENCH I-II (3 CR.) (3 CR.)

Prerequisite FRE 102 or equivalent. Continues to develop understanding, speaking, reading, and writing skills. French is used in the classroom. Lecture 3 hours per week.

FRE 211-212 INTERMEDIATE FRENCH CONVERSATION I-II (3 CR.) (3 CR.)

Prerequisite FRE 202 or equivalent. Continues to develop fluency through emphasis on idioms and other complex sentence structures. Lecture 3 hours per week.

FRE 233-234 INTRODUCTION TO FRENCH CIVILIZATION AND LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite FRE 201-202 or equivalent. Introduces the student to French culture and literature. Readings and discussions conducted in French. Lecture 3 hours per week.

FRE 241-242 INTERMEDIATE FRENCH COMPOSITION I-II (3 CR.) (3 CR.)

Prerequisite FRE 202 or equivalent. Develops writing skills and stresses French grammar. Lecture 3 hours per week.

GEOGRAPHY

GEO 200 INTRODUCTION TO PHYSICAL GEOGRAPHY (3 CR.)

Studies major elements of the natural environment including earth sun relationship, land forms, weather and climate, natural vegetation and soils. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 205 SURVEY OF PHYSICAL GEOGRAPHY (4 CR.)

Presents a survey of major elements of the natural environment, including land forms, weather and climate, natural vegetation and soils. Introduces the student to types and uses of maps. Lecture 3 hours per week. Laboratory 2 hours. Total 5 hours per week.

GEO 210 PEOPLE AND THE LAND: AN INTRODUCTION TO CULTURAL GEOGRAPHY (3 CR.)

Focuses on the relationship between culture and geography. Presents a survey of modern demographics, landscape modification, material and non-material culture, language, race and ethnicity, religion, politics, and economic activities. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 220 WORLD REGIONAL GEOGRAPHY (3 CR.)

Studies physical and cultural characteristics of selected geographical regions of the world. Focuses upon significant problems within each of the regions, and examines the geographical background of those problems. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 221-222 REGIONS OF THE WORLD I-II (3 CR.) (3 CR.)

Presents an overview of physical and cultural characteristics of selected geographical regions of the world. Focuses upon significant problems within each of the regions. Studies the European cultural sphere including Europe, Soviet Union, the Americas and Australia and the emerging nations in Africa, Southwest Asia and the Orient. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 230 POLITICAL GEOGRAPHY (3 CR.)

Emphasizes the influence of geography on political systems and nation states. Discusses historic and current events including campaigns, wars, and treaties as functions of land, resources and energy requirements. Introduces the student to types and uses of maps. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

GEOLOGY

GOL 105 PHYSICAL GEOLOGY (4 CR.)

Introduces the composition and structure of the earth and modifying agents and processes. Investigates the formation of minerals and rocks, weathering, erosion, earthquakes, and crustal deformation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 106 HISTORICAL GEOLOGY (4 CR.)

Traces the evolution of the earth and life through time. Presents scientific theories of the origin of the earth and life and interprets rock and fossil record. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 111-112 OCEANOGRAPHY I-II (4 CR.) (4 CR.)

Examines the dynamics of the oceans and ocean basins. Applies the principles of physical, chemical, biological, and geological oceanography. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 135 FIELD STUDIES IN GEOLOGY (1 CR.)

Investigates geologic phenomena. Includes activities such as observation of regional geology and landforms, collection of samples, and measurement and interpretation of geologic structures. Lecture 1 hour per week.

GOL 206 PALEONTOLOGY (4 CR.)

Prerequisite GOL 106. Surveys the major invertebrate and vertebrate fossil groups. Covers the distribution of fossils through time, evolution and biostratigraphic and paleoecologic significance. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 207 MINERALOGY (4 CR.)

Prerequisite GOL 105. Provides details for study of minerals. Focuses on the structure and properties of minerals, their occurrence, and uses. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

GERMAN

GER 016 GERMAN FOR BUSINESS (1-3 CR.)

Introduces the student to German used in business transactions. Lecture 1-3 hours per week.

GER 017 GERMAN FOR THE TOURIST (1-3 CR.)

Introduces spoken German to people intending to travel in German speaking countries. Lecture 1-3 hours per week.

GER 018 GERMAN FOR READING KNOWLEDGE (1-3 CR.)

Develops the ability to translate German texts. Lecture 1-3 hours per week.

GER 101-102 BEGINNING GERMAN I-II (5 CR.) (5 CR.)

Introduces understanding, speaking, reading, and writing skills and emphasizes basic German sentence structures. Lecture 5 hours per week.

GER 103-104 BASIC SPOKEN GERMAN I-II (3 CR.) (3 CR.)

Teaches oral communication and introduces cultural mores and customs to students with no prior instruction in the language. Lecture 3 hours per week.

GER 111-112 CONVERSATION IN GERMAN I-II (3 CR.) (3 CR.)

Prerequisite GER 102. Emphasizes the spoken language, stressing correctness of structure, pronunciation, fluency, and vocabulary. Lecture 3 hours per week.

GER 201-202 INTERMEDIATE GERMAN I-II (3 CR.) (3 CR.)

Prerequisite GER 102 or equivalent. Continues to develop understanding, speaking, reading, and writing skills. German is used in the classroom. Lecture 3 hours per week.

GER 211-212 INTERMEDIATE GERMAN CONVERSATION I-II (3 CR.) (3 CR.)

Prerequisite GER 102 or equivalent. Continues to develop fluency through emphasis on idioms and other complex sentence structures. Lecture 3 hours per week.

GER 221-222 GERMAN LITERATURE IN TRANSLATION I-II (3 CR.) (3 CR.)

Introduces major works and periods of German literature. Classes conducted in English. Lecture 3 hours per week.

GER 231-232 INTRODUCTION TO GERMAN LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite Ger 202 or equivalent. Surveys major German literary works and periods. Lecture 3 hours per week.

GER 241-242 INTERMEDIATE GERMAN COMPOSITION I-II (3 CR.) (3 CR.)

Prerequisite GER 202 or equivalent. Develops skills and practice in written German. Lecture 3 hours per week.

GER 251-252 GERMAN CULTURE AND CIVILIZATION I-II (3 CR.) (3 CR.)

Introduces the student to German thought, culture, and scientific achievement. Classes conducted in English. Lecture 3 hours per week.

GREEK**GRE 101-102 INTRODUCTION TO ANCIENT GREEK I-II (3 CR.) (3 CR.)**

Introduces ancient Greek language. Designed to prepare the student for early readings in Hellenic or Hellenistic literature. Lecture 3 hours per week.

GRE 201-202 INTERMEDIATE ANCIENT GREEK I-II (3 CR.) (3 CR.)

Prerequisite GRE 101-102. Introduces the reading of classical and Koine Greek with a review of Greek grammar, forms, and syntax. Lecture 3 hours per week.

HEALTH**HLT 100 FIRST AID AND CARDIOPULMONARY RESUSCITATION (3 CR.)**

Focuses on the principles and techniques of safety, first aid, and cardiopulmonary resuscitation. Lecture 3 hours per week.

HLT 105 CARDIOPULMONARY RESUSCITATION (1 CR.)

Provides training in coordinated mouth-to-mouth artificial ventilation and chest compression, choking, life-threatening emergencies, and sudden illness. Lecture 1 hour per week.

HLT 106 FIRST AID AND SAFETY (2 CR.)

Focuses on the principles and techniques of safety and first aid. Lecture 2 hours per week.

HLT 110 CONCEPTS OF PERSONAL AND COMMUNITY HEALTH (3 CR.)

Studies the concepts related to the maintenance of health, safety, and the prevention of illness at the personal and community level. Lecture 3 hours per week.

HLT 135 CHILD HEALTH AND NUTRITION (3 CR.)

Focuses on the physical needs of the pre-school child and the methods by which these are met. Emphasizes health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety as related to health growth and development. Lecture 3 hours per week.

HLT 140 ORIENTATION TO HEALTH RELATED PROFESSIONS (2 CR.)

Explores the interrelated roles and functions of various members of the health team. Lecture 2 hours per week.

HLT 141 INTRODUCTION TO MEDICAL TERMINOLOGY (2 CR.)

Focuses on medical terminology for students preparing for careers in the health professions. Lecture 2 hours per week.

HLT 143-144 MEDICAL TERMINOLOGY I-II (3 CR.) (3 CR.)

Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, word stems, and technical terms with emphasis on proper spelling, pronunciation, and usage. Emphasizes more complex skills and techniques in understanding medical terminology. Lecture 3 hours per week.

HLT 165 PHARMACOLOGY (2 CR.)

Focuses on pharmacology for residential care home personnel, and the lay public. Emphasizes safe administration of prescriptions, medications, and the recognition of adverse side effects. Lecture 2 hours per week.

HLT 200 HUMAN SEXUALITY (3 CR.)

Provides a basic understanding of human sexuality. Includes anatomy, physiology, pregnancy, family planning, venereal diseases, and sexual variations. Lecture 3 hours per week.

HLT 220 CONCEPTS OF DISEASE (3 CR.)

Emphasizes general principles, classifications, causes, and treatments of selected disease processes. Intended primarily for students enrolled in health technology programs. Lecture 3 hours per week.

HLT 250 GENERAL PHARMACOLOGY (3 CR.)

Emphasizes general pharmacology for the health related professions covering general principles of drug actions/reactions, major drug classes, specific agent within each class, and routine mathematical calculations needed to determine desired dosages. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

HISTORY**HIS 101-102 HISTORY OF WESTERN CIVILIZATION I-II (3 CR.) (3 CR.)**

Examines the development of western civilization from ancient times to the present. The first semester ends with the seventeenth century; the second semester continues through modern times. Lecture 3 hours per week.

HIS 111-112 HISTORY OF WORLD CIVILIZATION I-II (3 CR.) (3 CR.)

Surveys Asian, African, Latin American, and European civilizations from the ancient period to the present. Lecture 3 hours per week.

HIS 121-122 UNITED STATES HISTORY I-II (3 CR.) (3 CR.)

Surveys United States history from its beginning to the present. Lecture 3 hours per week.

HIS 125 HISTORY OF THE AMERICAN INDIAN (3 CR.)

Examines the history and culture of the native peoples of the Americas. Lecture 3 hours per week.

HIS 126 WOMEN IN WORLD HISTORY (3 CR.)

Studies the role of women and attitudes toward women from ancient times to the present. Lecture 3 hours per week.

HIS 127 WOMEN IN AMERICAN HISTORY (3 CR.)

Studies the role of women and attitudes toward women in American society from colonial times to the present. Lecture 3 hours per week.

HIS 135 HISTORY OF THE CONTEMPORARY WORLD (3 CR.)

Analyzes world developments since World War II. Lecture 3 hours per week.

HIS 141-142 AFRO-AMERICAN HISTORY I-II (3 CR.) (3 CR.)

Surveys the history of black Americans from their African origins to the present. Lecture 3 hours per week.

HIS 165 GENEALOGY (3 CR.)

Studies methodology for investigating ancestry and family history. Lecture 3 hours per week.

HIS 201-202 HISTORY OF AMERICAN CIVILIZATION I-II (3 CR.) (3 CR.)

Surveys the social, cultural, and intellectual development of American society. Lecture 3 hours per week.

HIS 203-204 HISTORY OF AFRICAN CIVILIZATIONS I-II (3 CR.) (3 CR.)

Examines major social, economic, political and religious developments from earliest times to the present. Lecture 3 hours per week.

HIS 205 LOCAL HISTORY (3 CR.)

Studies the history of the local community and/or region. Lecture 3 hours per week.

HIS 211-212 HISTORY OF ENGLAND I-II (3 CR.) (3 CR.)

Surveys the history of the British Isles from pre-Celtic times to the present. Lecture 3 hours per week.

HIS 225-226 TOPICS IN EUROPEAN HISTORY I-II (3 CR.) (3 CR.)

Examines selected topics in the history of Europe from ancient times to the present. Lecture 3 hours per week.

HIS 231-232 HISTORY OF LATIN AMERICAN CIVILIZATIONS I-II (3 CR.) (3 CR.)

Examines Latin American civilizations from pre-Columbian origins to the present. Lecture 3 hours per week.

HIS 241-242 HISTORY OF RUSSIA I-II (3 CR.) (3 CR.)

Surveys history of Russia from earliest times to the present. Includes political, economic, multi-national, social, and cultural aspects of Russian and Soviet history. Lecture 3 hours per week.

HIS 243-244 HISTORY OF THE ANCIENT WORLD I-II (3 CR.) (3 CR.)

Studies the history of the ancient world from the dawn of civilization in the Near East to the fall of Rome. Lecture 3 hours per week.

HIS 251-252 HISTORY OF MIDDLE EAST CIVILIZATION I-II (3 CR.) (3 CR.)

Surveys intellectual, cultural, social, economic and religious patterns in the civilizations of the Middle East. Covers Semitic, Indo-European, and Turkic-speaking peoples from pre-Islamic to the present. Lecture 3 hours per week.

HIS 253-254 HISTORY OF ASIAN CIVILIZATIONS I-II (3 CR.) (3 CR.)

Surveys the civilizations of Asia from their origins to the present. Lecture 3 hours per week.

HIS 255 HISTORY OF CHINESE CULTURE AND INSTITUTIONS (3 CR.)

Examines traditional Chinese social, political, economic, and military institutions. Also examines major literary, artistic and intellectual achievements from pre-historic times to the present. Lecture 3 hours per week.

HIS 256 HISTORY OF JAPANESE CULTURE AND INSTITUTIONS (3 CR.)

Examines traditional Japanese social, political, economic, and military institutions. Also examines major literary, artistic and intellectual achievements from pre-historic times to the present. Lecture 3 hours per week.

HIS 261-262 TOPICS IN UNITED STATES HISTORY I-II (3 CR.) (3 CR.)

Examines selected topics in United States history which shaped the American experience. Lecture 3 hours per week.

HIS 266 MILITARY HISTORY OF THE CIVIL WAR (3 CR.)

Analyzes military campaigns of the Civil War, including factors contributing to the defeat of the Confederacy and problems created by the war. May include field trips to Civil War sites in the region. Lecture 3 hours per week.

HIS 269 CIVIL WAR AND RECONSTRUCTION (3 CR.)

Studies factors that led to the division between the States. Examines the war, the home fronts, and the era of Reconstruction. Lecture 3 hours per week.

HIS 271-272 INTELLECTUAL HISTORY I-II (3 CR.) (3 CR.)

Examines important thinkers, their ideas, and their influence. The first semester concentrates on western intellectual history, the second semester on American intellectual history. Lecture 3 hours per week.

HIS 273-274 HISTORY OF THE CITY I-II (3 CR.) (3 CR.)

Focuses on European, American and Third World cities from their origins to the present. Lecture 3 hours per week.

HIS 276 UNITED STATES HISTORY SINCE WORLD WAR II (3 CR.)

Investigates United States history from 1946 to the present, studying both domestic

developments and American involvement in international affairs. Lecture 3 hours per week.

HIS 277 THE AMERICAN EXPERIENCE IN VIETNAM (3 CR.)

Analyzes American involvement in Vietnam from World War I through the Nixon and Ford years. Includes Roosevelt's plan of trusteeship, the Geneva Conference, the American military role, and the search for peace. Lecture 3 hours per week.

HIS 278 UNITED STATES ECONOMIC HISTORY (3 CR.)

Analyzes economic developments from the colonial period to the present. Includes the emergence of the market system, the transition from small scale enterprises to corporate capitalism, and the emergence of the contemporary economy. Lecture 3 hours per week.

HIS 279 AGE OF THE AMERICAN REVOLUTION (3 CR.)

Examines the factors that led to the separation of the American colonies from Great Britain. Covers the Revolutionary War, the problems faced by the revolutionary government, and postwar events that led to the adoption of the United States Constitution. Lecture 3 hours per week.

HIS 281-282 HISTORY OF VIRGINIA I-II (3 CR.) (3 CR.)

Examines the cultural, political, and economic history of the Commonwealth from its beginning to the present. Lecture 3 hours per week.

HIS 285 FAMILY HISTORY (3 CR.)

Examines the changing role of the family in the American experience. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

HORTICULTURE**HRT 100 INTRODUCTION TO HORTICULTURE** (3 CR.)

Surveys the commercial horticulture industry with emphasis on career opportunities. Examines plant classification and identification, common insects and diseases, home landscaping and related subjects. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 107 PLANTSCAPING FOR INTERIOR DESIGN (2 CR.)

Surveys principles and practices of interior designing with plants. Includes identification, selection, cultural requirements and design characteristics of plant material. Intended for non-Horticulture Technology majors. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 115 PLANT PROPAGATION (3 CR.)

Teaches principles and practices of sexual and asexual methods. Examines commercial and home practices. Provides experience in techniques using seed, spores, cuttings,

grafting, budding, layering and division. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 117 TOOLS AND EQUIPMENT (2 CR.)

Introduces tools and equipment used in horticulture. Emphasizes power-operated equipment including lawnmowers, spreaders, sprayers, saws and tractors. Stresses safety, maintenance, minor repair and appropriate tool selection. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 118 TURF PESTS (2 CR.)

Examines turf pests. Covers identification, morphology, and life cycles of insects and other animals, disease agents and weeds. Stresses diagnosis and management of specific turf pests. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 119 IRRIGATION SYSTEMS FOR TURF AND ORNAMENTALS (3 CR.)

Explains why, when, and how irrigation systems are used by the grounds management industry. Includes component selection, system design, installation, operation, and maintenance. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 121 GREENHOUSE CROP PRODUCTION I (3 CR.)

Examines commercial practices related to production of floricultural crops. Considers production requirements, environmental control and management, cultural techniques affecting seasonal management, and cultural techniques affecting production of seasonal crops. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 127 HORTICULTURAL BOTANY (3 CR.)

Studies taxonomy, anatomy, morphology, physiology, and genetics of plants. Stresses their importance in plant identification, propagation and culture. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 197 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)**HRT 205 SOILS** (3 CR.)

Teaches theoretical and practical aspects of soils and other growing media. Examines media components, chemical and physical properties, and soil organisms. Discusses management and conservation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 206 PESTICIDES IN HORTICULTURE (2 CR.)

Discusses pesticide selection, mixing, application, storage, and disposal. Stresses safety and environmental considerations. Emphasizes insecticides, legal restrictions of fungicides and herbicides currently used. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 207 PLANT PEST MANAGEMENT (3 CR.)

Teaches principles of plant pest management. Covers morphology and life cycles of insects and other small animal pests and plant pathogens. Lab stresses diagnosis, chemical

and non-chemical control of specific pests, and pesticide safety. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 231 PLANTING DESIGN I (3 CR.)

Applies landscape theory and principles of drawing to the planning of landscape designs for residential and small scale commercial projects. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 232 PLANTING DESIGN II (3 CR.)

Prerequisite HRT 231. Applies landscape theory and principles of drawing to the planning of landscape designs for large-scale projects. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 236

INTERIOR LANDSCAPING (2 CR.)

Examines principles and practices of interior landscaping in residential and commercial buildings. Covers design, selection, planting, and maintenance of plant materials suitable for indoor use. Includes assessment of client needs, preparation of contracts and specifications, and construction materials. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 245 WOODY PLANTS (2 CR.)

Studies identification, culture, and uses of woody plants in landscaping. Includes deciduous and evergreen, native and cultivated shrubs and trees and vines. Teaches scientific and common names of plants. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 246 HERBACEOUS PLANTS (2 CR.)

Considers the herbaceous plants used in the landscape. Includes identification, use, culture, and propagation of common bulbs, perennials, and annuals. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 247 INDOOR PLANTS (2 CR.)

Considers problems unique to the growth of indoor plants, and their use in interior landscaping. Covers identification, uses, culture, and propagation of specific indoor plants. Teaches scientific and common names of plants. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 260 INTRODUCTION TO FLORAL DESIGN (3 CR.)

Serves as a practical introduction to floral designs. Teaches basic methods of design and floral arrangement. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 266

ADVANCED FLORAL DESIGN (3 CR.)

Teaches skills related to floral designs created by retail florists. Studies wreaths, baskets, sprays, wedding flowers, corsages, and other contemporary arrangements. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 269

PROFESSIONAL TURF CARE (3 CR.)

Discusses careers in the turf industry. Stresses turfgrass identification, selection, culture, propagation, and pest control from a commercial standpoint. Surveys turf care op-

erations and use of common equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRT 275 LANDSCAPE CONSTRUCTION AND MAINTENANCE (3 CR.)

Examines practical applications of construction techniques. Surveys landscape construction materials used in commercial and residential applications. Other topics may include estimating, construction, planting, and maintenance of a landscaping project. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 285 MANAGEMENT OF A HORTICULTURAL BUSINESS (3 CR.)

Studies the business and selling practices which relate to wholesale and retail horticultural businesses including garden centers, greenhouses, nurseries, and flower shops. Examines planning and layout, suppliers, merchandising, maintenance, and display of horticultural items. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 297

COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

HRI 101-102 HOTEL-RESTAURANT ORGANIZATION AND MANAGEMENT I-II (3 CR.) (3 CR.)

Introduces the history, opportunities, problems and trends of the hospitality industry. Covers the organization of the various sectors of the hospitality industry including human resources, general business considerations, and management theory. Lecture 3 hours per week.

HRI 120 PRINCIPLES OF FOOD PREPARATION (4 CR.)

Applies scientific principles and techniques to the preparation of food, including carbohydrates, such as fruits, vegetables, sugars and starches; fats, including both animal and vegetable, as well as natural and manufactured; and proteins, such as milk, cheese, eggs, meats, legumes, fish and shellfish. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

HRI 125 PRINCIPLES OF COMMERCIAL FOOD PREPARATION (3 CR.)

Prerequisite HRI 120 or departmental approval. Studies the principles related to cooking in large quantities. Includes purchasing, production planning, position assignments and proper use of equipment. Presents and solves problems in expanding and converting recipes, using alternate cooking methods. Considers traditional and computerized methods. Requires field trips. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 126

THE ART OF GARNISHING (1 CR.)

Focuses on the relationship between colors and shapes and how they pertain to garnishes. Provides student with knowledge to create impressive presentations. Lecture 1 hour per week.

HRI 150 INTRODUCTION TO HOSPITALITY OWNERSHIP (3 CR.)

Presents growth, development, present status and trends of the food and lodging industry. Includes special problems of operating small and medium sized establishments. Introduces credit and accounting procedures, management of staff, marketing, advertising, and security, as well as personal attitudes, qualifications, and ethics. Lecture 3 hours per week.

HRI 157 ADVANCED PRINCIPLES OF FOOD PREPARATION (4 CR.)

Prerequisite HRI 120. Introduces experimental techniques and procedures applied to the development of standardized recipes for the food service industry. Emphasizes sensory quality evaluation to determine general palatability and customer acceptance. Presents laboratory applications of scientific principles to international cuisine, microwave cookery, and baking. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

HRI 158

SANITATION AND SAFETY (3 CR.)

Covers the moral and legal responsibilities of management to insure a sanitary and safe environment in a food service operation. Emphasizes the causes and prevention of food-borne illnesses in conformity with federal, state and local guidelines. Focuses on OSHA standards in assuring safe working conditions. Lecture 3 hours per week.

HRI 165 HOTEL HOUSEKEEPING AND ENGINEERING MANAGEMENT (4 CR.)

Studies housekeeping and engineering departments of a hotel. Emphasizes organization, staffing, scheduling, staff development, cleaning materials and procedures, preventive maintenance, refurbishing, design, safety, and computer applications. Lecture 4 hours per week.

HRI 215 FOOD PURCHASING (3 CR.)

Presents the method and procedures for purchasing food for hotels, restaurants and institutions. Deals with markets, federal and trade grades, governmental regulations, packaging, comparative versions price buying, yields and quality control. Lecture 3 hours per week.

HRI 217 EQUIPMENT LAYOUT AND DESIGN (3 CR.)

Focuses on conceptualization, design, layout, space utilization and specification requirements of a food service operation. Incorporates kitchen and dining room equipment and facilities. Lecture 3 hours per week.

HRI 225 MENU PLANNING AND DINING ROOM SERVICE (3 CR.)

Covers fundamentals of menu writing, types of menus, layout, design and food mer-

chandising, and interpreting a profit and loss statement as it relates to menu pricing. Analyzes menus for effectiveness. Instructs on proper dining room service, customer seating, and dining room management. Emphasizes use of computer in management of food service operations. Lecture 3 hours per week.

HRI 235 MARKETING OF HOSPITALITY SERVICES (3 CR.)

Studies principles and practices of marketing the services of the hotel and restaurant industry. Emphasizes the marketing concept with applications leading to customer satisfaction. Reviews methods of external and internal stimulation of sales. May include a practical sales/marketing exercise and computer applications. Lecture 3 hours per week.

HRI 245 LABOR COST CONTROL (3 CR.)

Focuses on position analysis and description. Considers employee scheduling, forecasting, and staffing needs as related to sales for the labor intensive hospitality industry. Covers interpretation and analysis of payroll to maximize efficiency and productivity. Uses problem solving techniques to illustrate payroll procedures. Includes explanation of payroll deductions, tip credits and tip-sales allocation. Lecture 3 hours per week.

HRI 251-252 FOOD AND BEVERAGE COST CONTROL I-II (3 CR.) (3 CR.)

Presents methods of pre-cost and pre-control as applied to the menu, purchasing, receiving, storing, issuing, production, sales and service which result in achievement of an operation's profit potential. Emphasizes both manual and computerized approaches. Lecture 3 hours per week.

HRI 255 HUMAN RESOURCES MANAGEMENT AND TRAINING FOR HOSPITALITY AND TOURISM (3 CR.)

Prepares the students for interviewing, training and developing employees. Covers management skills (technical, human, and conceptual) and leadership. Covers the establishment and use of effective training and evaluative tools to improve productivity. Emphasizes staff and customer relations. Lecture 3 hours per week.

HRI 256 PRINCIPLES AND APPLICATIONS OF CATERING (3 CR.)

Prerequisite divisional approval. Analyzes and compares the principles of on-premise and off-premise catering. Includes student presentations in a series of catered functions where they assume typical managerial/employee positions emphasizing planning, organizing, operating, managing and evaluating. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

HRI 265 HOTEL FRONT OFFICE OPERATIONS (3 CR.)

Analyzes hotel front office positions and the procedures involved in reservation registration, accounting for and checking out guests, and principles and practices of night auditing. Covers the complete guest operation in both traditional and computerized operations. Lecture 3 hours per week.

HRI 269 CLUB MANAGEMENT (3 CR.)

Surveys the organization and management of member-owned and proprietary private clubs. Studies relationship between board of directors, management, employees, club committees, and club members. Covers budget preparation, including applicable tax laws. Field trips included. Lecture 3 hours per week.

HRI 275 HOSPITALITY LAW (3 CR.)

Studies the laws applicable to the ownership and operation of food and lodging operations. Includes duties to guests, ejection of undesirables, liabilities for personal injuries, damage, arrest and detention of offenders. Lecture 3 hours per week.

HRI 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

HUMAN SERVICES

HMS 109 STRUCTURED CAREER PLANNING IN HUMAN SERVICES (3 CR.)

Overviews human services as a career field. Teaches career development skills for personal career planning and for use with clients. Includes 9 hour computer component (word processing). Lecture 3 hours per week.

HMS 121 BASIC COUNSELING SKILLS I (3 CR.)

Develops skills needed to function in a helping relationship. Emphasizes skills in attending, listening and responding. Clarifies personal skill strengths, deficits and goals for skill improvement. Lecture 3 hours per week.

HMS 122 BASIC COUNSELING SKILLS II (3 CR.)

Expands the development of counseling skills needed to function effectively in a helping relationship. Emphasizes skills in responding, personalizing, summarizing and initiating. Clarifies personal skill strengths, deficits and goals for skill improvement. Develops plans for achieving personal and program goals. Lecture 3 hours per week.

HMS 141 GROUP DYNAMICS I (3 CR.)

Examines the stages of group development, group dynamics, the role of the leader in a group, and recognition of the various types of group processes. Discusses models of group dynamics that occur as a result of group membership dynamics. Lecture 3 hours per week.

HMS 142 GROUP DYNAMICS II (3 CR.)

Examines group dynamics, group leadership, group cohesion, transference and group helping through experiential involvement in group facilitating and leadership. Increases group skills through active classroom participation in group experiences. Lecture 3 hours per week.

HMS 225 FUNCTIONAL FAMILY INTERVENTION (3 CR.)

Provides an understanding of functions and dysfunctions within the family. Emphasizes the development of effective skills through an interpersonal/interactional approach to family intervention. Lecture 3 hours per week.

HMS 226 HELPING ACROSS CULTURES (3 CR.)

Provides an historical overview of selected cultural and racial groups. Promotes understanding of group differences and the impact on counseling services. Lecture 3 hours per week.

HMS 227 THE HELPER AS A CHANGE AGENT (3 CR.)

Teaches the following skills for implementing alternative models of change and influence: action research, problem-solving, consultation, workshop development, and outreach and advocacy for diverse client populations. Lecture 3 hours per week.

HMS 228 PRODUCTIVE PROBLEM-SOLVING (3 CR.)

Develops problem-solving and program-development skills needed to function in helping relationships. Emphasizes skills-training within the classroom and application of the skills in other settings. Lecture 3 hours per week.

HMS 231-232 GERONTOLOGY I-II (3 CR.) (3 CR.)

Examines characteristics of the aging process and problems for the elderly. Considers both theoretical and applied perspectives on the following issues: biological, psychological, sociological, economic and political. Lecture 3 hours per week.

HMS 237 HEALTH AND WELL-BEING OF THE ELDERLY (3 CR.)

Focuses on the health of the elderly and teaches preventive health techniques including cardio-pulmonary resuscitation (CPR). CPR certification is awarded upon successful completion of training. Lecture 3 hours per week.

HMS 238 SELECTED TOPICS IN AGING (3 CR.)

Provides students with an opportunity to explore a variety of major current issues in aging. Topics may include care giving and the elderly, elderly drug use and misuse, protective services, crisis interventions, homecare, elder-abuse, and other current topics. Lecture 3 hours per week.

HMS 239 COMMUNITY SERVICES FOR THE ELDERLY (3 CR.)

Introduces the social service delivery system and analyzes its impact on the elderly. Discusses how national, state, and local programs for the elderly are developed. Assists students in becoming advocates for their clients. Lecture 3 hours per week.

HMS 251 SUBSTANCE ABUSE I (3 CR.)

Provides knowledge, skills, and insight for working in drug and alcohol abuse programs. Emphasizes personal growth and client growth measures in helping relationships.

Stresses various methods of individual and group techniques for helping the substance abuser. Lecture 3 hours per week.

HMS 252 SUBSTANCE ABUSE II (3 CR.)

Prerequisite HMS 251. Expands knowledge and skill in working with the substance abuser. Focuses on assisting substance abusers in individual and group settings and explores client treatment modalities. May provide opportunities for field experience in treatment centers. Lecture 3 hours per week.

HMS 255 ADOLESCENT ALCOHOL USE AND ABUSE (3 CR.)

Examines adaptive and injurious effects of alcohol on the adolescent. Teaches adolescent developmental tasks, behavior concepts and principles. Explores specific treatment modalities. Lecture 3 hours per week.

HMS 256 SUBSTANCE ABUSE AND THE FAMILY (3 CR.)

Examines the theoretical constructs of working with families including a cause and effect approach and a systems theory approach. Compares and contrasts models for working with families and discusses treatment modalities. Familiarizes students with resources in their own communities. Lecture 3 hours per week.

HMS 257 CULTURE, CLASS, AND SUBSTANCE ABUSE (3 CR.)

Examines the different characteristics of substance abuse for various groups of people. Emphasizes physical, psychological, and sociological stress factors as they relate to substance abuse and treatment modalities. Lecture 3 hours per week.

HMS 258 CASE MANAGEMENT AND SUBSTANCE ABUSE (3 CR.)

Focuses on the process for interviewing substance abuse clients. Includes intake, assessment, handling denial, and ending the interview. Teaches skills for writing short-term goals and treatment plans with emphasis on accountability. Examines various reporting devices. Lecture 3 hours per week.

HMS 265 PERSONALITY THEORY (3 CR.)

Studies the theories of personality and their relationship to counseling. Emphasis is on the historical perspective, view of human nature, contributions and limitations of each theory. Lecture 3 hours per week.

HMS 266 COUNSELING PSYCHOLOGY (3 CR.)

Studies major counseling theories, their contributions and limitations, and the application of each to a counseling interaction. Students develop their own personal counseling theory. Lecture 3 hours per week.

HMS 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

HUMANITIES

HUM 100 SURVEY OF THE HUMANITIES (3 CR.)

Introduces the humanities through the art, literature, music, and philosophy of various cultures and historical periods. Lecture 3 hours per week.

HUM 105 TECHNOLOGY AND THE LIBERAL ARTS (3 CR.)

Relates technology in the modern world to the humanities. Designed primarily but not exclusively for students in occupational/technical fields. Draws from a variety of the liberal arts disciplines, and focuses on the theory and practice of technology. Lecture 3 hours per week.

HUM 111-112 GREAT BOOKS I-II (3 CR.) (3 CR.)

Introduces selected great works of philosophy and literature, with emphasis on close analysis of the text. Lecture 3 hours per week.

HUM 201 SURVEY OF WESTERN CULTURE I (3 CR.)

Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Ancient and Classical, Early Christian and Byzantine, Medieval, and Early Renaissance. Lecture 3 hours per week.

HUM 202 SURVEY OF WESTERN CULTURE II (3 CR.)

Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Renaissance, Baroque, Enlightenment, Romantic, and Modern. Lecture 3 hours per week.

HUM 211-212 SURVEY OF AMERICAN CULTURE I-II (3 CR.) (3 CR.)

Examines elements of our national culture as they evolved from the first European explorations through colonization and independence to the present day. Lecture 3 hours per week.

HUM 231-232 SURVEY OF ASIAN CULTURE I-II (3 CR.) (3 CR.)

Studies thought, values, and arts of Asian culture, integrating art, architecture, literature, music, and philosophy of various cultures, including two or more of the following: India, China, Japan, and Southeast Asia. Lecture 3 hours per week.

HUM 255 MASTERPIECES OF THE RENAISSANCE (3 CR.)

Studies Renaissance culture through the analysis of selected major figures and masterworks in art, literature, and music. Lecture 3 hours per week.

HUM 256 MYTHOLOGY IN LITERATURE AND THE ARTS (3 CR.)

Studies cultural expressions of mythology in literature and the arts. Considers several of the following mythologies, with emphasis on parallels and divergencies: Egyptian, Near-Eastern, Greek, Roman, Celtic, Norse, Asian, and African. Lecture 3 hours per week.

HUM 260 SURVEY OF TWENTIETH-CENTURY CULTURE (3 CR.)

Explores literature, visual arts, philosophy, music, and history of our time from an interdisciplinary perspective. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

INTERIOR DESIGN

IDS 100 THEORY AND TECHNIQUES OF INTERIOR DESIGN (3 CR.)

Introduces drafting and presentation, color theory, and coordination, space planning and arrangement of furnishings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 105 ARCHITECTURAL DRAFTING FOR INTERIOR DESIGN (3 CR.)

Introduces tools and equipment, lettering, methods of construction, designing and delineation of architecture. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 106 THREE DIMENSIONAL DRAWING AND RENDERING (3 CR.)

Provides instruction in graphic presentation of three-dimensionally drawn interiors. Presents the use of colored media to render three-dimensional drawings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 109 STYLES OF FURNITURE AND INTERIORS (3 CR.)

Teaches history of furnishings and interiors from the ancient world to the present. Lecture 3 hours per week.

IDS 115 CONTEMPORARY RESIDENTIAL DESIGN STUDIO (4 CR.)

Prerequisites IDS 100, IDS 105, and IDS 106. Plans an interior space based on contemporary designs. Presents each step used in planning, i.e., drafting the space, spatial planning and arrangement, color and furnishings selection. May require a final visual presentation with all necessary furnishings, materials, and color boards with rendered perspectives. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

IDS 205 MATERIALS AND SOURCES (3 CR.)

Presents textiles, floor and wall coverings, and window treatments. Emphasizes construction, fiber, finish, and code applications. May use research and field trips to trade sources representing these elements. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 206 LIGHTING AND FURNISHINGS (3 CR.)

Provides instruction in lighting terminology and calculations and instructions in techniques of recognizing quality of construction in furnishings and related equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 207 UPHOLSTERY AND SLIPCOVERING (3 CR.)

Provides instruction and studio experience in cutting and fabricating slipcovers, and in upholstering small pieces of furniture. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 208 DRAPERY DESIGN AND FABRICATION (3 CR.)

Provides instruction in designing, measuring, cutting and fabricating various kinds of window treatments. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 215 THEORY AND RESEARCH IN COMMERCIAL DESIGN (3 CR.)

Teaches graphic standards and specifications in interior design. Explains handicap codes and fire codes for large scale spaces. Provides programming and space planning with emphasis on systems furniture. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 216 TWENTIETH CENTURY DESIGN (3 CR.)

Exposes the student to 20th century art, architecture, and the design and designers of furniture and furnishings which create the interiors of the present century. Lecture, field trips, and visual materials expose the student to the design of the Twentieth Century. Lecture 3 hours per week.

IDS 217 ADVANCED RENDERING AND PRESENTATION (3 CR.)

Prerequisites IDS 105 and IDS 106. Gives advanced problems in rendering and visual presentation. Teaches methods of presentation and development of completed interior design projects with rendered perspectives and presentation boards of furnishings, fixtures, finishes, schedules, and related materials. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

IDS 221 DESIGNING COMMERCIAL INTERIORS I (4 CR.)

Presents problems in designing and developing presentations with emphasis on retail spaces. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

IDS 225 BUSINESS PROCEDURES (3 CR.)

Provides instruction in preparation of contracts, purchase orders, specifications, and other business forms used in the interior design field. Lecture 3 hours per week.

IDS 235 ANTIQUES (3 CR.)

Involves process of research, authentication, and determining provenance. Covers examples of furnishings, fixtures, textiles, glass, and ceramics. May provide field trips, lectures, examination, and discussion to assist in determining age, condition, and other properties. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ITALIAN**ITA 101-102 BEGINNING ITALIAN I-II (5 CR.) (5 CR.)**

Develops the understanding, speaking, reading, and writing of Italian, and emphasizes the structure of the language. Lecture 5 hours per week.

ITA 103-104 BASIC SPOKEN ITALIAN I-II (3 CR.) (3 CR.)

Teaches oral communication, and introduces the student to cultural mores and customs. Recommended for students with no prior instruction in the language. Lecture 3 hours per week.

ITA 201-202 INTERMEDIATE ITALIAN I-II (3 CR.) (3 CR.)

Prerequisite ITA 102 or equivalent. Continues development of skills of understanding, speaking, reading and writing of Italian. Classes conducted in Italian. Lecture 3 hours per week.

ITA 211-212 INTERMEDIATE ITALIAN CONVERSATION I-II (3 CR.) (3 CR.)

Prerequisite ITA 202 or equivalent. Continues emphasis on the spoken language, stressing correctness of structure, pronunciation, fluency, and vocabulary. Lecture 3 hours per week.

JAPANESE**JPN 101-102 BEGINNING JAPANESE I-II (5 CR.) (5 CR.)**

Develops the understanding, speaking, reading, and writing of Japanese, and emphasizes the structure of the language. Lecture 5 hours per week.

JPN 201-202 INTERMEDIATE JAPANESE I-II (3 CR.) (3 CR.)

Prerequisite JPN 102. Continues the development of the skills of understanding, speaking, reading, and writing of Japanese. Classes conducted in Japanese. Lecture 3 hours per week.

LATIN**LAT 101-102 ELEMENTARY LATIN I-II (3 CR.) (3 CR.)**

Teaches Latin grammar and composition. Introduces the translation of Latin literature, with special selections from Caesar and other writers. Lecture 3 hours per week.

LAT 201-202 INTERMEDIATE LATIN I-II (3 CR.) (3 CR.)

Prerequisites two years high school Latin or one year college Latin. Introduces the reading of classical Latin with a review of Latin grammar, forms, and syntax. Lecture 3 hours per week.

LEGAL ADMINISTRATION**LGL 110 INTRODUCTION TO LAW AND THE LEGAL ASSISTANT (3 CR.)**

Introduces various areas of law in which a legal assistant will be working. Includes intense study of court system (Virginia and federal) as well as a brief overview of criminal law, torts, domestic relations, evidence, ethics, the role of the legal assistant and other areas of interest. Lecture 3 hours per week.

LGL 115 REAL ESTATE LAW (3 CR.)

Studies law of real property, and gives in-depth survey of more common types of real estate transactions and conveyances such as deeds, contracts, leases, and deeds of trust. Focuses on drafting problems involving these various instruments. Includes research projects, and studies the system of recording and search of public documents. Lecture 3 hours per week.

LGL 116 DOMESTIC RELATIONS AND CONSUMER LAW (3 CR.)

Studies elements of a valid marriage, grounds for divorce and annulment, separation, defenses, custody, support, adoptions, and applicable tax consequences. Focuses on separation and pre-nuptial agreements, pleadings, and rules of procedure. May include specific federal and Virginia consumer laws. Lecture 3 hours per week.

LGL 125 LEGAL RESEARCH (3 CR.)

Provides an understanding of various components of a law library, and emphasizes research skills through the use of digests, encyclopedias, reporter systems, codes, Shepards, ALR and other research tools. Lecture 3 hours per week.

LGL 126 LEGAL WRITING (3 CR.)

Requires competence in English grammar. Studies proper preparation of various legal documents, including case and appeal briefs, legal memoranda, letters and pleadings. Involves practical applications. Lecture 3 hours per week.

LGL 215 TORTS (3 CR.)

Studies fundamental principles of the law of torts, including preparation and use of pleadings and other documents involved in the trial of a civil action. Emphasizes personal injury and medical malpractice cases. Lecture 3 hours per week.

LGL 217 TRIAL PRACTICE AND THE LAW OF EVIDENCE (3 CR.)

Introduces civil and criminal evidence; kinds, degrees and admissibility of evidence; and methods and techniques of its acquisition. Emphasizes Virginia and federal rules of evidence. Focuses on elements of a trial and various problems associated with the trial of a civil or criminal case. Lecture 3 hours per week.

LGL 218 CRIMINAL LAW (3 CR.)

Focuses on major crimes: their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasizes Virginia law. Gives general principles of

applicable constitutional law and criminal procedure. Lecture 3 hours per week.

LGL 227 ADMINISTRATION OF DECEDENT'S ESTATES (3 CR.)

Teaches students how to administer an estate efficiently. Includes instruction on substantive areas of law and preparation of forms and provides samples for the efficient administration of decedent's estates. Lecture 3 hours per week.

LGL 230 LEGAL TRANSACTIONS (3 CR.)

Introduces commercial principles and practices and Uniform Commercial Code. Emphasizes contracts, warrants, title, consideration, performance, parties, subject matter and remedies for breach, torts, sales, negotiable instruments, consumer protection, insurance, wills and inheritance, bankruptcy and statute of limitations. Lecture 3 hours per week.

LGL 235 LEGAL ASPECTS OF BUSINESS ORGANIZATIONS (3 CR.)

Examines lawyer's role in the formation of business entities, including sole proprietorship, partnerships and corporations, and other business vehicles. Studies fundamental principles of law applicable to each and the preparation of the documents necessary for organization and operation. Lecture 3 hours per week.

LGL 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

LIBRARY TECHNOLOGY

LBR 105 LIBRARY SKILLS FOR RESEARCH (1 CR.)

Introduces students to library skills and resources. Employs a laboratory approach to develop skills in the use of library materials. Presents general information about library procedures, specific methods for utilizing varied reference materials including dictionaries, indexes, special subject area tools, on-line information retrieval, classification systems, and the card catalog. Introduces general topics on research paper preparation. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

MARKETING

MKT 100 PRINCIPLES OF MARKETING (3 CR.)

Presents principles, methods and problems involved in the distribution and marketing of goods and services to industrial and ultimate consumers. Introduces various marketing middlemen: wholesaler, retailer, broker, agent including cooperative and trade associations, shippers, stores and facilitators. Discusses present-day problems and policies connected with distribution and sale of products, pricing, promotion, and buyer motivation. Examines variations of the marketing

mix and market research, plus legal, social and ethical considerations in marketing. Lecture 3 hours per week.

MKT 110 PRINCIPLES OF SELLING (3 CR.)

Presents fundamental aspects of personal selling, sales, ethics, and selling methods. Emphasizes professional sales techniques. Examines organization necessary for a well coordinated sales effort, including the training of sales personnel for maximum efficiency in selling and organization of the sales division within the business enterprise. Introduces sales management in planning, organizing, directing and controlling the total sales effort. Lecture 3 hours per week.

MKT 115 RETAIL ORGANIZATION AND MANAGEMENT (3 CR.)

Examines the organization of the retail establishment to accomplish its goals in an effective and efficient manner. Includes study of site location, internal layout, store operations, and security. Examines the retailing mix, the buying or procurement process, pricing, and selling. Studies retail advertising, promotion and publicity as a coordinated effort to increase store traffic. Lecture 3 hours per week.

MKT 120 FUNDAMENTALS OF FASHION (3 CR.)

Develops an understanding of the principles and procedures involved in the production, distribution, and consumption of fashion merchandise. Traces the history and development of fashion and how these changes affect the fashion merchandising world. Focuses on changing consumer characteristics which influence demand for fashion products and the effects that fashion marketing activities have on the economy. Lecture 3 hours per week.

MKT 129 BASIC INSURANCE SKILLS (3 CR.)

Presents basic insurance concepts and terminology, including personal and commercial insurance. Emphasizes customer relations and interpersonal skills, including written and oral communications. Lecture 3 hours per week.

MKT 130 PRINCIPLES OF INSURANCE (3 CR.)

Provides an introduction to insurance principles and practices. Includes an examination of risks and applications to the principal fields of insurance including life, accident and health, fire, liability, surety, and property. Lecture 3 hours per week.

MKT 140 TRAFFIC AND TRANSPORTATION (3 CR.)

Provides an overview of the U.S. transportation industry. Examines all modes of transportation and emphasizes history, purpose, functions, along with advantages and disadvantages of each mode. Highlights the importance and value of transportation to the U.S. economy in the production and distribution of goods and services. Includes a brief history of the regulation of transportation. Lecture 3 hours per week.

MKT 150 INTRODUCTION TO FOOD MARKETING (3 CR.)

Introduces food marketing practices and problems with emphasis on the supermarket organization. Emphasizes the economic importance of food marketing and the historical development of food retailing. Explores the role of trade groups, systems of food distribution, food industry surveys, supermarket organization and management, food industry issues, and the future of food marketing. Lecture 3 hours per week.

MKT 200 CONSUMERS, MARKETING, AND SOCIETY (3 CR.)

An overview of the marketing system as it applies to the needs and wants of consumers and the purchasing process, along with consideration of the role of government in consumer affairs. Assists the individual in becoming an informed consumer and better business manager through an understanding of rights and obligations in consumer transactions. Lecture 3 hours per week.

MKT 210 SALES MANAGEMENT (3 CR.)

Presents an in-depth examination of managing a sales force. Introduces methods of training, compensating, motivating and evaluating the sales force. Explores forecasting techniques and quotas. Lecture 3 hours per week.

MKT 220 PRINCIPLES OF ADVERTISING (3 CR.)

Emphasizes the role of advertising in the marketing of goods and services. Discusses the different uses of advertising; types of media; how advertising is created; agency functions and legal, social and economic aspects of the industry. Introduces advertising display, copy and art work preparation, printing and selection of media. Lecture 3 hours per week.

MKT 225 MERCHANDISE INFORMATION (3 CR.)

Studies merchandise characteristics of durable as well as non-durable goods. Includes detailed analysis of construction, uses, care and related government regulations. Stresses value and quality standards for consumer use. Emphasizes usefulness of product information as a merchandising tool. Lecture 3 hours per week.

MKT 227 MERCHANDISE BUYING AND CONTROL (3 CR.)

Studies the merchandising cycle. Explores techniques used in the development of buying resources, merchandising plans, model stock, unit control, and inventory systems. Highlights merchandise selection, policy pricing strategies, and inventory control methods. Lecture 3 hours per week.

MKT 228 PROMOTION (3 CR.)

Presents an overview of promotion activities including advertising, visual merchandising, publicity and sales promotion. Focuses on coordinating these activities into an effective campaign to promote sales for a particular product, business, institution or industry. Emphasizes budgets, selecting media, and analyzing the effectiveness of the campaign. Lecture 3 hours per week.

MKT 236 COLOR, LINE AND DESIGN APPLICATION (3 CR.)

Presents color theory and principles of line and design. Applies these principles to various fashion activities, such as visual merchandising, special events and apparel coordination. Lecture 3 hours per week.

MKT 238 FASHION MERCHANDISING (3 CR.)

Develops an understanding of the major considerations involved in the buying and merchandising of fashion products. Emphasizes the dynamics of fashion and consumer buying patterns and sources of buying information. Discusses fashion buying and inventory control in the merchandising cycle plus techniques used to develop fashion buying plans, model stocks, unit control and inventory systems. Stresses selection policy and pricing for profit. Lecture 3 hours per week.

MKT 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MATHEMATICS**MTH 001 DEVELOPMENTAL MATHEMATICS (1-5 CR.)**

Bridges the gap between a weak mathematical foundation and the knowledge necessary for the study of mathematics courses in technical and professional programs. Arithmetic, algebra, geometry, and trigonometry may be covered. Students may re-register for this course in subsequent semesters as necessary until the course objectives are completed. Variable hours per week.

MTH 002 BASIC ARITHMETIC (1-5 CR.)

Reviews arithmetical principles and computations designed to develop the mathematical proficiency necessary for selected curriculum entrance. Variable hours per week.

MTH 003 BASIC ALGEBRA I (1-5 CR.)

Prerequisites satisfactory score on an appropriate proficiency examination and MTH 002 or equivalent. Develops mathematical proficiency necessary for selected curriculum entrance. Variable hours per week.

MTH 004 BASIC ALGEBRA II (1-5 CR.)

Prerequisite satisfactory score on an appropriate proficiency examination and MTH 003 or equivalent. Develops the mathematical proficiency in intermediate algebra necessary for selected curriculum entrance. Variable hours per week.

MTH 006 BASIC GEOMETRY (1-5 CR.)

Prerequisites satisfactory score on an appropriate proficiency examination and MTH 003 or equivalent. Develops the mathematical proficiency in geometry necessary for selected curriculum entrance. Variable hours per week.

MTH 007 BASIC TRIGONOMETRY (1-5 CR.)

Prerequisites satisfactory score on an appropriate proficiency examination and MTH 004 or equivalent. Develops the mathematical proficiency in trigonometry necessary for selected curriculum entrance. Variable hours per week.

MTH 103-104 BASIC TECHNICAL MATHEMATICS I-II (3 CR.) (3 CR.)

Prerequisites satisfactory score on an appropriate proficiency examination and MTH 002 or equivalent. Presents a review of arithmetic, and teaches elements of algebra, geometry, and trigonometry. Directs applications to specialty areas. Lecture 3 hours per week.

MTH 115-116 TECHNICAL MATHEMATICS I-II (3 CR.) (3 CR.)

Prerequisites satisfactory score on appropriate mathematics proficiency examinations, two units of high school algebra and one unit of high school geometry or equivalent. Designed for the technical student. Teaches analytical geometry of the straight line, basic algebra through exponentials and logarithms, curve sketching, numerical trigonometry, vectors, and complex numbers. Introduces analytical trigonometry and calculus. Lecture 3 hours per week.

MTH 120 INTRODUCTION TO MATHEMATICS (3 CR.)

Prerequisite is a satisfactory score on an appropriate proficiency examination covering basic arithmetic skills. MTH 003 or equivalent is desirable. Introduces number systems, logic, basic algebra, systems of equations, and descriptive statistics. Lecture 3 hours per week.

MTH 126 MATHEMATICS FOR ALLIED HEALTH (2 CR.)

Teaches scientific notation, precision and accuracy, decimals and percents, ratio and proportion, variation, simple equations, techniques of graphing, use of charts and tables, logarithms, and the metric system. Lecture 2 hours per week.

MTH 150 TOPICS IN GEOMETRY (3 CR.)

Prerequisites satisfactory score on an appropriate proficiency examination and MTH 003 and MTH 006 or equivalent. Studies the fundamentals of plane and solid geometry. Topics include visualization, ratio, right triangle geometry, and non-Euclidean geometry. Applications will aid students in aviation, teaching, and other fields. Lecture 3 hours per week.

MTH 151-152 MATHEMATICS FOR THE LIBERAL ARTS I-II (3 CR.) (3 CR.)

Prerequisites satisfactory score on an appropriate proficiency examination and MTH 003 and either MTH 004 or MTH 006 or equivalent. Covers the basic concepts and methods of mathematics, computer science, and statistics. Presents topics including number theory, logic, functions, elementary computer concepts, problem-solving, probability, and statistics. Lecture 3 hours per week.

MTH 160 INTRODUCTION TO COLLEGE ALGEBRA (3 CR.)

Prerequisites include a satisfactory score on an appropriate proficiency examination and MTH 004 or equivalent. Reviews the fundamental ideas of algebra including sets, polynomials, rational expressions, graphing, equations and inequalities, relations and functions, and systems of first degree equations and inequalities. Lecture 3 hours per week.

MTH 165 COLLEGE ALGEBRA (3 CR.)

Prerequisites are a satisfactory score on an appropriate proficiency examination and MTH 003, MTH 004 and MTH 006 or equivalent. Prepares students for MTH 271, Applied Calculus. Topics include algebra, analytic geometry, systems of equations, and a study of algebraic, exponential, and logarithmic functions. Credit is not given for both MTH 165 and MTH 166. Lecture 3 hours per week.

MTH 166 COLLEGE ALGEBRA AND TRIGONOMETRY (4 CR.)

Prerequisites are a satisfactory score on an appropriate proficiency examination and MTH 003, MTH 004, and MTH 006 or equivalent. Prepares students for Calculus with Analytic Geometry. Includes algebra, analytic geometry, and a study of algebraic and transcendental functions. Credit is not given for both MTH 165 and MTH 166. Lecture 4 hours per week.

MTH 173-174 CALCULUS WITH ANALYTIC GEOMETRY I-II (5 CR.) (5 CR.)

Prerequisites are MTH 166 or (1) satisfactory score on an appropriate proficiency examination and (2) two units of algebra, one unit of geometry and one-half unit each of trigonometry and pre-calculus. Covers functions, limits, derivatives, differentials, indefinite integrals, definite integrals, and applications. Lecture 5 hours per week.

MTH 181-182 FINITE MATHEMATICS I-II (3 CR.) (3 CR.)

Prerequisites satisfactory score on an appropriate proficiency examination and MTH 003, MTH 004, and MTH 006 or equivalent. Introduces set theory, the real number system, probability theory, vectors, matrices, linear programming, systems of linear equations, and theory of games. Lecture 3 hours per week.

MTH 213 ADVANCED ENGINEERING TECHNICAL MATHEMATICS I (3 CR.)

Prerequisite MTH 116 or equivalent. Applies differential and integral calculus to the appropriate technical field. Lecture 3 hours per week.

MTH 241-242 STATISTICS I-II (3 CR.) (3 CR.)

Prerequisites MTH 152, MTH 165, MTH 182, or permission of the division. Covers descriptive statistics, elementary probability, distributions, including the normal distribution, sampling distributions, estimation, hypothesis testing (including z, t, F and χ^2 tests),

regression, correlation, analysis of variance, and non-parametric methods. Lecture 3 hours per week.

MTH 243-244 PROBABILITY AND STATISTICS I-II (3 CR.) (3 CR.)

Prerequisite for MTH 243 is MTH 174 or equivalent. Corequisite is MTH 277. Prerequisite for MTH 244 is MTH 285. Covers distribution theory, moment generating functions, estimation, multiple regression, and analysis of variance. Lecture 3 hours per week.

MTH 250 COLLEGE GEOMETRY (3 CR.)

Prerequisite MTH 174 or consent of the division. Presents topics in Euclidean and non-Euclidean geometries chosen to prepare individuals for teaching geometry at the high school level. Studies Euclid's geometry and its limitations, axiomatic systems, techniques of proof, and Hilbert's geometry, including the parallel postulates for Euclidean, hyperbolic, and elliptic geometries. Lecture 3 hours per week.

MTH 271-272 APPLIED CALCULUS I-II (3 CR.) (3 CR.)

Prerequisites are a satisfactory score on an appropriate proficiency examination and MTH 165 or four units of high school mathematics beginning with two units of algebra and one unit of geometry or equivalent. Introduces limits, continuity, differentiation and integration of algebraic and transcendental functions, multivariable calculus, and differential equations. Emphasizes applications. Lecture 3 hours per week.

MTH 277 MULTIVARIABLE CALCULUS (4 CR.)

Prerequisite is satisfactory completion of Calculus with Analytic Geometry I-II. Covers vector valued functions, partial derivatives, multiple integration, and topics in vector calculus. Lecture 4 hours per week.

MTH 285 LINEAR ALGEBRA (3 CR.)

Prerequisite is satisfactory completion of Calculus with Analytic Geometry I-II. Covers matrices, vector spaces, determinants, solutions of systems of linear equations, eigenvalues, and eigenvectors. Lecture 3 hours per week.

MTH 286 DISCRETE MATHEMATICS (4 CR.)

Prerequisite MTH 174. Examines mathematical structures and procedures that facilitate the manipulation of discrete or non-continuous data, primarily for Computer Science majors. Topics include sets, logic and Boolean algebra, counting methods, functions and relations, graphs, trees, and introduction to finite state automata. Lecture 4 hours per week.

MTH 291 ORDINARY DIFFERENTIAL EQUATIONS (3 CR.)

Prerequisite is satisfactory completion of Calculus with Analytic Geometry I-II. Covers first order differential equations, linear differential equations, systems of differential equations, and applications. Lecture 3 hours per week.

MTH 292 TOPICS IN DIFFERENTIAL EQUATIONS (3 CR.)

Prerequisite is successful completion of Multivariable Calculus and Ordinary Differential Equations. Covers more topics in differential equations. These topics include series solutions, Fourier series, Laplace transform, partial differential equations and boundary value problems. Lecture 3 hours per week.

MTH 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MECHANICAL ENGINEERING TECHNOLOGY

MEC 112 PROCESSES OF INDUSTRY (3 CR.)

Analyzes the processes of manufacturing products from materials for industry/engineering. Includes machining casting, forming molding, hot/cold working, chipless machining, and welding. Addresses quality assurance and inspection procedures. Lecture 3 hours per week.

MEC 118 AUTOMATED MANUFACTURING TECHNOLOGY (3 CR.)

Studies numerical control systems. Includes application of numerical control to standard machine tools, numerical control systems, NC coordinate system, APT systems, two-dimensional machine process, three-dimensional machine process, flexible manufacturing role of robotics in automated manufacturing. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MEC 120 PRINCIPLES OF MACHINE TECHNOLOGY (3 CR.)

Studies fundamental machine operations and practices, including layout, measuring devices, hand tools, drilling, reaming, turning between centers, cutting tapers and threads, and milling; fabrication of mechanical parts on drill press, lathe and mill. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MEC 126 COMPUTER PROGRAMMING FOR TECHNOLOGISTS (2 CR.)

Introduces computer programming to technology students. Covers programming for the microcomputer using high level languages such as BASIC, FORTRAN, or Pascal. Teaches computer solutions of mathematical problems in applications such as circuit analysis and static equilibrium. Lecture 2 hours per week.

MEC 127 COMPUTER PROGRAMMING FOR ENGINEERING TECHNOLOGY (3 CR.)

Focuses on programming for microcomputers in engineering technology. Covers problem solving techniques, structures programming, flowcharts, input/output, variables,

expressions, conditionals, looping, and sub-routines. Uses scientific languages such as BASIC, Pascal, and FORTRAN. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 131 MECHANICS I— STATICS FOR ENGINEERING TECHNOLOGY (3 CR.)

Teaches Newton's laws, resultants and equilibrium of force systems, trusses and frames, determination of centroids, and distributed loads and moments of inertia. Introduces dry friction and force systems in space. Lecture 3 hours per week.

MEC 132 MECHANICS II— STRENGTH OF MATERIALS FOR ENGINEERING TECHNOLOGY (3 CR.)

Teaches the concepts of stress and strain. Provides an analysis of stresses and deformations in loaded members, connectors, shafts, beams, columns, and combined stress. Lecture 3 hours per week.

MEC 133 MECHANICS III— DYNAMICS FOR ENGINEERING TECHNOLOGY (2 CR.)

Focuses on rigid body mechanics including kinetics, kinematics, and applications to machine elements. Lecture 2 hours per week.

MEC 136 ADVANCED MACHINE TECHNOLOGY (3 CR.)

Prerequisite MEC 120. Applies machine operations of MEC 133 and boring, grinding and gear cutting to build simple machines and make the necessary tools for fabrication. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MEC 155 MECHANISMS (2 CR.)

Studies the purpose and actions of cams, gear trains, levers, and other mechanical devices used to transmit control. Focuses on motions, linkages, velocities, and acceleration of points within a link mechanism; layout method for designing cams and gear train. Requires preparation of weekly laboratory reports. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MEC 210 MACHINE DESIGN (3 CR.)

Studies the design of machine elements for producing and transmitting power. Includes additional material in statics, strength of materials, dynamics, engineering materials and industrial processes, including lubrication, and friction. Emphasizes graphical kinematics of mechanisms, and discusses analytical design of machine components. Requires preparation of weekly laboratory reports. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 225 METALLURGY (3 CR.)

Prerequisites MEC 112 and MTH 116. Teaches fundamentals of metallurgy, grain size, effect on carbon content, and hardness testing devices. Tests different alloys to determine the effect of heat treatment. Requires preparation of weekly laboratory reports. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 245 ROBOTICS (3 CR.)

Prerequisite MEC 118. Introduces industrial robotics including spatial descriptions, positions, translations, rotations, mappings and transformations; manipulator kinematics and dynamics; force control of manipulators. Teaches robot programming languages and systems; programming and operation of education robots. Requires outside laboratory reports. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 255 THERMODYNAMICS (3 CR.)

Prerequisite MTH 116. Studies the properties of fluids and basic principles of work, energy, and heat. Includes the first and second laws of thermodynamics, processes and cycles, thermal reversibilities and irreversibilities, internal combustion engines, and gas turbines. Lecture 3 hours per week.

MEC 257 HEAT TRANSFER (3 CR.)

Studies basic principles and fundamentals of heat transfer; laws and properties of the three modes of heat flow; conduction, convection, and radiation; application to selected engineering problems. Lecture 3 hours per week.

MEC 265 FLUID MECHANICS (3 CR.)

Studies properties of fluids and fluid flow, Bernoulli's theorem, measuring devices, viscosity and dimensional analysis. Emphasizes pumps, piping, and fluid motors. Lecture 3 hours per week.

MEC 297**COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MEDICAL LABORATORY**MDL 101 INTRODUCTION TO MEDICAL LABORATORY TECHNIQUES (3 CR.)**

Introduces the basic techniques including design of the health care system, ethics, terminology, calculations, venipuncture and routine urinalysis. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MDL 105 PHLEBOTOMY (3 CR.)

Introduces basic medical terminology, anatomy, physiology, components of health care delivery and clinical laboratory structure. Teaches techniques of specimen collection, specimen handling, and patient interactions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MDL 110 URINALYSIS AND BODY FLUIDS (3 CR.)

Studies the gross, chemical, and microscopic techniques used in the clinical laboratory. Emphasizes study of clinical specimens which include the urine, feces, cerebrospinal fluid, blood, and body exudates. Introduces specimen collection and preparation. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MDL 120 PRINCIPLES OF HEMATOLOGY (4 CR.)

Presents theory of procedure performed in hematology and coagulation and the relationship of these procedures to the diagnosis of disease. Includes performance of manual hematology procedure and coagulation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

MDL 135 CLINICAL MICROBIOLOGY TECHNIQUES I (5 CR.)

Introduces the basic theories and techniques used to identify bacteria, fungi, and parasites in a simulated clinical setting. Lecture 3 hours. Laboratory 6 hours. Total 9 hours per week.

MDL 215 IMMUNOLOGY (2 CR.)

Presents the physiological basis of humoral and cell mediated immunity, including the medical and clinical laboratory application of immunological principles. Lecture 2 hours per week.

MDL 216 BLOOD BANKING (4 CR.)

Teaches fundamentals of blood grouping and typing, compatibility testing, antibody screening, component preparation, donor selection, and transfusion reactions and investigation. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

MDL 255**DIAGNOSTIC MICROBIOLOGY (3 CR.)**

Presents principles of medical microbiology including specimen handling, identification and pathogenicity of bacteria, fungi, parasites and viruses infecting humans. Lecture 3 hours per week.

MDL 262 CLINICAL CHEMISTRY AND INSTRUMENTATION II (5 CR.)

Introduces methods of performing biochemical analysis of clinical specimens. Teaches instrumentation involved in a clinical chemistry laboratory, quality control, and the ability to recognize technical problems. Lecture 3 hours. Laboratory 6 hours. Total 9 hours per week.

MDL 265 ADVANCED CLINICAL CHEMISTRY (2 CR.)

Presents principles of current special chemistry techniques. Lecture 2 hours per week.

MDL 266 CLINICAL CHEMISTRY TECHNIQUES (4 CR.)

Includes performing of clinical chemistry methodologies and operation of typical instrumentation in a clinical laboratory or simulated laboratory setting. Laboratory 12 hours per week.

MDL 276 CLINICAL HEMATOLOGY TECHNIQUES (4 CR.)

Stresses performing hematological and coagulation methods and operation of typical instrumentation in a clinical laboratory or simulated laboratory setting. Laboratory 12 hours per week.

MDL 277 CLINICAL IMMUNOHEMATOLOGY AND IMMUNOLOGY TECHNIQUE (4 CR.)

Deals with performing techniques, procedures, and interpretations in Blood Banking

and Serology in a clinical laboratory or simulated laboratory setting. Laboratory 12 hours per week.

MDL 278 CLINICAL MICROBIOLOGY TECHNIQUES II (4 CR.)

Includes performing of techniques, procedures, and identification of microorganisms in a clinical laboratory or simulated laboratory setting. Laboratory 12 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MEDICAL RECORDS**MDR 100 INTRODUCTION TO THE HEALTH CARE DELIVERY SYSTEM (1 CR.)**

Introduces the organization of the health care delivery system with emphasis on types of providers and the role that accrediting and licensing bodies play in the delivery of health care. Lecture 1 hour per week.

MDR 113-114 MEDICAL TERMINOLOGY AND DISEASE PROCESSES I-II (3 CR.) (3 CR.)

Includes the study of prefixes, suffixes, stem words, and technical terms; puts emphasis on the causes and treatment of selected disease processes. Lecture 3 hours per week.

MDR 141-142 FUNDAMENTALS OF HEALTH INFORMATION SYSTEMS I-II (3 CR.) (3 CR.)

Focuses on health data collection, storage, retrieval and reporting systems, with emphasis on the role of the computer in accomplishing these functions. Lecture 3 hours per week.

MDR 215 HEALTH DATA CLASSIFICATION SYSTEMS (5 CR.)

Prerequisite MDR 141 or permission of the program head. Focuses on disease and procedure classification systems currently utilized for collecting health data for the purposes of statistical research and financial reporting. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

MDR 220 HEALTH STATISTICS (2 CR.)

Introduces the student to basic statistical principles as applied in the health care environment. Lecture 2 hours per week.

MDR 225 QUALITY ASSURANCE IN HEALTH CARE (2 CR.)

Presents medical care evaluation techniques, utilization review activities, peer review organization requirements, and risk management. Lecture 2 hours per week.

MDR 226 LEGAL ASPECTS OF HEALTH RECORD DOCUMENTATION (2 CR.)

Presents the legal requirements associated with health record documentation. Emphasizes the policies and procedures concerning the protection of the confidentiality of the patient's health record. Lecture 2 hours per week.

MDR 231-232 HEALTH RECORD APPLICATIONS I-II (3 CR.) (3 CR.)

Uses an integrated approach to practicing health records skills in a simulated clinical environment. Emphasizes the use of the microcomputer in accomplishing problem-solving tasks. Laboratory 6 hours per week.

MDR 241 FUNDAMENTALS OF HEALTH INFORMATION SYSTEMS III (3 CR.)

Continues MDR 142. Lecture 3 hours per week.

MDR 251 CLINICAL PRACTICE I (4 CR.)

Supervises student practice in health record activities conducted in a variety of clinical settings. Laboratory 12 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MENTAL HEALTH**MEN 121-122 MENTAL RETARDATION I-II (3 CR.) (3 CR.)**

Explores current problems and social, cultural and legal issues involved in therapeutic interventions for understanding and programs relating to the mentally retarded. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MILITARY SCIENCES**MSC 111-112 MILITARY SCIENCE I-II (2 CR.) (2 CR.)**

Covers the first year of general military science: organization of the army and ROTC, U.S. Army and national security, individual weapons, marksmanship, and leadership laboratory. Courses offered only in cooperation with four-year colleges authorized to offer Army ROTC programs. Lecture 2 hours per week.

MSC 121-122 LEADERSHIP SKILLS I-II (2 CR.) (2 CR.)

Introduces the ROTC student to techniques of land navigation and map reading. Covers fundamentals of military leadership and management with practical leadership applications. May include field training exercises. Lecture 2 hours per week.

MSC 211-212 MILITARY SCIENCE III-IV (2 CR.) (2 CR.)

Focuses on the second year of general military science: American military history, introduction to operations and basic tactics, map and aerial photo reading, and leadership laboratory. Courses offered only in cooperation with four-year colleges authorized to offer Army ROTC programs. Lecture 2 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MUSIC**MUS 008 FUNDAMENTALS OF MUSIC (3 CR.)**

Teaches the beginner to read, write, and understand the symbols of music notation. Introduces both pitch and rhythmic notation symbols. Combines listening and visual exercises in order to develop performance skills and proficiency in the language of music. Re-registration permitted until course objectives are completed. Lecture 3 hours per week.

MUS 101-102 BASIC MUSICIANSHIP I-II (3 CR.) (3 CR.)

Provides exercises leading to knowledge and skill in the rudiments of music. Includes rhythmic notation as well as scales, keys, and intervals along with exercises in sight reading and ear training. Lecture 3 hours per week.

MUS 103-104 COMPREHENSIVE MUSICIANSHIP I-II (3 CR.) (3 CR.)

Continues basic musicianship for the non-music major. Lecture 3 hours per week.

MUS 105 HISTORY OF INSTRUMENTS (3 CR.)

Traces the evolution and construction of instruments and their sound production properties. Also discusses problems in sound production when new and different materials are used in constructing instruments. Lecture 3 hours per week.

MUS 109 MUSIC FOR CHILDREN (3 CR.)

Selects and develops a repertoire of songs, musical games, rhythms, and movement activities for the 2-5-year-old. Develops skills on keyboard, autoharp, or musical instruments appropriate for use in early childhood education. Lecture 3 hours, Laboratory 1 hour. Total 4 hours per week.

MUS 111-112 MUSIC THEORY I-II (4 CR.) (4 CR.)

Discusses elements of musical construction of scales, intervals, triads, and chord progressions. Develops ability to sing at sight and write from dictation. Introduces the analysis of the Bach chorale style. Expands facility with harmonic dictation and enables the student to use these techniques at the keyboard. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

MUS 113-114 INSTRUMENTAL REPAIR I-II (3 CR.) (3 CR.)

Teaches the principles of instrumental maintenance and repair through the use of modern diagnostic methods. Explains electronic and mechanical diagnostic and remedial techniques. Includes both theoretical and applied laboratory experiments. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MUS 120 HYMNOLOGY (3 CR.)

Prerequisite divisional approval. Studies the development of hymns throughout different historical periods. Analyzes hymn

styles for a variety of religious services throughout the liturgical year. Surveys current trends in hymn singing and accompaniment styles. Lecture 3 hours per week.

MUS 121-122 MUSIC APPRECIATION I-II (3 CR.) (3 CR.)

Increases the variety and depth of the student's interest, knowledge, and involvement in music and related cultural activities. Acquaints the student with traditional and twentieth century music literature, emphasizing the relationship music has as an art form with man and society. Increases the student's awareness of the composers and performers of all eras through listening and concert experiences. Lecture 3 hours per week.

MUS 123-124 ORGANIZING AND DIRECTING CHORAL ACTIVITIES I-II (2 CR.) (2 CR.)

Develops the organizational skills necessary for directing a variety of choral groups, planning a rehearsal, and building a choral program. Enables students to master the conducting skills that deal with beat patterns, score reading, and musical terminology. Permits performance in a laboratory group as singers and conductors to gain experience in selecting and rehearsing music. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 125 AMERICAN MUSIC (3 CR.)

Presents the development of music in America from early colonists to the present, in light of philosophical, political, geographical, and sociological developments. Lecture 3 hours per week.

MUS 126 INTRODUCTION TO MUSIC LITERATURE (3 CR.)

Explores sound-producing mediums and the nature of melodic, harmonic, and rhythmic styles. Introduces instrumental and vocal literature by type and historical period. Lecture 3 hours per week.

MUS 127 FOLK MUSIC (3 CR.)

Introduces and surveys traditional, Appalachian, and contemporary folk songs, instruments, and performers in American culture. Requires no previous knowledge of music. Lecture 3 hours per week.

MUS 128 ORGANIZING AND DIRECTING THE CHURCH CHOIR (3 CR.)

Examines specific problems of church choirs, recruiting new members, training unskilled singers, establishing a philosophy of church music selection and service participation, and motivating the singers. Surveys choir materials that improve diction, sight reading, and vocal performance. Includes application of rehearsal procedures and conducting techniques. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 130 OVERVIEW OF THE RECORDING INDUSTRY (1 CR.)

Prerequisite divisional approval. Introduces and surveys employment opportunities in the commercial music industry. Assists students in defining their professional goals. Lecture 1 hour per week.

MUS 131-132**CLASS VOICE I-II (2 CR.) (2 CR.)**

Introduces the many aspects of singing from the physical act through the aesthetic experience. The course is designed for the beginning singer who desires vocal improvement, and for the voice major as an addition to and extension of skills and knowledge necessary for artistic development. Introduces appropriate repertoire. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 133-134 RECORDING SYSTEMS**SERVICES I-II (3 CR.) (3 CR.)**

Prerequisite divisional approval. Introduces the principles of recording systems and recording system designs. Provides the student with theoretical and practical site locations. Includes the study of sound studio design and construction, production costs, and retail distribution. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 135**PRINCIPLES OF TUNING (3 CR.)**

Prerequisite divisional approval. Teaches an understanding of the principles of musical tuning systems. Presents theory and laboratory experiments to explain and illustrate the tuning of musical instruments, including the piano. Lecture 2 hours, Laboratory 2 hours. Total 4 hours per week.

MUS 136**APPLIED MUSIC-VOICE * (1-2 CR.)**

Prerequisite divisional approval. Teaches singing, proper breath control, diction, and development of tone. Studies the standard vocal repertoire. One or two half-hour lessons per week. Four to eight hours practice required.

MUS 137 CHORUS ** (1 CR.)**MUS 138 SMALL****VOCAL ENSEMBLE ** (1 CR.)****MUS 140****INTRODUCTION TO RECORDING TECHNIQUES (3 CR.)**

Introduces the theory and practice of basic magnetic and multichannel recording. Presents the concepts of recording electronics, equipment nomenclature, function, application, and interface, microphone application, and mixdown techniques. Provides basic hands-on experience in the recording studio. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 141-142**CLASS PIANO I-II (2 CR.) (2 CR.)**

Offers the beginning piano student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of keyboard playing. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 145**APPLIED MUSIC—KEYBOARD *(1-2 CR.)**

Prerequisite divisional approval. Teaches piano, organ, harpsichord, or synthesizer.

Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.

MUS 148 ORCHESTRA ** (1 CR.)**MUS 149 BAND ** (1 CR.)****MUS 151-152****CLASS WOODWINDS I-II (2 CR.) (2 CR.)**

Offers the beginning woodwind student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of specific woodwind instruments. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 155 APPLIED**MUSIC—WOODWINDS * (1-2 CR.)**

Prerequisite divisional permission. Teaches fundamentals of the woodwind instruments. Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.

MUS 156**WOODWINDS ENSEMBLE ** (1 CR.)****MUS 157****SOUND STUDIO DESIGN (3 CR.)**

Prerequisite divisional approval. Introduces the theory and practice of sound studio design. Provides a basic understanding of acoustics and the acoustical properties of construction materials. Allows the student practical opportunities in designing sound studios. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 158 RECORDING STUDIO**ELECTRONICS: THEORY AND MAINTENANCE (3 CR.)**

Prerequisite divisional approval. Introduces the practices used in maintaining professional recording equipment and basic electronic theory used within the recording industry. Provides the skills and knowledge necessary to perform routine maintenance and to repair recording and related equipment. Designed to prepare the student for position as entry-level technician or apprentice recording engineer. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 159 IMPROVISATIONAL**TECHNIQUES (3 CR.)**

Prerequisite selected Applied Music or freshman level proficiency. Introduces the principles of improvisation using harmonic structures and progressions from the period of common practice. Includes listening to and performing music of the standard jazz and popular repertoire. Develops performance skills utilizing specific improvisational devices employed in different historical periods. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 161-162**CLASS STRINGS I-II (2 CR.) (2 CR.)**

Offers the beginning string student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of specific string instruments. Presents appropriate literature. Open to all

students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 163-164 GUITAR THEORY AND**PRACTICE I-II (3 CR.) (3 CR.)**

Studies the fundamentals of sound production, music theory, and harmony as they apply to guitar. Builds proficiency in both the techniques of playing the guitar and in the application of music fundamentals to these techniques. Presents different types of guitars and related instruments. Emphasizes music as entertainment and as a communication skill. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MUS 165**APPLIED MUSIC—STRINGS * (1-2 CR.)**

Prerequisite divisional approval. Teaches fundamentals of string instruments, harp, or guitar. Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.

MUS 166 STRING ENSEMBLE ** (1 CR.)**MUS 171-172****CLASS BRASS I-II (2 CR.) (2 CR.)**

Offers the beginning brass student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of specific brass instruments. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 175**APPLIED MUSIC—BRASS * (1-2 CR.)**

Prerequisite divisional approval. Teaches fundamentals of brass instruments. Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.

MUS 176 BRASS ENSEMBLE ** (1 CR.)**MUS 179****MUSIC COPYRIGHT LAW (1 CR.)**

Prerequisite divisional approval. Introduces the legal problems and normal conventions practiced within the commercial music industry. Provides a basic understanding of national and international music copyright laws. Lecture 1 hour per week.

MUS 181-182**CLASS PERCUSSION I-II (2 CR.) (2 CR.)**

Offers the beginning percussion student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of specific percussion instruments. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 185 APPLIED**MUSIC—PERCUSSION * (1-2 CR.)**

Prerequisite divisional permission. Teaches fundamentals of percussion instruments. Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.

- MUS 186**
PERCUSSION ENSEMBLE ** (1 CR.)
- MUS 200 VOCAL METHODS AND MATERIALS** (3 CR.)
Studies the problems, materials, and techniques of the teaching of voice. Lecture 3 hours per week.
- MUS 205 KEYBOARD METHODS AND MATERIALS** (3 CR.)
Studies the problems, materials, and techniques of teaching keyboard. Lecture 3 hours per week.
- MUS 211-212 ADVANCED MUSIC THEORY I-II** (4 CR.) (4 CR.)
Prerequisite MUS 111-112 or equivalent. Increases facility in the analysis and usage of diatonic and chromatic harmonies. Continues harmonic analysis of Bach style. Includes exercises in sight-singing, ear-training, and keyboard harmony. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.
- MUS 213-214**
COMPOSITION I-II (3 CR.) (3 CR.)
Prerequisite divisional approval. Requires the writing of short compositions in several styles, ranging from the 18th to the 20th century, for various instrumental or vocal combinations. Individualized instruction meets the special need of each student. Score analysis forms an important part of this course. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 221-222**
HISTORY OF MUSIC I-II (3 CR.) (3 CR.)
Presents the chronology of musical styles from antiquity to the present time. Relates the historical development of music to parallel movements in art, drama, and literature. Develops techniques for listening analytically and critically to music. Lecture 3 hours per week.
- MUS 223-224 THE HISTORY OF OPERA I-II** (3 CR.) (3 CR.)
Studies the development of operatic style through the presentation of representative works from 1600 to the present. Lecture 3 hours per week.
- MUS 225 THE HISTORY OF JAZZ** (3 CR.)
Studies the underlying elements of jazz, concentrating on its cultural and historical development from earliest stages to the present. No previous knowledge of music is required. Lecture 3 hours per week.
- MUS 226 TWENTIETH CENTURY MUSIC AND MUSIC CULTURES** (3 CR.)
Examines the twentieth century in all its social, political, and cultural ramifications as a point of departure. Includes a study of both Western and non-Western folk, popular, and classical music of the twentieth century. Lecture 3 hours per week.
- MUS 227 EDITING AND MIXDOWN TECHNIQUES** (3 CR.)
Prerequisite divisional approval. Introduces the theory and practice of electronic-mechanical editing and mixdown techniques. Provides the skills necessary to edit, mixdown, externally reprocess, and otherwise manipulate multitrack original recordings into finished master recordings. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 231-232 ADVANCED CLASS VOICE I-II** (2 CR.) (2 CR.)
Continues MUS 131-132. Continues the expansion of appropriate vocal repertoire. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- MUS 235 ADVANCED RECORDING TECHNIQUES** (3 CR.)
Prerequisite MUS 140 or divisional approval. Introduces advanced recording techniques that lead to master release and demonstration tapes. Provides knowledge and skills in refined areas of multi-channel recording and mixdown techniques. Includes study of the process which converts finished master tapes to phonograph discs or prerecorded cartridges suitable for retail release. Provides experience in solving on-site recording problems. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 236 ADVANCED APPLIED MUSIC—VOICE *** (1-2 CR.)
Continues MUS 126.
- MUS 237 CHORUS **** (1 CR.)
Continues MUS 137.
- MUS 238**
SMALL VOCAL ENSEMBLE ** (1 CR.)
Continues MUS 138.
- MUS 241-242 ADVANCED CLASS PIANO I-II** (2 CR.) (2 CR.)
Teaches advanced applications of keyboard fundamentals and technical skills. Includes exercises in intervals, triads, all major and minor scales, and simple and compound meters. Uses advanced repertoire. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- MUS 243-244 LITURGICAL MUSIC AND SERVICE PLAYING I-II** (3 CR.) (3 CR.)
Acquaints the student with the standard repertoire of vocal, instrumental, and organ literature used in a variety of liturgical services. Develops the knowledge and performance skills for piano or organ accompaniment and registration for responses, hymns, and anthems. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 245 ADVANCED APPLIED MUSIC—KEYBOARD *** (1-2 CR.)
Continues Applied Music—Keyboard MUS 145.
- MUS 248 ORCHESTRA **** (1 CR.)
Continues Orchestra MUS 148.
- MUS 249 BAND **** (1 CR.)
Continues Band MUS 149.
- MUS 255 ADVANCED APPLIED MUSIC—WOODWINDS **** (1-2 CR.)
Continues Applied Music—Woodwinds MUS 155.
- MUS 256**
WOODWIND ENSEMBLE ** (1 CR.)
Continues Woodwind Ensemble MUS 156.
- MUS 259 ADVANCED IMPROVISATIONAL TECHNIQUES** (3 CR.)
Prerequisite MUS 159. Extends the improvisational performance skills of the student in the standard jazz repertoire through the use of techniques based on harmonic progressions, rhythmic patterns, and scalar and arpeggio patterns. Includes the practical application of modal theory to standard jazz and popular repertoire. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 265 ADVANCED APPLIED MUSIC—STRINGS *** (1-2 CR.)
Continues Applied Music—Strings MUS 165.
- MUS 266 STRING ENSEMBLE **** (1 CR.)
Continues String Ensemble MUS 166.
- MUS 275 ADVANCED APPLIED MUSIC—BRASS *** (1-2 CR.)
Continues Applied Music—Brass MUS 175.
- MUS 276 BRASS ENSEMBLE **** (1 CR.)
Continues Brass Ensemble MUS 176.
- MUS 278 MULTICHANNEL RECORDING WORKSHOP** (2 CR.)
Prerequisite divisional approval. Provides the opportunity to improve and refine multichannel recording techniques in a seminar and project format. Emphasizes hands-on laboratory experiences in multichannel recording, overdubbing, and mixdown techniques. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- MUS 285 ADVANCED APPLIED MUSIC—PERCUSSION *** (1-2 CR.)
Continues Applied Music—Percussion MUS 185.
- MUS 286**
PERCUSSION ENSEMBLE ** (1 CR.)
Continues Percussion Ensemble MUS 186.
- MUS 288 RECORDING PROBLEMS SEMINAR** (2 CR.)
Prerequisite divisional approval. Provides a seminar setting in which students may discuss recording problems with commercial music industry professionals. Introduces the student to professional organizations, libraries, and journals common to the recording industry. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.
- * **APPLIED MUSIC:** Private lessons are available for either 1 or 2 hours of credit per semester. The length of the lessons will be 1/2 hour for 1 hour credit and 1 hour for 2 hours credit per semester. All courses in applied music may be repeated for a total of 8 hours for the major and 4 hours for the minor.
- ** **ENSEMBLE:** Courses in ensemble consist of performance from the standard repertoires, including study of ensemble techniques and interpretation. Divisional approval required. May be repeated for

credit. Laboratory 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

NATURAL SCIENCE

NAS 120 INTRODUCTORY METEOROLOGY (3 CR.)

Studies cloud formation, weather maps, forecasting, and wind systems with emphasis on local weather patterns. Lecture 3 hours per week.

NAS 125 METEOROLOGY (4 CR.)

Presents a non-technical survey of fundamental meteorology. Focuses on the effects of weather and climate on humans and their activities. Serves for endorsement or recertification of earth science teachers. Lecture 3 hours. Recitation and laboratory 2 hours. Total 5 hours per week.

NAS 130 ELEMENTS OF ASTRONOMY (4 CR.)

Covers history of astronomy and its recent developments. Stresses the use of astronomical instruments and measuring techniques and includes the study and observation of the solar system, stars, and galaxies. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

NAS 131-132 ASTRONOMY I-II (4 CR.) (4 CR.)

Studies the major and minor bodies of the solar system, stars and nebulae of the milky way, and extragalactic objects. Examines life and death of stars, origin of the universe, history of astronomy, and instruments and techniques of observation. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

NAS 161-162 HEALTH SCIENCE I-II (4 CR.) (4 CR.)

Presents an integrated approach to human anatomy and physiology, microbiology, and pathology. Includes chemistry and physics as related to health sciences. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

NURSING

NUR 105 ELEMENTARY NURSING SKILLS (4 CR.)

Develops elementary nursing skills for the basic needs of patients; related theory and simulated practice. Provides selected laboratory experiences. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

NUR 111 NURSING I (8 CR.)

Introduces nursing principles, concepts and the nursing process. Develops nursing skills to meet the biopsychosocial needs of

individuals. May include math computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experiences in college nursing laboratory and/or cooperating agencies. Lecture 5 hours. Laboratory 9 hours. Total 14 hours per week.

NUR 112 NURSING II (8 CR.)

Focuses on the nursing care of individuals and/or families experiencing changes along the health/illness continuum that are common, well-defined, and have predictable outcomes. Provides supervised learning experiences in college nursing laboratory and/or cooperating agencies. Lecture 4 hours. Laboratory 12 hours. Total 16 hours per week.

NUR 135 DRUG DOSAGE CALCULATIONS (2 CR.)

Teaches apothecary, metric, household conversion; reading of drug orders and labels. Provides a practical approach to learning to prepare dosages and solutions, including calculating intravenous flow rates and pediatric drugs. Lecture 2 hours per week.

NUR 136 PRINCIPLES OF MEDICATION ADMINISTRATION (2 CR.)

Teaches elementary principles of medication administration including dosage calculation, major drug classifications, drug legislation, legal aspects of medication administration and drug action on specific body systems. Lecture 2 hours per week.

NUR 211-212-213 NURSING III-IV-V (8 CR.) (9 CR.) (9 CR.)

Emphasizes the nursing area of individuals/families in various stages of development experiencing problems related to their biopsychosocial needs. Uses all components of the nursing process with increasing degrees of skill. Provides supervised learning experiences in college nursing laboratory and/or cooperating agencies. For NUR 211: Lecture 4 hours. Laboratory 12 hours. Total 16 hours per week. For NUR 212-213: Lecture 4 hours. Laboratory 15 hours. Total 19 hours per week.

NUR 220 NURSING DIMENSIONS (2 CR.)

Explores the role of the registered nurse. Emphasizes trends, nursing organizations, legal and ethical implications, and methods of planning and assigning patient care. Lecture 2 hours per week.

NUR 225 NURSING PROCESS (3 CR.)

Teaches a systematic approach to the utilization of the nursing process. Develops skills in nursing process to ensure quality nursing care to meet the changing standards for nursing practice. Lecture 3 hours per week.

NUR 235 INTRAVENOUS THERAPY FOR NURSES (3 CR.)

Focuses upon the scientific principles and nursing skills utilized in the administration of intravenous therapy. Explores the effects of intravenous therapy upon individuals across the life span and/or individuals with selected disease processes. Lecture 3 hours per week.

NUR 261-262-263 NURSING PERSPECTIVES

I-II-III (1 CR.) (1 CR.) (1 CR.)

Introduces the philosophy and curricular framework of the nursing program. Explores the dimensions of the discipline of nursing. Includes historical aspects and selected current trends, nursing care delivery systems, ethical/legal issues, basic computer skills and concerns, and responsibilities of the associate degree nurse. Lecture 1 hour per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

OFFICE SYSTEMS TECHNOLOGY

OFT 100 OFFICE SKILLS REVIEW (3 CR.)

Provides the opportunity to review office skills such as keyboarding typewriting, shorthand, machine transcription and other selected office topics based on individual needs. Lecture 3 hours per week.

OFT 105 PERSONAL KEYBOARDING (3 CR.)

Teaches touch keyboarding, using correct techniques. Introduces business letters and manuscript/report formats. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 107 EDITING/PROOFREADING SKILLS (3 CR.)

Develops skills essential to creating and editing business documents. Covers spelling, diction, punctuation, word division, capitalization, and sentence structure. Lecture 3 hours per week.

OFT 110 KEYBOARDING—SKILLBUILDING (3 CR.)

Prerequisite basic knowledge of the keyboard. Emphasizes speed and accuracy to attain skills for job employment and job promotion. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 111 KEYBOARDING I (3 CR.)

Introduces the keyboard with emphasis on good techniques, machine mastery, letter formats and styles, tabulations, centering, and reports. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 112 KEYBOARDING II (3 CR.)

Prerequisite OFT 111. Continues skill building through production typing with emphasis on employment competencies. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 115 KEYBOARDING FOR INFORMATION PROCESSING (3 CR.)

Develops keyboarding proficiency with a variety of keyboards found on electronic text-data entry devices. Includes instruction in general business and office formats. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

- OFT 116 AUTOMATED KEYBOARDING EQUIPMENT** (1 CR.)
Prerequisite divisional approval. Develops proficiency in the operation of automated keyboarding equipment. May use self-instructional materials. Laboratory 2 hours per week.
- OFT 117 KEYBOARDING FOR COMPUTER USAGE** (2 CR.)
Develops keyboarding proficiency in the operation of computers with emphasis on speed, accuracy, and use of special keys. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- OFT 121 SHORTHAND I** (3 CR.)
Focuses on shorthand theory, reading and writing skills, development of general business vocabularies, word usage, and general business dictation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 122 SHORTHAND II** (3 CR.)
Prerequisite Shorthand I or equivalent. Develops speed in typical business dictation, with emphasis on transcription accuracy from shorthand notes. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 123 SPEEDWRITING I** (3 CR.)
Develops skill in an alphabetic shorthand system based on dominant sounds, high frequency letter groups, and prefixes and suffixes. Strengthens dictation skills. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 124 SPEEDWRITING II** (3 CR.)
Develops advanced dictation skills and transcription accuracy. Develops further skill in reading and writing with emphasis on spelling and punctuation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 130 OFFICE PROCEDURES** (3 CR.)
Prerequisite OFT 111 or divisional approval. Introduces general functions and duties performed in the office. Lecture 3 hours per week.
- OFT 136 OFFICE RECORDKEEPING** (3 CR.)
Introduces types of recordkeeping duties performed in the office, such as financial, tax, payroll, and inventory. Utilizes specialized software where applicable. Lecture 3 hours per week.
- OFT 137 FILING AND RECORDS MANAGEMENT** (3 CR.)
Introduces indexing principles, filing procedures, and systems, including electronics and micrographics. Teaches selection of equipment and supplies and solving records management problems. Lecture 3 hours per week.
- OFT 206 PROFESSIONAL DEVELOPMENT** (3 CR.)
Develops professional awareness in handling business and social situations. Emphasizes goal setting and decision making. Lecture 3 hours per week.
- OFT 216 WORD PROCESSING EQUIPMENT OPERATION** (3 CR.)
Prerequisite OFT 111 or equivalent. Teaches use and operation of word/information processing equipment. Incorporates specific advanced applications. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 221 ADVANCED SHORTHAND AND TRANSCRIPTION I** (3 CR.)
Reviews principles of shorthand, develops vocabulary and phrasing techniques, and builds speed of general business dictation and transcription skills. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 222 ADVANCED SHORTHAND AND TRANSCRIPTION II** (3 CR.)
Continues emphasis on speed building and the development of transcription skills with emphasis on particular phrases, and shortcuts. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 225 LEGAL SHORTHAND AND TRANSCRIPTION** (3 CR.)
Prerequisites OFT 112 and OFT 121. Practices dictation and transcription through concentrated study of high frequency legal terminology and construction of shorthand outlines for common legal terms. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 230 INTRODUCTION TO OFFICE AUTOMATION** (3 CR.)
Introduces principles, methods, and techniques involved in office automation technology. Emphasizes word processing and microcomputer equipment and software. Studies automated office personnel, procedures, ergonomics, and career opportunities. Lecture 3 hours per week.
- OFT 231 MICROCOMPUTER OFFICE APPLICATION I** (3 CR.)
Prerequisite OFT 111 or equivalent. Teaches business applications of microcomputer software packages. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 232 MICROCOMPUTER OFFICE APPLICATION II** (3 CR.)
Prerequisite OFT 111 or equivalent. Teaches business applications of microcomputer software packages. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 235 SPECIALIZED SOFTWARE APPLICATIONS** (3 CR.)
Introduces specific business software on the microcomputer. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 236 WORD PROCESSING OPERATION AND SYSTEM OPERATION** (3 CR.)
Focuses on advanced applications and use of word/information processing equipment. Teaches system supervision and operation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 237 PRINCIPLES OF OFFICE AUTOMATION MANAGEMENT** (3 CR.)
Prerequisite OFT 230. Studies management functions and analyzes supervisor's role in information processing cycle and changing technology of office automation. Lecture 3 hours per week.
- OFT 241-242 MACHINE TRANSCRIPTION I-II** (3 CR.) (3 CR.)
Prerequisite OFT 112. Teaches efficient operation of transcribing equipment, listening and dictating techniques and business formats, grammar. Also covers punctuation and business English usage. Emphasizes production rates of mailable copy. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- OFT 251-252 OFFICE SYSTEMS AND PROCEDURES I-II** (3 CR.) (3 CR.)
Prerequisite OFT 111 or divisional approval. Teaches office protocol, solutions to office problems, managerial functions, and other topics associated with office technology. Lecture 3 hours per week.
- OFT 261-262 LEGAL OFFICE PROCEDURES I-II** (3 CR.) (3 CR.)
Prerequisite OFT 112 or divisional approval. Teaches topics associated with procedures used in law offices and courts. Lecture 3 hours per week.
- OFT 297 COOPERATIVE EDUCATION** (1-6 CR.)
(see General Usage Courses section)
- Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHILOSOPHY

- PHI 101-102 INTRODUCTION TO PHILOSOPHY I-II** (3 CR.) (3 CR.)
Introduces a broad spectrum of philosophical problems and perspectives with an emphasis on the systematic questioning of basic assumptions about meaning, knowledge, reality, and values. Lecture 3 hours per week.
- PHI 111 LOGIC I** (3 CR.)
Introduces inductive and deductive reasoning, with an emphasis on common errors and fallacies. Lecture 3 hours per week.
- PHI 112 LOGIC II** (3 CR.)
Evaluates deductive arguments utilizing methods of symbolic logic. Lecture 3 hours per week.
- PHI 115 PRACTICAL REASONING** (3 CR.)
Studies informal logic and language techniques as they relate to reasoning and argument. Provides practice in analyzing arguments and constructing sound arguments. Lecture 3 hours per week.
- PHI 211-212 THE HISTORY OF WESTERN PHILOSOPHY I-II** (3 CR.) (3 CR.)
Provides historical survey of representative philosophers from the pre-Socratics to the present. Introduces the student to development of philosophical thought through selected readings of original works and appropriate critical materials. Lecture 3 hours per week.

PHI 220 ETHICS (3 CR.)
Provides a systematic study of representative ethical systems. Lecture 3 hours per week.

PHI 226 SOCIAL ETHICS (3 CR.)
Provides a critical examination of moral problems and studies the application of ethical concepts and principles to decision-making. Topics may include abortion, capital punishment, euthanasia, man and the state, sexuality, war and peace, and selected issues of personal concern. Lecture 3 hours per week.

PHI 227 BIO-MEDICAL ETHICS (3 CR.)
Examines the ethical implications of specific biomedical issues in the context of major ethical systems. Lecture 3 hours per week.

PHI 231-232 THANATOLOGY: DIMENSIONS OF DEATH AND DYING I-II (3 CR.) (3 CR.)
Surveys attempts to understand the meaning of death, and ways of handling personal and social implications. Examines dying and death from a variety of perspectives, including psychological, sociological, cultural, and religious views. Lecture 3 hours per week.

PHI 240 AESTHETICS (3 CR.)
Examines a variety of attempts to define beauty and the norms of taste and criticism. Gives attention to problems specific to particular art forms and general theories about the nature of art. Lecture 3 hours per week.

PHI 241-242 AESTHETICS I-II (3 CR.) (3 CR.)
Examines a variety of philosophical attempts to define beauty and the norms of artistic taste. Lecture 3 hours per week.

PHI 255 MIND, BRAINS, AND COMPUTERS (3 CR.)
Provides critical review of major concepts of mind, cognitive functions, and computer intelligence. Lecture 3 hours per week.

PHI 256 SCIENCE, TECHNOLOGY, AND THE HUMAN CONDITION (3 CR.)
Examines the nature of technology and its effects on the human condition from the perspective of the philosophy of science. Lecture 3 hours per week.

PHI 265 PHILOSOPHY OF RELIGION (3 CR.)
Examines problems raised by arguments for and against the existence of God and discusses such topics as the nature of God, the nature of religious experience, the problem of evil, religious truth and language, immortality, miracles, spirituality, and the relation between philosophy and theology. Lecture 3 hours per week.

PHI 266 PHILOSOPHICAL EXPERIENCE (3 CR.)
Explores basic types, themes, and problems of philosophical experience. Emphasizes development of personal philosophical experience and reflection. Lecture 3 hours per week.

PHI 267 POLITICAL PHILOSOPHY (3 CR.)
Examines the questions of political power and the relationship between the individual and society. Lecture 3 hours per week.

PHI 275 THEORIES OF HUMAN NATURE (3 CR.)
Surveys major theories of human nature and their relation to human experience and the external world. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHOTOGRAPHY

PHT 101-102 PHOTOGRAPHY I-II (3 CR.) (3 CR.)
Teaches principles of photography and fundamental camera techniques. Requires outside shooting and lab work. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 110 HISTORY OF PHOTOGRAPHY (3 CR.)
Surveys important photographers, technical developments, and historical influences on nineteenth and twentieth century photography. Lecture 3 hours per week.

PHT 111 HISTORY OF AMERICAN PHOTOGRAPHY (2 CR.)
Explores various themes in American photography and the changing nature of the content, purposes and techniques found in American photography. Assists in the role of the viewer and the significance of the traditional American public acceptance of the accuracy of the camera image. Lecture 2 hours per week.

PHT 112 HISTORY OF CONTEMPORARY TRENDS (3 CR.)
Emphasizes the most contemporary work of the day. Covers individual photographers, the issues their work represents, and the historical influences that have made their work possible. Lecture 3 hours per week.

PHT 126 INTRODUCTION TO VIDEO TECHNIQUES (3 CR.)
Concentrates on skills necessary to light, edit, and record on video tape. Covers situations such as weddings, meetings, and small corporate productions. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 201-202 ADVANCED PHOTOGRAPHY (3 CR.) (3 CR.)
Prerequisite PHT 102 or equivalent. Provides weekly critiques of students' work. Centers on specific problems found in critiques. Includes working procedures and critical skills in looking at photographs. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 205 ZONE SYSTEM IN PHOTOGRAPHY (3 CR.)
Prerequisite PHT 102 or equivalent. An advanced course designed for users of all photographic formats. Teaches control of image quality through calibration and testing of

film, exposure, and development and negative printing. Teaches creative "previsualization" techniques. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 206 LARGE FORMAT PHOTOGRAPHY (3 CR.)
Prerequisite PHT 102 or equivalent. Discusses 4x5 view camera techniques and controls, and sheet film processing. Demonstrates the image-making advantages of large format photography. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 207 COLOR SLIDE WORKSHOP (3 CR.)
Prerequisite PHT 102 or equivalent. Examines color transparency materials. Focuses on use of slides as personal expression and as a communication tool. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 211-212 COLOR PHOTOGRAPHY I-II (3 CR.) (3 CR.)
Prerequisites PHT 102 and PHT 110. Introduces theory, materials, and processes of modern color images. Includes additive and subtractive theory, color filtration, and negative and positive printing techniques. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 221-222 STUDIO LIGHTING I-II (3 CR.) (3 CR.)
Prerequisite PHT 102 or equivalent. Examines advanced lighting and camera techniques under controlled studio conditions. Includes view camera use, electronic flash, advanced lighting techniques, color temperature and filtration, and lighting ratios. Requires outside shooting. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 226 COMMERCIAL PHOTOGRAPHY (3 CR.)
Prerequisites PHT 206-222. Examines advanced topics relating to commercial photography. Emphasizes advertising, portraiture, and commercial and public relations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 227 PHOTOGRAPHIC MARKETING (3 CR.)
Teaches the techniques of small photographic business operations. Includes portfolio preparation and presentation and basic marketing techniques. Covers theory of marketing, costing procedures and problems, legal accounting problems, copyright, and fundamentals of small photographic business operation. Lecture 3 hours per week.

PHT 231-232 PHOTOJOURNALISM I-II (3 CR.) (3 CR.)
Prerequisite PHT 102 or equivalent. Introduces equipment, techniques, skills, and concepts of photojournalism. Teaches photography for features, spot news, and photo essays. Emphasizes editing, captioning, and layout. May require individual projects. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 246 ADVANCED PHOTOGRAPHIC PRINTING (3 CR.)

Prerequisite PHT 102 or equivalent. Examines advanced printing techniques and principles of archival processing and presentation. Emphasizes development of individual printing style. Requires a portfolio of high quality prints on subject of choice. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 247 ALTERNATIVE PHOTOGRAPHIC PROCESSES (3 CR.)

Prerequisite PHT 102 or equivalent. Explores manipulated imagery including traditional and non-traditional processes such as non-silver and electronic imaging. Uses enlarged film negatives in order to investigate a variety of methods. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 256 COMMUNICATING THROUGH THE PHOTOGRAPHIC SEQUENCE (3 CR.)

Using experiences of sequencing, involves the student in creating a picture book composed of images that have been placed in a sequence that has special visual meaning. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHYSICAL EDUCATION AND RECREATION**PED 101 FUNDAMENTALS OF PHYSICAL ACTIVITY (1 CR.)**

Presents principles underlying the components of physical fitness. Utilizes conditioning activities involving cardiovascular strength and endurance, respiratory efficiency, muscular strength, and flexibility. May include fitness assessment, nutrition and weight control information, and concepts of wellness. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 103-104 AEROBIC FITNESS I-II (1 CR.) (2 CR.)

Develops cardiovascular fitness through activities designed to elevate and sustain heart rates appropriate to age and physical condition. For PED 103, Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week. For PED 104, Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 105-106 AEROBIC DANCE I-II (1 CR.) (2 CR.)

Focuses on physical fitness through dance exercises. Emphasizes the development of cardiovascular endurance, muscular endurance, and flexibility. For PED 105, Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week. For PED 106, Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 107-108 SLIMNASTICS I-II (1 CR.) (2 CR.)

Provides the student with a full body workout through flexibility, strength, and cardiovascular endurance exercises. Includes fitness evaluation, nutrition analysis, and weight control. For PED 107, Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week. For PED 108, Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 109 YOGA (1 CR.)

Focuses on the forms of yoga training emphasizing flexibility. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 110 PHYSICAL ACTIVITIES FOR CHILDREN (3 CR.)

Includes methods and materials for teaching simple rhythms, recreational games, singing games, and other movement experiences. Emphasizes methods for pre-school through elementary age students. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

PED 111-112 WEIGHT TRAINING I-II (1 CR.) (2 CR.)

Focuses on muscular strength and endurance training through individualized workout programs. Teaches appropriate use of weight training equipment. For PED 111, Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week. For PED 112, Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 113-114 LIFETIME ACTIVITIES (1 CR.) (1 CR.)

Presents lifetime sports and activities. Teaches skills and methods of lifetime sports and activities appropriate to the local season and facilities available. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 121-122 RACKETBALL I-II (1 CR.) (1 CR.)

Prerequisite for PED 122 is PED 121 or instructor's permission. Teaches racketball skills and strategies for team and individual play. Includes terminology, scoring, etiquette, equipment selection, and safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 123-124 TENNIS I-II (1 CR.) (1 CR.)

Prerequisite for PED 124 is PED 123 or instructor's permission. Teaches tennis skills with emphasis on stroke development and strategies for individual and team play. Includes rules, scoring, terminology, and etiquette. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 125 BADMINTON (1 CR.)

Introduces skills, techniques, strategies, rules, and scoring. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 126 ARCHERY (1 CR.)

Teaches skills and techniques of target archery. Focuses on use and maintenance of equipment, terminology, and safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 127 CYCLING (1 CR.)

Introduces cycling techniques, equipment selection, care and maintenance, safety, and

physical conditioning. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 128 HORSEBACK RIDING (1 CR.)

Prerequisite appropriate riding skills or instructor's permission for advanced course. Presents riding seats and preparation for riding, care and grooming of a horse, selection, use and care of equipment, and safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 129 SELF-DEFENSE (1 CR.)

Examines history, techniques, and movements associated with self-defense. Introduces the skills and methods of self-defense emphasizing mental and physical discipline. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 131-132 FENCING I-II (1 CR.) (1 CR.)

Prerequisite for PED 132 is PED 131 or instructor's permission. Presents the skills and techniques of foil fencing emphasizing footwork, terminology, rules, strategies of offensive and defensive movements. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 133-134 GOLF I-II (1 CR.) (1 CR.)

Prerequisite for PED 134 is PED 133 or instructor's permission. Teaches basic skills of golf, rules, etiquette, scoring, terminology, equipment selection and use, and strategy. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 135-136 BOWLING I-II (1 CR.) (1 CR.)

Prerequisite for PED 136 is PED 135 or instructor's permission. Teaches basic bowling skills and techniques, scoring, rules, etiquette, and terminology. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 139 ICE SKATING (1 CR.)

Introduces the skills of figure skating with emphasis on form. Includes equipment selection and safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 140 WATER AEROBICS (1 CR.)

Focuses on cardiovascular endurance, muscular endurance, and flexibility using water resistance. Includes the principles and techniques of aerobic exercise. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 141-142 SWIMMING I-II (1 CR.) (1 CR.)

Prerequisite for PED 142 is PED 141 or instructor's permission. Introduces skills and methods of swimming strokes. Focuses on safety and physical conditioning. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 144 SKIN AND SCUBA DIVING (2 CR.)

Prerequisite strong swimming skills. Emphasizes skills and methods of skin and scuba diving. Includes training with underwater breathing apparatus and focuses on safety procedures, selection and use of equipment. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 146 KAYAKING (1 CR.)

Prerequisite Swimming recommended. Introduces kayaking techniques, selection and care of equipment, terminology, reading whitewater, and safety practices. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 150 SOCCER (1 CR.)

Emphasizes soccer skills and techniques, strategies, rules, equipment, and physical conditioning. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 154 VOLLEYBALL (1 CR.)

Introduces skills, techniques, strategies, rules, and scoring. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 155 WALLYBALL (1 CR.)

Focuses on skills, techniques, strategies, rules, and scoring. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 156 SOFTBALL (1 CR.)

Emphasizes skills, techniques, strategies, rules. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 160 MODERN DANCE (1 CR.)

Teaches the basic techniques of creative dance. Skills include self-expression, contemporary routines, dance forms, and basic choreography. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 161-162 DANCE PRODUCTION I-II (1 CR.) (1 CR.)

Prerequisite for PED 162 is PED 161 or instructor's permission. Focuses on creating a dance performance. Teaches the basic skills in creating and producing a dance. Includes lighting, costumes, music, and choreography. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 163-164 JAZZ I-II (1 CR.) (1 CR.)

Prerequisite for PED 164 is PED 163 or instructor's permission. Introduces dance through contemporary jazz movements. Includes floor stretches, isolations, dance patterns and locomotor movements. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 165 TAP DANCE (1 CR.)

Teaches the basic footwork, patterns, and coinciding body movements to various rhythms. Includes development of choreographic routines. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 166 BALLET (1 CR.)

Teaches ballet as a discipline with correct alignment and ballet form. Expresses movement through traditional dance form with choreographic emphasis. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 167 DANCE IMPROVISATION (1 CR.)

Explores the creation of spontaneous movement experiences with emphasis on self-expression and creative awareness. Includes improvisational techniques utilizing body awareness, use of the environment, and group dynamics. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 168 FOLK DANCE (1 CR.)

Introduces the basic step patterns, rhythmic patterns, positions, and formations of traditional and ethnic group dances. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 169 SQUARE DANCE (1 CR.)

Introduces the step and movement patterns, rhythmic patterns, and formation of the American square dance. Includes historical significance and development of dance patterns. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 171-172 BALLROOM DANCE I-II (1 CR.) (1 CR.)

Prerequisite for PED 172 is PED 171 or instructor's permission. Presents the basic step patterns, rhythmic patterns, and positions in ballroom dance. Includes techniques based upon traditional steps with basic choreographic patterns. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 173 ROCK CLIMBING AND RAPPELLING (1 CR.)

Presents techniques and skills of climbing and rappelling with emphasis on safety, equipment, skills in knot tying, terminology and physical conditioning. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 174 SHOOTING AND FIREARM SAFETY (1 CR.)

Teaches the basic techniques of shooting and firearm safety for both hunting and sport shooting. Emphasizes the selection and care of equipment, proper shooting forms, personal safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 175 HUNTER SAFETY (1 CR.)

Presents the basic techniques of gun handling, types of firearms and ammunition, game laws, safety principles, ethics, game and nature conservation. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 177 BASIC CANOEING (1 CR.)

Introduces basic canoeing techniques, selection and care of equipment, terminology, safety procedures, and navigating currents. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 178 WHITEWATER CANOEING (1 CR.)

Introduces whitewater canoeing techniques, selection and care of equipment, terminology, safety procedures and rescues, and reading and navigating whitewater. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 181-182 DOWNHILL SKIING I-II (1 CR.) (1 CR.)

Prerequisite for PED 182 is PED 181 or instructor's permission. Teaches basic skills of downhill skiing; selection and use of equipment; terminology and safety rules. Includes field experience. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 183-184 OUTDOOR ADVENTURES I-II (2 CR.) (2 CR.)

Prerequisite for PED 184 is PED 183 or instructor's permission. Introduces outdoor ad-

venture activities with emphasis on basic skills, preparation, personal and group safety, equipment selection and use, ecology, and field experience. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 185 CROSS-COUNTRY SKIING (1 CR.)

Presents cross-country skiing techniques with emphasis on ski touring, waxing, selection and use of equipment, and physical conditioning. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 245 ADVANCED LIFESAVING (2 CR.)

Prerequisite strong swimming skills. Introduces basic swimming and non-swimming rescues, swimming approaches and carries, water survival, first aid and safety. Focuses on preparation for the American Red Cross Advanced Lifesaving Certificate. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHYSICAL THERAPY ASSISTING**PTH 100 INTRODUCTION TO PHYSICAL THERAPY ASSISTING (1 CR.)**

Introduces the health technology student to the field of physical therapy. Emphasizes the team approach to patient care and the role of the physical therapist assistant within the therapeutic team. Provides instruction in computational skills needed in physical therapy practice. Lecture 1 hour per week.

PTH 106 EMERGENCY SITUATIONS AND PROCEDURES (1 CR.)

Emphasizes student recognition of safety factors, potential hazards, and emergency situations in health care settings. Outlines procedures and measures used for common emergency situations seen in a physical therapy department. Lecture 1 hour per week.

PTH 110 MEDICAL REPORTING (1 CR.)

Emphasizes the principles of medical reporting, including the ability to abstract pertinent information from actual medical records. Includes the writing of patient progress notes in standardized formats and medical terminology. Introduces the student to computer usage. Lecture 1 hour per week.

PTH 115 KINESIOLOGY FOR THE PHYSICAL THERAPIST ASSISTANT (5 CR.)

Studies individual muscles and muscle functions, biomechanical principles of joint motion and gait patterns. Applies kinesiological principles to therapeutic exercises. Lecture 3 hours. Laboratory 4 hours. Total 7 hours per week.

PTH 121-122 THERAPEUTIC PROCEDURES I-II (8 CR.) (5 CR.)

Emphasizes therapeutic procedures utilized by physical therapist assistants. Allows

students to practice elements of patient care and therapeutic skills. For PTH 121—Lecture 5 hours. Laboratory 6 hours. Total 11 hours per week. For PTH 122—Lecture 3 hours. Laboratory 4 hours. Total 7 hours per week.

PTH 131 CLINICAL EDUCATION I (3 CR.)

Provides supervised instruction in the administration of therapeutic skills in a variety of clinical settings. Emphasizes the development of oral and written communication skills and the understanding of commonly seen disabilities. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

PTH 210 PSYCHOLOGICAL ASPECTS OF THERAPY (2 CR.)

Focuses on the psychological reactions and behavioral changes in patients and their families. Emphasizes techniques of effective interaction between the allied health worker and the patient. Lecture 2 hours per week.

PTH 225 REHABILITATION PROCEDURES (5 CR.)

Focuses on rehabilitation techniques utilized in the treatment of disabling conditions. Emphasizes advanced exercise procedures, prosthetic and orthotic training, and other specialized techniques. Lecture 3 hours. Laboratory 4 hours. Total 7 hours per week.

PTH 227 PATHOLOGICAL CONDITIONS (2 CR.)

Studies specific pathologic conditions commonly seen in physical therapy. Emphasizes musculo-skeletal and neurological system conditions. Lecture 2 hours per week.

PTH 231-232 CLINICAL EDUCATION II-III (7 CR.) (8 CR.)

Provides instruction during the administration of therapeutic skills in a clinical setting. Emphasizes the total therapy program including rehabilitation techniques and specialized exercise programs. Provides experience in a variety of clinical settings. For PTH 231—Lecture 2 hours. Laboratory 15 hours. Total 17 hours per week. For PTH 232—Lecture 1 hour. Laboratory 21 hours. Total 22 hours per week.

PTH 245 PROFESSIONAL ISSUES (3 CR.)

Studies administrative procedures, changing practices in physical therapy, and trends in health care delivery. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHYSICS

PHY 001 BASIC PHYSICS (1-5 CR.)

Focuses on a basic understanding of physics. Variable hours per week.

PHY 100 ELEMENTS OF PHYSICS (4 CR.)

Covers basic concepts of physics, including Newtonian mechanics, properties of matter, heat and sound, fundamental behavior of gases, ionizing radiation, and fundamentals of electricity. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 111-112 TECHNICAL PHYSICS I-II (4 CR.) (4 CR.)

Prerequisite one year of high school algebra or equivalent. A concurrent course in college algebra and trigonometry is recommended. Emphasizes technical applications. Includes precision measurement, statics, dynamics, energy and momentum, heat, sound, optics, DC and AC electricity, and modern physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 114 TECHNICAL PHYSICS I (4 CR.)

Prerequisite three units of high school mathematics. Co-requisite MTH 115. Introduces electronics and nuclear energy for industrial purposes. Focuses on precision measurement, properties of matter, hydrostatics and hydraulics, force and motion, Newtonian mechanics, vectors and graphics solutions, statics, dynamics, rotary motion, motion, light and optics, magnetism and electricity, DC and AC circuits and machines. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 150 INTRODUCTION TO MODERN PHYSICS (2 CR.)

Introduces topics in modern physics, such as structure of the atom, nature and use of nuclear energy, and recent discoveries in atomic and nuclear physics. Lecture 2 hours per week.

PHY 155 TOPICS IN CONTEMPORARY PHYSICS (2 CR.)

Explores the physics of everyday life. Includes discussion of contemporary events and issues as reported by news media and recent research. Lecture 2 hours per week.

PHY 165 PHYSICS IN MEDICINE (2 CR.)

Introduces physics as applied to modern medicine. Includes medical imaging, X-rays, CAT scans, PET scans, NMR imaging, ultrasonic real-time imaging, and lasers. Lecture 2 hours per week.

PHY 166 PHYSICS IN COMMUNICATION (2 CR.)

Introduces physics principles employed in communication. Includes fiber optics, satellites, data communication, and remote sensing. Lecture 2 hours per week.

PHY 167 PHYSICS OF SOUND SYSTEMS (2 CR.)

Introduces physics principles employed in sound systems. Includes sound production, transmission and reproduction. Also covers application and design. Lecture 2 hours per week.

PHY 168 AUTOMOTIVE PHYSICS (2 CR.)

Presents topics in technical physics which relate to the function of the automobile. Lecture 2 hours per week.

PHY 201-202 GENERAL COLLEGE PHYSICS I-II (4 CR.) (4 CR.)

Prerequisite MTH 165 or equivalent. Teaches fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity and magnetism, and selected topics in modern physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 211-212 GENERAL COLLEGE PHYSICS I-II (5 CR.) (5 CR.)

Prerequisite MTH 165 or equivalent. Teaches fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity and magnetism, and selected topics in modern physics. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

PHY 221 ENGINEERING PHYSICS I (3 CR.)

Prerequisite MTH 173 or MTH 174 or divisional approval. Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity, and nuclear physics. Lecture 3 hours per week.

PHY 231-232 GENERAL UNIVERSITY PHYSICS I-II (5 CR.) (5 CR.)

Prerequisite for PHY 231—MTH 173 or MTH 174 or divisional approval. Prerequisite for PHY 232—MTH 174 or divisional approval. Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity, solid state, quantum physics, and nuclear physics. Includes extended coverage of selected topics. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

PHY 241-242 UNIVERSITY PHYSICS I-II (4 CR.) (4 CR.)

Prerequisite MTH 173, corequisite MTH 174. Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity, and nuclear physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 243 MODERN PHYSICS (4 CR.)

Prerequisites PHY 241 and PHY 242 or equivalent. For majors requiring calculus-based physics. Teaches principles of modern physics. Includes in-depth coverage of relativity, quantum physics, solid state and nuclear physics. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week. Additional 1 credit recitation hour recommended.

PHY 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses' section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PLANNING

PLN 100 INTRODUCTION TO PLANNING DEVELOPMENT (3 CR.)

Provides material on the growth of urban and suburban areas. Includes planning theory, size and density of urban areas, clustering, economic base analysis, and economics of business and residential location. Introduces theoretical patterns of geographic form, density and control. Covers the value of planning document, regulations and zoning. Lecture 3 hours per week.

PLN 106 REAL ESTATE**PLANNING AND DEVELOPMENT (3 CR.)**

Evaluates commercial and residential real estate market in terms of land use development. Considers environmental factors in land use planning, and determining best locations for various types of development. Interprets real estate market and feasibility studies within the context of an interdependent urban system. Lecture 3 hours per week.

PLN 107**URBAN LAND DEVELOPMENT (3 CR.)**

Prerequisite PLN 100. Expands on concept of land use planning. Presents legislative and legal aspects of residential and commercial development issues. Includes evaluation of planning renewal, and environmental impact analysis. Lecture 3 hours per week.

PLN 110 INTRODUCTION TO**PUBLIC ADMINISTRATION (3 CR.)**

Studies basic concepts in planning management, growth control techniques, organization and planning policies. Presents government operation, personnel organization, financial planning and budget analysis and utilization of data processing in fiscal administration. Lecture 3 hours per week.

PLN 125 SITE PLANNING AND URBAN DESIGN (3 CR.)

Prerequisite divisional approval. Concentrates on problems and solutions of actual urban site. Considers vehicular and pedestrian circulation, site development including zoning regulations, pavements, planting, orientation, sunlight and air along with environment quality for the individual user. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PLN 126**PLANNING APPLICATIONS (3 CR.)**

Prerequisite PLN 100 and DRF 120 or divisional approval. Combines organizational planning, financial planning, and a variety of planning and forecasting methods in a series of practical applications. Develops set of interrelated plans in a number of areas. Lecture 3 hours per week.

PLN 127**TRANSPORTATION PLANNING (3 CR.)**

Emphasizes importance of balance among various modes of transportation as well as impact of energy shortages on the transport system. Studies transportation planning principles and policy problems along with methods of analyzing demand and choices of systems for circulation of people and goods by land to produce a balanced total system. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

POLITICAL SCIENCE**PLS 100****BASIC SKILLS OF CITIZENSHIP (3 CR.)**

Prerequisite satisfactory score on English placement test. Teaches social and civic obli-

gations, values, beliefs of American political culture, emphasizing oral and written skills necessary for passing national citizenship exam. Lecture 3 hours per week.

PLS 110 INTRODUCTION TO**DEMOCRATIC GOVERNMENT (3 CR.)**

Teaches the analysis and comparison of American presidential and British parliamentary forms of democratic government. Lecture 3 hours per week.

PLS 120 INTRODUCTION TO**POLITICAL SCIENCE (3 CR.)**

Teaches basic concepts and methods of the discipline of political science through study of political dimensions of a selected topic. Lecture 3 hours per week.

PLS 130 BASICS OF AMERICAN**POLITICS (3 CR.)**

Teaches basics of the operations of Congress, the presidency, and the federal court system. Includes civil liberties, citizenship, elections, political parties, and interest groups. Lecture 3 hours per week.

PLS 135 AMERICAN NATIONAL**POLITICS (3 CR.)**

Teaches political institutions and processes of the national government of the United States, focuses on the Congress, presidency, and the courts, and on their interrelationships. Gives attention to public opinion, suffrage, elections, political parties, interest groups, civil rights, domestic policy, and foreign relations. Lecture 3 hours per week.

PLS 136**STATE AND LOCAL POLITICS (3 CR.)**

Teaches structure, powers and functions of state and local government in the United States. Lecture 3 hours per week.

PLS 211-212**U.S. GOVERNMENT I-II (3 CR.) (3 CR.)**

Teaches structure, operation, and process of national, state, and local governments. Includes in-depth study of the three branches of the government and of public policy. Lecture 3 hours per week.

PLS 241**INTERNATIONAL RELATIONS I (3 CR.)**

Teaches geographic, demographic, economic, ideological, and other factors conditioning the policies of countries and discusses conflicts and their adjustment. Lecture 3 hours per week.

PLS 242 INTERNATIONAL**RELATIONS II (3 CR.)**

Teaches foreign policies of the major powers in the world community with an emphasis on the role of the United States in international politics. Lecture 3 hours per week.

PLS 297**COOPERATIVE EDUCATION (1-6 CR.)**

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PSYCHOLOGY**PSY 001****PREPARATION FOR COLLEGE (1-3 CR.)**

Teaches good habits of listening, studying, and exam-taking. Especially recommended for students who are in academic difficulty after one semester of college. Students may re-register for the course in subsequent semesters as necessary until the course objectives are completed. Variable hours.

PSY 100 PRINCIPLES OF APPLIED**PSYCHOLOGY (3 CR.)**

Introduces the general principles of psychology as they are applied to work, relationships, and self. Includes perception, learning, development, motivation, emotion, therapy, communication, attitudes. Lecture 3 hours per week.

PSY 105 PSYCHOLOGY OF PERSONAL**ADJUSTMENT (3 CR.)**

Introduces psychological principles that contribute to the well-adjusted personality. Considers the effects of stress and coping with the problems of everyday life. Lecture 3 hours per week.

PSY 106 EXPERIENCES IN PERSONAL**GROWTH (3 CR.)**

Teaches individual to understand himself better in relation to his immediate environment, community, and society. Also, stresses stimulation, role playing, and other experiential techniques. Lecture 3 hours per week.

PSY 108**PSYCHOLOGY OF AGING (3 CR.)**

Studies development of adult personality, and the importance of social roles in that development. Uses a variety of activities. Increases understanding of aging as a continuing human process. Lecture 3 hours per week.

PSY 115 HEALTH PSYCHOLOGY (3 CR.)

Studies the psychology of healthy behavior. Applies psychological principles to preventative health care. Covers topics such as exercise, nutrition, stress, life-styles, and habits. Lecture 3 hours per week.

PSY 119 CROSS-CULTURAL**PSYCHOLOGY (3 CR.)**

Investigates psychological principles from a cross-cultural perspective. Examines cultural basics for views of reality. Describes topics such as time, space, values, sex roles, and human development in relation to culture. Lecture 3 hours per week.

PSY 120 HUMAN RELATIONS (3 CR.)

Introduces the theory and practice of effective human relations. Increases understanding of self and others and interpersonal skills needed to be a competent and cooperative communicator. Lecture 3 hours per week.

PSY 125 INTERPERSONAL**RELATIONSHIPS (3 CR.)**

Studies individual behavior as it affects the individual's relationships. Considers such topics as attitudes, needs, values, leadership, communication, and group dynamics.

Teaches constructive methods of interpersonal problem solving. Lecture 3 hours per week.

PSY 126 PSYCHOLOGY FOR BUSINESS AND INDUSTRY (3 CR.)

Focuses on the application of psychology to interpersonal relations and the working environment. Includes topics such as group dynamics, motivation, employee-employer relationship, interpersonal communications, and techniques for selection and supervision of personnel. Lecture 3 hours per week.

PSY 135 CHILD CARE PSYCHOLOGY (3 CR.)

Analyzes the development of the child from conception to adolescence with concentration on physical, cognitive, emotional, and social growth patterns. Includes theory, research, and practical applications. Provides background for careers involving continuous work with children. Lecture 3 hours per week.

PSY 165 PSYCHOLOGY OF HUMAN SEXUALITY (3 CR.)

Focuses on scientific investigation of human sexuality and psychological and social implications of such research. Considers socio-cultural influences, the physiology and psychology of sexual response patterns, sexual dysfunctions, and development of relationships. Lecture 3 hours per week.

PSY 166 PSYCHOLOGY OF MARRIAGE (3 CR.)

Analyzes personality interactions in marriage and other intimate relationships. Examines theories of personal development and types of relationships resulting from interactions. Lecture 3 hours per week.

PSY 201-202 INTRODUCTION TO PSYCHOLOGY I-II (3 CR.) (3 CR.)

Examines human and animal behavior, relating experimental studies to practical problems. Includes topics such as sensation/perception, learning, memory, motivation, emotion, stress, development, intelligence, personality, psychopathology, therapy, and social psychology. Lecture 3 hours per week.

PSY 205 PERSONAL CONFLICT AND CRISIS MANAGEMENT (3 CR.)

Studies the effective recognition and handling of personal and interpersonal conflicts. Discusses cooperative roles of public and private agencies, management of family disturbances, child abuse, rape, suicide, and related cases. Lecture 3 hours per week.

PSY 215 ABNORMAL PSYCHOLOGY (3 CR.)

Prerequisite PSY 201. Explores historical views and current perspectives of abnormal behavior. Emphasizes major diagnostic categories and criteria, individual and social factors of maladaptive behavior, and types of therapy. Includes methods of clinical assessment and research strategies. Lecture 3 hours per week.

PSY 216 SOCIAL PSYCHOLOGY (3 CR.)

Prerequisite PSY 201. Examines individuals in social contexts, their social roles, group processes and intergroup relations. Includes

topics such as small group behavior, social behavior, social cognition, conformity, attitudes, and motivation. Lecture 3 hours per week. This course is also approved for offering as SOC.

PSY 220 INTRODUCTION TO BEHAVIOR MODIFICATION (3 CR.)

Studies the history of behaviorism and the principles and applications of behavior modification. Emphasizes observation and application of behavior modification principles. Lecture 3 hours per week.

PSY 225 THEORIES OF PERSONALITY (3 CR.)

Prerequisite PSY 201 or divisional approval. Studies the major personality theories and their applications. Includes psychodynamic, behavioral, cognitive, and humanistic perspectives. Lecture 3 hours per week.

PSY 231-232 LIFE SPAN HUMAN DEVELOPMENT I-II (3 CR.) (3 CR.)

Investigates human behavior through the life cycle. Describes physical, cognitive, and psycho-social aspects of human development from conception to death. Lecture 3 hours per week.

PSY 235 CHILD PSYCHOLOGY (3 CR.)

Studies development of the child from conception to adolescence. Investigates physical, intellectual, social and emotional factors involved in the child's growth. Lecture 3 hours per week.

PSY 236 ADOLESCENT PSYCHOLOGY (3 CR.)

Studies development of the adolescent. Investigates physical, intellectual, social, and emotional factors of the individual from late childhood to early adulthood. Lecture 3 hours per week.

PSY 237 ADULT PSYCHOLOGY (3 CR.)

Studies development of the adult personality. Investigates physical, intellectual, social, and emotional aspects of aging from early adulthood to death. Lecture 3 hours per week.

PSY 245 EDUCATIONAL PSYCHOLOGY (3 CR.)

Prerequisite PSY 135, 201, or 235. Explores human behavior and learning in the educational context. Investigates the nature of various mental characteristics such as intelligence, interest, and knowledge. Examines their measurement and appraisal and their significance for educational goals. Lecture 3 hours per week.

PSY 246 PSYCHOLOGY OF MANAGEMENT (3 CR.)

Prerequisite PSY 100, 120, or 201 or divisional approval. Applies principles of industrial and organizational psychology to work environments. Includes topics such as job assessment, work design, employer-employee relations, and organizational climate. Lecture 3 hours per week.

PSY 250 LAW ENFORCEMENT PSYCHOLOGY (3 CR.)

Prerequisite PSY 100, 125, or divisional approval. Studies the psychology of police work in interpersonal or intergroup situations. In-

cludes topics such as prejudice, suggestion, emotion, frustration, and aggression. Lecture 3 hours per week.

PSY 255 PSYCHOLOGICAL ASPECTS OF CRIMINAL BEHAVIOR (3 CR.)

Studies psychology of criminal behavior. Includes topics such as violent and non-violent crime, sexual offenses, insanity, addiction, white collar crime, and other deviant behaviors. Provides a background for law enforcement occupations. Lecture 3 hours per week.

PSY 256 GROUP DYNAMICS (3 CR.)

Prerequisite PSY 201, 202, or divisional approval. Studies the social and psychological principles that govern the behavior of the individual in a group setting. Examines motivation of individuals who form and join groups, performance and productivity of group members, group leadership, and majority/minority influence. Lecture 3 hours per week.

PSY 257 PSYCHOLOGICAL TESTS AND MEASUREMENTS (3 CR.)

Prerequisite PSY 202 or divisional approval. Examines and applies the principles underlying theory, interpretation, and administration of psychological tests. Surveys current tests of mental ability, aptitude, interest, and personality. Lecture 3 hours per week.

PSY 265 PSYCHOLOGY OF MEN AND WOMEN (3 CR.)

Prerequisite divisional approval. Examines the major determinants of sex differences. Emphasizes psychosexual differentiation and gender identity from theoretical, biological, interpersonal, and sociocultural perspectives. Includes topics such as sex roles, socialization, rape, abuse, and androgyny. Lecture 3 hours per week.

PSY 266 PSYCHOLOGY OF DEATH AND DYING (3 CR.)

Focuses on psychological aspects of death and dying. Teaches the meaning of death and ways of handling its personal and social implications. Includes psychological, sociological, cultural, and religious views of death. Lecture 3 hours per week.

PSY 267 PSYCHOLOGY OF RELIGION (3 CR.)

Focuses on the psychological aspects of religion, including historical views and current perspectives. Considers the personal, social, and cultural implications of religious beliefs, experiences, and practices. Lecture 3 hours per week.

PSY 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RADIOGRAPHY

RAD 100 INTRODUCTION TO RADIOLOGY AND PROTECTION (2 CR.)

Presents brief history of radiological profession, code of ethics, conduct for radiologic students, and the basic fundamentals of radiation protection. Lecture 2 hours per week.

RAD 111-112 RADIOLOGIC SCIENCE I-II (4 CR.) (4 CR.)

Teaches concepts of radiation, radiography physics, fundamentals of electromagnetic radiation, electricity and magnetism, and application of these principles to radiography. Focuses on X-ray production, emission, and X-ray interaction with matter. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 121 RADIOGRAPHIC PROCEDURES I (4 CR.)

Introduces procedures for positioning the patient's anatomical structures relative to X-ray beam and image receptor. Emphasizes procedures for routine examination of the chest, abdomen, extremities, and axial skeleton. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 125 PATIENT CARE PROCEDURES (2 CR.)

Presents the care and handling of the sick and injured patient in the Radiology Department. Introduces the fundamentals of nursing procedures, equipment and supplies specific to radiology. Lecture 2 hours per week.

RAD 131-132 ELEMENTARY CLINICAL PROCEDURES I-II (3 CR.) (3 CR.)

Develops advanced technical skills in fundamental radiographic procedures. Focuses on manipulation of equipment, patient care, osseous studies, skull procedures, and contrast studies. Provides clinical experience in cooperating health agencies. Clinical 15 hours per week.

RAD 205 RADIATION PROTECTION AND RADIOBIOLOGY (3 CR.)

Studies methods and devices used for protection from ionizing radiation. Teaches theories of biological effects, cell and organism sensitivity, and the somatic and genetic effects of ionizing radiation. Presents current radiation protection philosophy for protecting the patient and technologist. Lecture 3 hours per week.

RAD 221 RADIOGRAPHIC PROCEDURES II (4 CR.)

Continues procedures for positioning the patient's anatomical structures relative to X-ray beam and image receptor. Emphasizes procedures for routine examination of the skull, contrast studies of internal organs, and special procedures employed in the more complicated investigation of the human body. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 231-232 ADVANCED CLINICAL PROCEDURES I-II (5 CR.) (5 CR.)

Reinforces technical skills in fundamental radiographic procedures. Introduces more intricate contrast media procedures. Focuses on

technical proficiency, application of radiation, protection, nursing skills, and exposure principles. Teaches advanced technical procedures and principles of imaging modalities, correlating previous radiographic theory, focusing on full responsibility for patients in technical areas, perfecting technical skills, and developing awareness of related areas utilizing ionizing radiation. Provides clinical experience in cooperating health agencies. Clinical 25 hours per week.

RAD 240 RADIOGRAPHIC PATHOLOGY (3 CR.)

Presents a survey of common medical and surgical disorders that affect radiographic image. Discusses conditions related to different systems of the human body. Studies the correlation of these conditions with radiographs. Lecture 3 hours per week.

RAD 246 SPECIAL PROCEDURES (2 CR.)

Studies special radiographic and surgical procedures and equipment employed in the more complicated investigation of internal conditions of the human body. Lecture 2 hours per week.

RAD 255 RADIOGRAPHIC EQUIPMENT (3 CR.)

Studies principles and operation of general and specialized X-ray equipment. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

REAL ESTATE

REA 100 PRINCIPLES OF REAL ESTATE (3 CR.)

Examines practical applications of real estate principles. Includes a study of titles, estates, land descriptions, contracts, legal instruments, financing and management of real estate. Lecture 3 hours per week.

REA 105 REAL ESTATE MATHEMATICS (3 CR.)

Focuses on the application of fundamental mathematical principles of special real estate problems. Includes, but is not limited to, allocation of areas of land, pricing land, computation of commissions, earnings on investments, calculation of escrow items, and closing costs. Lecture 3 hours per week.

REA 110 REAL ESTATE SALES (3 CR.)

Focuses on the fundamentals of sales principles as they apply to real estate. Includes prospect, motives, needs, and abilities to buy real estate. Lecture 3 hours per week.

REA 215 REAL ESTATE BROKERAGE (3 CR.)

Considers administrative principles and practices of real estate brokerage, financial control and marketing of real property. Lecture 3 hours per week.

REA 216 REAL ESTATE APPRAISAL (3 CR.)

Explores fundamentals of real estate evaluation: methods used in determining value; application of the valuation process and the principal techniques by simulations, working problems and reviewing actual appraisals. Includes the opportunities available in the appraisal field. Lecture 3 hours per week.

REA 217 REAL ESTATE FINANCE (3 CR.)

Presents principles and practices of financing real estate sales and properties. Analyzes various types of mortgage payments and contracts, financing of homes and industrial properties and building, loan applications, relationship between correspondent and investor, construction loans. Lecture 3 hours per week.

REA 225 REAL PROPERTY MANAGEMENT (3 CR.)

Introduces the field of property management; professional aspects of real estate brokerage, properties, neighborhood analysis, tenants and qualifications, aspects of maintenance and repair. Lecture 3 hours per week.

REA 245 REAL ESTATE LAW (3 CR.)

Studies real estate law, including rights incidental to property ownership and management, agency contract and application to real estate transfer covenancing probate proceedings, trust transactions, and tax implications. Lecture 3 hours per week.

REA 246 REAL ESTATE ECONOMICS (3 CR.)

Examines the nature and classification of land economics, the development of property, construction and subdivision, economic values and real estate evaluation, real estate cycles and business fluctuations, residential market trends, rural property and special purpose property trends. Lecture 3 hours per week.

REA 247 REAL ESTATE INVESTMENTS (3 CR.)

Focuses on estate investments with emphasis on taxation, limited partnerships, syndications, exchanges and modern techniques of mortgage equity requirements and depreciation guidelines. Lecture 3 hours per week.

REA 256 LAND PLANNING AND USE (3 CR.)

Presents land value and usage, planning, zoning regulations, building and site requirements, sanitation and utilities, highest and best use concept, population analysis, influence of market forces and public policies. Lecture 3 hours per week.

REA 297 COOPERATIVE EDUCATION (1-6 CR.) (see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RECREATION AND PARKS

RPK 100 INTRODUCTION TO THE FIELD OF RECREATION AND PARKS (3 CR.)

Includes history and philosophy of the recreation and parks movement. Discusses the theory of leisure and play. Analyzes leisure service delivery systems and career opportunities. Emphasizes the private, commercial, industrial sectors, Armed Forces, and volunteer, as well as the public area. Lecture 3 hours per week.

RPK 110 ARTS ACTIVITIES IN RECREATION AND PARKS (3 CR.)

Develops basic skills and practical application of programming for the arts in a wide variety of settings in the recreation and parks field. Includes specific programs in arts and crafts, music and drama, as well as a survey of current practices in programming in the field. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 120 OUTDOOR RECREATION (3 CR.)

Includes history and philosophy of conservation, preservation, and the development of outdoor recreation in the United States. Emphasizes development of practical skills in planning, instructing, and managing outdoor recreation programs and facilities, including youth resident camps, R.V. campgrounds, as well as resources in the urban setting. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 125 OUTDOOR EDUCATION AND INTERPRETIVE SERVICES (3 CR.)

Develops basic skills in outdoor education and interpretive services. Provides direct application of skills in nature centers, visitor management services or resident-based outdoor educational settings. Includes use of audiovisual equipment, interpretive display design and construction, and nature trail planning. Develops specific interpretive programs and outdoor education teaching units. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 126 ORGANIZATION AND MANAGEMENT OF RECREATIONAL SPORTS ACTIVITIES (3 CR.)

Includes official and instructional activities, aspects of recreational sports, game rules, and administering of tournaments. Lecture 3 hours per week.

RPK 135 PROGRAM PLANNING, ORGANIZATION AND GROUP LEADERSHIP (3 CR.)

Teaches principles of program planning in the recreation setting. Analyzes participants' needs and demands, as well as social, physical, and psychological characteristics. Explains how to organize and lead programs. Includes a leadership practicum. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 136 ORGANIZATION AND MANAGEMENT OF RECREATIONAL SOCIAL AND PHYSICAL ACTIVITIES (3 CR.)

Includes programs of a social and physical nature in schools, home, church, youth groups, community centers, camps and other institutions. Teaches planning and leadership in games, parties, as well as dual, individual, and team sports. Emphasizes organization, management and specific leadership strategies. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 145 HORTICULTURE AND TURF PRACTICES IN RECREATION AND PARKS (3 CR.)

Introduces recreation and parks students to horticulture methods and materials, and turf grass management practices as they apply to the field of recreation and parks. Covers plant materials, silviculture, propagation, maintenance, and equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 146 FACILITY AND LANDSCAPE PLANNING FOR RECREATION AND PARKS (3 CR.)

Provides experience in planning and landscaping design for a variety of recreation and park areas and facilities. Emphasizes the planning and design process, and practical field application. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 155 THERAPEUTIC RECREATION (3 CR.)

Introduces competencies needed to direct recreation activities for special populations such as mentally retarded, physically disabled, and senior adults in the community and in special settings. Teaches techniques for adaptation of social and physical activities to special populations, as well as leadership techniques and strategies. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 165 RISK MANAGEMENT ON RECREATION IN RECREATION AND PARKS (3 CR.)

Discusses the law and liability as they relate to the individual and agencies in recreation and parks. Emphasizes the analysis of programs and facilities for safety, emergency, and accident procedures, and supervision. Lecture 3 hours per week.

RPK 200 MICROCOMPUTERS IN PUBLIC SERVICE AGENCIES (3 CR.)

Provides detailed, practical application of the use of the microcomputer in public services. Gives the student an understanding of how microcomputers work and their software applications in specific public service fields such as Administration of Justice, Fire Science, and Recreation and Parks. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 201 RECREATION AND PARKS MANAGEMENT I (3 CR.)

Examines organization and management of recreation and parks agencies. Discusses management theory, line charts, and personnel policies. Explains budget preparation, documentation and presentation. Outlines

fiscal policies including pricing theory and marketing strategies. Lecture 3 hours per week.

RPK 202 RECREATION AND PARKS MANAGEMENT II (3 CR.)

Includes problems and practices in maintenance of buildings, outdoor facilities, and equipment, as well as safety and emergency procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 205 ROCK CLIMBING (1 CR.)

Covers fundamentals of rock climbing and includes instruction in face climbing, as well as basics of security on rocks using ropes and anchors. Includes two single day climbing trips. Laboratory 2 hours per week.

RPK 206 ADVENTURE ROPES COURSES (1 CR.)

Introduces programs which emphasize the development of self-concept, group cooperation, and physical abilities. Teaches a variety of rope course activities including new games, initiatives, and the high and low rope courses. Includes the use of ropes course apparatus, safety techniques, and sequencing. Laboratory 2 hours per week.

RPK 207 CROSS COUNTRY SKIING (1 CR.)

Introduces the basics of cross country skiing, including selection of equipment, waxing, flat track techniques, and skills for skiing uphill and downhill. Is a combination of classroom and field experience. Laboratory 2 hours per week.

RPK 208 ALPINE SKIING (1 CR.)

Introduces basic alpine skiing and planning group ski trips. Includes equipment, safety, basic fundamentals of skiing, and planning group ski trips. Laboratory 2 hours per week.

RPK 215 RECREATIONAL CAMPING (1 CR.)

Discusses organizing and running a group camping trip. Includes information in site, food and shelter selection, personal and group safety, packing, and conservation. Emphasizes appreciation of natural resources, outdoor skills, and outdoor living. Laboratory 2 hours per week.

RPK 216 RECREATIONAL BACKPACKING (2 CR.)

Required for Recreation and Parks majors. Discusses the ethical role of the backpacker in terms of conservation and ecology. Includes field experience involving backpacking, orienteering, and trail safety. Laboratory 4 hours per week.

RPK 225 CANOE CAMPING (2 CR.)

Introduces the history, techniques, safety, and planning related to canoe operation and camping along a river or on a lake shore. Required for Recreation and Parks majors. Laboratory 4 hours per week.

RPK 297 COOPERATIVE EDUCATION (1-6 CR.) (see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RECREATION VEHICLE

RVH 100 INTRODUCTION TO MOTORCYCLE MECHANICS (3 CR.)

Develops understanding of the motorcycle, its systems, operating principles, and diagnostic techniques. Gives emphasis to developing safe shop practices. Includes the use of hand tools and equipment required for basic motorcycle maintenance. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RVH 101 MOTORCYCLE ENGINES I (2 CR.)

Prerequisite RVH 100. Covers the proper disassembly and repair procedures for single cylinder 2 stroke, and 4 stroke motorcycle engines. Emphasizes trouble shooting procedures for diagnosing common engine problems. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

RVH 102 MOTORCYCLE ENGINES II (3 CR.)

Prerequisite RVH 101 or divisional approval. Emphasizes diagnosis and inspection procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RVH 105 MOTORCYCLE MACHINE LABORATORY (3 CR.)

Prerequisite RVH 100 or AUT 100 or one year of high school Automotive Shop or equivalent. Presents theory and practice of machinery equipment used in reconditioning and repairing motorcycles. Gives special emphasis to measuring instruments, valve refinishing, cylinder boring, crankshaft rebuilding, and bearing selection. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RVH 106 MOTORCYCLE FUEL SYSTEMS (2 CR.)

Prerequisite RVH 100. Covers basic carburetion theory from cable slide carburetors to fuel injected turbo charged fuel systems. Emphasizes carburetors normally found on motorcycle engines. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

RVH 107 MOTORCYCLE ELECTRICAL SYSTEMS (3 CR.)

Prerequisite RVH 100. Covers basic electrical theory, electrical components, and wiring diagrams. Emphasizes proper use of electrical test equipment for checking circuits, alternators, battery points, ignition systems, electronic ignition systems, and accessories. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RVH 115 MARINE COOLING, FUELS AND ELECTRICAL SYSTEMS (3 CR.)

Studies cooling, fuel, and electrical systems used in outboard and inboard marine power plants. Includes design principles, operation, service, and repair of individual components of these systems. Focuses on outboard safety and emergency procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RVH 116 OUTBOARD ENGINES (3 CR.)

Studies design, construction, installation, operation, service and repair of marine outboard power plants. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RVH 117 INBOARD/OUTDRIVES (3 CR.)

Provides major technical training in the design, operation, service, and overall repair procedures of inboard/outboard motor power units. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RVH 125 MOTORCYCLE DRIVE TRAINS, BRAKES AND SUSPENSIONS (4 CR.)

Studies power transfer from the engine through clutches, transmissions, and drive wheels. Covers shafts and chains. Details brakes, wheels, suspensions, and frames. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RELIGION

REL 100 INTRODUCTION TO THE STUDY OF RELIGION (3 CR.)

Explores various religious perspectives and ways of thinking about religious themes and religious experience. Lecture 3 hours per week.

REL 205 HEBREW SCRIPTURES (3 CR.)

Surveys history, literature, and theology of ancient Israel and early Judaism in light of the religious writings of Israel (Old Testament). Lecture 3 hours per week.

REL 206 THE HEBREW TORAH (3 CR.)

Studies Genesis, Exodus, Leviticus, Numbers, and Deuteronomy as part of the literary and religious heritage of western civilization. Lecture 3 hours per week.

REL 207 HEBREW PROPHETIC LITERATURE (3 CR.)

Studies the prophetic books of the Old Testament as part of the literary and religious heritage of western civilization. Examines historical and social context, and literary and theological purposes. Lecture 3 hours per week.

REL 208 HEBREW POETRY AND WISDOM LITERATURE (3 CR.)

Studies the poetry of the Old Testament as a part of the literary and religious heritage of western civilization. Includes the Festal Scrolls and Apocalyptic writings. Lecture 3 hours per week.

REL 215 NEW TESTAMENT AND EARLY CHRISTIANITY (3 CR.)

Surveys the history, literature, and theology of early Christianity in the light of the New Testament. Lecture 3 hours per week.

REL 216 LIFE AND TEACHINGS OF JESUS (3 CR.)

Studies the major themes in the teachings of Jesus of Nazareth as recorded in the Gospels, and examines the events of his life in

light of modern biblical and historical scholarship. Lecture 3 hours per week.

REL 217 LIFE AND LETTERS OF PAUL (3 CR.)

Studies the journeys and religious thought of the apostle Paul. Lecture 3 hours per week.

REL 225 SELECTED TOPICS IN BIBLICAL STUDIES (3 CR.)

Examines a selected body of literature, a specific book of the Bible, or a pervasive theme. Lecture 3 hours per week.

REL 230 RELIGIONS OF THE WORLD (3 CR.)

Introduces the religions of the world with attention to origin, history, and doctrine. Lecture 3 hours per week.

REL 231-232 RELIGIONS OF THE WORLD I-II (3 CR.) (3 CR.)

Studies religions of the world with attention to origin, history, and doctrine. Lecture 3 hours per week.

REL 235 MAJOR RELIGIOUS THINKERS (3 CR.)

Examines the works of one or more important people in religious thought. May be repeated for credit. Lecture 3 hours per week.

REL 236 SPECIAL STUDIES IN RELIGIONS OF THE WORLD (3 CR.)

Studies aspects of one or more of the religions of the world. May be repeated for credit. Lecture 3 hours per week.

REL 240 RELIGIONS IN AMERICA (3 CR.)

Surveys various manifestations of religion in the American experience. Emphasizes concepts, problems, and issues of religious pluralism and character of American religious life. Lecture 3 hours per week.

REL 246 CHRISTIANITY (3 CR.)

Examines the origins and historical development of Christianity, its basic metaphysical and theological assumptions, its essential doctrines, and the present state of the church in the modern world. Lecture 3 hours per week.

REL 250 PHILOSOPHY OF RELIGION (3 CR.)

Critically examines problems raised by arguments for and against the existence of God. Discusses topics such as the nature of God, problem of evil, religious truth, immortality, miracles, spirituality, and the relation between philosophy and theology. Lecture 3 hours per week.

REL 260 SOCIOLOGY OF RELIGION (3 CR.)

Introduces the student to the role of religion in the social life of a community and its members. Studies areas of socialization and recruitment, social class and religion, social control and religion, new religions, and religious trends in the future. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RESPIRATORY THERAPY

RTH 102 INTEGRATED SCIENCES FOR RESPIRATORY CARE (3 CR.)

Integrates the concepts of mathematics, chemistry, physics, microbiology, and computer technology as these sciences apply to the practices of respiratory care. Lecture 3 hours per week.

RTH 121 CARDIOPULMONARY SCIENCE I (3 CR.)

Focuses on assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary, renal and neuromuscular physiology and pathophysiology. Lecture 3 hours per week.

RTH 131-132 RESPIRATORY CARE THEORY AND PROCEDURES I-II (4 CR.) (4 CR.)

Presents theory of equipment and procedures used for patients requiring general and critical cardiopulmonary care. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RTH 135 DIAGNOSTIC AND THERAPEUTIC PROCEDURES I (2 CR.)

Focuses on purpose, use and evaluation of equipment, and procedures used in the diagnosis and therapeutic management of patients with cardiopulmonary disease. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

RTH 145 PHARMACOLOGY FOR RESPIRATORY CARE I (1 CR.)

Introduces students to pharmacologic agents used in cardiopulmonary care. Lecture 1 hour per week.

RTH 151-152 FUNDAMENTAL CLINICAL PROCEDURES I-II (4 CR.) (4 CR.)

Prerequisite for RTH 151 is RTH 131. Prerequisite for RTH 152 is RTH 151. Offers clinical instruction in basic patient care practices. Laboratory 16 hours per week.

RTH 222 CARDIOPULMONARY SCIENCE II (3 CR.)

Focuses on assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary, renal, and neuromuscular physiology, and pathophysiology. Lecture 3 hours per week.

RTH 223 CARDIOPULMONARY SCIENCE III (2 CR.)

Continues the exploration of topics discussed in RTH 121 and 222. Lecture 2 hours per week.

RTH 226 THEORY OF NEONATAL AND PEDIATRIC RESPIRATORY CARE (2 CR.)

Focuses on cardiopulmonary physiology and pathology of the newborn and pediatric patient. Lecture 2 hours per week.

RTH 235 DIAGNOSTIC AND THERAPEUTIC PROCEDURES II (3 CR.)

Focuses on quality assurance of diagnostic procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RTH 245 PHARMACOLOGY FOR RESPIRATORY CARE II (2 CR.)

Concentrates on pharmacologic agents used in the management of the critically ill patient. Lecture 2 hours per week.

RTH 253 ADVANCED CLINICAL PROCEDURES III (4 CR.)

Prerequisite is RTH 152. Offers clinical instruction in advanced patient care practice. Laboratory 16 hours per week.

RTH 254 ADVANCED CLINICAL PROCEDURES IV (4 CR.)

Prerequisite RTH 253. Offers clinical instruction in advanced patient care practice. Laboratory 16 hours per week.

RTH 265 CURRENT ISSUES IN RESPIRATORY CARE (2 CR.)

Explores current issues affecting the profession of respiratory care. Lecture 2 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RUSSIAN

RUS 101-102 BEGINNING RUSSIAN I-II (5 CR.) (5 CR.)

Develops the understanding, speaking, reading, and writing of Russian, and emphasizes the structure of the language. Lecture 5 hours per week.

RUS 201-202 INTERMEDIATE RUSSIAN I-II (3 CR.) (3 CR.)

Prerequisite RUS 102 or equivalent. Continues the development of the skills of understanding, speaking, reading, and writing of Russian. Class conducted in Russian. Lecture 3 hours per week.

SAFETY

SAF 120 SAFETY & HEALTH STANDARDS: REGULATIONS AND CODES (3 CR.)

Teaches development of safety standards, the Occupational Safety and Health Act (OSHA), its rules and regulations; penalties for non-compliance, and methods of compliance. Includes an examination of Government Regulatory Codes and appraisal of consensus, advisory, and proprietary standards. Lecture 3 hours per week.

SAF 131 MATERIALS HANDLING, MACHINERY, HANDTOOLS & CONTROL I (3 CR.)

Examines physical hazards of environment including power sources, methods of control, hazards, storage and materials handling. Examines general safety rules regarding the use of handtools, portable power tools, and machine tools; maintenance, repair and inspection

programs to be established, and personal protective equipment to be utilized. Lecture 3 hours per week.

SAF 135 SAFETY PROGRAM ORGANIZATION AND ADMINISTRATION (3 CR.)

Introduces techniques of organizing and administering practical safety programs. Emphasizes safety as a management function. Includes an examination of history, occupational safety and health regulations, and a survey of current laws, codes and standards. Lecture 3 hours per week.

SAF 140 INTRODUCTION TO INDUSTRIAL HYGIENE (3 CR.)

Studies environmental energy, physical and chemical hazards, including gases, vapors, dusts, fumes, and mists; the importance of personal protective equipment, and contamination control methodology. Lecture 3 hours per week.

SAF 235 MANUFACTURING PROCESS ANALYSIS (3 CR.)

Prerequisite SAF 135. Discusses occupational safety and health based upon visits to commercial enterprises and surveying safety activities. Applies to safety program effectiveness and accident prevention strategies. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

SAF 241 OCCUPATIONAL ENVIRONMENT I (3 CR.)

Studies recognition, evaluation, and control of physical hazards generated in the workplace, with emphasis on ionizing and non-ionizing radiation, and heat stress. Includes methodology for evaluating industrial exposure to these hazards and study of appropriate instrumentation and measures for protection of personnel. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

SOCIAL SCIENCE

SSC 111-112 APPLIED SOCIAL SCIENCES I-II (3-4 CR.) (3-4 CR.)

Focuses on application of current governmental, economic, psychological, and sociological perspectives to today's situations in business, industry, and the home. Studies anthropology and history as relating to problems and accomplishments of modern man. Lecture 3-4 hours per week.

SSC 201-202 CONTEMPORARY AMERICAN CIVILIZATION I-II (3 CR.) (3 CR.)

Analyzes factors involved in the development of American society and culture. Applies contents, methods, and insights of anthropology, economics, geography, government/political science, history, psychology, and sociology in an integrated sequence of courses. Lecture 3 hours per week.

SSC 205 CULTURAL AND SOCIAL STUDY OF WOMEN (3 CR.)

Analyzes historical and contemporary social, cultural, political, and economic factors affecting the role of women. Uses selected literature about women in the modern world as a basis for study and discussion. Lecture 3 hours per week.

SSC 211-212 SURVEY OF URBANIZATION I-II (3 CR.) (3 CR.)

Focuses on European, American, and Third World cities. Uses an interdisciplinary perspective to draw on concepts and findings from archeology, architecture, history, economics, sociology, urban geography, political science, psychology, and urban planning. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

SOCIOLOGY**SOC 115 SOCIOLOGY OF WORK AND ORGANIZATIONS (3 CR.)**

Covers occupational socialization; job satisfaction; minority and gender issues in the work place; organizational structure and dynamics; international organizations. Lecture 3 hours per week.

SOC 200 PRINCIPLES OF SOCIOLOGY (3 CR.)

Introduces fundamentals of social life. Presents significant research and theory in areas such as culture, social structure, socialization, deviance, social stratification, and social institutions. Lecture 3 hours per week.

SOC 201-202 INTRODUCTION TO SOCIOLOGY I-II (3 CR.) (3 CR.)

Introduces basic concepts and methods of sociology. Presents significant research and theory in areas such as socialization, group dynamics, gender roles, minority group relations, stratification, deviance, culture, community studies. Includes population, social change, and social institutions (family, education, religion, political system, economic system). Lecture 3 hours per week.

SOC 206 URBAN SOCIOLOGY (3 CR.)

Studies historical and demographic trends of American metropolitan areas. Emphasizes issues of migration, housing, transportation, environmental protection, public finance. May include ethnic structures, crime, blight, and urban planning. Lecture 3 hours per week.

SOC 207 MEDICAL SOCIOLOGY (3 CR.)

Surveys the social, economic, cultural, and individual factors in health and illness. Examines issues of wellness, health-care systems, physician-nurse-patient relationships, medical costs, ethics and policy. Lecture 3 hours per week.

SOC 208 SOCIOLOGY OF POPULAR CULTURES (3 CR.)

Focuses on historical and contemporary currents of social life. Includes nature of social

trends, relationship between social trends and individual behavior, and reflection of cultural trends in the mass media. Lecture 3 hours per week.

SOC 211-212 PRINCIPLES OF ANTHROPOLOGY (3 CR.) (3 CR.)

Inquires into the origins, development, and diversification of human biology and human cultures. Includes fossil records, physical origins of human development, human population genetics, linguistics, cultures' origins and variation, and historical and contemporary analysis of human societies. Lecture 3 hours per week.

SOC 215 SOCIOLOGY OF THE FAMILY (3 CR.)

Studies topics such as marriage and family in social and cultural context. Addresses the single scene, dating and marriage styles, child-rearing, husband and wife interaction, single parent families, alternative lifestyles. Lecture 3 hours per week.

SOC 216 CHILD-PARENT COMMUNITY RELATIONS (3 CR.)

Emphasizes understanding of interrelationships within the community that influence childhood development. Includes the role of religion, ethical values and citizenship in the education of children. Lecture 3 hours per week.

SOC 217 PARENT-CHILD INTERACTION (3 CR.)

Studies experiences and problems in raising children from infancy through the teenage years. Introduces stages of child development and explores several parenting strategies. Lecture 3 hours per week.

SOC 218 FAMILY VIOLENCE (3 CR.)

Examines occasions and reasons family relationships do not work. Includes types of family violence, and its prevention. Lecture 3 hours per week.

SOC 219 SOCIOLOGY OF RELIGION (3 CR.)

Introduces role of religion in social life of members of a community. Includes socialization and recruitment, social class and religion, social control and religion, new religions, and religious trends in the future. Lecture 3 hours per week.

SOC 220 SOCIALIZATION AND THE LIFE CYCLE (3 CR.)

Discusses the cultural and historical influences on life cycle through examination of the various agents of socialization, such as family, school and mass media. May address life stages of adolescence, adulthood and aging. Lecture 3 hours per week.

SOC 226 HUMAN SEXUALITY (3 CR.)

Studies sociological research and theory on sexuality. Includes anatomy and physiology, birth control, sexually transmitted diseases and sexual behavior. Lecture 3 hours per week.

SOC 235 JUVENILE DELINQUENCY (3 CR.)

Studies demographic trends, causal theories, and control of juvenile delinquency. Presents juveniles' interaction with family,

schools, police, courts, treatment programs, and facilities. Lecture 3 hours per week.

SOC 236 CRIMINOLOGY (3 CR.)

Studies research and causal theories of criminal behavior. Examines crime statistics, crime victims, and types of criminal offenses. Introduces role of police, judicial and correctional system in treatment and punishment of offenders. Lecture 3 hours per week.

SOC 245 SOCIOLOGY OF AGING (3 CR.)

Introduces study of aging with special emphasis on later stages of the life cycle. Includes theories of aging, historical and comparative settings, social policy, and future trends of aging. Lecture 3 hours per week.

SOC 246 DEATH AND SOCIETY (3 CR.)

Analyzes death and its relationship to social behavior and societal institutions. Focuses attention on types of death, bereavement, funerals, estate planning/inheritance, and the student's own responses to these issues. Lecture 3 hours per week.

SOC 247 DEATH AND DYING (3 CR.)

Studies theoretical, practical, and historical aspects of death. Focuses upon student's own ideas, feeling, and attitudes toward death and dying and the significance and consequences of those attitudes. Lecture 3 hours per week.

SOC 255 COMPARATIVE SOCIOLOGY (3 CR.)

Analyzes varieties of human behavior, beliefs and values in western and non-western cultures. Emphasizes similarities and variations among social institutions such as family, law, religion, economics and government. Lecture 3 hours per week.

SOC 256 SOCIOLOGY OF THE FUTURE (3 CR.)

Emphasizes images of the future; technology and social evolution; basic methodologies of futures research; technology forecasting and assessment; world view; speculation on the future of basic institutions including family, education, economics and politics. Lecture 3 hours per week.

SOC 265 SOCIAL PSYCHOLOGY (3 CR.)

Prerequisite SOC 200 or 201. Examines individuals in social contexts: social roles, group processes and intergroup relations. May include small group interaction, social behavior, social cognition, conformity, attitudes, and motivation. Lecture 3 hours per week.

SOC 266 MINORITY GROUP RELATIONS (3 CR.)

Investigates minorities such as racial and ethnic groups. Addresses social and economic conditions promoting prejudice, racism, discrimination, and segregation. Lecture 3 hours per week.

SOC 268 SOCIAL PROBLEMS (3 CR.)

Applies sociological concepts and methods to analysis of current social problems. Includes delinquency and crime, mental illness, drug addiction, alcoholism, sexual behavior, population crisis, race relations, family and community disorganization, poverty, automation, wars, and disarmament. Lecture 3 hours per week.

SOC 270 METHODS OF SOCIAL RESEARCH (3 CR.)

Introduces basic procedures and techniques of data collection and analysis. Provides research opportunities in participant-observation, market research, sampling, and analysis of documents. Lecture 3 hours per week.

SOC 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

SPANISH**SPA 016 SPANISH FOR BUSINESS (1-3 CR.)**

Introduces the student to Spanish used in business transactions. Lecture 1-3 hours per week.

SPA 017 SPANISH FOR THE TOURIST (1-3 CR.)

Introduces spoken Spanish to people intending to travel in a Spanish-speaking country. Lecture 1-3 hours per week.

SPA 018 SPANISH FOR READING KNOWLEDGE (1-3 CR.)

Develops the ability to translate Spanish texts. Lecture 1-3 hours per week.

SPA 101-102 BEGINNING SPANISH I-II (5 CR.) (5 CR.)

Introduces understanding, speaking, reading, and writing skills and emphasizes basic Spanish sentence structure. Lecture 5 hours per week.

SPA 103-104 BASIC SPOKEN SPANISH I-II (3 CR.) (3 CR.)

Teaches oral communication and introduces cultural mores and customs to students with no prior instruction in the language. Lecture 3 hours per week.

SPA 111-112 CONVERSATION IN SPANISH I-II (3 CR.) (3 CR.)

Prerequisite SPA 102. Emphasizes the spoken language, stressing fluency and correctness of structure, pronunciation, and vocabulary. Lecture 3 hours per week.

SPA 163-164 SPANISH FOR HEALTH PROFESSIONALS I-II (3 CR.) (3 CR.)

Introduces Spanish to those in the health sciences. Emphasizes oral communication and practical medical vocabulary. May include oral drill and practice. Lecture 3 hours per week.

SPA 201-202 INTERMEDIATE SPANISH I-II (3 CR.) (3 CR.)

Prerequisite SPA 102 or equivalent. Continues to develop understanding, speaking, reading, and writing skills. Spanish is used in the classroom. Lecture 3 hours per week.

SPA 211-212 INTERMEDIATE SPANISH CONVERSATION I-II (3 CR.) (3 CR.)

Prerequisite SPA 202 or equivalent. Continues to develop fluency through emphasis on idioms and other complex sentence structures. Lecture 3 hours per week.

SPA 233-234 INTRODUCTION TO SPANISH CIVILIZATION AND LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite SPA 202 or equivalent. Introduces the student to Spanish culture and literature. Readings and discussions conducted in Spanish. Lecture 3 hours per week.

SPA 241-242 INTERMEDIATE SPANISH COMPOSITION I-II (3 CR.) (3 CR.)

Prerequisite SPA 202 or equivalent. Develops skills in written Spanish, emphasizing grammatical correctness. Lecture 3 hours per week.

SPA 271-272 INTRODUCTION TO LATIN AMERICAN CIVILIZATION AND LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite SPA 202 or equivalent. Introduces the student to Latin American culture and literature. Readings and discussions conducted in Spanish. Lecture 3 hours per week.

SPEECH AND DRAMA**SPD 001 DEVELOPMENTAL SPEECH (1-5 CR.)**

Teaches basic skills needed to enter college-level oral communication courses. Students may re-register for this in subsequent semesters as necessary until the course objectives are completed. Variable hours per week.

SPD 100 PRINCIPLES OF PUBLIC SPEAKING (3 CR.)

Applies theory and principles of public address with emphasis on preparation and delivery. Lecture 3 hours per week.

SPD 110 INTRODUCTION TO SPEECH COMMUNICATION (3 CR.)

Examines the elements affecting speech communication at the individual, small group, and public communication levels with emphasis on practice of communication at each level. Lecture 3 hours per week.

SPD 111-112 VOICE AND DICTION I-II (3 CR.) (3 CR.)

Enables students to improve pronunciation, articulation, and voice quality. Includes applied phonetics. Lecture 3 hours per week.

SPD 115 SMALL GROUP COMMUNICATION (3 CR.)

Emphasizes the development of presentational ability in a group, decision-making, group maintenance, and leadership and participant skills. Incorporates a preliminary study of group dynamics. Lecture 3 hours per week.

SPD 116 SPEECH WORKSHOP (3 CR.)

Enables work in competitive speech activities such as debate, oratory, impromptu speaking, prose and poetry reading, and rhe-

torical criticism. May be repeated for credit. Lecture 3 hours per week.

SPD 117 FORENSICS (3 CR.)

Offers instruction and supervised practice in the preparation and delivery of various competitive speech activities including oratory and oral interpretation of literature. Lecture 3 hours per week.

SPD 125 INTERVIEWING (3 CR.)

Studies theory and practice of interviewing, emphasizing the informational interview, the journalistic interviews, the employment interview, and the performance-appraisal interview. Lecture 3 hours per week.

SPD 126 INTERPERSONAL COMMUNICATION (3 CR.)

Teaches interpersonal communication skills for both daily living and the world of work. Includes perception, self-concept, self-disclosure, listening and feedback, nonverbal communication, attitudes, assertiveness and other interpersonal skills. Lecture 3 hours per week.

SPD 127 WORKSHOP IN INTERPERSONAL SKILLS (1 CR.)

Emphasizes practical applications of career-oriented oral communication skills at the interpersonal level. Lecture 1 hour per week.

SPD 130 INTRODUCTION TO THE THEATRE (3 CR.)

Surveys the principles of drama, the development of theatre production, and selected plays to acquaint the student with various types of theatrical presentations. Lecture 3 hours per week.

SPD 131-132 ACTING I-II (3 CR.) (3 CR.)

Develops personal resources and explores performance skills through such activities as theatre games, role playing, improvisation, work on basic script units, and performance of scenes. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

SPD 136 THEATRE WORKSHOP (1-6 CR.)

Enables students to work in various activities of play production. The student participates in performance, set design, stage carpentry, sound, costuming, lighting, stage managing, props, promotion, or stage crew. May be repeated for credit. Variable hours per week.

SPD 137 ORAL INTERPRETATION (3 CR.)

Studies the theory and practice of performing various types of literature: prose, poetry, and drama. Emphasizes the relationship among the oral interpreter, the literary work, and the audience. Lecture 3 hours per week.

SPD 141-142 THEATRE APPRECIATION I-II (3 CR.) (3 CR.)

Aims to increase knowledge and enjoyment of theatre. Considers process, style, organization, written drama, and performed drama. Lecture 3 hours per week.

SPD 165 MASS MEDIA WORKSHOP (3 CR.)

Emphasizes mass media production, to include script writing, acting for the camera,

broadcast diction, filming, and editing. May be repeated for credit. Lecture 3 hours per week.

SPD 200 ADVANCED PUBLIC SPEAKING (3 CR.)

Prerequisite SPD 100 or divisional approval. Focuses on preparation and delivery of various advanced forms of public address. Lecture 3 hours per week.

SPD 225 LISTENING (3 CR.)

Focuses on practical application of listening skills to everyday experience, including listening for evaluation, appreciation, information, and retention. Lecture 3 hours per week.

SPD 226 NONVERBAL COMMUNICATION (3 CR.)

Studies nonverbal messages with emphasis upon body language, tactile communication, personal space, eye contact, vocal cues, body movement, and gestures in human interaction. Lecture 3 hours per week.

SPD 227 INDUSTRIAL AND ORGANIZATIONAL COMMUNICATION (3 CR.)

Applies communication theory and principles to industrial and organizational settings. Lecture 3 hours per week.

SPD 228 PERSUASION (3 CR.)

Studies practical message strategies and argumentation in such areas as business, politics, mass media, and campaigns. Emphasizes practical application. Lecture 3 hours per week.

SPD 229 INTERCULTURAL COMMUNICATION (3 CR.)

Emphasizes the influence of culture on the communication process including differences in values, message systems, and communication rules. Lecture 3 hours per week.

SPD 231-232 HISTORY OF THEATRE I-II (3 CR.) (3 CR.)

Analyzes and studies theatre history to include architecture, performers and performance, playwrights, stage, production methods, and audience from the Greeks through modern drama. Lecture 3 hours per week.

SPD 233-234 REHEARSAL AND PERFORMANCE I-II (4 CR.) (4 CR.)

Explores various aspects of the theatre through involvement in college theatre production. Laboratory 12 hours per week.

SPD 241-242 INTRODUCTION TO DIRECTING I-II (3 CR.) (3 CR.)

Prerequisite SPD 131-132 or divisional approval. Introduces theory and practice of stage direction through the study of directing methods as well as the execution and discussion of directing exercises. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

SPD 249 STAGE MAKE-UP (1 CR.)

Presents principles and practice of make-up for the stage. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

SPD 250 THE ART OF THE FILM (3 CR.)

Introduces the art of the film through a survey of film history; viewing, discussion, and analysis of selected films. Studies film

techniques such as composition, shot sequence, lighting, visual symbolism, sound effects, and editing. Lecture 3 hours per week.

SPD 265 INTERPRETER'S THEATRE (3 CR.)

Involves study and practice of translating literature into theatrical performance, including such formats as Chamber Theatre, Readers' Theatre, and Choral Reading. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

SPD 268 CHILDREN'S THEATRE (3 CR.)

Surveys history, literature, and nature of the production of theatre for child audiences. Lecture 3 hours per week.

SPD 276 MODERN DRAMA (3 CR.)

Surveys drama from Ibsen and Strindberg to American, European, and Third-World dramatists. Lecture 3 hours per week.

SPD 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

STUDENT DEVELOPMENT

STD 100 ORIENTATION (1 CR.)

Assists students in transition to colleges. Provides overviews of college policies, procedures, curricular offerings. Encourages contacts with other students and staff. Assists students toward college success through information regarding effective study habits, career and academic planning, and other college resources available to students. May include English and math placement testing. Strongly recommended for beginning students. Required for graduation. Lecture 1 hour per week.

STD 107 CAREER EDUCATION (3 CR.)

Surveys career options available to students. Stresses career development and assists in the understanding of self in the world of work. Assists students in applying decision-making to career choice. May be substituted for STD 100. Lecture 3 hours per week.

TRAVEL AND TOURISM

TRV 100 INTRODUCTION TO THE TRAVEL INDUSTRY (3 CR.)

Presents an overview of the structure and scope of the travel industry with emphasis on job categories and functions, basic vocabulary, and the interrelationships of the various components. Includes the study of information displays of airline computer reservation system. Lecture 3 hours per week.

TRV 111-112 GEOGRAPHY OF TOURISM I-II (3 CR.) (3 CR.)

Focuses on the geographic knowledge necessary to provide effective, efficient service to clients. Studies major western hemisphere (Part I) and eastern hemisphere (Part II) des-

tinations. Emphasizes features of touristic importance, such as visit documentation, climate and physical features, accommodations and attractions, and accessibility. Lecture 3 hours per week.

TRV 115 GROUND TRANSPORTATION, TOURS, CRUISES, SERVICES PLANNING (3 CR.)

Prerequisite TRV 100. Studies travel industry products and procedures including steamship travel and cruises, rail travel, motor coach travel, escorted and independent tours, hotel and resort features and procedures, car rentals, and assembling and selling complete travel packages. Includes the use of an airline computer reservation system to access ground arrangement information. Lecture 3 hours per week.

TRV 116 AIR TRAVEL PLANNING (4 CR.)

Prerequisite TRV 100. Teaches basic tariff and ticketing to include interpreting and preparing domestic and international itineraries, applying airfares and tariff rules for proper fare construction and ticket issuance, procedures for credit sales, and the explanation and use of ticket refunds and exchanges. Includes the use of an airline computer reservation system to access fares and fare rules. Lecture 4 hours per week.

TRV 125 PRINCIPLES OF TRAVEL SELLING AND COUNSELING (3 CR.)

Prerequisite TRV 100. Studies successful selling strategies in the travel business. Analyzes selling techniques by types of travel clientele and their needs. Emphasizes the development of basic selling skills through role playing exercises and sales presentations. Lecture 3 hours per week.

TRV 211 AIRLINE COMPUTER RESERVATION SYSTEMS I (4 CR.)

Prerequisite TRV 116. Studies airline computer reservation system entry instructions and processes to enable the student to acquire proficiency in developing itineraries, building passenger name records, and accessing other standard airline and travel information procedures. Includes car rental, hotel reservation, and other functions of major computerized reservation systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

TRV 212 AIRLINE COMPUTER RESERVATION SYSTEMS II (3 CR.)

Prerequisite TRV 211. Teaches advanced applications of an airline computer reservation system including complex domestic and international itineraries with specialized faring, passenger name record changes. Deals with constructing connections, creating client profile records, interpreting seat map displays and prereserved seat selection, rail and cruise bookings, and ticket reissuance procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

TRV 220 PRINCIPLES OF GROUP TRAVEL AND TOUR OPERATIONS (3 CR.)

Prerequisites TRV 115 and TRV 116. Introduces procedures and practices used in the travel industry to plan and operate travel programs for various sized groups. Encompasses

all aspects of group travel, from the selling and planning stages to specific day-to-day details of directing and managing a tour group. Lecture 3 hours per week.

TRV 225 INTERNATIONAL TRAVEL AND TOURISM (3 CR.)

Prerequisite TRV 100. Analyzes the international organization of tourism, the role of the physical environment and culture, and tourism as a factor in economic planning and development. Lecture 3 hours per week.

TRV 230 MARKETING AND MANAGEMENT OF TRAVEL SERVICES (3 CR.)

Prerequisite TRV 115. Focuses on the management and marketing activities and functions in the travel industry. Studies planning and staffing procedures, specialized sales and management reports, profit analysis, and the unique problems of marketing services. Emphasizes the analysis of case studies of travel organizations. Lecture 3 hours per week.

TRV 235 PRINCIPLES OF MEETING PLANNING (3 CR.)

Focuses on planning and managing meetings. Examines entire sequence of events, from conceptual stage of first meeting plan through completion of the event. Emphasizes technical planning skills including site selection, negotiating with suppliers, meeting specifications, preparation, budgeting, special event planning, and working with facility staff to manage a successful meeting. Lecture 3 hours per week.

TRV 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

VETERINARY TECHNOLOGY

VET 105 INTRODUCTION TO VETERINARY TECHNOLOGY (3 CR.)

Introduces the role of veterinary technicians in veterinary practice. Includes medical terminology, ethics, professionalism, and basic concepts of patient care. Lecture 3 hours per week.

VET 110 FUNDAMENTALS OF HORSE MANAGEMENT (3 CR.)

Surveys horse breeds, their functions and uses. Addresses horse conformation, facilities, and basic feeds and feedings. Includes study of principles of horse nutrition. Lecture 3 hours per week.

VET 111 ANATOMY AND PHYSIOLOGY OF DOMESTIC ANIMALS (4 CR.)

Introduces the structure and function of the animal and of all the organ systems of common domestic animals. Includes histology, embryology, and genetics. Includes laboratory dissection and demonstrations. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

VET 116 ANIMAL BREEDS AND BEHAVIOR (3 CR.)

Surveys common species of domestic animals including basic husbandry, care, and handling. Introduces identification of various breeds and their characteristics, including behavior patterns, problems, and solutions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

VET 121-122 CLINICAL PRACTICES I-II (4 CR.) (4 CR.)

Presents clinical techniques commonly performed in veterinary practice. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

VET 131-132-133 CLINICAL PATHOLOGY I-II-III (3 CR.) (3 CR.) (3 CR.)

Surveys techniques used in the veterinary hospital laboratory. Includes hematology, urinalysis, microbiology, cytology, immunology, clinical chemistry, serology, and necropsy. Emphasizes the use of microscope, automated laboratory equipment, and modern diagnostic procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

VET 135 ANESTHESIA OF DOMESTIC ANIMALS (2 CR.)

Introduces the basic principles of anesthesia of common domestic species. Includes techniques of induction, monitoring, and recovery of patients using injectable and inhalation anesthetics. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

VET 211-212 ANIMAL DISEASES I-II (2 CR.) (2 CR.)

Describes animal health and disease, surgical techniques, and animal behavior. Includes demonstrations and selected observation and practice in animal hospitals, clinics, or research laboratories. For VET 211—Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week. For VET 212—Lecture 2 hours. Laboratory 1 hour. Total 3 hours per week.

VET 216 ANIMAL PHARMACOLOGY (2 CR.)

Studies drugs and other medical substances of veterinary importance. Includes their characteristics, usage, measurement, dosage, administration, and also pharmacy management. Lecture 2 hours per week.

VET 217 INTRODUCTION TO LABORATORY, ZOO AND WILDLIFE MEDICINE (2 CR.)

Focuses on the identification, captive management, restraint and diseases of fish, reptiles, birds, rodents, rabbits, ferrets, primates, wild carnivores, and wild herbivores. Presents the fields of laboratory research zoological medicine. Lecture 2 hours per week.

VET 221 ADVANCED CLINICAL PRACTICES III (4 CR.)

Prerequisite VET 121-122. Presents advanced clinical techniques commonly performed in veterinary practice. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

VET 225 PARASITOLOGY OF DOMESTIC ANIMALS (2 CR.)

Studies the common internal and external parasites of various species of domestic animals. Emphasizes their lifecycles, pathology, treatment, and prevention. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

VET 235 ANIMAL HOSPITAL MANAGEMENT AND CLIENT RELATIONS (3 CR.)

Introduces the basic concepts of business procedures of veterinary practice. Includes communication skills, office management, record keeping, and use of computers in veterinary practice. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

WELDING

WEL 115 ARC AND GAS WELDING (3 CR.)

Presents arc and gas welding practices. Discusses safety, general welding practices and effects of welding on metals. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 116 WELDING I (OXYACETYLENE) (2 CR.)

Teaches oxygen/acetylene welding and cutting including safety of equipment, welding, brazing and soldering procedures and cutting procedures. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WEL 121 ARC WELDING (2 CR.)

Studies the operation of AC and DC power sources, weld heat, polarities, and electrodes for use in joining various alloys by the SMAW process. Covers welds in different types of joints and different welding positions. Emphasizes safety procedures. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WEL 122 WELDING II (ELECTRIC ARC) (3 CR.)

Teaches electric arc welding, including types of equipment, selection of electrodes, safety equipment and procedures, and principles and practices of welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 126 PIPE WELDING I (3 CR.)

Teaches metal arc welding processes including the welding of pressure piping in the horizontal, vertical, and horizontal-fixed positions in accordance with section IX of the ASME Code. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 127 PIPE WELDING II (3 CR.)

Provides practice in the welding of pressure piping in the horizontal, vertical, and fixed positions. Laboratory 9 hours per week.

WEL 130 INERT GAS WELDING (3 CR.)

Introduces practical operations in the uses of inert-gas-shield arc welding. Discusses equipment, safety operations, welding practice in the various positions; shielded gases, filler rods, process variations and applica-

tions; manual and semi-automatic welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 141-142 WELDER QUALIFICATION TESTS I-II (3 CR.) (3 CR.)

Studies techniques and practices of testing welded joints through destructive and non-destructive tests, guiding, discoloration heat test, porous examinations, tensile, hammer and free bend tests. Also studies visual, magnetic and fluorescent tests. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 145 WELDING METALLURGY (3 CR.)

Studies steel classifications, heat treatment procedures, properties of ferrous and non-ferrous metals. Discusses techniques and practices of testing welded joints and destructive/nondestructive, visual magnetic and fluorescent testing. Lecture 3 hours per week.

WEL 146 WELDING QUALITY CONTROL (3 CR.)

Teaches techniques and practices of inspection, and interpretation of tests and measurements. Includes radiographic tests of joints of unlimited thickness welded in 3G and 4G positions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 150 WELDING DRAWING AND INTERPRETATION (2 CR.)

Teaches fundamentals required for successful drafting as applied to the welding industry. Includes blueprint reading, geometric

principles of drafting and freehand sketching, basic principles of orthographic projection, preparation of drawings and interpretation of symbols. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

WEL 160 SEMI-AUTOMATIC WELDING PROCESSES (3 CR.)

Introduces semi-automatic welding processes with emphasis on practical application. Includes the study of filler wires, fluxes, and gases. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

WOODWORKING AND FURNITURE RECONSTRUCTION

WOD 100 INTRODUCTION TO WOODWORKING (2 CR.)

Emphasizes planning procedures and wood selection, basic woodworking practices and basic wood joints, general wood finishing techniques, and safety. Includes general uses of hand tools, portable power tools, and stationary power equipment. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WOD 101 WOODWORKING I HAND AND POWER TOOLS (3 CR.)

Teaches identification, care and use of hand and portable tools. Emphasizes basic station-

ary power equipment. Stresses accuracy and safety. Includes planning, layout techniques, joints and material selections related to furniture and cabinetmaking industries. Lecture 1 hour. Laboratory 5 hours. Total 6 hours per week.

WOD 102 WOODWORKING II ADVANCED POWER TOOLS (3 CR.)

Emphasizes identification, care, and use of stationary power equipment and advanced operations and techniques as they relate to furniture construction and cabinetmaking industries. Stresses additional woodworking practices, accuracy of work, and safety. Lecture 1 hour. Laboratory 5 hours. Total 6 hours per week.

WOD 116 SPECIAL WOODWORKING TECHNIQUES (3 CR.)

Includes tools, equipment, materials, techniques, and practices related to bending, laminating veneering, and inlaying as well as countertop installation. Emphasizes working with plastic laminates. Lecture 1 hour. Laboratory 5 hours. Total 6 hours per week.

WOD 120 CABINETMAKING (3 CR.)

Prerequisite WOD 102. Emphasizes principles, practices, techniques, and designs used in the furniture and cabinetmaking industries. Stresses doors, drawers, and cabinet interiors. Lecture 1 hour. Laboratory 5 hours. Total 6 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.



Aviation Technology



Air Conditioning and Refrigeration



Learning Laboratory

The five campuses are indicated as follows: AL, Alexandria; AN, Annandale; LO, Loudoun; MA, Manassas; WO, Woodbridge; and ELI, Extended Learning Institute. Those individuals with cross campus responsibilities are indicated as CS, College Staff.

- Adams, Joseph D.;** Professor; B.A., Franklin and Marshall College; M.Ed., Shippensburg State College; Ph.D., Lehigh University; English (AN)
- Ahrens, David A.;** Assistant Professor; B.A., University of Hawaii; M.A., University of Oregon; Teleconference Specialist, Telecommunications Center (ELI)
- Aiello, Nancy C.;** Professor; B.A., M.S., Syracuse University; Ph.D., V.P.I. & S.U.; Division Chairman, Natural & Applied Science (LO)
- Alford, Terry;** Professor; B.A., M.A., Ph.D., Mississippi State University; History (AN)
- Allaire, Ruth A.;** Professor; B.S., M.S., University of Massachusetts; Ph.D., University of Maryland; Biology (WO)
- Allen, W. Gordon;** Associate Professor; A.A., Northern Virginia Community College; B.S., U.S. Military Academy; M.B.A., George Washington University; M.S., Southeastern University; Accounting (LO)
- Allison, David;** Assistant Professor; A.B., Wilmington College; M.F.A., George Washington University; Photography (AL)
- Anderson, Carol L.;** Professor; A.S., Ferrum College; B.S., M.S., Virginia Commonwealth University; Accounting (AN)
- Anderton, Lillie M.;** Assistant Professor; B.A., Howard University; M.S., V.P.I. & S.U.; Business Management & Marketing (AN)
- Anwari, M. Hashem;** Assistant Professor; B.S., Tri-State University; M.S., North Carolina A&T State University; Computer and Information Systems (LO)
- Archer, Chalmers, Jr.;** Associate Professor; A.A., Saints College; B.S., M.Ed., Tuskegee Inst.; Ed.D., Auburn University; Counselor, Financial Aid (AL)
- Atchison, Evelyn C.;** Professor; B.S.N., Duquesne University; M.S.N., Catholic University of America; Program Head, Nursing (AN)
- Atwater, Thomas C.;** Assistant Professor; B.S., M.A.C.T., University of North Carolina; Business Management (AL)
- Avery, Fay;** Professor; B.A., Parsons College; M.Ed., University of Buffalo; Division Chairman, Business (AL)
- Bachtell, Janice E.;** Professor; M.S.N., Catholic University; Ph.D., American University; Nursing (AN)
- Baer, James A.;** Assistant Professor; A.B., Oberlin College; M.A.T., Antioch Graduate School of Education; M.A., Rutgers University; History (AL)
- Bailey, Haroldine;** Assistant Professor; B.A., Colby College; M.Ed., Howard University; Counselor (AL)
- Bailey, Raymond C.;** Professor; A.B., Catawba College; M.A., Ph.D., University of Georgia; History (MA)
- Bailey, Sandra;** Assistant Professor; B.S., Indiana University; Program Head, Medical Record Technology Program (AN)
- Baldwin, Susan M.;** Assistant Professor; B.A., Boston College; M.A., University of Ky.; Foreign Languages (AN)
- Ballmann, Gary E.;** Professor; B.A., University of Missouri; M.S., Texas Christian University; Ph.D., University of Maryland; Medical Laboratory Technology (AN)
- Banas, Edward J.;** Associate Professor; B.A., Rutgers College; M.B.A., Rutgers University; Accounting (WO)
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- Wooldridge, John B., Jr.;** Professor; B.A., University of Richmond; M.A., Ph.D., University of Maryland; Spanish (LO)
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- Wu, Yen;** Professor; B.S., National Taiwan University; M.S., Ph.D., V.P.I. & S.U.; Pre-Engineering (AN)
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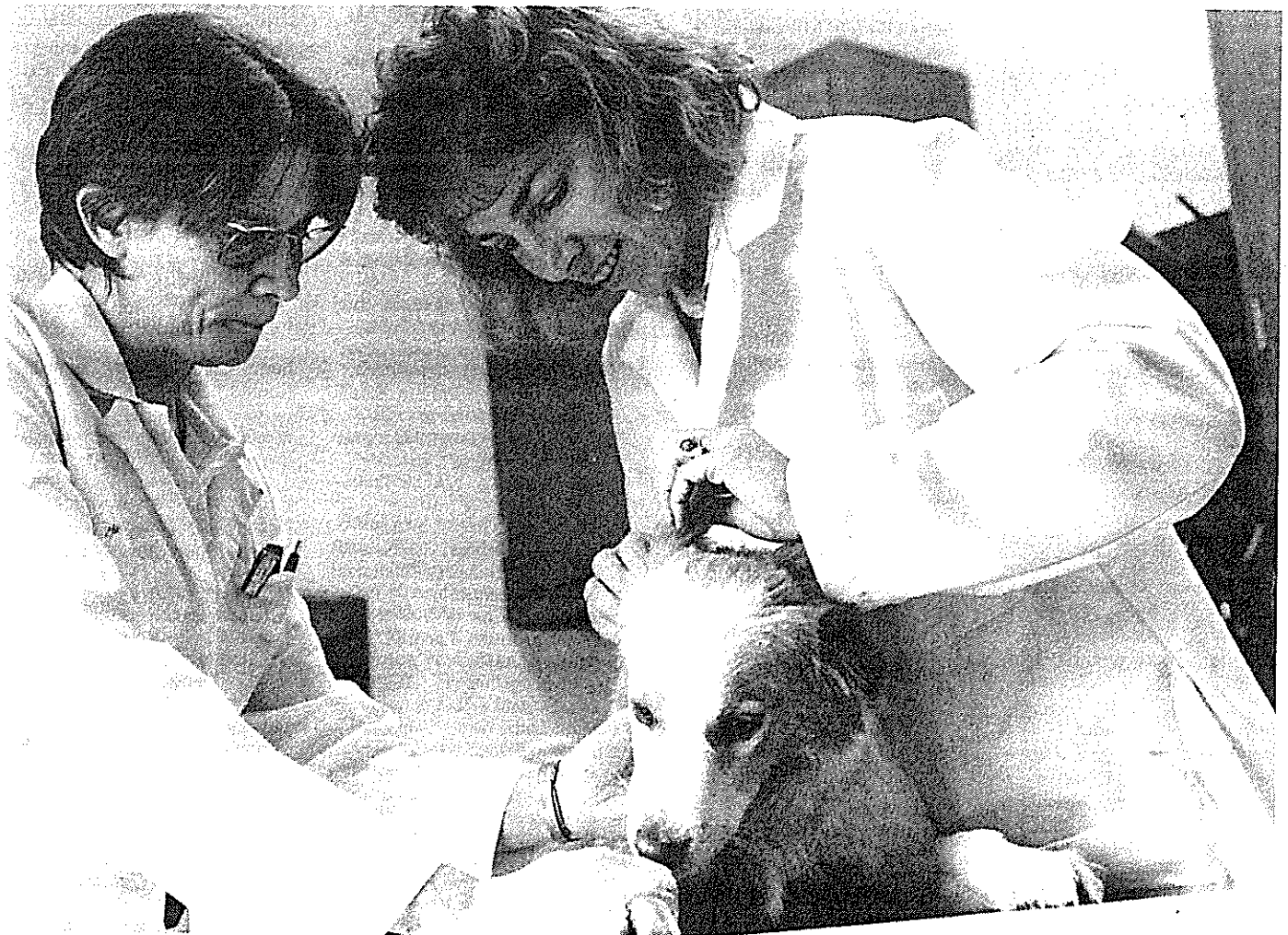
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