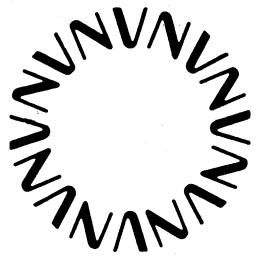
Northern Virginia Community College

Catalog 1981-82

NORTHERN VIRGINIA COMMUNITY COLLEGE



Alexandria Campus
30001 North Beauregard Street
Alexandria, Virginia 22311
Telephone: (703) 323-4285

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) 323-4561

Manassas Campus
6901 Sudley Road
Manassas, Virginia 22110
Telephone: (703) 368-0184

Woodbridge Campus
15200 Smoketown Road
Woodbridge, Virginia 22191
Telephone: (703) 670-2191

Extended Learning Institute
8333 Little River Turnpike
Annandale, Virginia 22003
Telephone: (703) 323-3368

For Application Information by mail:
Northern Virginia Community College
P.O. Box 131
Annandale, Virginia 22003

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 Quarter 1981

September

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

October

				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

November

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

December

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Registration Begins ..... August 24
Registration Ends ..... September 23
Classes Begin ..... September 25
Last Day to Withdraw Without Grade Penalty ..... November 6
Holiday for Students (Faculty In-service Day) ..... November 25
Thanksgiving Recess ..... November 26-29
Classes and Exams End ..... December 17

Winter Quarter 1982

January

					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

February

	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

March

	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Registration Begins ..... December 7
Registration Ends ..... January 5
Classes Begin ..... January 7
Washington's Birthday Holiday .. February 15
Last Day to Withdraw Without Grade Penalty ..... February 18
Classes and Exams End ..... March 24

Spring Quarter 1982

March

	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

April

				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

May

						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

June

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Registration Begins ..... March 8
Registration Ends ..... March 30
Late Afternoon and Evening Classes Begin ..... 4:00 p.m., March 31
Day Classes Begin ..... April 1
Last Day to Withdraw Without Grade Penalty ..... May 12
Memorial Day Holiday ..... May 31
Classes and Exams End ..... June 15
Commencement ..... June 18

Summer Quarter 1982

June

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

July

				1	2	3
4	5	6	7	8	9	10
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18	19	20	21	22	23	24
25	26	27	28	29	30	31

August

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

September

			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

(Ten-Week Session)
Registration Begins ..... June 2
Registration Ends ..... June 17
Classes Begin ..... June 18
Independence Day Holiday ..... July 5
Last Day to Withdraw Without Grade Penalty ..... July 30
Classes and Exams End ..... September 2

(First Five-Week Session)
Registration Begins ..... June 2
Registration Ends ..... June 17
Classes Begin ..... June 18
Independence Day Holiday ..... July 5
Last Day to Withdraw Without Grade Penalty ..... July 9
Classes and Exams End ..... July 27

(Second Five-Week Session)
Registration Begins ..... July 26
Registration Ends ..... July 27
Classes Begin ..... July 28
Last Day to Withdraw Without Grade Penalty ..... August 17
Classes and Exams End ..... September 2

Table of Contents

A Multi-Campus Institution

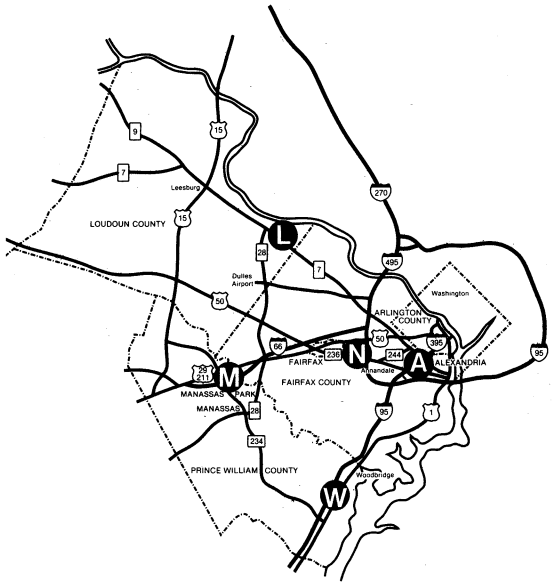
A— Alexandria Campus—3001 North Beauregard Street, Alexandria, 38 acres. Additional classrooms in rented facilities, 3443 South Carlyn Springs Road, Bailey's Crossroads

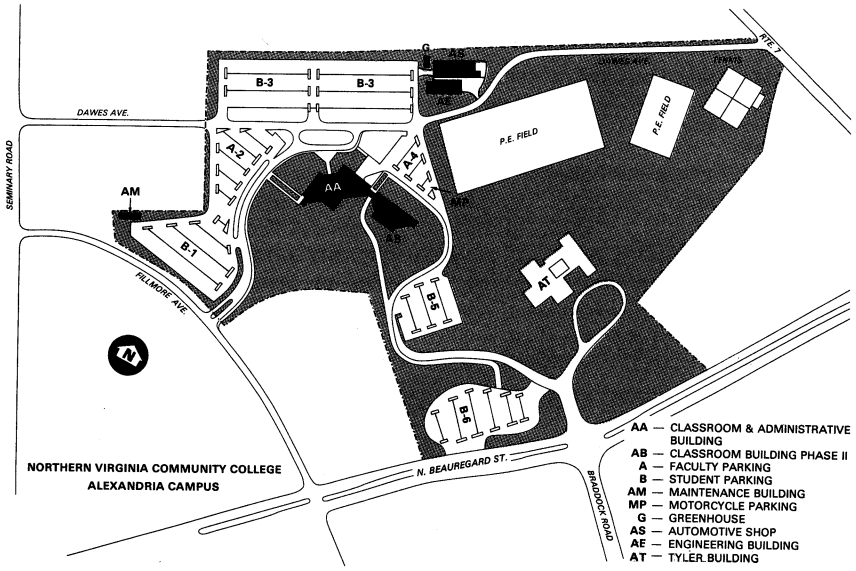
N— Annandale Campus—8333 Little River Turnpike, Annandale, 78 acres, one mile west of Interstate 495 on Route 236

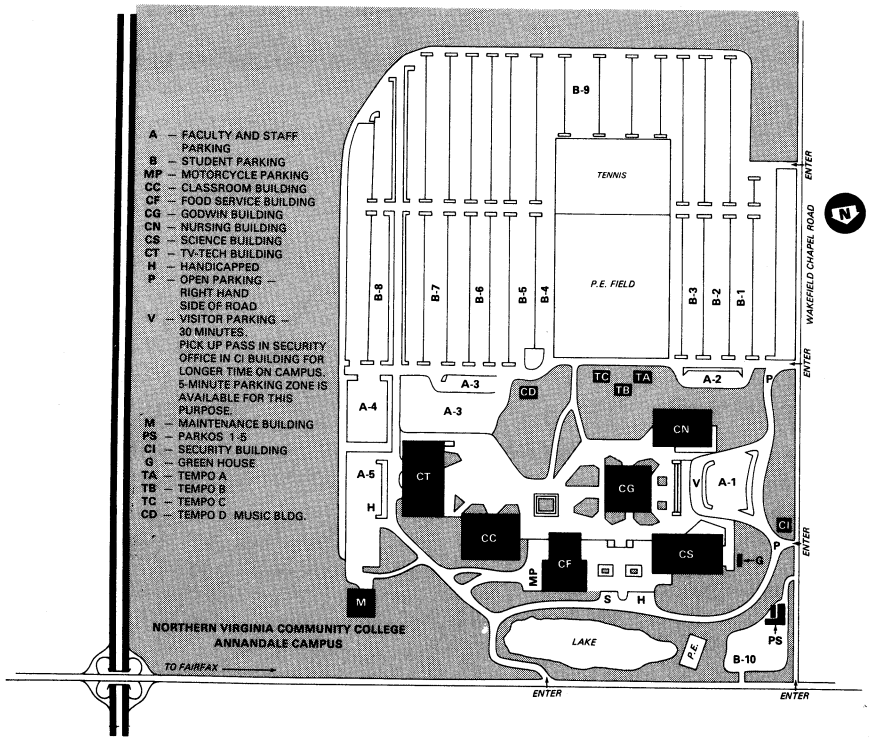
L— Loudoun Campus—1000 Harry Flood Byrd Highway, Sterling, Virginia, 98 acres, on Route 7 at State Route 637, midway between Tysons Corner and Leesburg

M—Manassas Campus—6901 Sudley Road, Manassas, Virginia, 100 acres, on Route 234 between Interstate 66 and Route 29/211

W—Woodbridge Campus—15200 Smoketown Road, Woodbridge, Virginia, 112 acres, adjacent to Interstate 95 at State Route 642 in Prince William County




DAWES AVE.
SEMINARY ROAD
FILLMORE AVE.
N. BEAUREGARD ST.
BRADDOCK ROAD
RTE. 7
TENNIS
P.E. FIELD
B-1
B-3
B-5
B-6
A-1
A-2
AA
AB
AM
AS
AT
NORTHERN VIRGINIA COMMUNITY COLLEGE
ALEXANDRIA CAMPUS
AA — CLASSROOM & ADMINISTRATIVE BUILDING
AB — CLASSROOM BUILDING PHASE II
A — FACULTY PARKING
B — STUDENT PARKING
AM — MAINTENANCE BUILDING
MP — MOTORCYCLE PARKING
G — GREENHOUSE
AS — AUTOMOTIVE SHOP
AE — ENGINEERING BUILDING
AT — TYLER BUILDING


A — FACULTY AND STAFF PARKING
B — STUDENT PARKING
MP — MOTORCYCLE PARKING
CC — CLASSROOM BUILDING
CF — FOOD SERVICE BUILDING
CG — GODWIN BUILDING
CN — NURSING BUILDING
CS — SCIENCE BUILDING
CT — TV-TECH BUILDING
H — HANDICAPPED
P — OPEN PARKING — RIGHT HAND SIDE OF ROAD
V — VISITOR PARKING — 30 MINUTES. PICK UP PASS IN SECURITY OFFICE IN CI BUILDING FOR LONGER TIME ON CAMPUS. 5-MINUTE PARKING ZONE IS AVAILABLE FOR THIS PURPOSE.
M — MAINTENANCE BUILDING
PS — PARKOS 1-5
CI — SECURITY BUILDING
G — GREEN HOUSE
TA — TEMPO A
TB — TEMPO B
TC — TEMPO C
CD — TEMPO D MUSIC BLDG.
NORTHERN VIRGINIA COMMUNITY COLLEGE
ANNANDALE CAMPUS
TO FAIRFAX
WAKEFIELD CHAPEL ROAD
ENTER
TENNIS
P.E. FIELD
LAKE
B-1
B-2
B-3
B-4
B-5
B-6
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B-8
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CT
CC
CF
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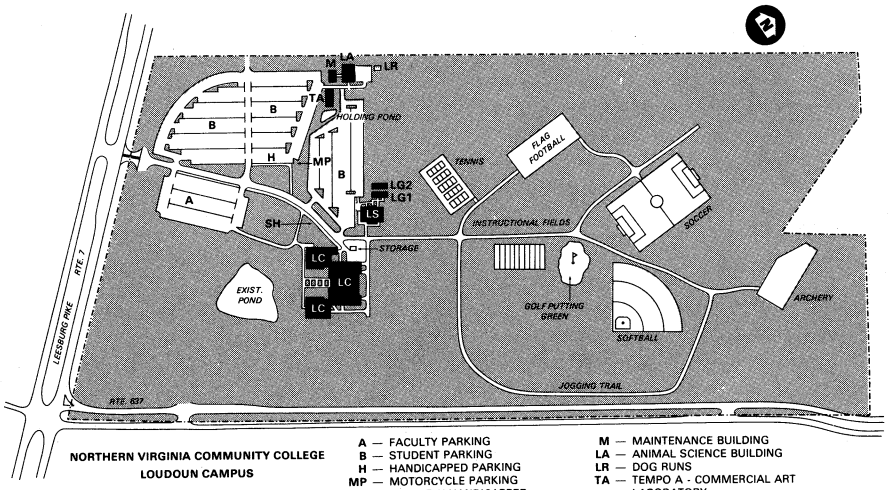
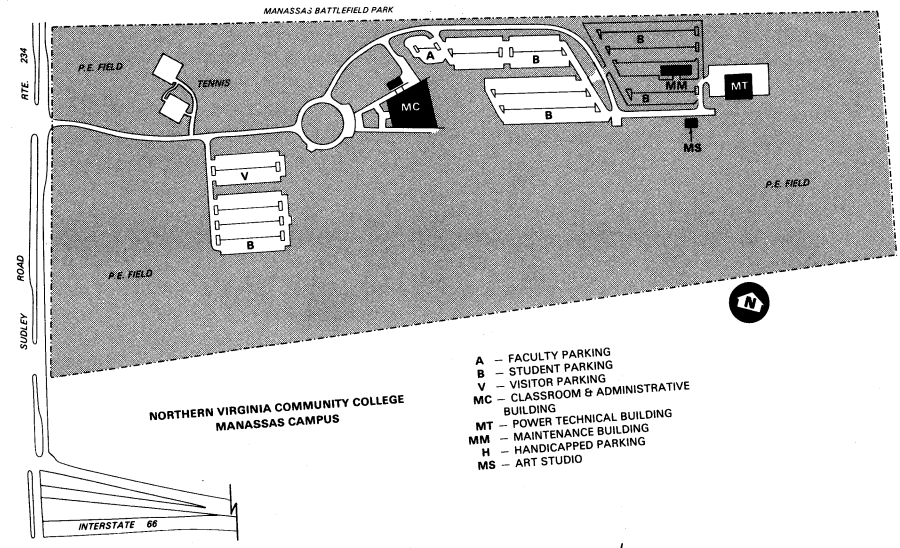
CS
CD
CI
M
PS



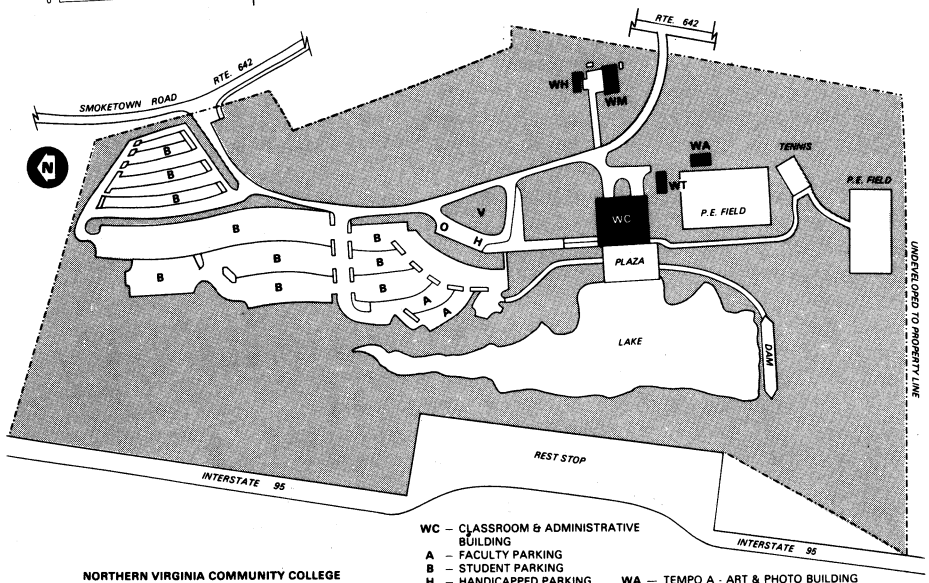
NORTHERN VIRGINIA COMMUNITY COLLEGE
LOUDOUN CAMPUS

A — FACULTY PARKING
B — STUDENT PARKING
H — HANDICAPPED PARKING
MP — MOTORCYCLE PARKING
SH — SEVERELY HANDICAPPED
LC — CLASSROOM & ADMINISTRATIVE BUILDING
LS — SCIENCE BUILDING
M — MAINTENANCE BUILDING
LA — ANIMAL SCIENCE BUILDING
LR — DOG RUNS
TA — TEMPO A - COMMERCIAL ART LABORATORY
LG1 — GREENHOUSE
LG2 — GREENHOUSE



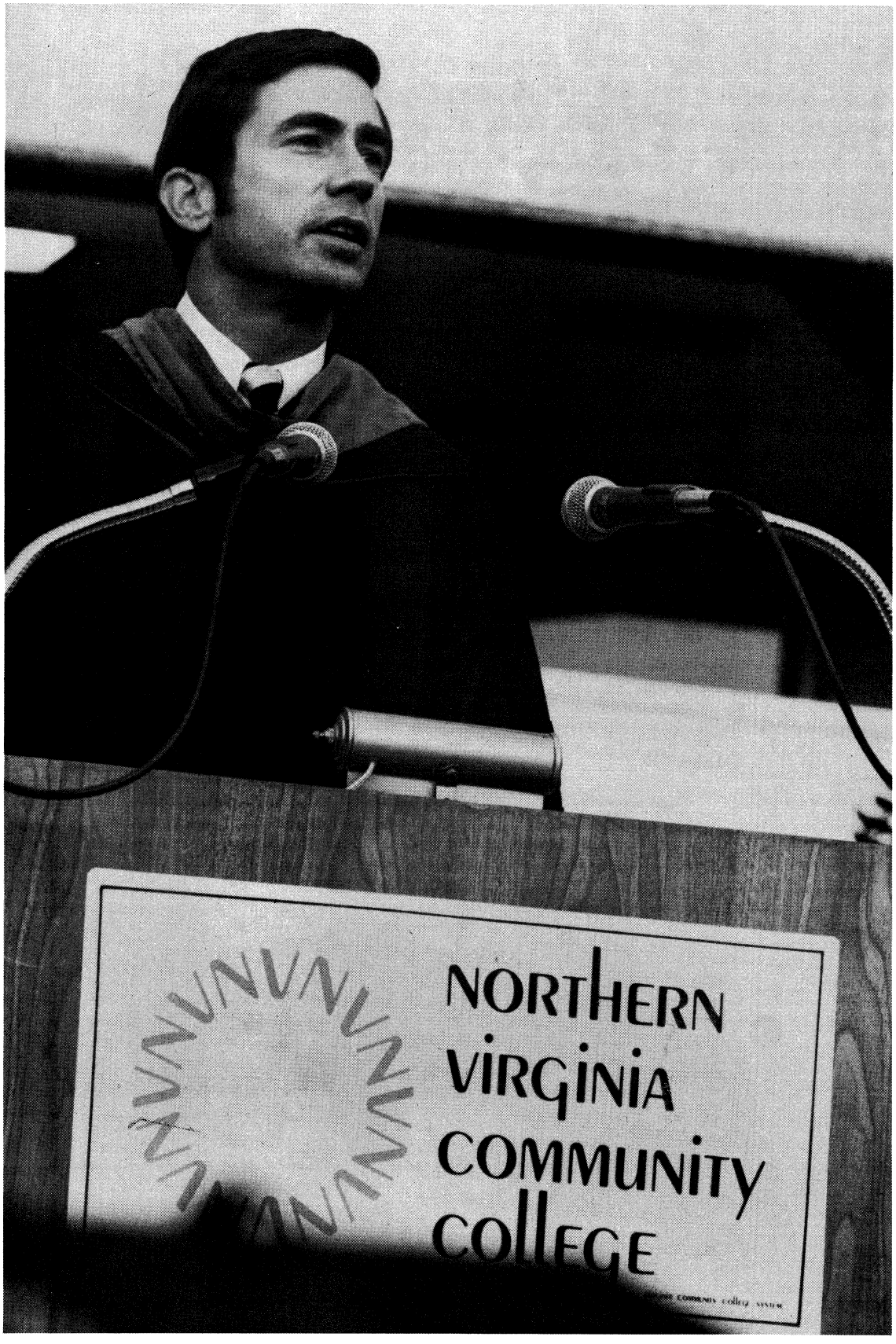
NORTHERN VIRGINIA COMMUNITY COLLEGE
MANASSAS CAMPUS

A — FACULTY PARKING
B — STUDENT PARKING
V — VISITOR PARKING
MC — CLASSROOM & ADMINISTRATIVE BUILDING
MT — POWER TECHNICAL BUILDING
MM — MAINTENANCE BUILDING
H — HANDICAPPED PARKING
MS — ART STUDIO



NORTHERN VIRGINIA COMMUNITY COLLEGE
WOODBRIDGE CAMPUS

WC — CLASSROOM & ADMINISTRATIVE BUILDING
A — FACULTY PARKING
B — STUDENT PARKING
H — HANDICAPPED PARKING
M — MAINTENANCE BUILDING
MP — MOTORCYCLE PARKING
O — OFFICIAL PARKING
V — VISITOR PARKING
WA — TEMPO A - ART & PHOTO BUILDING
WT — HVAC LABORATORY TRAILER
WH — HVAC LABORATORY BUILDING


NORTHERN
VIRGINIA
COMMUNITY
COLLEGE

General Information

Virginia Community College System

Northern Virginia Community College is one of 23 two-year colleges that make up the Virginia Community College System. 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.

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

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.

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 instruction, not extending beyond the associate degree level and encompassing post-secondary occupational-technical education, college transfer education, general education, developmental instruction, continuing education, special 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.

There are five NVCC campuses conveniently located throughout Northern Virginia. The College operates on the quarter system with 11 weeks of instruction and examinations each fall, winter, spring and summer quarter.

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.

Location and Facilities

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.

The **Alexandria Campus** is located at 3001 N. 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 and the John Tyler School was purchased from the City of Alexandria in 1980. The campus also maintains classrooms in leased, temporary facilities at Bailey's Crossroads and other off-campus locations.

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 a Classroom Building, Science Building, library/administration building, Food Service Building, TV/Technical Building, Nursing Building, temporary Music Building and three temporary faculty office buildings.

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 three permanent buildings which include a new Animal Science Laboratory Building, 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.

The **Manassas Campus** is located in western Prince William County on a 100.4-acre site at 6901 Sudley Road. The campus is one mile 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.

The **Woodbridge Campus** is adjacent to Interstate Route 95 on State Route 642 on a 115-acre site in Prince William County. There are two permanent buildings and two temporary buildings at 15200 Smoketown Road. There is a main building, a temporary photography and design building, and a temporary laboratory and classroom building. The newly constructed HVAC building became available for the Air Conditioning and Refrigeration programs in the spring of 1981.

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.

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

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 home television and radio programs, 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 twice as long as for on-campus courses. Even when lectures are on television or radio, you may decide how much time you will take to complete other course requirements within certain time limits.

When taking an ELI course, you are not entirely on your own. Faculty members assigned to each course provide valuable assistance by telephone, office visit, 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 for and begin some ELI courses at any time. Registration can be completed by mail or at any of the five NVCC campuses during regular registration periods each quarter. It is necessary to designate a home campus for College records and any other on-campus activities.

ELI offers student services similar to those available on the campuses, but suited to ELI's special methods of instruction. For additional information or assistance, write to Northern Virginia Community College, Extended Learning Institute, 8333 Little River Turnpike, Annandale, Virginia 22003, or telephone (703) 323–3368.

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.

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, paraprofessionals, 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. These programs are of equal grade and quality to those provided in the four-year degree granting institutions in order to facilitate your transfer from the College to four-year colleges and universities.

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 work may include credit and non-credit work offered during the day and evening hours.

5. 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.

6. 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.

7. 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 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.

8. Cooperative Education

Cooperative Education is a unique educational program that provides the opportunity for you to explore and develop careers in actual work situations. Your participation in this program extends the concepts, skills and theories learned in class to practical job applications. You earn both salaries and college credit. Students and employers participating in the Cooperative Education program engage in an evaluation of the work experience so that both can learn and benefit.

Accreditation and Recognition

NVCC is accredited by 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.

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 educa-

tional 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.

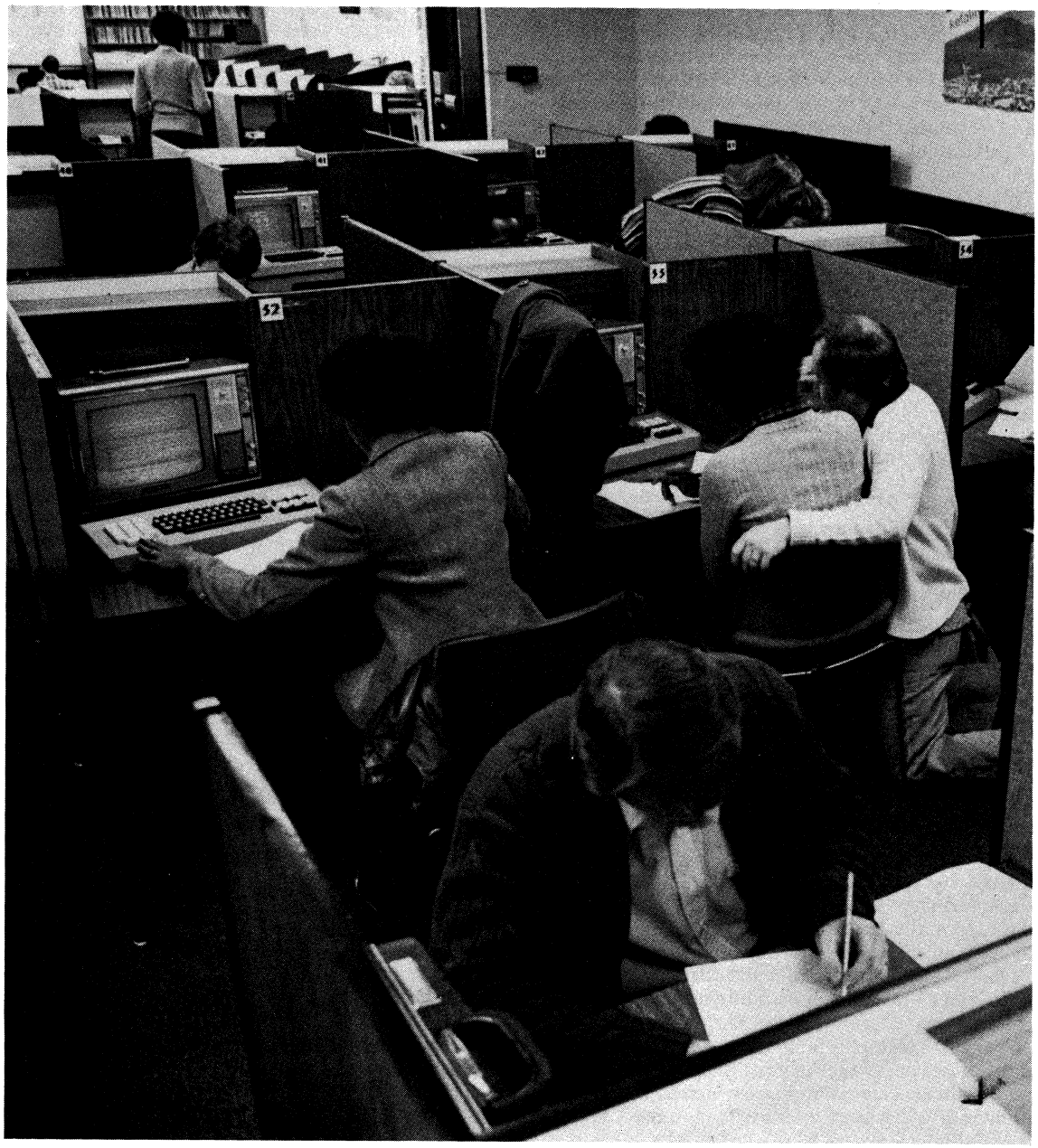
The Loudoun, Manassas and Woodbridge Campuses began operation in the fall of 1972 by setting up temporary offices and offering evening courses at community locations. The Alexandria Campus continued the use of the Bailey's Crossroads facilities and opened the first phase of construction on the new site 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 courses in January 1975. More than 4,500 students enrolled for courses during the first 18 months of operation.

During the 1979–80 fiscal year (July 1, 1979-June 30, 1980), the College served 54,175 different students in credit courses. In addition, 15,910 students registered for non-credit courses. Community service activities attracted 96,479 participants during the year.

The 1980 Fall Quarter enrollment was 33,899 full-time and part-time students.



Administrative Information

Home Campus

When you apply to the College, you must designate a home campus. Student records are maintained at the campus you designate. All enrollment transactions are completed at your home campus. These transactions include: registration for courses, add or drop of courses, change from credit to audit, withdrawal from the College, and requests for transcripts.

You can register on your home campus for courses offered on any campus of the College.

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 quarter.

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 quarter. If you are enrolled in classes for the current quarter, you must request a change of campus at least five working days prior to the beginning of registration for the next quarter, or you must wait until after the last day of the add/drop period for that quarter to make a change.

Classification of Students

Regular Student

You are classified as a regular student when admitted to a curriculum of the College. You must be a high school graduate, or 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 application for admission to the College.

A regular student may be either a full-time or part-time student working toward completion of a certificate or associate degree at the College. Admission as a regular student will follow a counseling interview, "called a program placement interview, in which the curriculum you enter and any developmental work that must be accomplished will be specified on an official program placement form."

Special Student

You may be admitted to the curriculum of the College as a special student even though you have not graduated from high school or earned a GED. You must apply for admission to the College and provide all of the supporting information with your application. You must meet the special admission requirements of the curriculum you apply for and enter it through a program placement interview with a counselor.

Non-Curricular Student

If you are not formally admitted to a curriculum or developmental program, you may still register for courses. 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 45 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 quarter 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 late register and add/drop for regular quarter ten (10) 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 late register and add/drop for regular quarter ten (10) week classes.

Freshman

You are classified as a freshman until you complete 45 credits of course work in a degree program.

Sophomore

You are classified as a sophomore after you complete 45 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 can be accepted by Northern Virginia Community College. The College shall determine if you are able to benefit from a program of instruction at NVCC. You may be accepted by the College when you have met the entrance requirements of the institution. You may be admitted to a specific curriculum when you have met the requirements of that program. A Program Placement form will be completed by a counselor for admission to a curriculum.

For all **regular** and **special students,** the following items are required:

1. A completed Application for Admission form. (Note: Social Security number is requested.)
2. A $5.00 application fee, which is non-refundable unless the curriculum or course you register for is not offered by the College.
3. Official transcripts from all high schools, colleges and universities attended. High school transcripts are not required for acceptance by the College if you have been out of high school for 10 years or more, have completed 20 semester or 30 quarter credits at an accredited college or university, or your high school transcripts are determined to be of no value for college or curricular admissions. Certain curricula require high school transcripts for admission. See the High School Transcripts section for details.

For all **non-curricular students,** the following items are required:

1. A completed Application for Admission form. (Note: Social Security number is requested.)
2. A $5.00 application fee, which is non-refundable unless the program or course you register for is not offered by the College.

Inquiries concerning applications to the College should be directed to the Northern Virginia Community College, P.O. Box 131, Annandale, Virginia 22003.

Admission Information

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.

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) other Virginia residents, (3) other U.S. citizens, and (4) others. It is even more important for you to apply early and be accepted by the College if you are interested in being admitted to a curriculum. Certain programs have space shortages which can limit enrollment. Some of these curricula may have waiting lists.

Acceptance by the College does not insure admission to a specific curriculum or course. Once accepted by the College you should meet with a College counselor. Together you will discuss your educational interests and determine if additional tests are needed. The counselor will advise you about the admission requirements of the curriculum you choose. After all of these requirements are met you may be admitted to your curriculum as a regular or special student.

Application for Admission forms may be either mailed to the College Applications Office or brought to the campus during registration.

If you are applying for admission or readmission to a specific curriculum, you must send your Application for Admission and all supporting documents to the College at least 30 days prior to the first day of registration for the quarter you plan to attend. If you miss this deadline or fail to provide the admissions office with all of the entrance requirements, you can still register for classes and receive credits. You will be classified as a non-curricular student.

Applications mailed to the College at least two weeks before registration can be processed and a response mailed back to you. If you do not mail your application at least two weeks before registration, you should take your application to your selected home campus. You may be accepted by the College, but may not be considered for admission to a curriculum until after classes begin for that quarter. You must then take the initiative to arrange a program placement interview with a NVCC counselor on your home campus.

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.

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 on campus for these community service courses and registration information.

Reapplication

If you have previously been a student at the College and have not taken courses for the past four quarters, you must reapply for admission to the College. You must complete a standard Application for Admission form of the College as you did when you first applied for admission. You also have to reapply for admission when you are accepted by the College but do not enroll for courses for one year.

You must reapply for admission to insure that your College records, such as address and telephone number, are accurate. A second application fee is not required.

Admission to a Curriculum

In addition to the general admission requirements for acceptance by the College, there are specific requirements listed in the Curricula of Study 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 admission to that curriculum. If you do

not meet these requirements, you may be able to make up deficiencies by taking developmental courses.

If you plan to apply for one of the associate degree programs (associate in science, associate in arts, or associate in applied science), you will need to have a high school diploma or the equivalent or have completed an approved developmental program.

High School Transcript Requirement

High school transcripts are required for admission into a curriculum if you have been out of high school for less than 10 years. If you have been out of high school for 10 years or more, you are not required routinely to submit high school transcripts. The exceptions to this are in admission to Nursing, Medical Records Technology, Medical Laboratory Technology, Dental Laboratory Technology, Dental Assisting, Dental Hygiene, Physical Therapist Assistant and Respiratory Therapy programs. High school transcripts are required to verify course completion and academic achievement in accordance with special admissions requirements in these programs.

If you have successfully completed at least 20 semester hour credits or 30 quarter hour credits at another accredited college or university, you will not be required to submit high school transcripts for admission to a curriculum at the College. The exceptions to this are for admission to Nursing, Medical Records Technology, Medical Laboratory Technology, Dental Laboratory Technology, Dental Assisting, Physical Therapist Assistant and Respiratory Therapy programs. High school transcripts are required for admission to these programs.

If you have earned credit in 30 quarter hours at NVCC and have a cumulative GPA of 2.00, you may have the high school transcript requirement waived for admission to a specific curriculum. The exceptions to this are for admission to Animal Science Technology, Dental Assisting, Dental Laboratory Technology, Medical Laboratory Technology, Medical Records Technology, Nursing, Physical Therapist Assisting and Respiratory Therapy programs. These curricula require high school transcript documentation.

Southeast Asian, Cuban, and other refugees are not required to submit high school transcripts. Acceptance by the College and admission to a curriculum are based on results of TOEFL, English and math placement test scores.

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 quarter deadline date or to the end of the quarter 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.

If you are an international student on an F–1 visa who entered the United States to study at another college, university or language school and plan to enter NVCC, you must have a release form I–538 from that institution and submit an official transcript from that institution showing successful completion of at least one term's work before you can be considered for admission to NVCC.

A temporary visa holder (except F visa holders) may be accepted by the College on a temporary basis but must hold a valid visa continuously during each quarter of enrollment, as indicated on the I–94. Such visa holders may be considered for subsequent issuing of an I–20 for a future quarter if I–20 admission requirements for international students are met. Deadlines are published in the quarterly Schedule of Classes.

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;
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 quarter you plan to attend. 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. Non-immigrant aliens who are students must complete at least one quarter of attendance before NVCC can consider recommending you for employment.

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 requirements. These courses must have prior written approval of your high school principal. You must have completed all but the final two units of your high school requirements since only the equivalent of two units of high school work may be applied toward your high school graduation. You would be classified as a special student while under the early admissions program.

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. You would be classified as a special student at NVCC.

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

When applying for admission to the College, you will be required to complete a Resident Affidavit to determine your domicile and your tuition rate. See the Tuition section and In-State Tuition Entitlement section for additional information.

The Application for Admission form contains the Resident Affidavit which must be completed by you or your parents or guardians if you are under age 18. You or your parents or guardians are responsible for the complete accuracy of your affidavit.

In order to be declared legally domiciled in Virginia, you must verify that, one year before the date of the beginning of the quarter for which you are requesting in-state tuition status, you:

1. were at least 18 years of age (or if under the age of 18, were an emancipated minor);
2. had abandoned any previos domicile;
3. were present in Virginia with the unqualified intention of remaining in Virginia for the period immediately after leaving the College and indefinitely thereafter.

If you are 18 but not yet 19 years of age, you must verify your domicile for the period of time since your 18th birthday plus your parents' domicile immediately prior to your 18th birthday for the required total of one year. Unemancipated minors are presumed to maintain, or have maintained, the same domicile as their parents up to your 18th birthday. At age 18, you may establish your own domicile.

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.

Being present in Virginia, maintaining a home, paying taxes, voting, and having a Virginia driver's license are factors which bear on the question but do not in themselves establish domicile. It is the responsibility of the applicant to present convincing evidence of intent to establish and maintain domicile in Virginia.

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.

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. The application fee is waived when transferring from another Virginia community college. Courses, grades and grade point average are simply transferred to NVCC.

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 will 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 five 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 June 1, 1974, write to DANTES Contract Representative (Transcripts), 2318 S. Park Street, Madison, Wisconsin 53713.
   b. The scores of military personnel tested overseas after June 1, 1974, may be obtained by communicating with the GED Testing Service, Transcripts-M, One Dupont Circle, N. W., Washington, D. C. 20036.
   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. A fee of $5.00 per course is charged for each ABLE examination attempted.

Waiver of P.E. Requirements for Veterans

Veterans may receive a waiver for physical education courses upon submission of a discharge certificate to the office of Admissions and Records. 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 be made in the Admissions and Records office during the first quarter of enrollment.

Auditing a Course

You may audit a course and attend without taking examinations. To do so you must gain the permission of the instructor and division chairman. You will register in the regular manner and pay the regular tuition, but register to audit the course.

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 Admission

Under the Virginia "Senior Citizens Higher Education Act of 1974," amended in 1977, anyone who is over 60 years of age, whose legal domicile is Virginia, and whose taxable income does not exceed $5,000 per year is eligible to enroll in credit courses at NVCC without charge. Senior citizens whose taxable income exceeds $5,000 may audit a maximum of three courses (credit and/or noncredit) per quarter without charge. Senior citizens must submit an application and be accepted by the College. The application fee is waived for those who qualify to enroll in credit courses and those who enroll in audit courses without tuition charge. Enrollment on a tuition-free basis under provisions of this Act is limited to three courses during any one quarter. 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.

Extended Learning Institute Registration

Some Extended Learning Institute courses are available for you to start at a 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.

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. Basic Equal Opportunity Grant program (BEOG) applicants are advised that Social Security numbers are required by the U.S. Department of Education when processing applications.

Application Fee

An application fee of $5.00 must accompany the Application for Admission to the College. This is a one-time charge. The fee is not applicable to tuition, nor refundable unless the program or course you desire is not offered by the College on any campus.

Tuition

Full-time student:	
Virginia Domicile	$128.00 per quarter
Out-of-State Domicile	$428.00 per quarter
Part-time student:	
Virginia Domicile	$ 10.75 per credit
Out-of-State Domicile	$ 36.00 per credit

The full-time tuition rate applies only when a student enrolls for twelve (12) or more credits by the last day of the late registration and add/drop period for the quarter's standard ten (10) week session classes. After this period, students enrolling in short session courses or for courses extending beyond one full quarter shall pay the part-time tuition rate for such special session courses regardless of the number of credit hours for which the student may be registered.

Students enrolling for a combination of short session, extended session, and/or standard ten (10) week session courses qualify for the full-time student tuition rate only if all of the following criteria are met:

1. Enrollment is for 12 or more credits;
2. Registration is completed for all courses by the last day of late registration and add/drop for standard ten (10) week session classes;
3. All courses begin within the quarter for which the full-time student tuition is paid.

The College has no installment plan for payment of tuition. **Tuition is due and payable before classes begin each quarter.** Payment of tuition entitles you to use the library, bookstore, student lounge, and other facilities of the College except parking. Vehicle registration is required for a parking permit to be issued. There are no special library fees. You must pay charges 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

In order to qualify for in-state tuition rates, you must be domiciled in Virginia for a period of at least one year immediately prior to the beginning of the quarter for which you are seeking the in-state tuition rates.

Mere residence in Virginia does not necessarily qualify you for in-state tuition. A Domicile Affidavit is included on the Application for Admission form. See the Domicile Requirements section for details.

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

Graduation Fee

A non-refundable graduation fee of $10.00 is charged each graduating student to cover the necessary expenses of graduation and the commencement exercises. The fee is payable with the application for graduation on or before the announced application cutoff date for any quarter, but not later than January 31, 1982 for the June 1982 commencement exercises.

Identification Cards

Student identification cards are issued without charge. They are validated each quarter at registration. Lost cards will be replaced at a charge of $3.00 upon request to your home campus office of Admissions and Records. ID cards are 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 from $75 to $100 per quarter for a full-time student.

Transcripts

An NVCC transcript of your academic record may be issued from your home campus Admissions and Records Office if you have been enrolled during the past year. If you have not been enrolled during the past year and request a transcript, the request should be forwarded to the

College Records Office at P.O. Box 131, Annandale, Virginia, 22003. 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. The fee is $1.00 for each transcript.

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 College).

The fine for overdue materials is five cents per item per day. Each campus may set higher fines on special or high-demand materials, such as those on reserve. In the event of loss, a replacement charge for the cost of the material is levied. A fine of $1.00 is charged for lost or mutilated master cards and transaction cards.

Vehicle Registration Fee

There is a vehicle registration fee of $5.00 per quarter if you wish to park in the student parking lots. The fee is paid separately from tuition and other fees. The fee is non-refundable unless all the courses you register for are cancelled by the College and you do not elect to take alternate courses. Your vehicle registration card is transferable from your car to another car to encourage car pooling.

You have the option of registering your vehicle for the entire academic year (fall, winter and spring quarters) for $12.00 at the beginning of the fall quarter only. At the beginning of the winter quarter, you may register a vehicle for the winter and spring quarters for $8.00. Any unused portion of the annual vehicle registration fee is refundable after paying quarterly rates for the period it was used.

There is a $2.00 fee for replacement of a lost vehicle registration card upon presentation of the original receipt. This fee is not refundable.

If taking non-credit courses through the Community Service program, you pay a vehicle registration fee based on a rate of 25¢ per class meeting.

ABLE Examination Fee

A non-refundable fee of $5.00 is charged for each ABLE examination attempted.

Payment

Tuition and fees are payable by cash, check, money order, contract, VISA or Master Card.

Personal checks are acceptable for payment of tuition and fees. Checks payable to NVCC can only be accepted for the exact amount due. Tuition and fees paid at one time can be combined except for the vehicle registration fee. Credit cards are accepted only for tuition and application and graduation fees. A service charge of $5.00 is charged to you for any check that is dishonored, except when the bank is at fault.

If you have a dishonored check that is not an error of the bank, you will be required to present cash, certified check, or money order at future registrations. Waiver of this policy may be considered upon written request to the campus Business Manager.

For students who have paid tuition by VISA or Master Card, 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.

Course Schedule Changes

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

Regular course to developmental course

If you enroll in a regular course for which there is a preparatory developmental course, and have difficulty keeping up with the regular course work in the first three weeks (21 days) of the course, you may, with the instructor's approval, drop the course and enroll in the developmental course which is more suited to your capabilities. You will not be charged additional tuition regardless of full-time or part-time status, even if you change from a three-credit to a five-credit course. This policy applies to the entire three-week period and to all disciplines which have corresponding developmental courses.

Developmental course to another developmental course

You may change from one developmental course to another within the same discipline using the add/drop form and without paying additional tuition, even though this transaction may occur after the add/drop period for the ten-week session.

Late initial or added new course enrollment

You may initially enroll in developmental courses designated by the division after the standard ten-week session add/drop period, but you must pay the appropriate new course tuition. The same applies if you are already enrolled and wish to take a developmental course as an added new course, regardless of full-time or part-time status.

Course section changes

You may request a change from one section to another of the same course within the same quarter after the add/drop period for the ten-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.

Refunds

The periods allowed for refunds are computed from the date classes begin. Specific dates for tuition payments and refunds are published in the quarterly Schedule of Classes. Refund periods for broadcast courses of the Extended Learning Institute (ELI) start on the day of the first broadcast. Refund periods for continuous enrollment courses of ELI start on the dates on which the student packets are mailed.

Unusual situations which warrant exceptions to tuition and refund policies may be so designated at the discretion of the College.

Refunds for Courses Dropped

To drop a course, you must complete a Student Schedule Change Form and submit it to the office of Admissions and Records. Cancelled courses must also be dropped by you in order to receive any refund.

Refunds for Full-time Students

When a course for which you registered in the beginning of quarter registration is dropped and your total beginning-of-quarter enrollment remains at twelve (12) or more credits, there is no refund of tuition for the course dropped.

If the College cancels a course or the student drops a course during the first ten (10) calendar days of the standard ten (10) week session classes, or first fifteen percent (15%) of calendar days of a short or extended session, the course is deleted from the student's record.

If you do not elect to take an alternate course, and this results in enrollment of fewer than twelve (12) credit hours, you are eligible for a refund. A refund will be given for the difference between the cost of credit hours enrolled for and the cost of a full-time student. After the first ten (10) calendar days of the standard ten (10) week session classes, or the first fifteen percent (15%) of calendar days of a short or extended course session, there will be no refund for tuition.

Full-time students who enroll for a course after the end of add/drop and before the beginning of registration for the next quarter and pay additional tuition for that course, may receive a full refund for that course if they drop it in the first fifteen percent (15%) of calendar days of the course regardless of the remaining number of credits in which they are enrolled.

Refunds for Part-time Students

Students are eligible for a full refund if a course is dropped during the first ten (10) calendar days of standard ten (10) week session classes, or the first fifteen percent (15%) of calendar days of a short session, or for a course which extends beyond one full quarter. There is no refund after these points in time.

Refunds for Short Sessions

Any class less than ten (10) weeks in length is considered a short session. These may range from one day through nine weeks. If registered for a short session, you are eligible for refunds according to the provisions of the preceding paragraphs.

Refunds for Extended Learning Institute (ELI)

Refund eligibility for ELI courses is in accordance with the provisions of the preceding paragraphs.

Refunds for Withdrawal from College

You must drop all classes by completing a Student Schedule Change Form to withdraw from the College. This form should be presented in person to the office of Admissions and Records. Official withdrawal from the College will become effective on the date that this form is received.

Students wishing to withdraw from the College are eligible for a full refund of tuition if: ten (10) week classes are dropped during the first ten (10) calendar days of the standard ten (10) week session, and/or short session or extended courses are dropped before the course begins or during the first fifteen percent (15%) of calendar days of a short or extended session.

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.

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 quarter hour credit or two-thirds of 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, cooperative education, and coordinated internship 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 quarter or another grade (A, B, C, D, F, W) must be awarded by the instructor based upon course work which has been completed. For "I" grades earned at the end of the spring quarter, you will have through the end of the subsequent fall quarter 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.
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 to complete the course objectives. (The "R" grade applies to a limited number of courses.)
S = **Satisfactory**— No grade point credit (applies only to specialized courses and seminars)
U = **Unsatisfactory**— No grade point credit (applies only to specialized courses and seminars)
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
FREN 101	4	A	4	4	16
ENGL 101	3	B	3	3	9
MUSC 141	2	C	2	2	4
PHED 100	1	D	1	1	1
MATH 121	5	F	0	0	0
PSYC 110	0	W	0	0	0
	15			10	30

Any grade errors or other errors on grade reports should be reported to the office of Admissions and Records at your home campus within 30 days after the close of the quarter in which grades were received, or the grade report will be assumed to be correct.

Developmental Courses Grading

An S (satisfactory) 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 to complete the 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.

Honor Roll and Dean's List

Your name will be placed on the Honor Roll for any quarter in which your cumulative grade point average is 3.50 or higher and you have earned a minimum of 30 quarter hours of credit at NVCC.

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

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 Art, 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 specializations 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 12 quarter 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 applied and 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;
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 cumulative 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 quarter; and
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 from the College you must:

1. Have applied and 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;
3. Have been recommended for graduation by the appropriate authority in the curriculum;
4. Have completed at least 50% of the credits for the Certificate in specialized courses at NVCC;
5. Have applied for graduation in the office of Admissions and Records on or before the dates published in the Schedule of Classes for each quarter; and
6. 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 non-credit courses at the College.

Graduation Honors

Students attending NVCC for a minimum of 45 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 grade point average for courses within your curriculum.

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.

Change of Registration

A Student Schedule Change form is required by the Admissions and Records office for making any change in your schedule after registration. Failure to follow established procedures could place your college attendance in jeopardy. Changes, refunds, etc., 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 quarterly Schedule of Classes.

1. Dropping a Course

A Student Schedule Change form is required by the office of Admissions and Records for dropping a course. You may drop a course within the first 60% of a session without academic penalty, and you will receive a grade of W. Dropping a course 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 explanations of grades. See the Refund section for additional information.

2. Adding a Course

A Student Schedule Change form is required by the office of Admissions and Records for adding a course. In most cases, you may not register for a new class after the first week of a quarter. Any request for entry into a class after the first week of the quarter must be approved by the instructor, division chairman and provost. Requests must be made through the office of Admissions and Records.

3. Withdrawal from the College

To withdraw from the College you should contact a counselor to initiate the appropriate procedure. Failure to follow established procedures could affect your eligibility to return to NVCC or enter another college. You must process withdrawal forms in person through the office of Admissions and Records, except under serious circumstances such as hospitalization or death in the family.

4. Cancellation of a section or course by the College

Cancelled courses must be dropped in order for you to get a refund. If all of your courses are cancelled and you do not want to add other courses, you must officially withdraw from the College. See the Refund section for additional information. To add other courses or sections, see the Adding a Course section above.

5. Curriculum Change

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

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 quarter 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 quarter. 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 quarter 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 quarter, you will be subject to academic suspension. Academic suspension normally will be for two quarters 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. Part-time students will not be placed on suspension until 24 quarter credit hours have been attempted.

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

4. Academic Dismissal

Failure to attain a minimum 1.50 grade point average in a subsequent quarter following academic suspension will result in academic dis-

missal from the College. The statement "placed on academic dismissal" will be placed on your permanent record. Academic dismissal normally is permanent unless, with good cause, you reapply and are accepted under special consideration for readmission by the Admissions Committee. Part-time students are not subject to academic dismissal until 36 quarter hours have been attempted.

Examinations

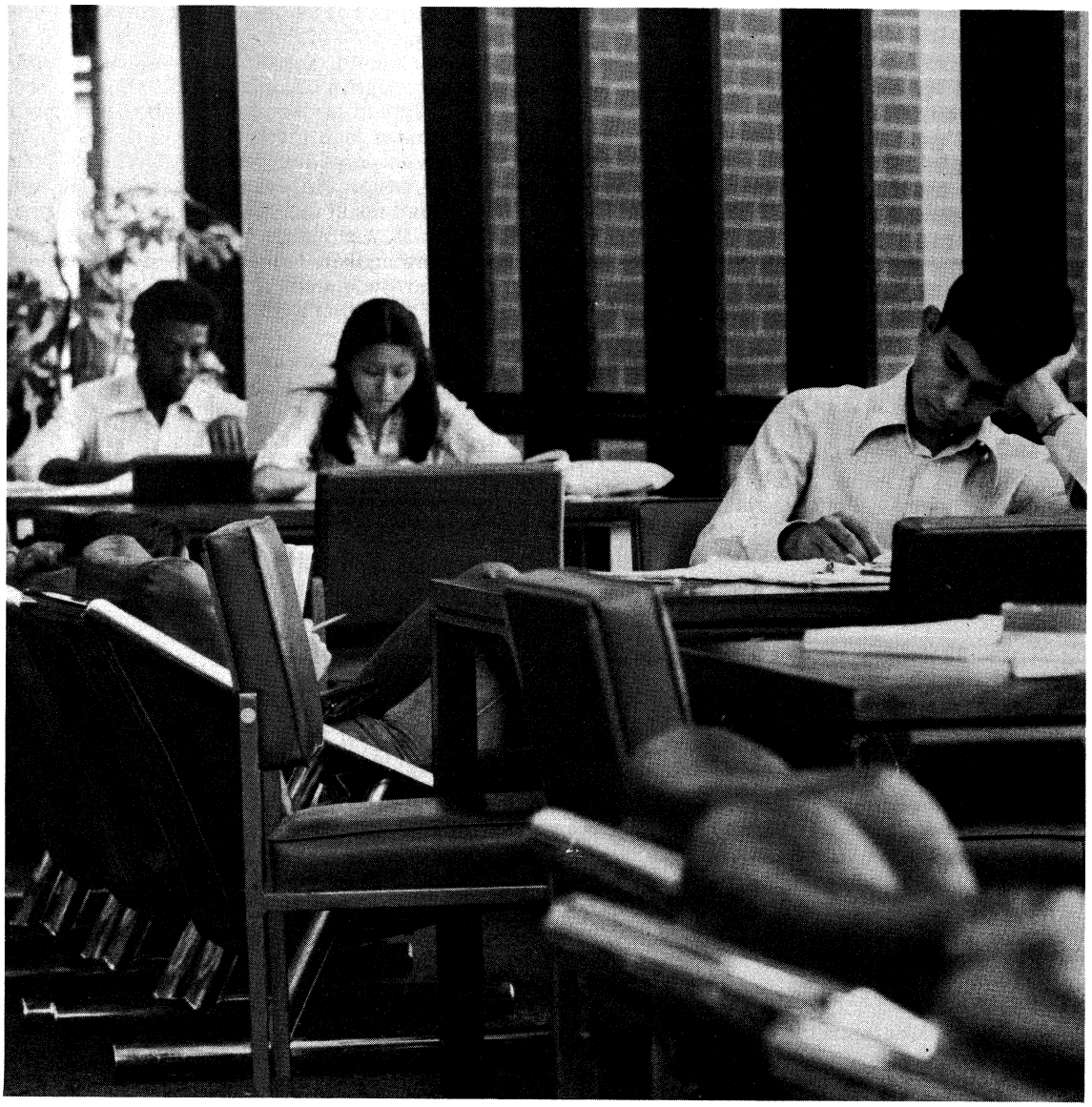
You are expected to take tests at regularly scheduled times. In addition, every student is required to take a final examination, receive an appropriate evaluation instrument, or continue receiving instruction during the scheduled final examination period. Any deviation from the final examination schedule 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 registration. A statement on student rights and responsibilities and the College policy on student conduct and discipline may be found in the current edition of the Student Handbook.



Student Services

Each campus provides a number of services designed to help with your education, career and personal development. Counseling, testing, faculty advising, financial aid, job placement, 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 use 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. Personal needs requiring professional assistance beyond the scope and training of the counselors will be referred to a qualified person outside of the College.

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, you are required to meet with a counselor for a program placement interview after acceptance by the College. This may mean planning a developmental program to gain the necessary background of knowledge 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 quarter at NVCC, the counselor will refer you to a faculty advisor who will assist you in planning your second quarter 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 no 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 quarter's courses planned.

The orientation course, GENL 100, is required for graduation in all degree curricula and many certificate curricula. It is best to take this credit course in your first quarter 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 providing information on colleges and professional schools are available, along with a selection of college catalogs. 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 that may not be available from any other source. Student activities and organizations are described. Food services, bookstores, parking regulations, the statement of student rights and responsibilities, the student government constitution, and a listing of College and campus office locations and phone numbers are included.

Faculty Advising

For the first quarter at the College you will work with a counselor to plan a program and be admitted to a specific curriculum. You then will be referred to a faculty advisor for all subsequent quarters. Your faculty advisor will assist 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. Regu-

lar and special 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

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 under a work-study program. If you are enrolled at least half-time and can show a financial need, you may qualify for participation in this program.

Loans are available through the National Direct Student Loan, Nursing Student Loan, and the Virginia Education Loan Authority. 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.

There is a Pell Grant which is also federally funded. You must be at least a half-time student to qualify for this program.

The College Scholarship Assistance Program provides scholarships for full-time students domiciled in Virginia. The program is provided through the State Council of Higher Education for Virginia for students attending Virginia colleges who are in good academic standing. The deadline for applying is usually early in April for the following fall quarter.

Virginia State Nursing Scholarships are available to students domiciled in Virginia and based on academic ability, need and agreement to pursue a career in nursing in the State of Virginia.

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 quarter for which assistance is needed.

Financial Aid Academic Standing and Satisfactory Progress

Academic Standing

If you receive financial aid and have attempted 12 or more quarter hours and your cumulative grade point average falls below 1.50, you will be placed on academic probation. If, in the next quarter of enrollment, you do not raise your cumulative GPA to a minimum of 1.50, you will be deemed to be making "unsatisfactory progress" and will not be eligible for further financial aid until such time as your cumulative GPA is at least 1.50 or you complete an academic suspension period imposed by the college.

Following reinstatement after academic suspension, you will be eligible to receive financial aid for one academic quarter. Failure to achieve a cumulative GPA of 1.50 at the end of that quarter of enrollment will result in ineligibility for further financial aid until your cumulative GPA is at least 1.50.

Satisfactory Progress

If you receive financial aid, you must maintain a standard of satisfactory progress.

Since NVCC offers associate degrees which normally require 97 credits, attendance on a minimum full-time basis can complete a degree program in nine quarters. Therefore, you will normally be limited to nine full-time quarters of eligibility on the financial aid programs. If you attend on less than a full-time basis, you may take up to 12–18 quarters of enrollment to use this entitlement at NVCC.

The Financial Aid Counselor monitors satisfactory progress on each financial aid recipient per quarter hours of enrollment on which financial aid disbursement was based. As part of the yearly awarding cycle, every applicant who has received aid will be reviewed for continued funding. Your records must reflect satisfactory progress at a minimum of twelve (12), nine (9), or six (6) credit hours per quarter depending on the amount of aid received as a full, three-quarter, or half-time student. Satisfactory completed credits are those for which a grade of A, B, C, D, R, or S is received.

If your transcript does not indicate compliance with minimum requirements, you will be notified that your financial aid has been terminated. To be reinstated on the financial aid program, you must verify earning the minimum number of credit hours per prior financial aid disbursements. You will pay your own expenses during this time.

At the time of the original award, you will be notified of the satisfactory progress policy and of the nine-quarter full-time limitation for receiving financial aid at NVCC. If you do not complete your program within the nine-quarter limitation, you may request an extension by submitting a written request to the Financial Aid Office.

Repayment

If you receive all "W" grades and stop attending all classes prior to the official last day to withdraw without grade penalty, you will be required to repay part of your financial aid. Additional information on this policy is available at the 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:
American Lung Association
Bailey's Crossroads (Host) Lions Club
Eleanor Becci Memorial Scholarship
Mark R. Bolster Memorial Scholarship
Deanna Bronder Memorial Fund
John Budoff Memorial Scholarship of the Shenandoah Club Managers Association
District of Columbia Dental Society
Fairfax City Professional Firefighters Association
James Freimuth Memorial Scholarship
Gretchen Gamble Scholarship Fund
Ronda A. Gilliam Memorial Scholarship
Angela Gregory Scholarship
Christopher T. Hanson, Phi Beta Lambda Memorial Scholarship
H. Yates Holleman Memorial Scholarship
Doctor Lloyd and Elizabeth Iddings Scholarship
Clifford Alan James Memorial Scholarship
Joseph R. Kemper Forestry Scholarship
Loudoun Campus Scholarship
Marriott Foundation
National Capital Club Managers Association
Northern Virginia Board of Realtors
Alice Pate Scholarship
Chester Phelps Wildlife Award
Restaurant Association of Metropolitan Washington
William Montgomery Smith Memorial Scholarship
Springfield-Annandale Junior Women's Club
Women's Auxiliary to Fairfax County Medical Society
Women's Club of McLean
Zonta Club of Arlington

Career Planning and Job Counseling

The College maintains a job referral service for off-campus jobs while attending NVCC. Employment opportunities may also be available 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

A registered nurse is available on each campus for accidents, 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. The nurse on duty provides emergency care for illness or injury occurring on campus.

Assistance from community mental health centers is available on a referral basis to aid faculty, staff and students with problem situations.

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.

Services for Handicapped Students

NVCC is committed to serving persons with handicaps. 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 handicap. 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 handicapped 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, Minority Affairs, and Grant Development.

Each campus and the Extended Learning Institute has identified a Special Services Team to assist disabled students. These teams generally serve as the handicapped 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 medical concerns and special parking permits can be obtained in the Student Health Office.

If you require any of these special services, you should contact the Special Services Team 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
All-Afrikans Student Union
Alpha Omega Society
Alpha Phi Omega (National Service Fraternity)

Amateur Radio Club
Animal Science Club
Anthropology Club
Art Association
Art Students League
Auto Association
Baptist Student Union
Black Studies Association
Bridge Club
Campus Crusade for Christ
Campus Student Governments
Chess Club
Computer Club
Corrections Club
Dental Assistants Association
Dietetics Club
Drama Club
Ecology Club
Fine Arts Club
French Club (Le Cercle Francais)
Gamma Sigma Sigma (National Service Sorority)
German Club (Deutscher Verein)
Horticulture Club
Hotel Sales Management Association
Interior Design Club
Korean Student Club
Latter-Day Saints Student Association
Martial Arts Club
Mathematics Club (Mu Alpha Theta)
Nazarene Christian Campus Fellowship
NOVAN Theatre Players
One in Christ Jesus
Organization of Minority Affairs
Outdoors Club
Outing Club
Phi Beta Lambda (National Business Organization)
Phi Theta Kappa Fraternity (National Junior College Scholastic Society)
Physical Therapist Assistants Club
Psychology Club
Radiography Association
Recreation and Parks Society
Respiratory Therapy Club
Science Club
Ski Club
Soccer Club
Society for Minority Concerns
Solar Energy Club
Spanish Club
Student Nurses Association
Student Photography Association
Student Plus
Tennis Club
Wargaming Society

Mobile Information and Counseling Center

The College maintains a Mobile Information and Counseling Unit. This van travels to shopping centers, high schools, agency offices, businesses and industry. Counselors, faculty and other staff members at the College go with the van to provide on-the-spot information about the curricula, activities and services available at NVCC.

The College chooses van locations carefully in order to help people learn about the College who may not have an opportunity to do so otherwise. People who think they cannot afford to attend college come by the van and learn about the financial aid programs. Those who think they have been out of school too long to go back to college can learn that refresher courses are available to bring them up to the level of entry into a college program or to remind them of what college is all about. Efforts are made to identify minority groups throughout Northern Virginia and give them an opportunity to see what is available at NVCC.

Child Care Centers

Four non-profit child care centers operated by the Northern Virginia Community College Child Care Centers, Inc. provide care and a quality developmental program for pre-school children ages 2-6. Infant care (6 weeks to 3 years) is also available through a carefully supervised referral system of family day care homes. Parent involvement is welcomed and encouraged.

The Centers, which are supervised by trained professional staff, are located on or near the Alexandria, Annandale, Loudoun and Woodbridge Campuses. The Alexandria Campus Center is in the Tyler Building on campus and the Loudoun Campus Center is in room 109 of the Classroom and Administrative Building. The Annandale Campus Center is located in the Ravensworth Baptist Church of Annandale and the Woodbridge Campus Center is in the Hillendale Baptist Church of Dale City. All Centers serve children of students and staff from any campus as well as the community at large. All Centers are open to anyone regardless of race, religion or national origin.

The Alexandria, Annandale and Woodbridge Campus Centers are open year-round while the Loudoun Campus Center operates during the Fall, Winter and Spring quarters only. The Loudoun Campus Center is open from 8 a.m. to 5 p.m. weekdays (M-F) with child care available up to a maximum of any 4 hours per day for children under 5 years and 6 hours per day for 5 years and older. The other Centers are open all day on weekdays with both full-time and part-time care available for all. Woodbridge is open 6:30 a.m.-6:00 p.m.; Annandale, 7:15 a.m.-5:15 p.m.; and Alexandria, 7:30 a.m.-5:30 p.m. Parents may schedule children at the Centers on a quarterly basis. Hourly and weekly rates are available and are based on family income with a sliding fee scale available for low income families. Space is limited. It is advisable to pre-register. A registration fee is required.

Further information and registration packets may be obtained from the Counseling Centers at any campus or the reception desk at the Alexandria Campus. You may call the Child Care Center

Central Office at 321–9040. Woodbridge residents may call toll free by dialing 670–2191 and asking for the Child Care Center.

Learning Resource Centers

A Learning Resource Center is designed for each campus, with a library, learning laboratories and audio-visual services.

The total college collection of over 300,000 units of print and non-print materials is accessed through joint union catalogs. Books, periodicals, films, and other resources are loaned among campuses.

Library: Open stacks and immediate access to materials are basic 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 microforms for information storage and retrieval adds breadth and depth to the resources.

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 the resources.

Learning Laboratories: Instructional design for individualized learning is the major function of the learning laboratories. Programmed instruction and audio-tutorial methods are developed and administered by learning lab staff. Electronic study carrels are equipped for audio and visual presentations.

Both specialized and generalized learning laboratories are designed to support independent learning within curricular requirements. Trained staff provide access and instruction, administer and grade tests, and provide tutorial services.

Audio-Visual Services: Support for classroom instruction, community services, library, and learning laboratories are a function of audio-visual 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 the audio-visual services.

Vocational Rehabilitation

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

Veterans Affairs Office

The College participates in the Veterans Cost of Instruction Program. This federal program is designed to assist veterans in becoming students and supporting educational endeavors while enrolled. The Office of Veteran's 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 by the Veterans Administration (V.A.) for training eligible veterans, war orphans, and widows under the appropriate Congressional action. Some certificate programs are not approved or are approved with special conditions. Additional information is available in the Veterans Affairs Office.

Veterans, widows and the dependents of veterans who may be eligible for educational benefits should contact the Veterans Administration regional office. Initial enrollment applications for educational benefits are available from the office of Admissions and Records but must be processed by the local V.A. Office. Those seeking V.A. educational benefits for any given quarter must register and complete the appropriate V.A. forms at the specified station during registration for classes at the College. Receipt of benefits in full and on time is dependent upon the individual student's attention to these requirements.

Full-time V.A. educational benefits are available to veterans registering for and maintaining enrollment in 12 or more credits in degree program courses. Since veterans receiving educational benefits must be pursuing an approved educational program, veterans must be admitted to a curriculum by the end of the second quarter of enrollment to continue eligibility for V.A. benefits.

Veterans may have earned credits at another college through USAFI or CLEP, for example, which are applicable to curricula at NVCC. You must insure that an official transcript is available in the NVCC office of Admissions and Records during the first quarter of enrollment. Your transcript must show all credits earned and/or satisfactorily completed. Courses taken at NVCC must be part of your educational program with generally no repetition of a course for which credit has been, or will be, received.

When receiving veterans educational benefits, you must report any enrollment changes promptly to the NVCC veterans clerk in the office of Veterans Affairs. Excessive absences may result in dismissal from a course and adjustment of entitlement to benefits. Continued eligibility for benefits is dependent upon maintaining satisfactory progress toward a degree in terms of quarters of enrollment, credits completed, and GPA status. For example, normal progress for a full-time student would mean completing most degree programs in six to eight quarters, depending upon the total credits required for the curriculum.

Any change in status must be reported to the Veterans Administration as soon as possible, but no more than 30 calendar days after the change has been officially completed at the College. Status changes would include a change of curriculum, reduction or increase in course load, withdrawal, suspension, dismissal, or other types of change. A veteran may remain on academic probation only one quarter without being reported to the V.A. as making unsatisfactory progress.

When a veteran's GPA in his curriculum is below that required for graduation, the GPA must be increased at a rate that will give him the required average by the time he has completed the curriculum's course work. If the average is not increased enough each quarter, satisfactory progress is not being maintained.

When receiving veterans benefits and enrolled in two or more courses, you will be considered as making unsatisfactory progress for benefits when failing or withdrawing from all courses. However, depending upon your academic record and in consideration of extenuating circumstances, the College may exercise the option of (a) notifying the V.A. to terminate benefits, or (b) to continue your probationary status for one quarter without being reported.

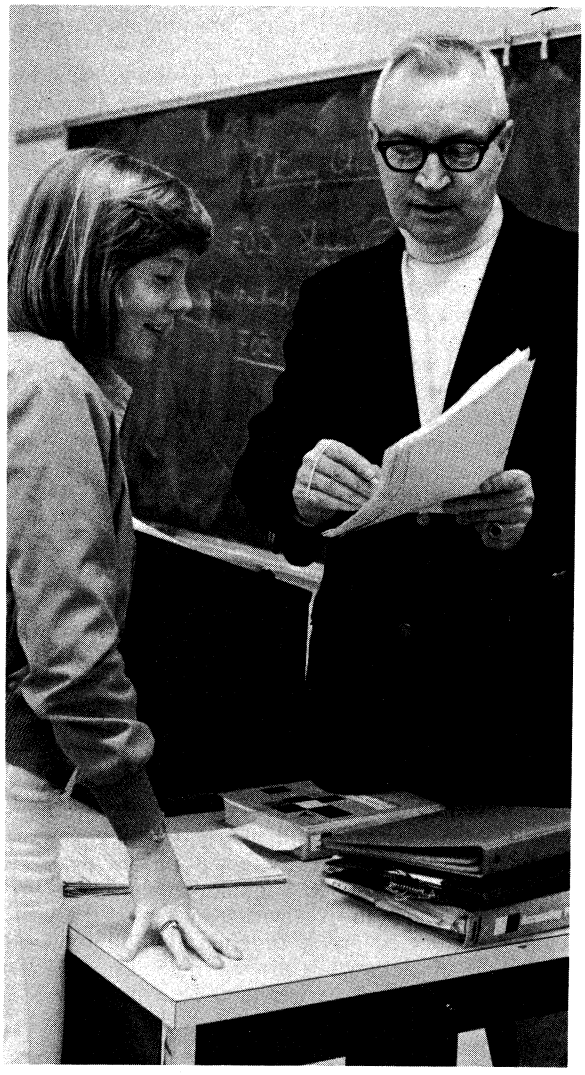
Questions regarding entitlement to benefits should be directed to the campus Veterans Affairs Office or the campus Veterans Clerk.

Servicemember's Opportunity College

NVCC has been identified by the American Association of Community and Junior Colleges as a Servicemember's Opportunity College (SOC) providing educational assistance to active duty servicement. A SOC institution offers the following benefits for servicemembers:

1. Use of admissions procedures which insure access to higher education for academically qualified military personnel;
2. Evaluation of learning gained through military experiences and academic credit awarded where applicable to the service member's program of study;
3. Evaluation of non-traditional learning and awarding of academic credit for such learning where applicable to the service member's program of study;
4. Evaluation of requests for inter-institutional transfer of credits and acceptance of such credits whenever they are appropriate to the service member's program and are consistent with the college's curriculum;
5. Flexibility to service members in satisfying residence requirements by making adjustments for military students who transfer when there are other assurances of program balance;
6. Designation of personnel with appropriate academic qualifications and experience to administer and supervise SOC-related activities and to develop policies and procedures appropriate to the scope of their voluntary education programs;
7. Educational services for veterans.

The College is also a charter member of the Servicemember's Opportunity College Associate Degree Program (SOCAD) Network. The Network was established by the American Association of State Colleges and Universities at the request of the U.S. Army to better serve Army enlisted personnel. NVCC and other participating colleges in the Network offer a flexible degree program in General Studies. Military personnel can complete degree requirements by taking courses at other Network colleges. For information about the SOCAD program, contact the SOC counselor through the campus Counseling Center.



Instructional Programs

The 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 Programs

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 quarter to serve special community needs. A listing of community service courses is included in each quarterly 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.

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 Program

A number of credit programs within the College are set up so that you can work on a job and also receive college credit for it. The office of Cooperative Education (Co-op) administers these programs which provide on-the-job experience with approved employers. This experience can be valuable in applying the theory and skills learned in the classroom to a job situation. Faculty advisors and the office of Cooperative Education can help you decide about the value of studying a subject and working in a related job situation at the same time.

There are certain qualifications for participation in the Co-op program. It is necessary to be enrolled in a degree-granting program which offers Co-op work experience. You must also show that your career goals are related to the type of work experience available through the Co-op program.

You must have been a student at the College for two full quarters in your curriculum and have completed approximately 24 credit hours. A minimum grade point average of 2.00 is required.

Written approval from the Co-op program coordinator is required. You must be hired by an approved Co-op employer before you may register for Co-op credit.

Credits earned in a Co-op program may be substituted for up to 15 credits of course work in the total requirements for your curriculum. A faculty advisor must approve the specific courses substituted for.

There is an office of Cooperative Education on both the Alexandria and Annandale Campuses. Information is also available through your faculty advisor or counselor.

The College has the option of offering the Cooperative Education program for any curriculum at NVCC. If your program is not represented, ask your faculty advisor about Co-op.

Developmental Studies Program

It may be that you are coming to the college without having taken some high school courses needed for admission to the curriculum of your choice, or you may not have done so well in some

of your high school courses and need to upgrade those skills. It is also possible that you may have been out of school for a few years and may be a little rusty, or you just want to brush up on some of the basic skills for your own personal reasons. Whatever the circumstances, you don't have to go back to high school to take courses you need, and you don't have to miss the opportunity of attending college because you lack certain prerequisites or don't feel ready for regular college courses. You can get the skills you need through developmental courses offered at all campuses of the college. These courses (numbered 01 through 09) are available in biology, chemistry, English composition, spelling, English as a second language, reading, and mathematics (arithmetic through trigonometry).

You can be accepted by the college and take whatever developmental courses you need until you are ready to go into the program of your choice. Counselors will help you determine those areas where you need to bring your skills and knowledge up to the college entry level. In some cases you will need to complete your developmental courses before you can be admitted to a curriculum. In others you can take certain college level courses along with the developmental courses. These would need to be approved by a counselor or a faculty advisor in the curriculum.

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; either the normal classroom type of lecture/discussion or individualized (programmed) instruction in which you can work at your own rate of learning. Also, in some of these courses you can sign up at any time during the quarter and complete the work as fast as you can or work as slowly as you need to. If you have any questions, you should check with a counselor or with a faculty advisor for the developmental courses.

Developmental Studies Program (Example)

(First Year)		Credits 1st Qtr	2nd Qtr	3rd Qtr
ENGL	01 Verbal Studies Lab	5	5	5
ENGL	08 Reading Improvement	5		
MATH	01 Developmental Math	5	5	5
GENL	100 Orientation	1		
PSYC	110 Principles of Applied Psychology		3	
PHED	100 Fundamentals of Physical Activity		1	
PHED	Physical Education Elective			1
NASC	100 Survey of Science			4
	Total Credits	16	14	15

Courses will vary according to the individual needs of the student. The program illustrated above would be typical for a student needing three quarters to achieve desired skill-levels in English and Mathematics.

Special Training Programs

NVCC can coordinate with the Special Training Division of the Virginia Community College System to set up training programs for business and industry.

The Special Training Division will rent space and hire qualified instructors to offer the training specified by the business or industry. This can provide a qualified work force when an expansion or new facility is ready to hire new employees.

More information is available from the Director of Continuing Education on the campus or from the Special Training Division, Virginia Community College System offices, P. O. Box 1558, Richmond, Virginia 23212.

Academic Computing

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

All campuses are equipped with DecWriter terminals, linked to the University of Virginia Computer Center, for faculty/student use, particularly in the data processing technology program. Each campus is also equipped with an IBM 3780 Remote Job Entry Terminal linked to the VCCS/VCU Computer Center. In addition, the Annandale Campus uses a microprocessor, and one plotter with desk top computer for instruction in the engineering and data processing technologies. The Alexandria campus utilizes a minicomputer system called TICCIT (Time-Shared, Interactive, Computer Controlled, Information Television) with 128 time sharing terminals for instruction in a variety of subjects, but most extensively in mathematics and English, as well as for testing in freshman Biology.

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 97 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, mathematics and natural science.

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

1. **English** (Total of 9 credits required)
   ENGL 111-112 English Composition I-II (6 cr.) and
   ENGL 113 English Composition III (3 cr.) or
   SPDR 136 Oral Communication (3 cr.) or
   ENGL 137 Technical Writing (3 cr.) or
   ENGL 180 Business English (3 cr.)
   Each curriculum lists the preferred third course. The courses should be taken in the sequence listed with the exception that SPDR 136 may be taken at any time.
2. **Social Science** (total of 9 credits required)
   Alternative A—
   GOVT 180 American Constitutional Government (3 cr.) and
   ECON 160 American Economics (3 cr.) and
   PSYC 110 Principles of Applied Psychology (3 cr.)
   Alternative B—
   SOSC 101–102–103 Contemporary American Civilization I–II–III (9 cr.)
   Alternative C—
   any 3 quarter (9 cr.) course sequence in one of the following disciplines:
   Anthropology
   History
   Government
   Psychology
   Sociology
   Social Science
   Geography
   Economics

Alternative A, B or C may be taken to satisfy the social science requirement for an A.A.S. degree. They need not be taken in the sequence listed.

Special Requirements for A.A.S. Degrees:

1. GENL 100 Orientation (1 credit)
2. PHED Physical Education (total of 3 credits)
   PHED 100 Fundamentals of Physical Activity is required. The remaining 2 credits may be selected from the various 1 credit hour activity courses.

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 or two quarters of a sequence. Quarter-hour and semester-hour equivalencies should be calculated if transfer to an institution operating on the semester system is contemplated.

General Requirements

1. **English** For transfer purposes, students should take: ENGL 111–112–113 English Composition (9 cr.) and a 200 level literature sequence.
2. **Mathematics** Mathematics courses for transfer purposes should be selected from one of the following course sequences:
   a. **Non-Science, Non-Mathematics, and Non-Engineering** Majors: MATH 191–192–193 Finite Mathematics MATH 161–162–163 College Mathematics MATH 181–182–183 General College Mathematics MATH 141–142–143 Introductory Mathematical Analysis
   b. **Science, Mathematics, and Engineering** Majors: MATH 141–142–143 Introductory Mathematical Analysis MATH 161–162–163 College Mathematics and MATH 241–242–243 Advanced Mathematical Analysis
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 second level in high school of a foreign language, you should not enroll in 101-102-103 of the same language. Take 106 or 201, depending on the results of the placement test.
4. **Humanities** Humanities courses for transfer purposes may be selected from the following areas: music, art, drama, humanities, language, philosophy, 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** Social science courses for transfer purposes may be selected from the following areas: economics, geography, government, history, 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 purposes 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 121–122–123 course sequence.

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

1. GENL 100 Orientation (1 credit)
2. PHED Physical Education (total of 3 credits)

PHED 100 Fundamentals of Physical Activity is required. The remaining two credits 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

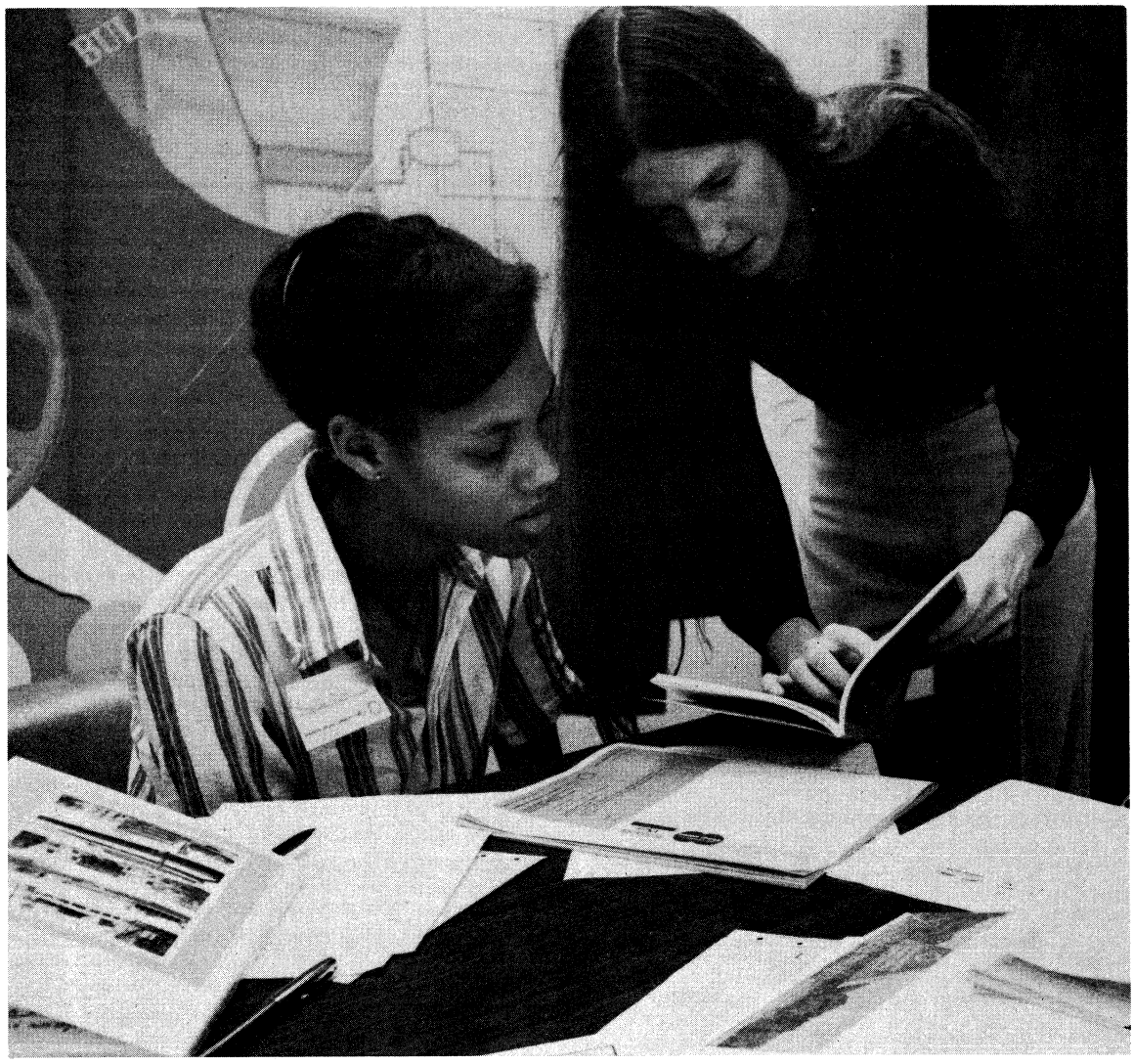
Only courses with 100 level or above numbers are counted toward degree requirements.

Minimum Credit Requirements

A minimum of 97 credits is required for an A.S. or A.A. degree.

Certificate General Requirements

1. The total minimum number of credits required for the 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.



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 in the appropriate box following the curriculum entry. Campus symbols are as follows: AL-Alexandria, AN-Annandale, LO-Loudoun, MA-Manassas, and WO-Woodbridge.

Major (Degree or Certificate) Specialization	AL	AN	LO	MA	WO
Accounting (A.A.S.)	X	X	X	X	X
Air Conditioning & Refrigeration (A.A.S. & Certificate)					X
Animal Science Technology (A.A.S.)			X		
Architectural Technology (A.A.S.)	X	X		X	
Art/Commercial Art (A.A.S.)	X		X		
Advertising Design	X		X		
Commercial Photography	X		X		
Illustration	X		X		
Art Education (A.A.)	X	X	X	X	X
Art/Fine Art Photography (A.A.)	X		X		X
Art History (A.A.)	X	X	X		X
Automotive Body Reconditioning (Certificate)				X	
Automotive Diagnosis & Tune-Up (Certificate)	X			X	
Automotive Electrical Technician (Certificate)	X				
Automotive Machinist (Certificate)	X				
Automotive Parts Merchandising (Certificate)	X				
Automotive Technology (A.A.S.)	X			X	
Diagnostician	X			X	
Mechanics	X			X	
Aviation Technology (A.A.S.)				X	
Aviation Technology/Flight Attendant (Certificate)				X	
Broadcast Engineering Technology (A.A.S.)		X			
Business Administration (A.S.)	X	X	X	X	X
Business Management (A.A.S.)	X	X	X	X	X
Civil Engineering Technology (A.A.S.)	X	X			
Construction Inspection (Certificate)	X			X	
Construction Management Technology (A.A.S.)	X			X	
Corrections Science (A.A.S. & Certificate)	X	X		X	X
Data Processing (A.A.S.)	X	X		X	X
Dental Assisting (Certificate)		X			
Dental Hygiene (A.A.S.)		X			
Dental Laboratory Technology (A.A.S.)		X			
Dietetic Assistant (Certificate)		X			
Dietetic Technician (A.A.S.)		X			
Early Childhood Development Assistant (Certificate)	X				
Education (A.S.)	X	X	X	X	X
Industrial Education	X	X	X	X	X
Educational Associate (A.A.S.)	X				
Early Childhood Educational Development	X				
Special Education	X				
Electronics Technology (A.A.S. & Certificate)		X			X
Emergency Medical Services Technology (A.A.S. & Certificate)		X			
Engineering (A.S.)	X	X			
Engineering Drafting (Certificate)	X	X		X	
Environmental & Science Technology (A.A.S.)					X
Science Technology					X
Wastewater Treatment					X
Environmental & Science Technology/Science Technician Aide (Certificate)					X
Environmental & Science Technology/Wastewater Treatment (Certificate)					X
Fine Arts (A.A.)	X	X	X	X	X

	AL	AN	LO	MA	WO
Fire Science (A.A.S. & Certificate)	X	X			
Administration	X	X			
Investigation	X	X			
Management	X	X			
Transfer (A.A.S. only)	X	X			
General Studies (A.S.)	X	X	X	X	X
Horticultural Technology (A.A.S.)			X		
Floriculture			X		
Landscape Grower			X		
Hotel, Restaurant & Institutional Management (A.A.S. & Certificate)		X			
Food Service Management		X			
Hotel-Motel Management		X			
Hotel, Restaurant & Institutional Management/ Travel & Tourism (Certificate)		X			
Human Services Associate (A.A.S.)	X				
Alcohol & Drug Abuse Rehabilitation	X				
Gerontology	X				
Mental Health	X				
Social & Community Services	X				
Interior Design (A.A.S.)			X		
Legal Assistant (Certificate)	X				
Liberal Arts (A.A.)	X	X	X	X	X
Machine Tool Operation (Certificate)		X			
Major Appliance Repair (Certificate)	X				
Mechanical Engineering Technology (A.A.S.)		X			
Medical Laboratory Technology (A.A.S.)	X				
Medical Record Technology (A.A.S.)		X			
Merchandising (A.A.S.)	X	X			X
Fashion	X	X			X
Retail	X	X			X
Music (A.A.)	X	X	X		
Entertainment	X	X	X		
Fine Arts	X	X	X		
Liberal Arts	X	X	X		
Religion	X	X	X		
Nursing (A.A.S.)		X			
Occupational Safety & Health Technology (A.A.S.)	X				
Industrial Health	X				
Industrial Safety	X				
Office Administration & Management (A.A.S.)	X	X	X	X	X
Physical Therapist Assistant (A.A.S.)		X			
Police Science (A.A.S. & Certificate)	X	X		X	X
Radiography (A.A.S.)		X			
Real Estate (A.A.S. & Certificate)		X		X	
Recreation & Parks (A.A.S.)			X		
Recreation Vehicle/Marine Mechanics (Certificate)	X				
Recreation Vehicle/Motorcycle Maintenance (Certificate)	X			X	
Respiratory Therapy (A.A.S.)		X			
Safety Technician (Certificate)	X				
Science (A.S.)	X	X	X	X	X
Secretarial Science (A.A.S.)	X	X	X	X	X
Administrative Assistant	X	X	X	X	X
Executive Secretary	X	X	X	X	X
Legal Secretary	X	X			X
Medical Secretary*	X	X			X
Secretarial Science/Office Systems (Certificate)	X	X	X	X	X
Security Administration (A.A.S.)	X	X		X	X
Service Station Operation & Management (Certificate)	X				
Technical Illustration (Certificate)	X				
Urban-Regional Planning & Development (A.A.S.)	X				
Welding (Certificate)				X	

*Inactive Specialization

ACCOUNTING
Associate in Applied Science Degree

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ACCT	111-112-113 Acct. or [1]ACCT 211-212-213 Prin. of Acct.	(3)4	(3)4	(3)4
BUAD	100 Intro. to Bus.	3		
BUAD	121-122-123 Bus. Math	3	3	3
*ENGL	111-112 Eng. Comp.	3	3	
*SPDR	136 Oral Comm.			3
GENL	100 Orientation	1		
BUAD	164-165 Prin. of Bus. Mgt.		3	3
PHED	100 Fund. of Phys. Act.		1	
DAPR	106 Prin. of Data Proc.		3	
DAPR	124 Comp. Prog. COBOL (or Bus. Elective)			3
*ECON	160 Amer. Econ.	3		
	Total Credits	17	17	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ACCT	221-222-223 Inter. Acct.	4	4	4
BUAD	241-242 Bus. Law	3	3	
BUAD	254 Appl. Bus. Stat.	3		
BUAD	246 Bus. Finance (or Bus. Elective)	3		
ACCT	234 Cost. Acct.		3	
ACCT	241-242 Prin. of Fed. Tax.		3	3
ACCT	229 Auditing (or Bus. Elect.)			3
ACCT	298 Sem. & Proj. or ACCT 256 (or Bus. Elective)			3
*PSYC	110 Prin. of Appl. Psyc.	3		
*GOVT	180 Amer. Const. Govt.		3	
PHED	Electives	1		1
	Total Credits	17	16	14

Total minimum credits for Accounting major-A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements for A.A.S. Degrees section.

[1]Three elective credit hours will be required to meet degree requirements if ACCT 211-212-213 are selected.

AIR CONDITIONING AND REFRIGERATION
Associate in Applied Science Degree

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
AIRC	101-102-103 Prin. of Refrig.	4	4	4
AIRC	154 Combustion (gas) Heatg. I			3
AIRC	111-112-113 Air Conditioning & Refrig. Elec. I-II-III	3	3	3
AIRC	199 Supervised Study		1	1
*ENGL	111-112-113 English Comp.	3	3	3
GENL	100 Orientation	1		
MATH	118-119 Intro. to Tech. Math.	5	5	
PHED	100 Fund. of Phys. Act. & 2 Electives	1	1	1
	Total Credits	17	17	15

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
AIRC	211-212 Air Cond. Controls	3	3	
AIRC	251-252-253 Air Cond. Systems	4	4	4
AIRC	110 Prin. of Air Cond.			4
[1]AIRC	Technical Elective	3	3	3
*Social Science Elective		3	3	3
Elective		3	3	2-3
	Total Credits	16	16	16-17

Total minimum credits for Air Conditioning and Refrigeration major - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]Technical Electives may be selected from Air Conditioning courses or closely related fields after consultation with a faculty advisor.

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 Qtr.	2nd Qtr.	3rd Qtr.
AIRC	101–102–103 Prin. of Refrig.	4	4	4
AIRC	111–112–113 Air Cond. Elec.	3	3	3
AIRC	154 Combustion Devices	3		
AIRC	155 Combustion Devices			3
AIRC	156 Clim. Control Heat Pump		3	
AIRC	199 Supervised Study		1	
AIRC	211 Air Cond. Controls			3
ENGL	111 Engl. Comp.			3
MATH	118–119 Intro. to Tech. Math.	5	5	
Social Science Elective		3		
	Total Credits	18	16	16

Total minimum credits for Air Conditioning and Refrigeration major certificate = 50.

ANIMAL SCIENCE TECHNOLOGY
Associate in Applied Science Degree

Purpose: The student will be trained as a veterinary medical technician. Satisfactory completion of the curriculum will make the student eligible to take State Board examinations for certification as an animal technician. The curriculum is designed for persons who wish to develop the latest techniques and skills that will prepare them for careers as veterinarian assistants and positions in diagnostic laboratories, research laboratories, institutional or pharmaceutical animal colonies, and as federal or state livestock inspectors.

Special Curriculum Admission Requirements: Entry into the Animal Science Technology curriculum requires an interview by the Program Head. This curriculum accepts 25 students each year. Preference is given to Virginia residents.

Satisfactory completion of the following high school units or equivalent as a minimum: 1 unit of algebra, 2 units of lab science, preferably biology and chemistry, and proficiency in high school English.

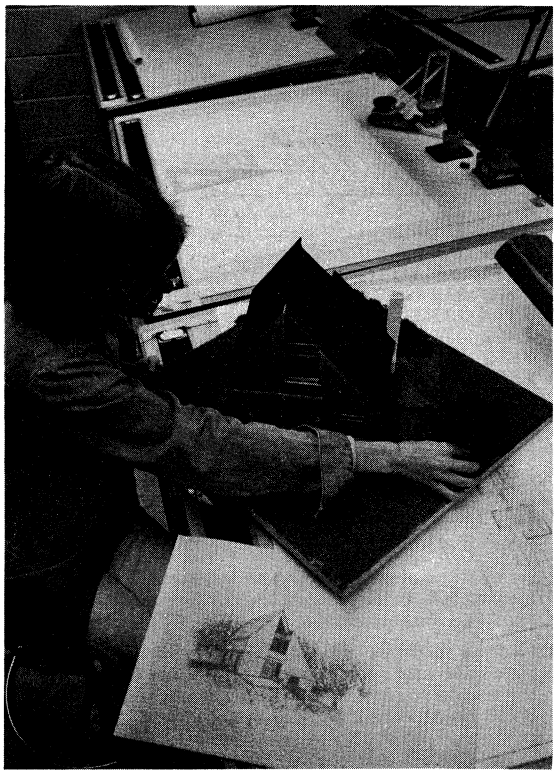
Special Curriculum Completion Requirements: Because of the eventual certification process, it is necessary for students to maintain satisfactory progress in their course work. Periodic evaluation of each student will be made by the Program Head.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
AGRI	116 Animal Breeds & Identification	3			
BIOL	156 Foundations of Zoology	4			
AGRI	155–156 Animal Anatomy & Physiology I & II		4	4	
*ENGL	111–112 English Composition	3	3		
SPDR	136 Oral Comm.			3	
CHEM	101–102 General Chemistry I & II	4	4		
GENL	100 Orientation	1			
SECR	111 Typing I	3			
PHED	100 Fund. of Physical Act. & 2 Elect.		1	1	1
AGRI	151–152–153 Lab Techniques		1	4	4
AGRI	161–162 Clinical Practices			3	4
BIOL	164 Pathology				3
BIOL	158 Parasitology		3		
AGRI	214 Animal Diseases w/lab				2
	Total Credits	18	16	15	14

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
AGRI	154 Lab Techniques			4	
AGRI	163–164 Clinical Practices w/lab	4	4		
*Social Sci. Elective		3	3	3	
AGRI	215 Animal Diseases	2			
AGRI	219 Animal Pharmacology w/lab	4			
AGRI	290 Coord. Intern.		5		
AGRI	260 Animal Nutrition			3	
AGRI	298 Seminar and Project			2	
	Total Credits	13	12	12	

Total minimum credits for Animal Science Technology major—A.A.S. degree = 100.

*Substitutes for English and Social Science courses for an A.A.S. degree are listed in General Requirements For A.A.S. Degrees section.



ARCHITECTURAL TECHNOLOGY

Associate in Applied Science Degree

Purpose: This curriculum is designed to prepare students for full-time employment in architectural offices or elsewhere in the construction industry. The occupational objectives include: Architectural Draftsman / Design Assistant / Specifications Assistant / Urban Design & City Planning Draftsman / Field Inspector.

Special Curriculum Admission Requirements: Proficiency in high school algebra and geometry.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARCH	111–112–113 Arch. Drafting	3	3	3
ARCH	164–165 Matl. & Meth. of Constr.	3	3	
ARCH	171 Spec. Writing			3
ARCH	204 History of Arch. I (or ARCH 100)	3		
ARCH	205 History of Arch. II		3	
ARCH	210 Site Planning			3
ENGL	111–112 English Comp.	3	3	
ENGL	137 Tech. Writing (or ENGL 113)			3
GENL	100 Orientation	1		
MATH	121–122 Engr. Tech. Math	5	5	
ENGR	151 Mechanics (Statics)			4
	Total Credits	18	17	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARCH	211–212–213 Arch. Drafting	3	3	3
ARCH	237 Bldg. Mech. Equip	3		
ARCH	236 Bldg. Elec. Equip		3	
ARCH	276 Constr. Estimating			3
ARCH	279 Critical Path Math Prog			3
*PHYS	111–112 Tech. Physics	4	4	
**Social Science Electives		3	3	3
PHED	100 Fund. of Phys. Activity	1		
PHED	Electives		1	1
ENGR	152–154 Mechanics (Strength) & Lab	4		
CIVL	217 Structural Steel Design		4	
CIVL	218 Reinf. Concrete Design			4
	Total Credits	18	18	17

Total minimum credits for Architectural Technology major-A.A.S. degree = 104.

*Science alternates: CHEM 101–102, GEOL 101–102, NASC 121–122.

**Social Science Electives sequences: GOVT 180 + ECON 160 + PSYC 110, ECON 211–212–213, GEOG 240–250–260, GOVT 281–282–283, HIST 101–102–103, HIST 111–112–113, HIST 187–188–189, HIST 221–222–223, PSYC 201–202–203, PSYC 231–232–233, SOSC 121–122–123, SOCI 101–102–103, 211–212–213.

ART/COMMERCIAL ART

Associate in Applied Science Degree

Purpose: The curriculum is designed for persons who seek full-time employment in the Commercial Art field immediately upon completion of the program. The occupational objectives include: Commercial Artist / Designer / Illustrator / Photographer.

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.

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. The student will then choose an area of concentration for the second year from one of the following fields: Advertising Design, Illustration or Photography.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

Advertising Design and Illustration Specializations

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	124–125–126 Drawing	4	4	4
ARTS	161–162–163 Design	4	4	4
ARTS	169 Visual Communications			4
ARTS	170 Intro. to Graphic Skills	3		
ARTS	171 Typography I		3	
ARTS	240 History of Design			3
*ENGL	111–112 Engl. Comp.	3	3	
GENL	100 Orientation	1		
PHTG	101 Photography I		3	
PHED	100 Fund. of Phys. Act. + 2 Electives	1	1	1
	Total Credits	16	18	16

Second Year Advertising Design Specialization		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	172–173 Typography	3	3	
ARTS	214–215 Graphic Tech.	4	4	
ARTS	287–288–289 Advertising Design	4	4	4
ARTS	298 Seminar & Project			3–5
**ARTS	Electives		3–4	3–4
*ENGL	113 Engl. Comp. III or			
SPDR	136 Oral Communications	3		
*Social Science Electives		3	3	3
	Total Credits	17	17–18	13–16

Total minimum credits for Advertising Design Specialization A.A.S. degree = 97.

Second Year Illustration Specialization		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	214 Graphic Tech. I	4		
ARTS	260 Painting Tech. for Illust.		3	
ARTS	281–282–283 Adv. Drawing	4	4	4
ARTS	284–285–286 Illustration	4	4	4
ARTS	298 Seminar & Project			4–5
*ENGL	113 Engl. Comp. III or			
SPDR	136 Oral Communications	3		
*Social Science Electives		3	3	3
	Total Credits	18	14	15-16

Total minimum credits for Illustration Specialization A.A.S. degree = 97.

Commercial Photography Specialization

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	124–125–126 Drawing	4	4	4
ARTS	161–162–163 Design	4	4	4
ARTS	169 Visual Communications			4
ARTS	170 Intro. to Graphic Skills	3		
ARTS	171 Typography		3	
*ENGL	111–112 Engl. Comp.	3	3	
GENL	100 Orientation	1		
PHTG	101–102–103 Photography	3	3	3
PHED	100 Fund. of Phys. Act. + 1 Elective		1	1
	Total Credits	18	18	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	214 Graphic Tech. I	4		
ARTS	270 History of Design			3
PHTG	144–145 History of Photog.	3	3	
PHTG	206 Large Format Photog.	3		
PHTG	224–225 Studio Lighting	3	3	
PHTG	226–227 Commercial Photog.		3	3
PHTG	228 Photo Marketing			3
PHTG	299 Supervised Study			1–5
*ENGL	113 Engl. Comp. III or			
SPDR	136 Oral Communications		3	
PHED	Elective		1	
*Social Science Electives		3	3	3
	Total Credits	16	16	13-17

Total minimum credits for Commercial Photography Specialization A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

**Electives should be chosen from courses offered in the Commercial Art curriculum. Students transferring to a 4-year college may be required to take History and Appreciation of Art, ARTS 111–112–113, if required by that college.

ART EDUCATION
Associate in Arts Degree

Purpose: The Associate in Arts 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.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	111–112–113 Hist. & Appre. of Art	3	3	3
ARTS	124–125–126 Drawing	4	4	4
ARTS	161–162–163 Fund. of Design	4	4	4
ENGL	111–112–113 Eng. Comp.	3	3	3
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act. + 1 Elective		1	1
[1]Soc. Sci. Electives		3	3	3
	Total Credits	18	18	18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	291–292 Design IV–V or Elective	4	4	
ARTS	Approved Studio Electives	4	4	4
ENGL	Amer., Eng., or World Lit.	3	3	
PHED	Phys. Act. Elective			1
[2]Nat. Sci. (with Lab.)		4	4	4
[3]Electives				4
	Total Credits	15	15	13

Total minimum credits for Art Education major—A.A. degree = 97.

[1]Soc. Sci. courses may be selected from the following: Economics, Geography, Government, History, Psychology, Social Science or Sociology (Anthropology).

[2]Science courses may be selected from Biology, Chemistry, Physics, Geology or the Natural Science 121–122–123 course.

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

ART/FINE ART PHOTOGRAPHY
Associate in Arts Degree

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.

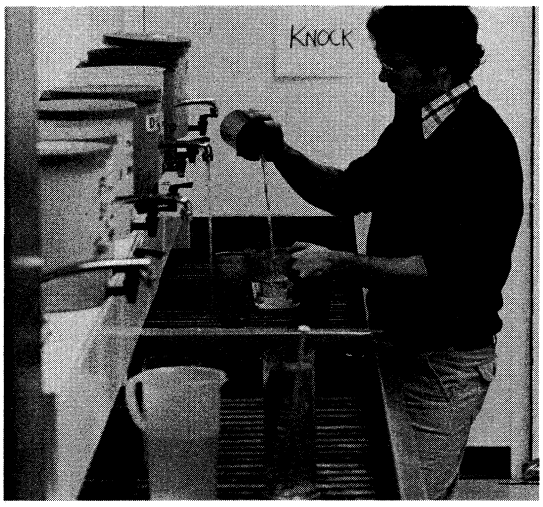
First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	111–112–113 History & Appre. of Art	3	3	3
ARTS	124–125–126 Drawing	4	4	4
ARTS	161–162–163 Fund. of Design	4	4	4
PHTG	101–102–103 Photography	3	3	3
ENGL	111–112–113 Engl. Comp.	3	3	3
GENL	100 Orientation	1		
	Total Credits	18	17	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
PHTG	144–145 History of Photography	3	3	
Electives		6	6	6
[1]Soc. Sci. Elect.		3	3	3
ENGL	American, English or World Lit.	3	3	3
PHED	100 Fund. of Phys. Act. + 2 Electives	1	1	1
	Total Credits	16	16	13

Total minimum credits for Fine Art Photography major—A.A. degree = 97.

[1]Soc. Sci. courses may be selected from the following: Economics, Geography, Government, History, Psychology, Social Science or Sociology (Anthropology).

The A.A. degree in Art/Fine Art Photography is designed for students who expect to transfer to four-year art or liberal arts colleges. 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.



ART HISTORY
Associate in Arts Degree

Purpose: The Art History Associate in Arts curriculum is designed for students who plan to transfer to a college or university baccalaureate degree program in Art History.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	111–112–113 Hist. & Appre. of Art	3	3	3
ARTS	124–125–126 Drawing or ARTS 161–162–163 Fund. of Design	4	4	4
ARTS	154–155–156 Design	3	3	3
ENGL	111–112–113 Eng. Comp.	3	3	3
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
[2]Foreign Language		4	4	4
[3]Elective				3
	Total Credits	15	15	18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	191–192–193 Hist. of American Art or approved Art History Elect.[4]	3	3	3
ENGL	271–272–273 World Lit.	3	3	3
PHED	Elective	1		
[34]Approved Art History, Studio, or Liberal Arts Elect.		7	7	7
[1]Social Science Elective		3	3	3
	Total Credits	17	16	16

Total minimum credits for Art History major—A.A. degree = 97.

[1]Soc. Sci. courses may be selected from the following: Economics, Geography, Government, History (recommended), Psychology or Sociology (Anthropology).

[2]The Language course may be either the first or second year sequence depending on the student's prior knowledge. French and German are preferred.

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

[4]Art History Electives: Primitive Art, Far Eastern Art, History of Printmaking, Aesthetics (Philosophy), Art in World Culture, Seminar and Project in Art History, Gallery Management (other, as approved).

AUTOMOTIVE BODY RECONDITIONING
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.

Special Curriculum Admission Requirements: One year high school shop program or equivalent. Students not meeting these requirements may correct this deficiency by successfully completing AUTO 128 - Auto Mechanics.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]AUTO	100 Auto Shop Pract. & Sfty.	3		
AUTO	160 Basic Sheet Metal Op.		4	
ENGL	100 Occup. Eng.	3		
WELD	115 Arc & Gas Welding	4		
AUTO	167 Auto Body Repair		4	
AUTO	168 Auto Sheet Metal Prep.			4
Tech. Elective			3–4	3–4
AUTO	165 Auto Painting			4
AUTO	169 Auto Frame Repair	4		
[2]Elect.				3
Soc. Sci. Elective			3	
	Total Credits	14	14-15	14-15

Total minimum credits for Automotive Body Reconditioning major certificate = 42.

[1]Pre or Co-Requisite to all Automotive shop courses.

[2]Suggested Elective MATH 151.

AUTOMOTIVE DIAGNOSIS AND TUNE-UP
Certificate

Purpose: The curriculum is designed to provide theory and experience and further development for mechanics not having had other educational automotive training. Also to provide a one-year entry program for students desiring auto-mechanics training in diagnosis and tune-up. The occupational objectives include: Tune-up Technician/Service Station General Repair.

Special Curriculum Admission Requirements: One year high school shop program or equivalent. Students not meeting these requirements may correct this deficiency by successfully completing AUTO 128 - Auto Mechanics.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]AUTO	100 Auto Shop Pract. & Safety	3		
AUTO	284–285 Auto Ser. Proc. & Tune-Up	3	3	
AUTO	121–122 Auto Fuel Systems	4	4	
ENGL/SPDR	Elective	3	3	
MATH	118 Intro. to Tech. Math		5	
AUTO	267 Suspension & Braking			4
AUTO	268 Auto Alignment			2
DRFT	144 Auto Drawing Inter.			2
AUTO	198 Sem. & Proj.			2
PSYC	128 Human Relat.			3
	Total Credits	13	15	13

Total minimum credits for Automotive Diagnosis and Tune-Up major - certificate = 41.

[1]Pre or Co-Requisite to all automotive shop courses.

AUTOMOTIVE ELECTRICAL TECHNICIAN
Certificate

Purpose: This curriculum is designed for persons who seek full-time employment in automotive electrical specialty or electrical rebuild shops. The curriculum includes the necessary theory and shop experience to advance the student to a level of competence for immediate employment as an Automotive Electrical Technician or Automotive Electrical Component Rebuild Specialist.

Special Curriculum Admission Requirements: One year high school shop program or equivalent. Students not meeting these requirements may correct this deficiency by successfully completing AUTO 100–Auto Shop Practices, and AUTO 128–Auto Mechanics.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
*AUTO	120 Intro. to Auto Mach. Shop	4		
AUTO	241–242–243 Automotive Electricity I–II–III	4	4	4
AUTO	104–105 Automotive Electrical Component Rebuild I–II	4	4	
ENGL or SPDR	Elective	3		
MATH	118–119 Intro. to Tech. Math I–II		5	5
AUTO	286–287 Shop Mgt. & Cust. Relations I–II		3	3
AUTO	246 Automotive Electronics			4
	Total Credits	15	16	16

Total minimum credits for Automotive Electrical Technician certificate = 47.

*AUTO 120 must be taken prior to or concurrent with any auto lab. course.

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: One year high school shop program or equivalent. Students not meeting these requirements may correct this deficiency by successfully completing AUTO 128 - Auto Mechanics.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]AUTO	120 Intro. to Auto Mach. Shop	4		
AUTO	107 Disassembly & Inspect.	3		
ENGL or SPDR	Elective	3		
MATH	118 Intro. to Tech. Math	5		
AUTO	118 Auto Turning Oper.		4	
AUTO	114 Auto Cyl. Block Serv.		4	
INDT	176 Indus. Safety or HLTH 146		2–3	
Humanities or Soc. Sci.	Elect.		4	
AUTO	115 Cyl. Head Ser.			4
AUTO	119 Crankshaft, Camshaft, & Connect. Rod Serv.			4
AUTO	109 Fabr. Tech.			3
AUTO	197 Coop. Ed.			3
	Total Credits	15	14–15	14

Total minimum credits for Automotive Machinist major—certificate = 43.

[1]Pre or Co-requisite to all auto machinist courses.

AUTOMOTIVE PARTS MERCHANDISING
Certificate

Purpose: The curriculum is designed to train automotive parts salespeople by providing experience in auto-mechanics, merchandising and parts management. Occupational objectives include: Auto Parts Clerk / Auto Counterman / Auto Parts Deliveryman.

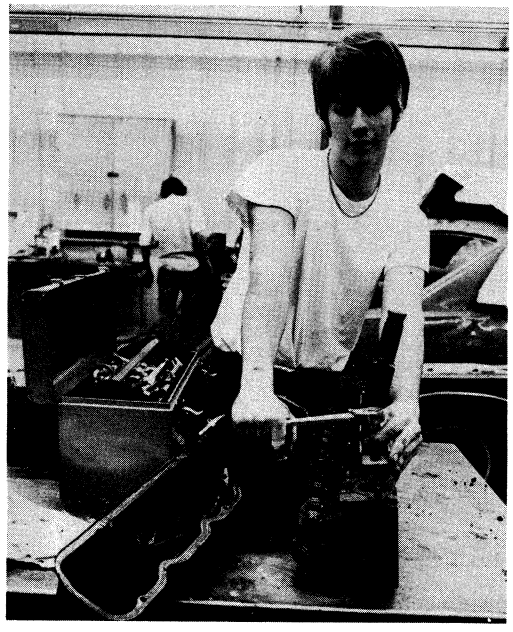
Special Curriculum Admission Requirements: One year high school shop program or equivalent. Students not meeting these requirements may correct this deficiency by successfully completing AUTO 128 - Auto Mechanics.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]AUTO	100 Auto Shop Pract. & Safety	3		
AUTO	121 Auto Fuel Sys.	4		
AUTO	284–285 Auto Serv. Proced. & Tune-Up	3	3	
SPDR	136 Oral Comm.	3		
AUTO	201 Auto Sys. Tech.	4		
AUTO	134–135 Auto Parts Management		3	3
AUTO	197 Coop. Ed.		3	3
BUAD	100 Intro. to Bus.		3	
PSYC	128 Human Relat.		3	
AUTO	267 Suspen. & Braking			4
ECON	160 Amer. Econ.			3
AUTO	136 Lub. & Cooling			3
	Total Credits	17	15	16

Total minimum credits for Automotive Parts Merchandising major - certificate = 48.

[1]AUTO 100 must be taken prior to or concurrent with any auto laboratory course.



AUTOMOTIVE TECHNOLOGY
Associate in Applied Science Degree

Purpose: This curriculum is designed to train technicians in the automotive field. People completing this program will be ready for full-time employment as automotive diagnosticians or automotive mechanics according to the specialization selected. The occupational objectives included: Line Mechanic / New Car Make-ready / Tune-Up Specialist / Diagnostician / Customer Service Representative / Service Manager.

Special Curriculum Admission Requirements: One year high school shop program or equivalent. Students not meeting these requirements may correct this deficiency by successfully completing AUTO 128 - Auto Mechanics.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year (Common to both specializations)		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]AUTO	100 Auto Shop Prac. & Safety	3		
AUTO	111 Auto Engines	4		
AUTO	121–122 Auto Fuel Systems		4	4
AUTO	241–242–243 Auto Electricity	4	4	4
*ENGL	111 English Comp.		3	
ENGL	137 Technical Writing			3
MATH	118–119 Intro. to Techn. Math	5	5	
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
*GOVT	180 Amer. Const. Govt.			3
	Total Credits	17	17	15

Mechanics Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
AUTO	112–113 Auto Engines	4	4	
AUTO	126 Anti-Pollution Systems			4
AUTO	151–152 Power Trains	4	4	
AUTO	238 Air-Conditioning			3
AUTO	267 Suspension & Brakes			4
AUTO	268 Steering & Alignment		2	
AUTO	298 Seminar & Project			2
	Automotive Electives		3	2
PHED	Phys. Act. Elective			1
*SPDR	136 Oral Communication	3		
*PSYC	128 Human Relations	3		
*ECON	160 Amer. Econ.		3	
DRFT	144 Auto Drawing Interp.	2		
	Total Credits	16	16	16

Total minimum credits for Automotive Mechanics specialization - A.A.S. degree = 97.

Diagnostician Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
AUTO	151–152 Power Trains	4	4	
[2]AUTO	181 Auto Diag. Tech.	3		
AUTO	267 Suspension & Brakes			4
AUTO	268 Steering & Alignment		2	
[3]AUTO	281–282 Auto Diag. Tech.		3	3
[4]AUTO	287–288 Auto Shop. Mgt.		3	3
AUTO	298 Sem. & Project			2
	Automotive Electives		3	4
PHED	Elect.			1
*PSYC	128 Human Relations	3		
*ECON	160 Amer.Econ.	3		
*SPDR	136 Oral Communication	3		
	Total Credits	16	15	17

Total minimum credits for Automotive Diagnostician specialization - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]AUTO 100 is a Pre or Co-requisite to all Automotive Program Shop Courses.

[2]AUTO 199 may be substituted for AUTO 181.

[3]AUTO 284–285 may be substituted for AUTO 281–282.

[4]Business Courses or AUTO 134–135 may be substituted for AUTO 287–288.

AVIATION TECHNOLOGY

Associate in Applied Science Degree

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/Tower Operators. In the latter area, the federal government is the sole employer.

Special Curriculum Admission Requirements: Proficiency in high school mathematics (Algebra I, Algebra II or Geometry) is desirable and acceptance by the Program Head following a personal interview is required.

Coordinated Internship (AERO 290): Students will find it highly desirable to enroll in a Coordinated Internship experience during one or all quarters of the second year if possible. For further information see General Usage Courses section.

This degree is designed for entry into all non-technical Aviation-related careers and the Air Traffic Control field.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
AERO	110 History of Air Transportation	3		
AERO	126 Aviation in the U.S.		3	
AERO	127 Fundamentals of Flight			3
ENGL	111–112–113 English Composition I–II–III	3	3	3
*MATH	101–102–103 Fundamentals of Mathematics I–II–III	3	3	3
PSYC	110 Principles of Applied Psychology	3		
AERO	176 Primary Flight (Optional)	(1)	(1)	(1)
AERO	136 The National Airspace System		3	
AERO	137 Aviation Safety			3
GENL	100 Orientation	1		
SOCI	101 Introductory Sociology		3	
PSYC	128 Human Relations			3
BUAD	100 Introduction to Business	3		
PHED	100 Fund. of Physical Activity		1	
Elective				3
	Total Credits	16	16	18

*The MATH 161 series, 181 series or 191 series may be substituted.

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
AERO	246 Meteorology	4		
AERO	248 Aircraft Support Operations		4	
AERO	266 Airport Operations & Management			3
AERO	247 Aviation Law	3		
AERO	256 Air Navigation		3	
AERO	267 Airline Operations & Management			3
AERO	249 Airline & Airport Security	3		
AERO	257 Radar, Radio Aids & Communications		4	
*AERO	298 Seminar & Project	(3)	(3)	3
*AERO	299 Supervised Study	3	(3)	(3)
AERO	258 Airline Marketing		3	
MKTG	100 Principles of Marketing	3		
GEOG	240 Intro. to Physical Geography		3	
DAPR	106 Principles of Data Processing			3
PHED	Electives	1		1
	Total Credits	17	17	13

Total Minimum Credits, Aviation Technology degree = 97.

*These courses may be taken during any of the last three (3) quarters.

NOTE: AERO 290 and 297 are electives and may be taken in any of the last three (3) quarters and substituted for 200 series courses.

VCCS Transfer Program

Aviation Technology

The breakdown of this curriculum is done to accomodate students outside of the Northern Virginia area. The first three quarters may be taken at any VCCS colleges and credited toward the A.A.S. degree in Aviation Technology.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL	111–112–113 English Composition I–II–III	3	3	3
GENL	100 Orientation	1		
MATH	101–102–103 Fundamentals of Math. I–II–III	3	3	3
PSYC	110 Prin. of Applied Psychology	3		
BUAD	100 Introduction to Business	3		
SOCI	101 Introductory Sociology I	3		
PSYC	128 Human Relations		3	
GEOG	240 Intro. to Physical Geography		3	
PHED	100 Fund. of Physical Activity		1	
PHED	Elective		1	
MKTG	100 Principles of Marketing			3
DAPR	106 Principles of Data Processing			3
PHED	Elective			1
Elective				3
	Total Credits	16	14	16

The second three quarters shown here are for students transferring to NVCC (Manassas Campus) for the A.A.S. degree in Aviation Technology.

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
AERO	110 History of Air Transportation	3		
AERO	126 Aviation in the U.S.		3	
AERO	127 Fundamentals of Flight			3
AERO	136 National Airspace System	3		
AERO	137 Aviation Safety		3	
AERO	176 Primary Flight (Optional)			(1)
AERO	246 Meterology	4		
AERO	247 Aviation Law		3	
AERO	248 Aircraft Support Operations			4
AERO	249 Airline & Airport Security	3		
AERO	256 Air Navigation		3	
AERO	257 Radar, Radio Aids & Communications			4
AERO	258 Airline Marketing	3		
AERO	266 Airport Operations & Management		3	
AERO	267 Airline Operations & Management			3
AERO	298 Seminar & Project		3	
AERO	299 Supervised Study			3
	Total Credits	16	18	17

AERO 290 and AERO 297 are electives and may be substituted for 200 series AERO courses.

AVIATION TECHNOLOGY/FLIGHT ATTENDANT

Certificate

Purpose: The curriculum is designed to prepare the student to compete for flight attendant jobs in the field of aviation and prepare for full-time employment with the airlines and for airports in non-flying jobs. Occupational objectives include: Steward/Stewardess/Customer Service Representative and other related jobs.

Special Curriculum Admission Requirements: Students are advised to determine both special and general qualifications for employment as flight attendants prior to entering this curriculum. Information can be obtained from Aviation Technology faculty or counselor.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL	111 English Composition I	3		
GENL	100 Orientation	1		
GEOG	240 Intro. to Physical Geography			3
HLTH	104 First Aid		2	
PSYC	128 Human Relations	3		
SPDR	136 Oral Communications			3
SOCI	101 Introductory Sociology			3
AERO	110 History of Air Transportation	3		
AERO	126 Aviation in the U.S.		3	
AERO	136 The National Airspace System		3	
AERO	140 Flight Attendant's Orientation	3		
AERO	146 Flight Attendant's Duties & Responsibilities		3	
AERO	147 Flight Attendant's Grooming & Apparel			3
AERO	176 Primary Flight (Optional)	(1)	(1)	(1)
AERO	258 Airline Marketing		3	
AERO	266 Airport Operations & Management			3
*Electives		3	3	3
	Total Credits	16	17	18

Total minimum credits for Flight Attendant major certificate = 51.

*Suggested Electives

AERO	127 Fundamentals of Flight
AERO	137 Aviation Safety
AERO	246 Meteorology
DAPR	106 Principles of Data Processing.
HRIM	164 Tourism Principles & Practices
HRIM	167 International Travel & Tourism
HRIM	169 Travel Destination Geography
HIST	113 American History
SECR	111 Typewriting I
SECR	121 Shorthand

Foreign Language (1 full year) (language for travelers)

BROADCAST ENGINEERING TECHNOLOGY

Associate in Applied Science Degree

Purpose: The curriculum is designed to prepare the student for employment as Engineering Technician in the broadcasting industry. The occupational objectives include: Commercial or Educational Radio or TV Station Technician / Video Tape Station Technician / Recording Company Technician.

Special Curriculum Admission Requirements: High school algebra and geometry.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation		1	
PHED	100 Fund. of Phys. Act.			1
ENGL	111–112 Engl. Comp.		3	3
MATH	121–122 Engr. Techn. Math.	5	5	
ELEC	114–115 Fund. of D.C. & A.C.	4	4	
ELEC	116 Intro. to Circuit Analysis			4
ELEC	120 Intro. to Tubes & Transistors	4		
ELEC	125 Intro. to Electronics		5	
ELEC	126 Amplifiers			5
PHYS	111 Tech. Phys.			4
BCST	116 Bcst. Equip. Oper.	5		
BCST	146 Fed. Broadcast Regulations			1
	Total Credits	18	18	18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
PHED	Electives		1	1
PHYS	112 Tech. Phys.	4		
*SPDR	136 Oral Comm.		3	
*Social Science Elective		3	3	3
BCST	126 Broadcast Instr. & Meas.	4		
BCST	274–275 Audio Systems I–II		4	4
BCST	298 Seminar & Project or BCST 297 Coop. Education			1
BCST	264–265 Television Systems I–II		3	3
ELEC	227 Pulse & Switching Circuits	3		
ELEC	241–242–243 Communications	4	4	4
ELEC	287 Adv. Circuits & New Devices			2
	Total Credits	18	18	18

Total minimum credits for Broadcast Engineering Technology major - A.A.S. degree = 108.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

BUSINESS ADMINISTRATION

Associate in Science Degree

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.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BIOL	101–102–103 Gen. Biol., CHEM 101–102–103, GEOL 101–102–103, or PHYS 201–202–203	4	4	4
ENGL	111–112–113 Eng. Comp.	3	3	3
GENL	100 Orientation	1		
HIST	101–102–103 Hist. of West. Civ. or HIST 111–112–113	3	3	3
MATH	161–162–163 College Math or MATH 181–182–183 or MATH 191–192–193	3	3	3
PHED	100 Fund. of Phys. Act.		1	
[1]Electives		3	3	3
	Total Credits	17	17	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ACCT	211–212–213 Prin. of Acct.	3	3	3
ECON	211–212–213 Prin. of Econ.	3	3	3
ENGL	Amer., Eng., or World Lit.	3	3	3
PHED	Phys. Act. Elect.		1	1
Electives		6	6	6
	Total Credits	15	16	16

Total minimum credits for Business Administration major - A.S. degree = 97.

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

BUSINESS MANAGEMENT
Associate in Applied Science Degree

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]ACCT	111–112–113 Accounting or ACCT 211–212–213 Prin. of Accounting	(3)[4]	(3)[4]	(3)[4]
BUAD	100 Intro. to Bus.	3		
BUAD	164–165 Prin. of Mgt.		3	3
BUAD	121–122–123 Bus. Math	3	3	3
*ENGL	111–112 Eng. Comp.	3	3	
*SPDR	136 Oral Comm.			3
*ECON	160 Amer. Econ.	3		
*PSYC	110 Prin. of Appl. Psyc.		3	
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act.		1	
*GOVT	180 Amer. Const. Govt.			3
	Total Credits	17	17	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[2]BUAD	241–242–243 Bus. Law	3	3	3
BUAD	254 Appl. Bus. Stat.	3		
[3]SECR	111 Typewriting or Bus. Elect.	3		
PHED	Elect.	1		1
MKTG	100 Prin. of Mkt.	3		
BUAD	269 Purchasing & Matl. Mgt.	3		
BUAD	246 Bus. Finance		3	
BUAD	276 Personnel Mgt.		3	
ACCT	241 Prin. of Fed. Tax.		3	
[4]Bus. Elect.			3	3
DAPR	106 Prin. of Data Processing			3
BUAD	110 Human Relat. & Ldrshp. Tng.			3
BUAD	298 Sem. & Proj.			3
	Total Credits	16	15	16

Total minimum credits for Business Management major - A.A.S. degree = 97.

*Substitutes for English and Social Science courses for an A.A.S. degree are listed in General Requirements For A.A.S. Degrees section.

[1]Three elective credit hours will be required to meet degree requirements if ACCT 211–212–213 are selected.

[2]Business Electives may be substituted for BUAD 243.

[3]Student may petition for credit by examination.

[4]Business Electives may be chosen from BUAD, DAPR, ACCT or MKTG courses.

CIVIL ENGINEERING TECHNOLOGY
Associate in Applied Science Degree

Purpose: The curriculum is designed to prepare the student for employment as an Engineering Technician, specializing in either Building Construction or Land Surveying. Occupational objectives include: Structural Designer / Surveying and Planning Assistant / Highways and Building Departments Inspector / Construction Supervisor and Foreman / Civil Engineering Technician.

Special Curriculum Admission Requirements: High school algebra and geometry.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year (Common to both specializations)		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
*ENGL	111–112 Eng. Comp.	3	3	
ENGL	137 Tech. Writing			3
MATH	121–122 Engr. Tech. Math	5	5	
ENGR	100 Intro. to Engr. Tech.	2		
ENGR	151 Mech. I (Statics)			4
DRFT	111–112–113 Tech. Drafting or ARCH 111–112	2–3	2–3	0–2
ARCH	164–165 Matl. & Meth. of Const.	3	3	
CIVL	181–182 Surveying		4	4
*Soc. Sci. Elect.				3
PHED	100 Fund. of Phys. Act. + 1 Elect.	1		1
		17–18	17–18	15–17

Building Construction Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
CIVL	246 Soil Mechanics	3		
CIVL	247 Soil Mechanics Lab.	1		
CIVL	254 Concrete Tech.		3	
CIVL	257 Concrete Tech. Lab.		1	
CIVL	227–228 Struc. Drafting I–II	2	2	
[1]CIVL	298 Seminar & Project or CIVL 297 Coop. Educ.			2–4
PHED	Elective			1
PHYS	111–112–113 Tech. Phys. I–II–II'	4	4	4
ENGR	152–154 Mech. II & Mech. Lab.	4		
*Social Science Electives		3	3	
MATH	123 Engr. Tech. Math. III or Tech. Elect.			3–5
CIVL	217–218 Steel Des. & Concrete Design		4	4
	Total Credits	17	17	14–18

Land Surveying Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
PHED	Elect.		1	1
PHYS	111–112–113 Tech. Phys.	4	4	4
ENGR	152–154 Mech. II and Mech. Lab	4		
*Social Science Elective		3	3	
CIVL	281–282 Adv. Surveying	4	4	
CIVL	201–202–203 Suburban Devel.	3	3	3
CIVL	298 Seminar & Project or CIVL 297 Cooperative Ed.			2–4
MATH	123 Engr. Tech. Math or tech. elec.			5
	Total Credits	18	15	15–17

Total minimum credits for Civil Engineering Technology major - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]CIVL 298 or CIVL 297 at 4 credit level required for program at Annandale Campus.

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. The occupational objective is one of the areas of construction inspection.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BLDG	100 Intro. to Constr. Insp. & Sfty.	3		
BLDG	111 Prin. of Res. Bldg. Constr. Insp.	3		
BLDG	107 Plan Review & Bldg. Codes	3		
MATH	118–119 Intro. to Tech. Math	5	5	
ENGL	100 Occup. Eng.	3		
ENGL	137 Tech. Writing			3
BLDG	112 Prin. of Concrete & Concrete Constr.		3	
BLDG	121 Prin. of Elec. Insp.		3	
CIVL	246–247 Soil Mech. & Soil Mech. Lab		4	
BLDG	113 Prin. of Steel Frame Constr. Insp.			3
BLDG	122 Prin. of Mech. Insp.			3
BLDG	123 Prin. of Plumbing Insp.			3
BLDG	197 Coop. Ed.			2–4
	Total Credits	17	15	14–16

Total minimum credits for a Construction Inspection major - certificate = 46.

CONSTRUCTION MANAGEMENT TECHNOLOGY
Associate in Applied Science Degree

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARCH	111–112 Arch Draft.	3	3	
*ENGL	111–112 Eng. Comp.	3	3	
SPDR	136 Oral Comm.			3
GENL	100 Orientation	1		
MATH	118–119 Intro. to Tech. Math.	5	5	
ENGR	100 Intro. to Engr. Tech.	2		
*Soc. Sci. Elect		3	3	3
ARCH	164–165 Matl. & Meth. for Const.		3	3
CIVL	181 Surveying			4
CIVL	140 Const. Planning			3
	Total Credits	17	17	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
CIVL	182 Surveying	4		
PHED	100 Fund. of Phys. Act. & 2 Elect.	1	1	1
ARCH	237 Bldg. Mech. Equip.	3		
CIVL	246–247 Soils Mech. & Lab.	4		
INDT	130 Safety Program Org. & Admin.	3		
BLDG	234 Materials Take-Off.	3		
CIVL	227–228 Struct. Draft		2	2
BUAD	276 Personnel Mgt.			3
ARCH	277 Bldg. Codes & Contract Docu.		3	
CIVL	254, 257 Civil Matl. (Concrete)		4	
ARCH	236 Bldg. Elect. Equip.		3	
ARCH	279 Critical Path Meth. Prog.			3
BLDG	235 Cost Estimating			3
CIVL	297 Coop. Ed.			2–4
CIVL	298 Sem. & Proj.			2
	Total Credits	18	13	16–18

Total minimum credits for Construction Management Technology major - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. Degrees, see General Requirements For A.A.S. Degrees section.

CORRECTIONS SCIENCE
Associate in Applied Science Degree

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 correction; i.e., probation, penology, parole, and to those presently in a Corrections position who are seeking promotion. Occupational objectives include: Local, State, and Federal Corrections Officer / Probation and Parole Aide.

Special Curriculum Admission Requirements: Students must participate in a personal interview with a Police Science-Corrections Faculty Member. 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 under the Safe Streets Act of 1968 for L.E.E.P. grants and loans. See Financial Aids Counselor for further details. Program adjustments may be made with faculty approval to enable a student to transfer to a four year criminal justice program.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	120 Intro. to Corrections	3		
ADJU	126 Prevention & Control of Juvenile Delinquency		3	
ADJU	128 Criminal Behavior		3	
ADJU	129 Treatment of the Offender			3
ADJU	156 Corr. & the Community			3
ADJU	176 Criminology		3	
ADJU	237 Administration of Justice	3		
ADJU	287 Principles of Probation & Parole			3
GENL	100 Orientation	1		
*ENGL	111–112–113 English Comp. I–II–III	3	3	3
*SOCI	101–102–103 Introductory Sociology	3	3	3
PHED	Fund. of PHED & 2 Elect	2	1	
	Total Credits	15	16	15

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	100 Intro. to Law Enforcement		3	
ADJU	124–125 Jail Opr. & Management		3	3
ADJU	155 Assessment of Corr. Process		3	
ADJU	159 Legal Challenge to Corr.	3		
ADJU	231 Crim. Law, Evidence & Procedure	3		
ADJU	289 Corr. Counseling	3		
ADJU	290/297 Coord. Intern. or Coop. Ed.		3	
ADJU	298 Seminar & Project			3
SOSC	121–122–123 Current American Social Problems I, II, III	3	3	3
PSYC	201–202–203 Genl. Psyc.	3	3	3
Approved Electives		3		3
	Total Credits	18	18	15

Total minimum credits for Corrections Science major - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

CORRECTIONS SCIENCE
Certificate

Purpose: The certificate curriculum in corrections 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 - A.A.S. Degree Curriculum.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	120 Intro. to Corrections	3		
ADJU	176 Criminology	3		
ADJU	126 Prev. & Control of Juvenile Del.	3		
ADJU	128 Crim. Behavior			3
ADJU	159 Legal Challenge to Corrections		3	
ADJU	156 Correction & the Comm.			3
ADJU	129 Treat. of the Offender		3	
GENL	100 Orientation	1		
ENGL	111–112 Comm. Skills	3	3	
SOCI	101–102–103 Intro. Soc. (or PSYC 201–202–203)	3	3	3
SOSC	121–122 Curr. Amer. Soc. Prob.		3	3
SPDR	136 Oral Comm. (or ENGL 113)			3
[1]ADJU	Elective			3
	Total Credits	16	15	18

Total minimum credits for a Corrections major - certificate = 49.

[1]Suggested ADJU Electives: 157, 237, 287.

DATA PROCESSING
Associate in Applied Science Degree

Purpose: The curriculum is for persons who seek employment in the data processing field or for those presently in data processing who desire to increase their knowledge and update their skills. The occupational objectives include: Computer Programer / Computer Operator / Related data processing occupations.

Special Curriculum Admission Requirements: The student should possess a proficiency in high school English and one unit of algebra or equivalent.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
DAPR	106 Prin. of Data Proc	3		
DAPR	138 Computer Sys. Arch.		3	
DAPR	124 Structured Comp. Prog. Concepts (Logic)		3	
DAPR	125 Structured Comp. Prog. (COBOL)			4
BUAD	100 Intro to Bus.	3		
BUAD	164 Prin. of Bus. Mgmt.			3
[1]ACCT	111–112–113 Accounting or ACCT 211–212–213 Prin. of Accounting	(3)4	(3)4	(3)4
*ENGL	111–112 Eng. Comp.	3	3	
GENL	100 Orientation	1		
MATH	101–102 Fund. of Math or			
BUAD	121–122 or Math Elect.	3	3	
PHED	100 Fund. of Phys. Act.		1	
*SPDR	136 Oral Comm.			3
*PSYC	110 Prin. of Appl. Psyc. or BUAD 110			3
	Total Credits	17	17	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
DAPR	256 Computer Prog. (ADV COBOL)	4		
DAPR	269 Computer Prog. (Assembler)		4	
DAPR	281 System Analysis I	3		
DAPR	286 Computer Prog. Applic.		4	
DAPR	287 Computer Software Sys.		3	
DAPR	298 Seminar & Project			4
DAPR	Computer Prog. Elect.			4
[2]BUAD	254–255 Appl. Bus. Statistics	3	3	
*ECON	160 Amer. Economics	3		
*GOVT	180 Amer. Const. Govt.			3
PHED	Electives		1	1
Electives		3		3
	Total Credits	16	15	15

Total minimum credits for Data Processing major — A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]Three elective credit hours will be required to meet degree requirements if ACCT 211–212–213 are selected.

[2]BUAD 251–252 may be substituted for BUAD 254–255 with approval of division.

DENTAL ASSISTING
Certificate

Purpose: The curriculum is designed to prepare the student to perform competently those duties performed by a dental assistant under supervision of a dentist as defined by the rules and regulations governing the practice of dentistry. Successful completion of the curriculum will normally prepare the student for the American Dental Assistants Association Certification Examination.

Special Curriculum Admission Requirements: (1) Each student will have a personal interview with the Program Head; (2) High School courses: 1 unit of science (biology preferred); transfer credits from another institution will be evaluated on an individual basis: (3) Good physical and mental health which may need to be substantiated by a physician's report; (4) The Dental Assisting Program reserves the right to determine the student's final acceptance.

Special Curriculum Completion Requirements: Any student whose overall grade average falls below 2.00 in any one quarter must obtain permission from the Program Head before taking the next course in the sequence. Students are responsible for transportation to and from facilities used for clinical laboratory experiences. Uniform and accessories and Dental Assisting Liability Insurance are the financial responsibility of the individual student.

Special Accreditation Status: The program has been approved by the Council on Dental Education of the American Dental Association.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
DENT	161–162–163 Dent. Care Science I,II,III	3	3	3	
DENT	110 Intro. Dent. Mat.	4			
DENT	134–135 Dent. Radiogr. I, II	4	4		
DENT	121–122–123 Chairside Assisting I,II,III	4	4	6	
DENT	124 Chairside Assisting IV				5
DENT	125 Chairside Assisting V				5
ENGL	111 English Comp. I	3			
NASC	130 Body Structure & Function		3		
HLTH	106 First Aid and Safety		3		
DENT	108 Intro. to Dent. Hlth. Care Del			3	
DIET	130 Nutritional Care			3	
ECON	160 American Economics			3	
GOVT	180 American Const. Govt.				3
PSYC	110 Prin. of Appl. Psyc.				3
	Total Credits	18	17	18	16

Total minimum credits for Dental Assisting Major Certificate = 69.

DENTAL HYGIENE

Associate in Applied Science Degree

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 accomodate 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, 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) Completion of a national standardized test for counseling purposes prior to program placement. (5) 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 seven quarter 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 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.

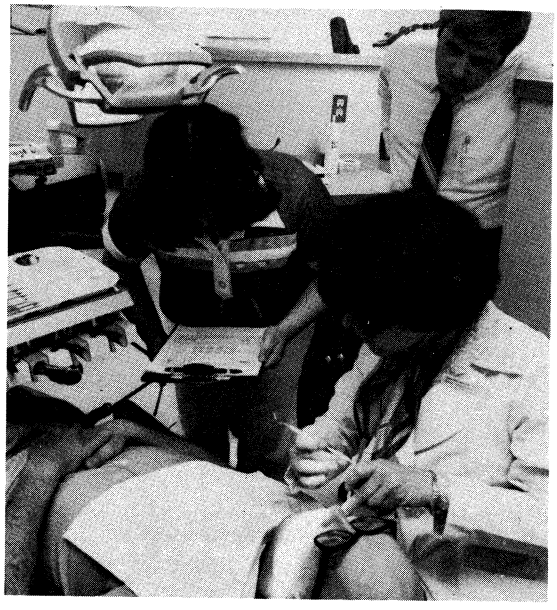
Special Accreditation Status: The curriculum is approved by the Council on Dental Education of the American Dental Association.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
DENT	140 Intro. to Dental Hygiene	1			
DENT	126 Oral Anatomy	3			
*ENGL	111 English Comp.	3			
NASC	111–112–113 Health Science	4	4	4	
GENL	100 Orientation	1			
PHED	100 Fund. of Phys. Act.	1			
DENT	130 Intro. to Prev. Dent.	2			
DENT	127 Gen. & Oral Histol.		3		
DENT	144–145–261 Dent. Hygiene I, II, III		5	5	6
HLTH	106 First Aid & Safety		3		
DENT	128 Head & Neck Anatomy			2	
DENT	146 Oral Radiogr. Tech.			3	
DENT	136 Pharmacology				2
DENT	150 Gen. & Oral Pathology				3
DENT	154 Periodontics I				2
PSYC	201 Gen. Psychology				3
PHED	Electives		1	1	
	Total Credits	15	16	15	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
DENT	138 Community Dental Health	4		
DENT	147 Nutrition	3		
DENT	262–263–264 Dental Hygiene IV, V, VI	5	5	5
SOCI	101 Intro. to Sociology	3		
DENT	116 Dental Lab. Materials		4	
DENT	139 Dental Assisting		2	
Social Science Electives			3	3
SPDR	136 Oral Communications		3	
DENT	148 Office Practice & Ethics			2
ENGL	112 Eng. Comp.			3
DENT	155 Periodontics II			2
	Total Credits	15	17	15

Total minimum credits for Dental Hygiene major - A.A.S. degree = 109.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.



DENTAL LABORATORY TECHNOLOGY

Associate in Applied Science Degree

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 approved by the Council on Dental Education of the American Dental Association.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
DENT	116 Dental Materials	4			
DENT	137 Dental Anatomy & Phys.	4			
DENT	141–142–143 Dental Lab. Tech. I–II–III		7	7	7
DENT	166 Ortho. & Pedo. Appliances				3
DENT	190 Coord. Internship				2
*ENGL	111–112 Eng. Comp. I–II	3	3		
*ENGL	113 Eng. Comp. III or SPDR 136 Oral Comm.			3	
GENL	100 Orientation	1			
NASC	111–112–113 Health Science.	4	4	4	
PHED	100 Fund. of Phys. Act. + Elective		1	1	
	Total Credits	16	15	15	12

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BUAD	100 Intro. to Business		3	
BUAD	121 Business Math. I			3
DENT	108 Intro. to Dent. Health Care Delivery	3		
DENT	244–245–246 Dent. Lab. Tech. IV–V–VI	7	8	8
DENT	290 Coord. Internship			2
PHED	Elective	1		
*Social Science Electives		3	3	3
	Total Credits	14	14	16

Total minimum credits for Dental Laboratory major - A.A.S. degree = 102.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

DIETETIC TECHNICIAN (General)

Associate in Applied Science Degree

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 dietetic assistant (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, 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.

Special Accreditation Status: The program is approved by the American Dietetic Association. Graduates are eligible for membership in ADA in the Dietetic Technician category.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
DIET	106 Dietetics and the Health Field	3		
DIET	140 Food Prep. & Mgt. Systems		3	
DIET	134 Nutrition I or DIET 130			3
DIET	190 Coordinated Practice		1	1
HRIM	111–112–113 Food Science	3	3	3
HRIM	124–125 Princ. of Food Prep	4	4	
HRIM	236 Sanitation			3
*ENGL	111–112 English Comp.	3	3	
SPDR	136 Oral Comm. or ENGL 113			3
BUAD	121–122 Business Math	3	3	
ACCT	211 Principles of Accounting			3
GENL	100 Orientation	1		
	Total Credits	17	17	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
DIET	135 Nutrition II	3		
DIET	234–235 Therapeutic Nutrition		4	3
DIET	298 Seminar & Project			3
DIET	190–290 Coordinated Practice	1	2	3
HRIM	126 Prin of Comm. Food Prep.	4		
DIET	146 Menu Plan. for Nutrition Prog.		3	
HRIM	264 Food Cost Control		3	
HRIM	277 Personnel Mgt.			3
HLTH	110 Concepts of Pers. & Comm. Hlth	3		
*SOSC	101–102–103 Contemp. Amer. Civl.	3	3	3
PHED	100 Fundamentals of Phys. Act. + 2 Electives	1	1	1
	Total Credits	15	16	16

Total minimum credits for Dietetic Technician major - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

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

DIETETIC ASSISTANT
Certificate

Purpose: The Dietetic Assistant 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 and good health which may need to be substantiated by a physician's report.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
DIET	100 Intro. to Dietetics	1		
DIET	130 Nutritional Care	3		
HRIM	236 Sanitation	3		
ENGL	111 Eng. Comp.	3		
DIET	140 Food Prep. & Mgt. Systems		3	
BUAD	121 Bus. Math		3	
BUAD	110 Human Relat. & Ldrshp. Tng		3	
HLTH	110 Concepts of Pers. & Comm. Hlth			3
SOSC	101 Contemporary Am. Civ.			3
HRIM	277 Personnel Mgt. for HRIM			3
DIET	190 Coord. Pract.	1–2	1–2	1–2
	Total Credits	11–12	10–11	10–11

Total minimum credits for Dietetic Assistant major certificate = 31.

EARLY CHILDHOOD DEVELOPMENT ASSISTANT
Certificate

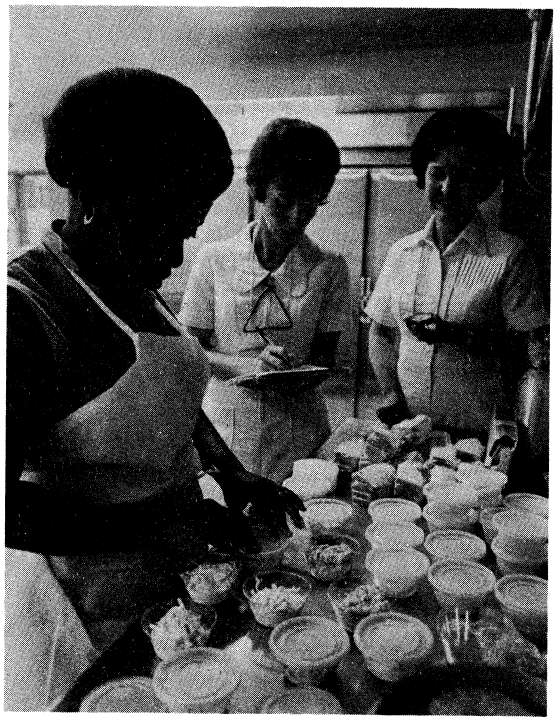
Purpose: The curriculum is designed to prepare individuals for employment in situations wherein care and maintenance of young children is the primary object. Occupational objectives include: Aides in Child Development Centers / Day Care Centers / Nursery School / Residential Facilities / Family Day Care Homes.

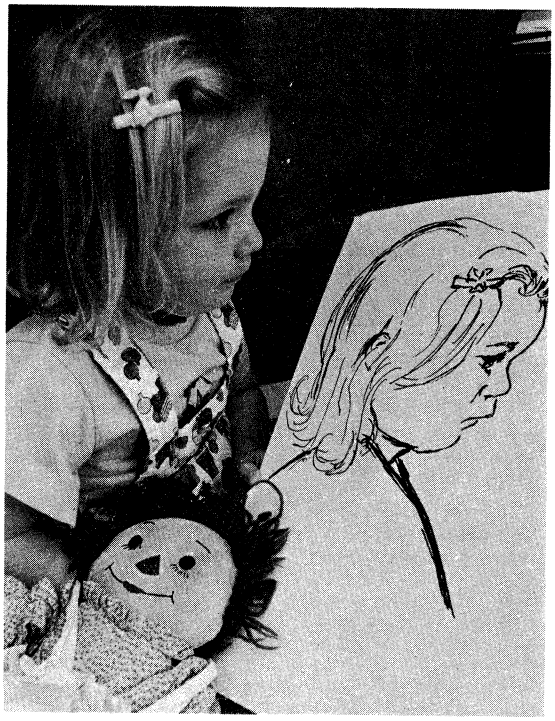
Special Curriculum Admission Requirements: Students must successfully complete a personal interview with a program faculty member.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
EDUC	100 Orientation to Early Child. Devel. & Educ.	2		
ENGL	111–112 Engl. Comp.	3	3	
PSYC	128 Human Relations			3
PSYC	231 Human Growth & Devel.			3
PHED	108 Phys. Act. for Child	3		
*EDUC	137 Creative Act. for Child		3	
*EDUC	190 Coordinated Internship		3	
*EDUC	298 Seminar & Project			3
*EDUC	190 Coordinated Internship			3
EDUC	121 Intro. to Early Child. Ed.	3		
EDUC	111–112–113 Tech. in Child Study	3	3	3
EDUC	136 Matl. & Equip. for Inst. Aides		3	
EDUC	176 Single Parent Families		3	
	Total Credits	15	18	15

*Must be taken concurrently

Total credits for Early Childhood Development Assistant major - certificate = 48.





EDUCATIONAL ASSOCIATE

Associate in Applied Science Degree

Early Childhood Educational Development Specialization

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
EDUC	100 Orientation to Early Childhood Devel. & Educ.	2		
*ENGL	111–112 Eng. Comp.	3	3	
*SPDR	136 Oral Comm.			3
PSYC	231 Human Growth & Development I	3		
PSYC	128 Human Relations		3	
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
PHED	108 Phys. Act. for Children		3	
HLTH	110 Concepts of Pers. & Comm. Hlth.	3		
EDUC	121–122–123 Childhood Ed.	3	3	3
EDUC	111–112–113 Tech. in Child Study	3	3	3
EDUC	137 Creative Act. for Child			3
Elect.			3	
	Total Credits	18	16	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
EDUC	136 Matl. & Equip. for Inst. Aides	3		
EDUC	210 Intro. to Spec. Ed.	3		
EDUC	127 Problem Solving in Early Childhood Educ.		3	
EDUC	106 Lang. Arts for Children		3	
EDUC	236 Child Dev. Programs, Plan. & Mgt.			3
EDUC	217 Models of Child Dev. Prog.		3	
EDUC	298 Sem. & Proj.			3
PHED	Elective	1		
SOCI	101 Intro. Soc. or PSYC 232		3	
SOCI	116 Child-Parent Comm. Relat.	3		
SOCI	236 Marriage & the Fam.			3
HLTH	156 Child Health & Nutrition		3	
HLTH	106 First Aid & Safety	3		
HLTH	216 Infant-Toddler Care & Dev.			3
MUSC	109 Music for Children		3	
Electives		3		4
	Total Credits	16	18	16

Total minimum credits for Early Childhood Development major - A.A.S. degree = 100.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

Special Education Specialization

Purpose: The Associate Degree program in Special Education has as its main objective the preparation of paraprofessionals who have attained a sufficient level of proficiency to assist public and private elementary school teachers in teaching severely and/or multiple handicapped pre-school and primary school aged children. The increased need for properly trained classroom assistants within the structure of public and private elementary schools results not only from society's increased awareness of the tremendous impact of early educational intervention in the lives of handicapped children, but also from the mandate of the state of Virginia that all developmentally disabled persons between the ages of two and twenty-one shall be educated to their fullest potential in the public school system. This program is designed to provide highly skilled classroom assistants to service the needs of these developmentally disabled young children.

Special Curriculum Admission Requirements: In addition to any prerequisites for individual courses, entry into the curriculum requires completion of high school diploma, and a satisfactory interview with the appropriate faculty member.

Program Requirements: The Program requires 66 of the 97 quarter hours needed for graduation to be taken in a specialized subject matter and the remainder to be in general education and supportive courses. Upon completion of the six-quarter program, the graduate will be awarded an Associate in Science Degree in Education with a specialization in Special Education.

Special Education Specialization *(continued)*

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
EDUC	100 Orientation to Early Child Dev. & Educ.	2		
ENGL	111–112 English Composition I, II	3	3	
ENGL	113 or SPDR 136, Comm. III or Speech			3
EDUC	109 Early Intervention for Phys. Handicapped Pre-Schooler		3	
EDUC	121–122–123 Childhood Education I, II, III	3	3	3
EDUC	126 Learning Disabilities		3	
EDUC	128 Perceptual Motor Dev. of the Pre-Schooler			2
EDUC	178 Parents of Special Needs Children			3
EDUC	210 Introduction to Special Education	3		
MENT	166 Mental Retardation			3
PHED	108 Physical Activities for Children	3		
PSYC	231–232–233 Human Growth & Development I, II, III	3	3	3
	Total Credits	18	15	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
EDUC	106 Language Arts			3
EDUC	117 Intro to Reading Methods	3		
EDUC	136 Materials & Equipment for Instr. Aides	3		
EDUC	137 Creative Activities for Children		3	
EDUC	176 Single Parents			3
EDUC	179 Deaf Education	3		
EDUC	267 Diagnostic/Prescriptive Teaching		3	
EDUC	190 Coordinated Practice (must be taken concurrently with EDUC 267)		3	
EDUC	298 Seminar & Project			3
HLTH	110 Concepts of Personal and Community Health	3		
HLTH	156 Child Health & Nutrition		3	
MUSC	109 Music for Children		3	
PHED	100 Fundamentals of Phys. Activities	1		
PHED	Electives		1	1
	Electives	3		5
	Total Credits	16	16	15

Total minimum credits for Associate in Applied Science degree = 97.

EDUCATION

Associate in Science Degree

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.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL	111–112–113 Eng. Comp.	3	3	3
GENL	100 Orientation	1		
HIST	111–112–113 Amer. Hist.	3	3	3
*MATH	Mathematics	3	3	3
[1]Nat. Science (with Lab.)		4	4	4
[2]Electives		3	3	3
PHED	100 Fund. of Phys. Act.			1
	Total Credits	17	16	17

econd Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL	Amer., Eng., or World Lit.	3	3	3
[3]Soc. Sci. Elect.		3–5	3	3
PSYC	201–202–203 Gen. Psyc.	3	3	3
PHED	Electives		1	1
SPDR	130 Prin. of Pub. Speaking or Elect.			5
[2]Electives		6	6	3
	Total Credits	15–17	16	18

Total minimum credits for Education major - A.S. degree = 97.

*Math courses to be selected are listed in General Requirements And Electives For A.A. and A.S. Degrees section.

[1]Science courses may be selected from the following: Biology, Chemistry, Physics, Geology or the NASC 121–122–123 course.

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

[3]Soc. Sci. courses may be selected from the following: Economics, Geography, Government, History, Psychology, Social Science or Sociology (Anthropology).

EDUCATION/INDUSTRIAL EDUCATION

Associate in Science Degree

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. Transfer agreements are currently in effect with George Mason University, Virginia Polytechnical and State University and the University of Maryland.

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.

First Year	Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL 111–112–113 Engl. Comp.	3	3	3
GENL 100 Orientation	1		
HIST 111–112–113 Amer. Hist.	3	3	3
MATH 191–192 Finite Math.	3	3	
PHYS 111–112–113 Tech. Phys.	4	4	4
PHED 100 Fund. of Phys. Act.		1	
PHED Elective			1
*Tech. Electives	3	3	6
Total Credits	17	17	17

Second Year	Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL Amer., Engl., or World Lit.	3	3	3
*Soc. Science (Transfer Series)	3	3	3
PHED Elective	1		
SPDR 130 Prin. of Pub. Speaking	5		
[1]Tech. Electives	4	9	9
Total Credits	16	15	15

Total minimum credits for Education Major - A.S. degree = 97.

[1]Social Science Courses may be selected from the following: Economics, Geography, Government, History, Psychology, Social Science or Sociology (Anthropology).

*Technical Electives: Students may select courses from any of the following areas. For state certification in Industrial Education, the Department of Education recommends 9-10 Qtr. Hours in one field. Drafting is an exception and a student may select a maximum of 15 Qtr. Hours.

Communications

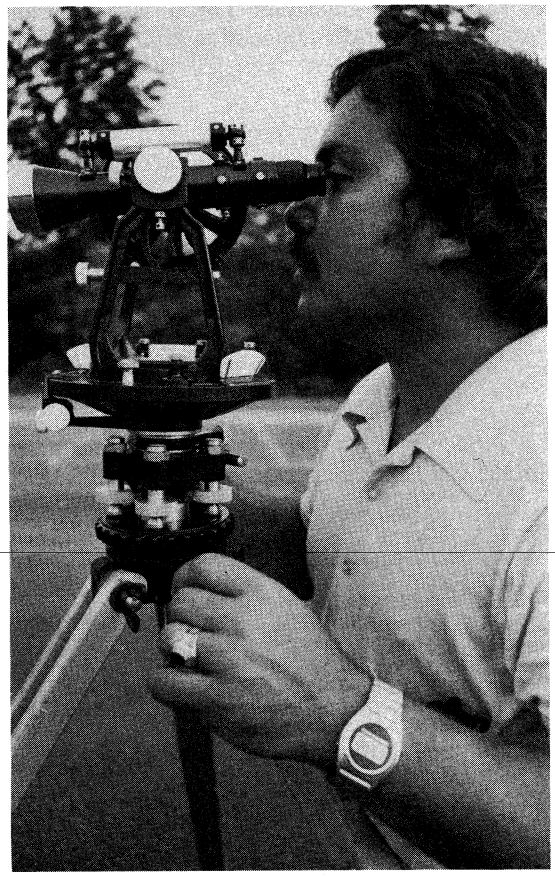
ARCH 111–112–113 Arch. Drft. (3 cr.)
ARTS 124–125–126 Drawing I–II–III (4 cr.)
ARTS 157–158–159 Ceramics I–II–III (4 cr.)
ARTS 170 Intro. to Graphic Skills (3 cr.)
ARTS 278 Printmaking: Silk Screen (4 cr.)
ARTS 279 Printmaking Relief (4 cr.)
ARTS 280 Printmaking: Intaglio (4 cr.)
DAPR 106 Prin. of Data Process (3 cr.)
DRFT 111–112–113 Drft. I–II–III (2 cr.)
ELEC 110 Intro. Elec. (4 cr.)
PHTG 101–102–103 Photo I–II–III (3 cr.)

Manufacturing and Construction

BLDG 100 Intro. to Construction (3 cr.)
BLDG 156 Dwelling Maintenance (3 cr.)
CIVL 181–182 Surveying I–II (4 cr.)
CIVL 140 Construction Planning (3 cr.)
INDT 111–112 Materials and Processes of Industry I–II (3 cr.)
WELD 106 Pipe Welding (3 cr.)
WELD 115 Arc and Gas Weld (4 cr.)

Power, Energy, Transportation

AIRC 101–102–103 Prin. of Refrig. (4 cr.)
APPL 120 Prin. of Appl. (2 cr.)
APPL 121–122–123 Major Appl. I–II–III (4 cr.)
AUTO 137 Consumer Auto Repair (2 cr.)
AUTO 176 Small Gasoline Engines (3 cr.)
MECH 131–132–133 Mach. Lab. I–II–III (2 cr.)



ELECTRONICS TECHNOLOGY
Associate in Applied Science Degree

Purpose: The curriculum is designed for persons who seek employment in the field of electronics. Additionally, the successful student is prepared for transfer into a baccalaureate program in Electronics Technology that is offered by a limited number of universities. Occupational objectives include: Electronics Technician / Instrument and Laboratory Technician / Radio and Television Technician / Electronics Product Sales Representative / Communication Technician.

Special Curriculum Admission Requirements: High school algebra and geometry.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act. + 1 Elective	1	1	
*ENGL	111–112 Eng. Comp.	3	3	
MATH	121–122–123 Engr. Tech. Math	5	5	5
ELEC	114–115 Fund. of D.C. & A.C.	4	4	
ELEC	116 Intro. to Circuit Analysis			4
ELEC	120 Tubes & Transistors	4		
ELEC	125 Intro. to Elec.		5	
ELEC	126 Amplifiers			5
PHYS	111 Tech. Phys.			4
	Total Credits	18	18	18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
PHED	Elective		1	
PHYS	112 Tech. Phys.	4		
*Soc. Sci.	Elect.	3	3	3
*ENGL	137 Tech. Writing			3
ELEC	227 Pulse & Switching Circuits	3		
ELEC	241–242–243 Communications	4	4	4
ELEC	276 Instr. & Meas.	4		
ELEC	250 Intro. to Computers		4	
ELEC	260 Control Circuits		4	
ELEC	249 TV Electronics			3
ELEC	287 Adv. Circuits & New Devices			2
ELEC	298 Sem. & Proj. or Coop. Ed.			2
DRFT	256 Elec. Drafting		2	
	Total Credits	18	18	17

Total minimum credits for Electronics Technology major - A.A.S. degree = 107.

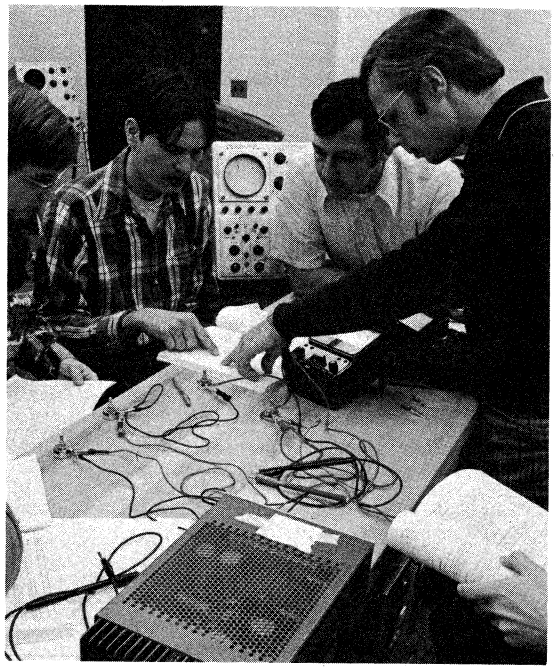
*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

ELECTRONICS TECHNICIAN
Certificate

Purpose: The Electronics curriculum is designed for persons who seek employment as electronics technicians. Also, the successful student is prepared to continue for an Associate in Applied Science Degree in Electronics Technology.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
CHEM	101 Gen. Chemistry	4		
ELEC	114 Fund. of D.C.	4		
ELEC	120 Intro. to Tubes & Trans.	4		
PHYS	111 Tech. Physics		4	
ELEC	115 Fund. of A.C.		4	
ELEC	125 Intro. to Elec.		5	
ELEC	116 Intro. to Cir. Analysis			4
ELEC	126 Amplifiers			5
ELEC	227 Pulse & Switch. Cir.			3
ENGL	100 Occup. Eng.			3
PSYC	128 Human Relations			3
MATH	121–122 Engr. Tech. Math	5	5	
	Total Credits	17	18	18

Total minimum credits for Electronics Technician major certificate = 53.



EMERGENCY MEDICAL SERVICES TECHNOLOGY

Certificate

Purpose: The EMDT curriculum is designed to develop the competency of pre-service or inservice personnel in methods of advanced emergency care. It provides the student with the knowledge about the acute critical differences in physiology, pathiophysiology, 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 experience in a hospital and on a mobile intensive care 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 Service 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 may need to be substantiated by a physician's report. The Emergency Medical Services Program reserves the right to determine the student's final acceptance. Students majoring in Emergency Medical Services Technology must begin course sequences in September. Early application is desirable. Students may take support courses prior to entering the Emergency Medical Services Program.

Special Curriculum Completion Requirements: Satisfactory health must be maintained for continuance in the program. Any student who receives a final grade less than "C" in any of the courses in the EMDT sequence must obtain permission from the Program Head to continue the major in EMDT 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 Qtr.	2nd Qtr.	3rd Qtr.
BIOL	151–152–153 Hum. Anat. & Phys. I–II–III	4	4	4
EMDT	111–112 Emergency Med. Services Tech. I–II	4	4	
EMDT	190 Coord. Practice		1	
ENGL	111–112 Eng. Comp. I–II	3	3	
FIRE	111–112 Hazardous Materials I–II or CHEM Electives		3	3
GENL	100 Orientation	1		
HLTH	100 Orientation to Allied Careers		1	
HLTH	124 Medical Terminology I	3		
PHED	100 Fund. of Phys. Activity + Elective			2
SPDR	136 Oral Communication or ENGL 113 Engl. Comp. III			3
Elective				4
	Total Credits	15	16	16

Total minimum credits for an Emergency Medical Services Technology major - certificate = 47.

EMERGENCY MEDICAL SERVICES TECHNOLOGY

Associate in Applied Science Degree

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).

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.

For students in the combined two year EMST certificate (Ambulance) and degree (Paramedic) program, the requirements of 3, 4 and 5 may be completed concurrently with the didactic and clinical portions of the EMDT program. These requirements must be fulfilled before the student begins the field internship. 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 a minimum of 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.

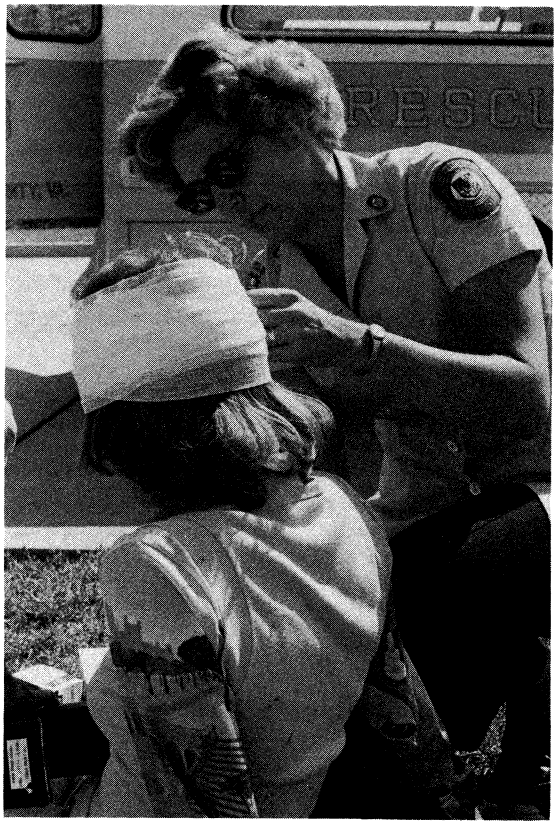
The letters should include information regarding the description of the course(s) taken, and the number of hours in didactic, clinical and practical field experience. Placement in the program will depend on the medical director's and program head's evaluations, school policy and the flexibility of the curriculum to fulfill student needs.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BIOL	151–152–153 Human Anatomy & Phys. I–II–III	4	4	4
EMDT	111–112 Emergency Medical Services Tech. I–II	4	4	
EMDT	190 Coord. Practice		1	
EMDT	217 Intro. to Cardiology or Elective			4
ENGL	111–112 English Comp. I–II	3	3	
FIRE	111–112 Hazardous Materials I–II or CHEM Electives		3	3
GENL	100 Orientation	1		
HLTH	100 Orientation to Allied Careers		1	
HLTH	124 Medical Terminology I	3		
PHED	100 Fund. of Phys. Act. + Elective			2
SPDR	136 Oral Communication or ENGL 113 Eng. Comp. III			3
	Total Credits	15	16	16

Second Year		1st Qtr.	Credits 2nd Qtr.	3rd Qtr.	
EMDT	216 Prin. of Extrication			4	
EMDT	226–227–228 Paramedic Procedures I–II–III	7	9	6	
EMDT	290 Coord. Practice				4
EMDT	298 Seminar & Project				2
HLTH	150 Concepts of Disease	3			
PHED	Elective		1		
*Social Science Electives		3	3	3	
General Electives			2	3	
	Total Credits	13	15	16	6

Total minimum credits for EMDT-Paramedic major A.A.S. degree = 97 hours.

*For further explanation of Social Science course requirements for A.A.S. degrees, see General Requirements for A.A.S. Degrees section.



ENGINEERING
Associate in Science Degree

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, Electrical Engineering, and others.

Special Curriculum Admission Requirements: 4 units of English, 4 units of mathematics or equivalent, and 1 unit of laboratory science (2 units preferred—Chemistry and Physics).

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
ENGL	111–112–113 Eng. Comp. I, II, III	3	3	3
MATH	141–142–143 Intro. to Math Anal. I, II, III	5	5	5
ENGR	104 Intro. to Engineering	3		
ENGR	105 Intro. to Engr. Methods		3	
ENGR	124 Engr. Graphics I		3	
CHEM	111–112–113 Gen. Inor. Chem. I, II, III	4	4	4
ENGR	140 Engr. Mech. I			3
PHED	100 Fund. of Phys. Act. + 1 Elective	1		1
	Total Credits	17	18	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
PHED	Elect.	1		
[1]Soc. Sci. Elect.		3	3	3
[2]Humanities Elect.		3		
ENGR	241–242 Engr. Mech. I, II	3	3	
ENGR	243 Engr. Mech III or ELEC 217–218 Elec. Cir. I, II			5
MATH	241–242–243 Adv. Math Analysis I, II, III	4	4	4
PHYS	221–222–223 Gen. Univ. Physics I, II, III	4	4	4
ENGR	206 Engr. Economy		3	
	Total Credits	18	17	16

Total minimum credits for Engineering majors - A.S. degree = 102.

[1]Soc. Sci. courses may be selected from the following: Economics, Geography, Government, History, Psychology, Social Science, or Sociology (Anthropology).

[2]Humanities courses may be selected from the following: Music, Arts, Drama, Language, Philosophy, Speech or English.

ENGINEERING DRAFTING
Certificate

Purpose: The curriculum is designed to prepare the student for employment after a course of study normally one academic year length. Alternatively the successful student can choose to transfer into one of the A.A.S. programs after completing the certificate program. Usually, substantial amount of credit can be so transferred. Occupational objectives include: Architectural Draftsman/Mechanical Engineering Draftsman/Structural Draftsman/Engineering Aide.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

Technical Drafting Concentration

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]ENGL	100 Occup. Engl	3		
ENGL	137 Tech. Writing			3
[2]MATH	118–119 Intro. to Tech. Math I & II	5	5	
ENGR	100 Intro. to Engr. Tech.	2		
Non-Technical Elect.		3	3	
GENL	100 Orientation	1		
ENGR	53 Elem. of Statics & Str. of Matl.			3
ENGR	198/197 Sem. & Proj. or Coop Ed.			2
DRFT	111 Tech. Draft. I	2		
DRFT	112–113 Tech. Draft. II & III		4	
DRFT	211 Av. Tech. Draft. V or Tech. Elect.			3
INDT	111–112 Mtl. & Processes of Indus. I & II		3	3
MECH	131–132 Machine Lab I & II		2	2
	Total Credits	16	17	16

Architectural Drafting Concentration		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]ENGL	100 Occup. Engl	3		
ENGL	137 Tech. Writing			3
[2]MATH	118–119 Intro. to Tech. Math	5	5	
ENGR	100 Intro to Engr. Tech.	2		
Non-Technical Elect.		3	3	
GENL	100 Orientation	1		
ENGR	53 Elem. of Statics & Str. of Materials			3
ENGR	298/297Sem. & Proj. or Coop Ed.			2
ARCH	111–112–113 Arch. Drafting I, II & III	3	3	3
ARCH	164–165 Mt. & Methods of Constr. I & II		3	3
Tech. Elective			2	2
	Total Credits	17	16	16

Total minimum credits for an Engineering Drafting Major (Certificate) = 49.

[1]For students who continue to a degree program, ENGL 111–112 is recommended.

[2]For students who continue to a degree program, MATH 121–122 is recommended.

ENVIRONMENTAL AND SCIENCE TECHNOLOGY

Associate in Applied Science Degree

Purpose: The curriculum is designed to accomplish two purposes: to prepare students to enter employment in a variety of environmental and science technology careers and to provide those now employed in these occupations the opportunity to upgrade their skills. Occupational objectives include: Water and wastewater treatment plant operators, air and water pollution control technicians, environmental and natural science technicians, chemical and biological science technicians.

With prior approval of the Division Chairman, students may modify this curriculum to accommodate specific career or employment requirements.

Special Curriculum Admission Requirements: Faculty interview and placement questionnaire.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year (Common to both Specializations)		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
*ENGL	111–112 Eng. Comp.	3	3	
*SPDR	136 Oral Comm.			3
MATH	118–119 Tech. Math I–II	5	5	
ENVR	106 Intro. to Sanitation	3		
PHED	100 Fund. of Phys. Act.	1	1	1
GENL	100 Orientation	1		
SCTE	111–112–113 Intro. to Env. and Sci. Tech.	4	4	4
ENVR	108 Env. Microbiology			4
Tech. Elect.			3	6
	Total Credits	17	16	18

Science Technology Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SCTE	204–205 Sci. Tech. Techniques	3	3	
SCTE	290 Coord. Internship or SCTE 297 Coop. Education	3	3	3
BIOL	101–102–103 Gen. Biol. (or Sci. or Tech. Elect.)	4	4	4
*Soc. Sci. Elect.		3	3	3
SCTE	298 Sem. & Proj.			1–5
Elect. (Applicable to type of tech.)		3	3	3
	Total Credits	16	16	14–18

Total minimum credits for Science Technology specialization - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

Wastewater Treatment Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SCTE	204–205 Sci. Tech. Techniques	3	3	
SCTE	290 Coord. Internship or SCTE 297 Coop. Education	3	3	3
BIOL	101–102–103 Gen. Biol. (or Sci. or Tech. Elect.)	4	4	4
*Soc. Sci. Elect.		3	3	3
ENVR	216 Wtr. Supp. & Wastewtr. Collect.	3		
ENVR	166 Wastewtr. Trtmt. Plant Op.		5	
ENVR	167 Fund. of Solids Processing			4
ENVR	168 Wastewtr. Trtmt. Plant Control			4
	Total Credits	16	18	18

Total minimum credit for Wastewater Treatment specialization - A.A.S. degree = 103.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

ENVIRONMENTAL AND SCIENCE TECHNOLOGY/SCIENCE TECHNICIAN AIDE

Certificate

Purpose: This curriculum is designed to provide the specialized skills and knowledge for employment as a laboratory technician. The occupational areas include Bio-medical laboratory, Research laboratory, and Animal laboratory.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
MATH	118–119 Intro. to Tech. Math.	5	5	
SCTE	111–112–113 Intro. to Envr. & Sci. Tech.	4	4	4
ENVR	106 Intro. to Sanitation	3		
ENVR	108 Environ. Microbiology			4
ENGL	100 Occupational Engl.	3		
Social Science Electives			3	3
Tech. Elective				3
Science Elective			3	
	Total Credits	15	15	14

Total minimum credits for the Science Technician Aid certificate = 44.

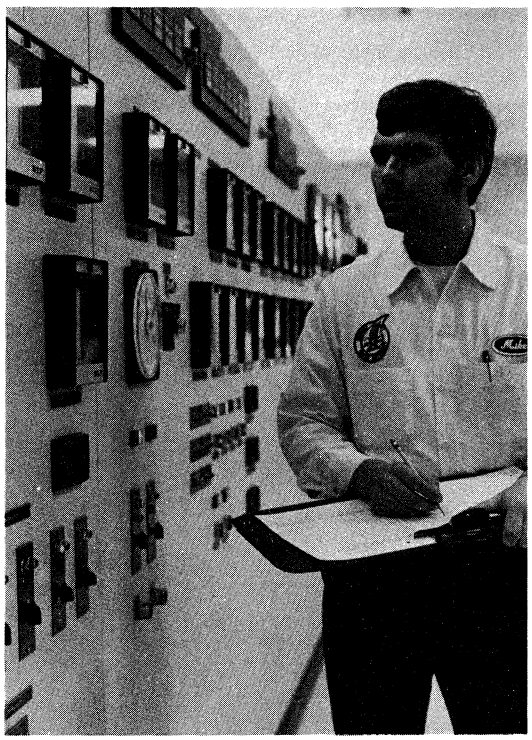
ENVIRONMENTAL AND SCIENCE TECHNOLOGY/WASTEWATER TREATMENT
Certificate

Purpose: The curriculum is designed to provide educational opportunities for individuals whose goals are to become wastewater treatment plant operators. There is state certification for plant operators at four levels...IV through I. This program will enable an individual to successfully progress through the classification tests as well as to perform effectively the related tasks in the wastewater treatment plant environment.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENVR	60 Basic Concepts for Wtr. & Wastewater Treatment	3		
ENVR	216 Water Supply & Wastewater Collection	3		
ENGL	100 Occup. Eng.	3		
ENVR	166 Wastewtr. Trtmt. Plant Op.		5	
ENGL	137 Tech. Writing		3	
Soc. Sci. Elect.			3–4	
ENVR	167 Fund. of Solids Proc.			4
ENVR	168 Wastewtr. Trtmt. Plant Control			4
	Total Credits	9	11-12	8

Total minimum credits for Wastewater Treatment certificate = 28.



FINE ARTS
Associate in Arts Degree

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 Qtr.	2nd Qtr.	3rd Qtr.
ARTS	111–112–113 History & Appre. of Art	3	3	3
ARTS	124–125–126 Drawing	4	4	4
ARTS	161–162–163 Fund. of Design	4	4	4
ENGL	111–112–113 Eng. Comp.	3	3	3
GENL	100 Orientation	1		
[1]Soc. Sci. Elect.		3	3	3
	Total Credits	18	17	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARTS	281–282–283 Advanced Drawing	4	4	4
[2]ARTS	291–292–293 Design IV–V–VI or approved studio or general electives	4	4	4
[2]ARTS	Approved studio or general electives	4	4	4
ENGL	Amer., Engl., or World Lit.	3	3	
PHED	100 Fund of Phys. Act. + 2 Electives	1	1	1
	Total Credits	16	16	13

Total minimum credits for Fine Arts major - A.A. degree = 97.

[1]Soc. Sci. courses may be selected from the following: Economics, Geography, Government, 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.

FIRE SCIENCE

Associate in Applied Science Degree

Administration Specialization

Purpose: The curriculum is designed for persons seeking employment in the broad field of the fire service with specialization in administration. The occupational objectives include: Fire Suppression / Communications / Insurance Investigation / Equipment Sales & Service.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	100 Intro. to Fire Sci.	3		
FIRE	106 Fund. of Fire Serv. Admin.	3		
FIRE	108 Fund. of Fire Suppression	3		
FIRE	116 Fund. of Fire Prevention		3	
FIRE	120 Fire Protection Equip. & Sys.			3
FIRE	141 Fire Admin.		3	
*ENGL	111–112 Eng. Comp.	3	3	
MATH	101–102 Fund. of Math		3	3
GENL	100 Orientation	1		
NASC	121–122–123 Natural Sciences	4	4	4
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
Electives				6
	Total Credits	17	17	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	147 Meth. of Fire Inst.	3		
FIRE	208 Water Distrib. Sys.			3
FIRE	216 Fire Hydra. & Equip.			4
FIRE	227 Bldg. Constr. & Codes		4	
FIRE	298 Sem. & Proj.			3
PHED	Elect.	1		
*Soc. Sci. Elect.		3	3	3
ENGL	137 Tech. Writing	3		
BUAD	110 Human Relations & Ldrshp. Trng.	3		
BUAD	276 Personnel Mgt.		3	
*SPDR	136 Oral Comm.		3	
	Electives	3	3	3
	Total Credits	16	16	16

Total minimum credits for Fire Science major - A.A.S. degree = 99.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

Investigation Specialization

Purpose: The curriculum is designed for persons seeking employment in the broad field of the fire service with specialization in fire investigation.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	100 Intro. to Fire Sci.	3		
FIRE	111–112 Hazardous Matl.		3	3
FIRE	116 Fund. of Fire Prevention		3	
FIRE	120 Fire Protection Equip. & Sys.			3
FIRE	146 Fire Admin. & Law	3		
*ENGL	111–112 Eng. Comp.	3	3	
GENL	100 Orientation	1		
MATH	101–102 Fund. of Math	3	3	
NASC	121–122–123 Natural Science	4	4	4
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
Electives				6
	Total Credits	17	17	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	147 Meth. of Fire Inst.	3		
FIRE	119 Indust. Fire Prot.	3		
FIRE	227 Bldg. Constr. & Codes		4	
FIRE	237 Arson Detect. & Inv.		3	
FIRE	298 Sem. & Proj.			3
ADJU	231–232–233 Crim. Law Evid. & Procedures	3	3	3
PHED	Elect.	1		
*Soc. Sci. Elect.		3	3	3
ENGL	137 Tech. Writing		3	
*SPDR	136 Oral Comm.			3
Elective		3		3
	Total Credits	16	16	15

Total minimum credits for Fire Science major A.A.S. degree = 98.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

Management Specialization

Purpose: The curriculum is designed for persons seeking employment in the broad field of the fire service with specialization in fire management. The occupational objectives include: Fire Suppression / Communications / Insurance Investigation / Equipment Sales & Service.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	100 Intro. to Fire Sci.	3		
FIRE	108 Fund. of Fire Suppression	3		
FIRE	109 Fire Suppression Oper.			3
FIRE	111–112 Hazardous Matl.		3	3
FIRE	116 Fund. of Fire Prevention		3	
FIRE	120 Fire Protection Equip. & Sys.			3
*ENGL	111–112 Eng. Comp.	3	3	
MATH	101–102 Fund. of Math	3	3	
GENL	100 Orientation	1		
NASC	121–122–123 Natural Sciences	4	4	4
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
	Electives			3
	Total Credits	17	17	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	137 Fire Fight. Tact. & Strat.		3	
FIRE	147 Meth. of Fire Inst.	3		
FIRE	119 Indust. Fire Prot.	3		
FIRE	208 Water Distrib. Sys.			3
FIRE	216 Fire Hydra. & Equip.			4
FIRE	227 Bldg. Constr. & Codes		4	
FIRE	298 Sem. & Proj.			3
PHED	Elect.	1		
*Soc. Sci.	Elect.	3	3	3
*SPDR	136 Oral Comm.	3		
*ENGL	137 Tech. Writing		3	
Electives		3	3	3
	Total Credits	16	16	16

Total minimum credits for Fire Science major - A.A.S. degree = 99.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

George Mason University Transfer Program

Purpose: This curriculum is designed for persons who plan to transfer to George Mason University to complete a Bachelor of Science Degree in Fire Administration and Technology.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	100 Intro. to Fire Sci.	3		
FIRE	106–141 Fire Serv. Adm.	3	3	
FIRE	108–109 Fund. Fire Supp.	3		3
FIRE	111–112 Haz. Matl.		3	3
FIRE	116 Fund. of Fire Prev.		3	
FIRE	120 Fire Prot. Equip. & Sys.			3
ENGL	111–112–113 Eng. Comp.	3	3	3
MATH	191–192–193 Finite Math.	3	3	3
[1]GENL	100 Orientation	1		
[1]PHED	100 Fund. of Phys. Act. & 2 Elect.	1	1	1
	Total Credits	17	16	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	119 Industrial Fire Prot.	3		
FIRE	137 Fire Fight. Tact. & Strat.		3	
FIRE	208 Water Distrib. Systems			3
FIRE	216 Fire Hydraulics & Equip.			4
FIRE	227 Bldg. Const. & Codes		4	
SPDR	136 Oral Communication	3		
SOCI	101–102–103 Intro. Sociology	3	3	3
[2]Sciences with laboratory		4	4	4
[3]Electives		3	3	3
	Total Credits	16	17	17

Total minimum credits for Fire Science major A.A.S. degree = 99.

[1]GENL 100, 1 cr., PHED 100, 1 cr., and 2 credits of PHED electives will not be acceptable for transfer.

[2]Science courses may be selected from Biology, Chemistry, Physics and Geology.

[3]Elective courses may be selected from the following: Economics, Psychology, Sociology & Anthropology, Social Science, Government and History. It is recommended that a student select a year's sequence of courses which total 9 credits. A student should obtain the guidance of a counselor or a Fire Science faculty advisor prior to registering for these courses.

FIRE SCIENCE
Certificate

Administration Specialization

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	100 Intro. to Fire Sci.	3		
FIRE	106 Fund. of Fire Serv. Admin.	3		
FIRE	116 Fund. of Fire Prevention		3	
FIRE	120 Fire Protection Equip. & Sys.			3
FIRE	141 Fire Admin.		3	
FIRE	146 Fire Admin. & Law			3
ENGL	111–112 Eng. Comp.	3	3	
MATH	101–102 Fund. of Math		3	3
NASC	121–122–123 Natural Science	4	4	4
GENL	100 Orientation	1		
BUAD	110 Human Relations & Ldrshp. Trng.	3		
Soc. Sci. Elect.				3
	Total Credits	17	16	16

Total minimum credits for Fire Administration major certificate = 49.

Investigation Specialization

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	100 Intro. to Fire Sci.	3		
ADJU	231 Criminal Law, Evid. & Procedures	3		
FIRE	116 Fund. of Fire Prevention		3	
FIRE	120 Fire Protection Equip. & Sys.			3
FIRE	111–112 Hazardous Matl.		3	3
FIRE	237 Arson Detect. & Inv.			3
ENGL	111–112 Eng. Comp.	3	3	
MATH	101–102	3	3	
NASC	121–122–123 Natural Science	4	4	4
GENL	100 Orientation	1		
Soc. Sci. Elect.				3
	Total Credits	17	16	16

Total minimum credits for Fire Investigation major certificate = 49.

Management Specialization

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
FIRE	100 Intro. to Fire Sci.	3		
FIRE	108 Fund. of Fire Suppression	3		
FIRE	109 Fire Suppression Oper.			3
FIRE	111–112 Hazardous Matl.		3	3
FIRE	116 Fund. of Fire Prevention		3	
FIRE	120 Fire Protection Equip. & Sys.			3
ENGL	111–112 Eng. Comp.	3	3	
MATH	101–102 Fund. of Math	3	3	
NASC	121–122–123 Natural Science	4	4	4
GENL	100 Orientation	1		
Soc. Sci. Elective				3
	Total Credits	17	16	16

Total minimum credits for Fire Management major certificate = 49.

GENERAL STUDIES
Associate in Science Degree

Purpose: The curriculum is designed for persons who are interested in transfer to a four-year college or university, and wish the flexibility of either broadening or narrowing as much as possible their first two years of undergraduate study. A student entering college with uncertain educational goals will have sufficient flexibility to take courses in a wide variety of areas of study.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL	111–112–113 Eng. Comp.	3	3	3
HIST	Elect.	3		
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act. & 2 Elect.	1	1	1
[1]Humanities Elect.		3		
[2]Soc. Sci. Elect.		3	3	3
Electives		0–4	8–11	8–11
	Total Credits	14-18	15-18	15-18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[3]Electives		15-18	15-18	15-18

Total minimum credits for a General Studies major A.S. degree = 97.

[1]Humanities courses may be selected from the following: MUSIC, ART, DRAMA, LANGUAGE, PHILOSOPHY, SPEECH, ENGLISH, or HUMANITIES.

[2]Soc. Sci. courses may be selected from the following: ECONOMICS, PSYCHOLOGY, SOCIOLOGY (ANTHROPOLOGY), SOCIAL SCIENCE, GOVERNMENT, HISTORY.

[3]Electives may be selected according to interest. It is recommended that a student select a year's sequence or combination of courses which total 5 credits or more if transfer is desired. A student desiring to transfer should consult the college or university to which transfer is contemplated in addition to seeking the guidance of a counselor and/or faculty advisor. All requirements for the degree are included in the first year as specified prefixes and specified electives. Any course offered by the college numbered 100 or above is applicable toward meeting the graduation requirements with the General Studies major and may be taken as an elective. However, if transfer is planned, seek advisor approval of all electives. You may earn up to 15 quarter hours of credit toward this degree in courses which may be repeated for academic credit (e.g., SPDR 119).

HORTICULTURAL TECHNOLOGY

Associate in Applied Science Degree

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: Landscaping, floristry, greenhouse management, garden center operation, fruit and vegetable production, grounds maintenance, sales and marketing in related industries.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year (Common to both Specializations)		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
HORT	100 Intro. to Hort.	4		
BUAD	121–122–123 Bus. Math	3	3	3
*ENGL	111–112 Eng. Comp.	3	3	
SPDR	136 Oral Comm.			3
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act. & 2 Elect.	1	1	1
CHEM	110 Hort. Chem.	4		
HORT	107 Plant Propagation			3
HORT	146 Horticulture Botany		4	
ECON	160 Amer. Econ.		3	
PSYC	110 Prin. of Appl. Psych.		3	
HORT	120 Soils			4
GOVT	180 Amer. Const. Govt.			3
	Total Credits	16	17	17

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements for A.A.S. Degrees section.

Landscape Grower Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BUAD	174–175 Small Bus. Mgt.	3	3	
MKTG	100 Prin. of Mktg.	3		
HORT	130 Envir. Factors in Plant Growth	3		
HORT	216 Horticultural Entomology	4		
HORT	256 Woody Plants	3		
HORT	290 Coord. Intern. or Coop. Ed.	1–5		
MKTG	109 Prin. of Salesmanship		3	
HORT	217 Hort. Plant Pathology		3	
HORT	257 Herbaceous Plants			3
HORT	250 Landscape Planning		2	
HORT	Elective		2–3	
HORT	220 Nursery Mgt.			3
HORT	240 Turf Green Mgt.			3
HORT	230 Greenhouse Mgt.		3	
HORT	126 Landscape Constr. & Maint.			3
HORT	Elective			4–6
	Total Credits	17-21	16-17	16-18

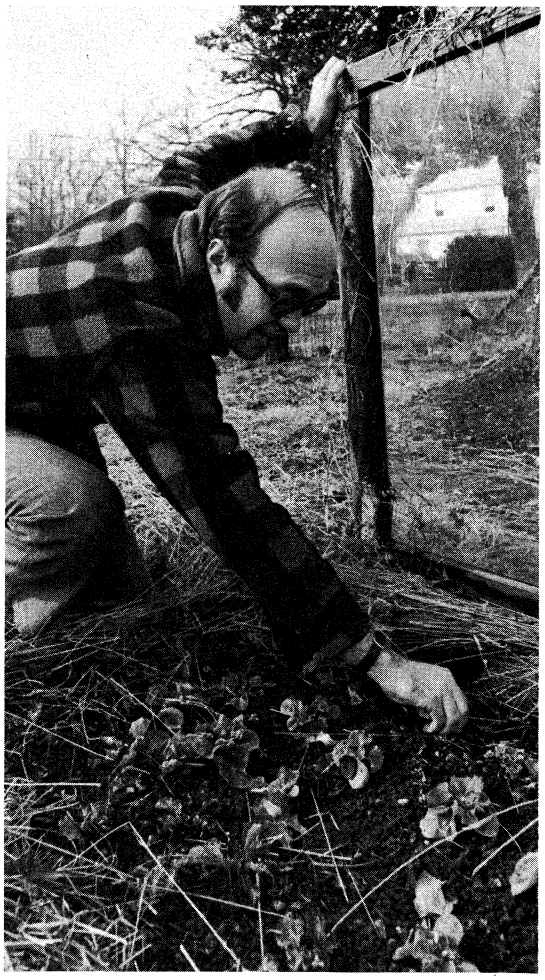
Total minimum credits for Landscape/Grower specialization - A.A.S. degree = 99.

Floriculture Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BUAD	174–175 Small Bus. Mgt.	3	3	
MKTG	100 Prin. of Mktg.	3		
HORT	130 Envir. Factors in Plant Growth	3		
HORT	216 Horticultural Entomology	4		
HORT	270 Floral Design & Arranging I	2		
HORT	290 Coord. Intern. or Coop. Ed.	1–5		
MKTG	109 Prin. of Salesmanship		3	
HORT	217 Hort. Plant Pathology		3	
HORT	257 Herbaceous Plants			3
HORT	266 House & Conservatory Plants.		3	
HORT	250 Landscape Planning		2	
HORT	230 Greenhouse Mgt.		3	
HORT	260 Flower Shop Mgt.			3
HORT	156 Greenhouse Crop Production			3
HORT	276 Floral Design & Arranging II			2
[1]HORT	Elective			4–6
	Total Credits	16-20	17	15-17

Total minimum credits for Floriculture specialization - A.A.S. degree = 98.

[1]Following is a list of approved Horticulture electives: HORT 157 Fruit Production, HORT 158 Vegetable Production, HORT 226 Garden Center Management, HORT 136 Interior Landscaping.



HOTEL, RESTAURANT & INSTITUTIONAL MANAGEMENT
Associate in Applied Science Degree

Food Service Management Specialization

Purpose: The curriculum is designed to enable the student to enter executive training and management positions in Food Establishments, College Feeding Complexes, Resorts or Private Clubs. The curriculum specializes in the Food Service management phase of the hospitality industry.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]BUAD	121–122 Business Math. I–II (or a transferable MATH I–II series)		3	3
[2]ENGL	111–112–113 English Comp.	3	3	3
GENL	100 Orientation	1		
HRIM	100 Intro. to Hotel & Rest. Management	3		
HRIM	124–125 Prin. of Food Preparation	4	4	
HRIM	126 Prin. of Commercial Food Preparation			4
HRIM	184–185 Hotel-Rest. Org. & Man.		3	3
HRIM	236 Sanitation	3		
PHED	100 Fund. of Phys. Act. + Elective		1	1
[2]Social Science Electives		3	3	3
	Total Credits	17	17	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ACCT	211–212 Prin. of Accounting I–II	3	3	
DIET	130 Nutritional Care or DIET 136 Diet for Living			3
HRIM	186 Equipment Layout-Design	3		
HRIM	226 Menu Planning & Food Merchandising		3	
HRIM	227 Advanced Foods			3
HRIM	246 Labor Cost Control		3	
HRIM	264 Food & Beverage Cost Controls I		3	
HRIM	277 Personnel Mngt. & Training for Hot., Rest. & Inst.	3		
HRIM	286 Catering			3
HRIM	289 Hotel & Motel Law			3
[3]HRIM	Electives	6	3	3
PHED	Elective	1		
	Total Credits	16	15	15

Total minimum credits for Food Service Specialization - HRIM A.A.S. degree = 97.

[1]For alternate MATH courses, see your faculty advisor.

[2]For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[3]HRIM electives may be selected from HRIM 156, 168, 188, 265, 287, 297, ACCT 126, 213, and DAPR 106.

HOTEL, RESTAURANT & INSTITUTIONAL MANAGEMENT
Certificate

Food Service Management Specialization

Purpose: The curriculum is designed for persons seeking employment in the hospitality industry and for those presently employed who desire updating in their occupational specialty.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]ENGL	111 English Comp. I	3		
GENL	100 Orientation	1		
HRIM	100 Intro. to Hotel/Rest. Management	3		
HRIM	124–125 Prin. of Food Preparation I–II	4	4	
HRIM	126 Prin. of Commercial Food Preparation			4
HRIM	184–185 Hotel-Rest. Org. & Man. I–II		3	3
HRIM	226 Menu Planning & Food Merchandising		3	
HRIM	236 Sanitation	3		
HRIM	277 Personnel Man. & Training for Hot., Rest. & Inst.			3
[2]HRIM	Elective		3	
[3]Social Science Elective				3
	Total Credits	14	13	13

Total minimum credits for HRIM Food Service Management certificate = 40.

[1]ENGL 100 Occupational English may be substituted; however, it will not count toward the A.A.S. degree.

[2]HRIM electives may be selected from HRIM 156, 168, 186, 188, 264, 265, 266, 286, 287, 289, 297, DIET 130, 136, ACCT 211, 212, and BUAD 121, 122.

[3]For social science courses, refer to General Requirements for A.A.S. Degrees section.

HOTEL, RESTAURANT & INSTITUTIONAL MANAGEMENT
Associate in Applied Science Degree

Hotel-Motel Management Specialization

Purpose: The curriculum is designed to enable the student to enter executive training and management positions in Hotels, Motor Hotels, and Clubs. The curriculum specializes in the Hotel/Motor Hotel management phase of the public hospitality industry.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]BUAD	121–122 Business Math. I–II (or a transferable MATH I–II series)		3	3
[2]ENGL	111–112–113 English Comp.	3	3	3
GENL	100 Orientation	1		
HRIM	100 Intro. to Hotel & Rest. Management	3		
HRIM	124–125 Prin. of Food Preparation	4	4	
HRIM	126 Prin. of Commercial Food Preparation	4	4	
HRIM	184–185 Hotel-Rest. Org. & Man.		3	3
HRIM	236 Sanitation	3		
PHED	100 Fund. of Phys. Act. + Elective		1	1
[2]Social Science Electives		3	3	3
	Total Credits	17	17	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ACCT	211–212 Prin. of Accounting I–II	3	3	
HRIM	168 Executive Housekeeping			3
HRIM	188 Marketing of Hospitality Services		3	
HRIM	246 Labor Cost Control		3	
HRIM	264 Food & Beverage Cost Control I		3	
HRIM	277 Personnel Man. & Training for Hot., Rest. & Inst.	3		
HRIM	286 Catering			3
HRIM	287 Hotel/Motel Front Office Procedures	3		
HRIM	289 Hotel & Motel Law			3
[3]HRIM	Electives	6	3	6
PHED	Elective	1		
	Total Credits	16	15	15

Total minimum credits for HRIM Hotel/Motel Specialization - A.A.S. degree = 97.

[1]For alternate MATH courses, see your faculty advisor.

[2]For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]HRIM Electives may be selected from: HRIM 156, 186, 226, 265, 266, 297, ACCT 126, 213, DAPR 106, and DIET 130, 136.

HOTEL, RESTAURANT & INSTITUTIONAL MANAGEMENT
Certificate

Hotel-Motel Management Specialization

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]ENGL	111 English Comp. I		3	
GENL	100 Orientation	1		
HRIM	100 Intro. to Hotel/Restaurant Management	3		
HRIM	124–125 Prin. of Food Preparation I–II	4	4	
HRIM	168 Executive Housekeeping			3
HRIM	184–185 Hotel-Rest. Org. & Man. I–II		3	3
HRIM	188 Marketing of Hospitality Services		3	
HRIM	277 Personnel Man. & Training for Hot., Rest. & Inst.			3
HRIM	287 Hotel/Motel Front Office Procedures	3		
[2]HRIM	Elective	3		
[3]Social Science Elective				3
	Total Credits	14	13	12

Total minimum credits for Hotel/Motel Management certificate = 39.

[1]ENGL 100 Occupational English may be substituted; however, it will not count toward the A.A.S. degree

[2]HRIM electives may be selected from HRIM 156, 168, 186, 188, 264, 265, 266, 286, 287, 289, 297, DIET 130, 136, ACCT 211, 212, and BUAD 121, 122.

[3]For social science courses, refer to General Requirements for A.A.S. Degrees section.

HOTEL, RESTAURANT & INSTITUTIONAL MANAGEMENT
Certificate

Travel and Tourism Specialization

Purpose: Supplement the staffs of airlines, automobile associations, hotel and hotel chains, major oil companies, railroads, steamship companies, and travel agencies by providing new employees who have combined meaningful technical training with work experience. Help develop and up-date the present manpower in Travel Industry.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BUAD	121 Business Math. I		3	
ENGL	111 English Comp. I	3		
HRIM	150 Intro. to the Travel Industry	3		
HRIM	154–155 Geography of Tourism I–II	3	3	
[1]HRIM	159 Grnd. Transport., Tours, Cruises & Services Planning		3	
[1]HRIM	177 Domestic Air Travel Planning		3	
[2]HRIM	178 International Air Travel Planning			3
[2]HRIM	179 Prin. of Group Travel Planning			3
HRIM	189 Marketing & Sales Man. for Travel Ind.			3
HRIM	190 Coord. Internship or HRIM Elective			3
HRIM	277 Personnel Man. & Training for Hot., Rest. & Inst.	3		
PSYC	110 Prin. of Applied Psych. or Social Science Elective		3	
[3]SECR	111 Typewriting I	3		
	Total Credits	15	15	12

Total minimum credits for Travel & Tourism certificate = 42.

[1]HRIM 150 is a prerequisite.

[2]HRIM 177 is a prerequisite.

[3]May be completed by taking the ABLE examination.

HUMAN SERVICES ASSOCIATE
Associate in Applied Science Degree

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 alcohol/drug rehabilitation counseling, gerontology, mental health, and social/community services. Occupational objectives include: Drug and Alcohol Rehabilitation Counselors, Gerontology Assistants, Nursing Home Assistants, Mental Health Technician, Community Development and Social Service 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 less than "C" in any of the courses in the Human Services major must obtain permission from the Program Head to continue the major in Human Services, 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 are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year (Common to all specializations)		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENG	111–112–113 Eng. Comp.	3	3	3
GENL	100 Orientation	1		
SOCI	101–102–103 Intro. Soc.	3	3	3
PSYC	201–202–203 Gen. Psych.	3	3	3
PSYC	231–232–233 Human Growth & Development	3	3	3
PHED	100 Fund. of Phys. Act. & 1 elective	1	1	
HMSV	106 Intro. to Human Services	3		
HMSV	134–135 Helping Relationships I–II		3	3
HMSV	128 Community Resources & Services			3
	Total Credits	17	16	18

Alcohol & Drug Abuse Rehabilitation Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
HMSV	211–212–213 Alcohol & Drug Abuse Rehab. Prog. I, II, III	3	3	3
HMSV	290 Coord. Internship (or HMSV 297 Co-op. Ed.)	2	2	2
HMSV	298 Sem. & Proj.			3
HMSV	144–145 Group Process I–II		3	3
MENT	104–105 Intro. to Mental Health	3	3	
MENT	221–222–223 Mental Health I, II, III	3	3	3
*SOCI	236 Marriage & the Family	3		
PBSV	258 Soc. Change Skills		3	
PHED	elective	1		
	Total Credits	15	17	14

*or approved substitute

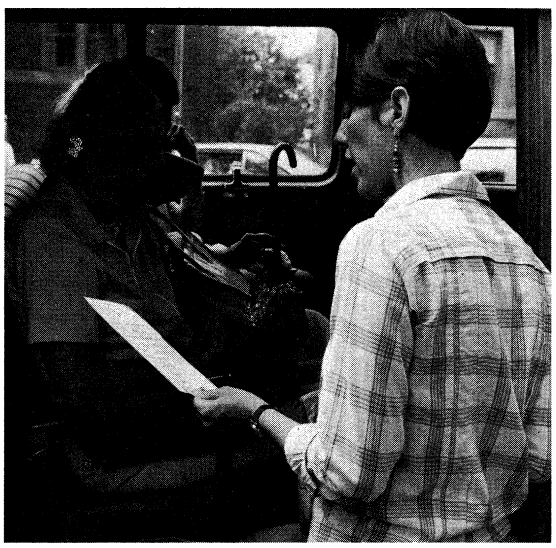
Total minimum credits for Alcohol & Drug Abuse Rehabilitations specialization - A.A.S. degree = 97.

Gerontology Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
HMSV	201–202–203 Gerontology I–II–III	3	3	3
HMSV	144–145 Group Process I–II		3	3
HMSV	217 Rec. for Senior Adults		3	
HMSV	290 Coord. Internship (or HMSV 297 Co-op Ed.)	2	2	2
HMSV	298 Sem. & Proj.			3
MENT	221–222 Mental Health I–II	3	3	
HLTH	110 Concepts of Personal & Community Hlth.	3		
PBSV	258 Soc. Change Skills		3	
*SOCI	266 Death & Society	3		
PHED	elective			1
Approved elective				3
	Total Credits	14	17	15

*or approved substitute

Total minimum credits for Gerontology specialization - A.A.S. degree = 97.



Mental Health Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
MENT	104–105 Intro. Mental Health	3	3	
MENT	221–222–223 Mental Health I, II, III	3	3	3
MENT	110 Intro. to Abnormal Psych.			3
MENT	116 Activities Therapies		3	
MENT	230 Sociology of Mental Hlth.	3		
HMSV	144–145 Group Process I–II		3	3
HMSV	290 Coord. Internship (or HMSV 297 Co-op. Ed.)	2	2	2
HMSV	298 Sem. & Proj.			3
PBSV	258 Soc. Change Skills		3	
*SOCI	236 Marriage & the Family	3		
PHED	Elective	1		
	Total Credits	15	17	14

*or approved substitute

Total minimum credits for Mental Health specialization - A.A.S. degree = 97.

Social & Community Services Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
HMSV	144–145 Group Process I, II		3	3
HMSV	290 Coord. Internship (or HMSV 297 Co-op Ed.)	2	2	2
HMSV	298 Sem. & Proj.			3
PBSV	116 Public Personnel Admin.	3		
PBSV	258 Social Change Skills		3	
PBSV	259 Social Legislation			3
SOCI	184–185 Cont. Soc. Problems I, II	3	3	
*SOCI	236 Marriage & the Family	3		
MENT	221–222–223 Mental Health I, II, III	3	3	3
MENT	230 Soc. of Mental Health	3		
PHED	Elective		1	
	Total Credits	17	15	14

*or approved substitute

Total minimum credits for Social/Community Services specialization - A.A.S. degree = 97.

INTERIOR DESIGN

Associate in Applied Science Degree

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 cordination; (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 (six quarters) 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.

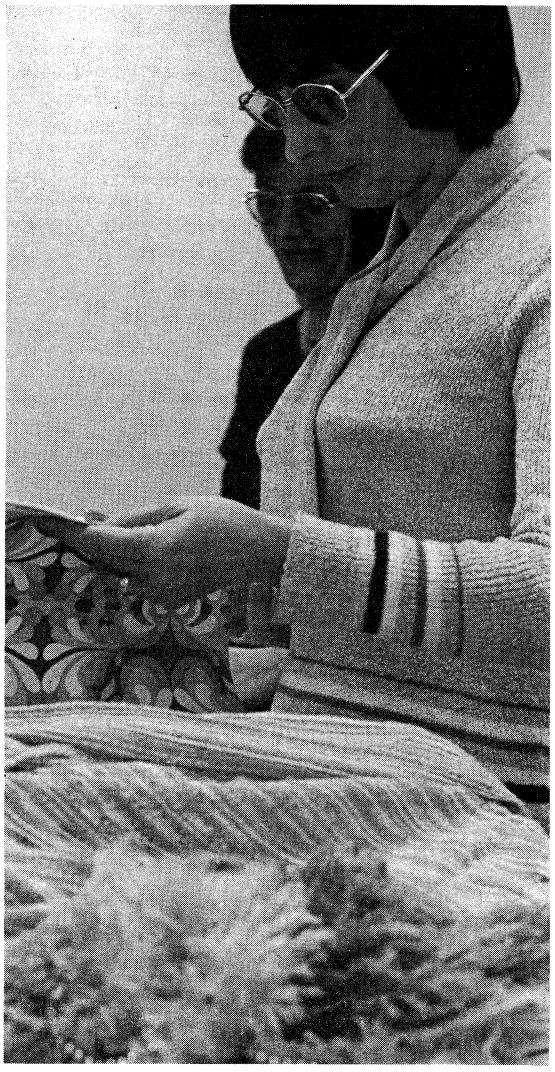
Coordinated Internship / Cooperative Education: Each student, when he/she reaches the end of the curriculum, is required to spend 24 hours per week under the direct supervision of an interior designer, interior design firm or architectural design firm, for one quarter. The student will apply for the intership 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 Qtr.	2nd Qtr.	3rd Qtr.
INDG	104 Tech. of Interior Design	3		
ARTS	154–155–156 Design	3	3	3
INDG	105 Beg. Drafting Tech. for the Int. Designer		3	
INDG	106 Isometrics and Model Const.			3
INDG	107 Perspective and Rendering		3	
ARTS	111–112–113 Hist. & Appre. of Art	3	3	3
INDG	109 Styles in Furniture & Int.			3
ENGL	111–112 Eng. Comp.	3	3	
*SPDR	136 Oral Comm.			3
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act & 1 Elective	1	1	
INDG	108 Color and Space Theories	3		
HORT	298 Landscape Arch. for Int. Desig. (Seminar & Project)			3
	Total Credits	17	16	18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
INDG	208 Advanced Drafting Tech.	3		
INDG	206 Textile, Floorcoverings, Wall & Window Treat.		3	
INDG	207 Furniture, Lighting Equipment and Access.		3	
INDG	216 Bus. Procedures for Int. Design	3		
INDG	299 Supervised Study		3	
INDG	290 Coord. Intern. or Co-op Educ.			4–5
PSYC	110 Principles of Applied Psyc.	3		
Social Science Electives			3	3
ARTS	183 or ARTS 171	3		
INDG	217 Int. Design Trade Sources		3	
INDG	Electives	6	3	2–3
PHED	Elect.			1
	Total Credits	18	18	10-12

Total minimum requirements for Interior Design specialization A.A.S. degree = 97.

[1]Areas of electives may also be selected from the following curricula which offer complimentary areas to Interior Design: Architectural Technology, Commercial Art, Art History, Business Administration, Horticultural Technology/Floral Design, Hotel Management, Retail Merchandising.



LEGAL ASSISTANT
Certificate

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 criminal and civil 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 and a satisfactory interview with the Program Director. Within practical limits, the curriculum will accommodate students with diverse educational backgrounds.

Enrollment in the curriculum is limited. The curriculum provides equality of opportunity in admission, and in all other areas, without discrimination or segregation on the grounds of race, color, sex, religion, or natural origin. The curriculum permits the enrollment in each individual course, as auditors or for credit, a limited number of non-degree candidate or candidates pursuing degrees in other areas.

Special Curriculum Completion Requirements: To remain in the program, students must complete each of the Administration of Justice (ADJU) and Legal (LEGL) courses in the program with a grade of "C" or better.

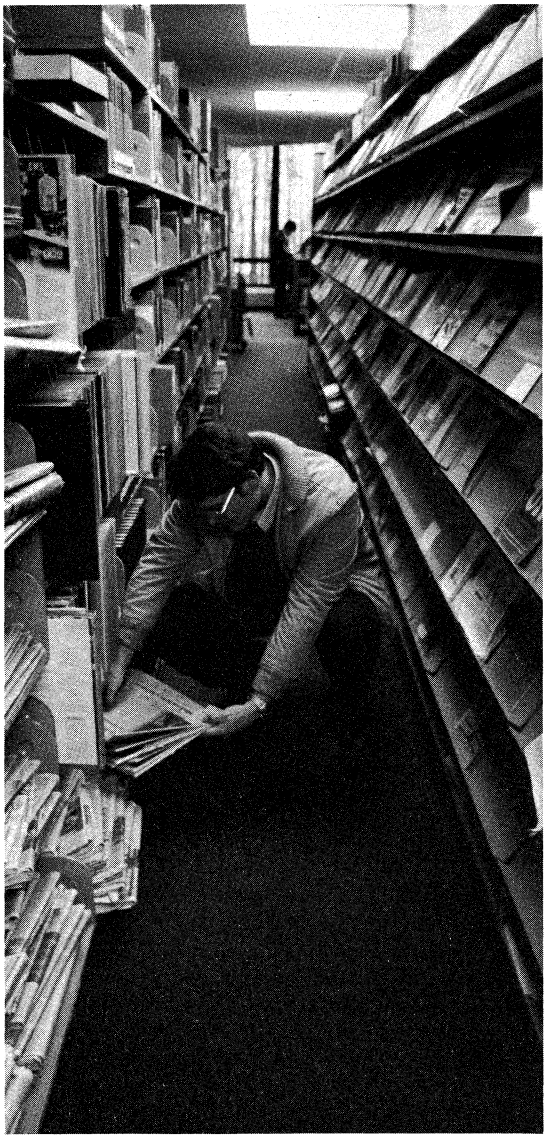
Cooperative Education: Students in this curriculum will participate in at least 6 quarter hours of Cooperative Education unless they already have equivalent experience.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	237 Administration of Justice			3
BUAD	100 Introduction to Business	3		
ENGL	111–112–113 English Composition I, II, III	3	3	3
GENL	100 Orientation	1		
LEGL	110 Overview of Legal Processes	3		
LEGL	126 Legal Research	3		
LEGL	134 Domestic Relations		3	
LEGL	136 Law Office Management		3	
LEGL	226 Trial Practice			3
LEGL	236 Real Estate Abstracting			3
PHED	100 Fund. of Phys. Act. + 2 Electives	1	1	1
SPDR	136 Oral Communications		3	
SOCI	101–102–103 Intro. to Sociology, I, II, III or GOVT 281–282–283	3	3	3
	Total Credits	17	16	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	231–232–233 Criminal Law Evidence and Procedures, I, II, III	3	3	3
LEGL	234 Estate Planning	3		
LEGL	240 Corporate Law		3	
LEGL	246 Law of Income Taxation		4	
LEGL	256 Legal Aspects of Real Estate			4
LEGL	258 Administration of Decedent's Estate	3		
[1]ADJU	290/297 Coordinated Internship/Coop. Ed. or			
[1]LEGL	290/297 Coordinated Internship/Coop. Ed.		3	3
PSYC	201–202–203 General Psychology, I, II, III	3	3	3
Approved Electives		6		3
	Total Credits	18	16	16

Total minimum credits for Legal Assistant certificate = 99.

[1]Students who are, or have been, employed in a law-related activity will substitute division-approved ADJU/LEGL courses for this requirement.



LIBERAL ARTS
Associate in Arts Degree

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 bachelors 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 Qtr.	2nd Qtr.	3rd Qtr.
ENGL	111–112–113 Eng. Comp.	3	3	3
GENL	100 Orientation	1		
HIST	Amer. Hist., Hist. of Western Civ., or Hist. of Civ.	3	3	3
*MATH	Mathematics	3	3	3
[1]Natural Science (with Lab.)		4	4	4
**Foreign Language		3–4	3–4	3–4
	Total Credits	17–18	16–17	16–17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL	Amer., Eng., or World Lit.	3	3	3
**Foreign Language		4	4	4
[2]Soc. Sci. Elect.		3	3	3
PHED	100 Fund. of Phys. Act. & 2 Elect.	1	1	1
[3]Electives		6	6	6
	Total Credits	17	17	17

Total minimum credits for Liberal Arts major - A.A. degree = 97.

*Math courses to be selected are listed in General Requirements And Electives For A.A. and A.S. Degrees.

**See "Foreign Lang. Requirement for A.A. degree in Liberal Arts" in General Requirements And Electives For A.A. and A.S. Degrees.

[1]Science courses may be selected from Biology, Chemistry, Physics, Geology or the Natural Science 121–122–123 course.

[2]Soc. Sci. courses may be selected from the following: Economics, Geography, Government, History, Humanities, Psychology, Social Science or Sociology (Anthropology).

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

**If foreign language requirements are met, electives may be selected.

MACHINE TOOL OPERATION
Certificate

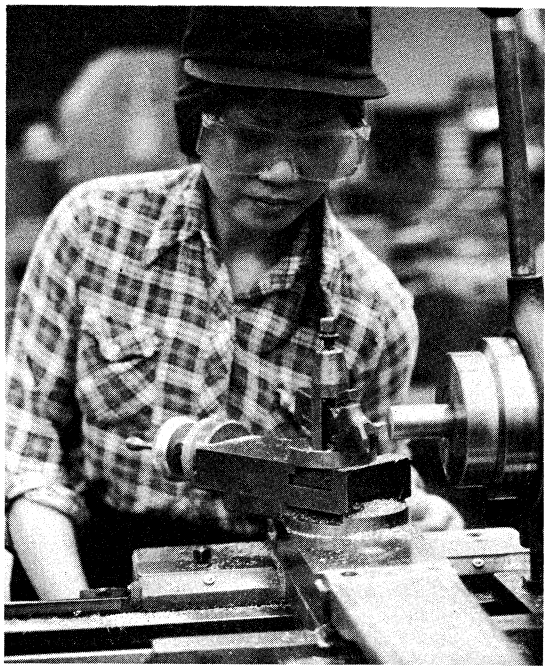
Purpose: This curriculum is designed to prepare the student for industrial employment with an emphasis on basic machine tool operation. The curriculum includes the necessary theory and laboratory experience to advance the student to an entry level of competency as a machine shop aide, drill press operator or lathe operator.

Curriculum Admission Requirements: Meet general admission requirements established by the College. Math and English placement exams are required at the time of entry.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
MATH	118–119 Intro. Engr. Math I–II	5	5	
ENGL	111 Engl. Comp. I	3		
ENGL	112/137 Engl. Comp II/Tech. Writing		3	
ENGR	100 Intro. to Engr. Tech.	2		
GENL	100 Orientation	1		
MECH	131–132–133 Machine Lab. I–II–III	2	2	2
MECH	116 Num. Control Prog. I			4
INDT	111–112 Matl. & Processes of Industry	3	3	
INDT	170 Indus. Management			3
INDT	127 Safety & Health Stand. Regulations & Codes			3
DRFT	111–112–113 Tech. Drafting I–II–III		4	2
Non-Technical Elective				3
	Total Credits	16	17	17

Total minimum credits for Machine Tool Operation major certificate = 50.



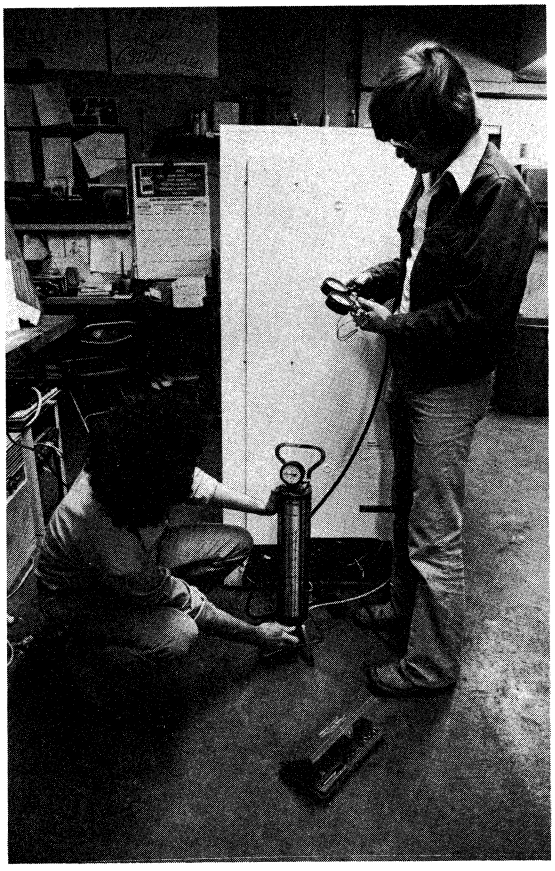
MAJOR APPLIANCE REPAIR
Certificate

Purpose: This curriculum is designed for persons who seek full-time employment in Major Appliance Service and Repair facilities. The curriculum includes the necessary theory and laboratory experience to advance the student to a level of competence for immediate employment as a Major Appliance Service and Repair Technician.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL/SPDR	English or Speech Elective		3	
MATH	118–119 Intro. to Engr. Math.	5	5	
DRFT	170 Electrical Drawing Interp.	2		
APPL	120 Appliance Principles	2		
APPL	121–122–123 Major Appl. Repair I–II–III	4	4	4
ELEC	110 Intro. to Electircity	4		
APPL	124 Appliance Comp. & Circuits		3	
APPL	125 Appliance Control Circuits			4
MECH	156 Mechanisms		2	
Social Science	Elective			3
	Total Credits	17	17	11

Total minimum credits for Major Appliance Repair certificate = 45.



MECHANICAL ENGINEERING TECHNOLOGY
Associate in Applied Science Degree

Purpose: The curriculum is designed to prepare the student for industrial employment as a mechanical engineering technician. Occupational objectives include: Draftsman or Drafting Supervisor / Estimator / Engineering Equipment Inspector / Engineering Plant Operator / Research and Development Technician / Manufacturers Sales Representative.

Special Curriculum Admission Requirements: High School Algebra and Geometry.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
*ENGL	111–112 Eng. Comp.	3	3	
*ENGL	137 Tech. Writing			3
MATH	121–122 Engr. Tech. Math	5	5	
ENGR	100 Intro. to Engr. Tech.	2		
DRFT	111–112–113 Tech. Drft.	2	2	2
INDT	111–112 Matl. & Processes of Indus. I–II		3	3
ENGR	151 Mechanics (Statics)			4
MECH	131–132 Machine Lab. I–II		2	2
*Soc. Sci.	Elect.	3	3	3
PHED	100 Fund of Phys. Act.			1
	Total Credits	16	18	18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
PHED	Elect.	1	1	
PHYS	111–112–113 Tech. Phys.	4	4	4
ENGR	152 Mechanics (Strength)	3		
ENGR	154 Strength Lab.	1		
ENGR	153 Mechanics (Dynamics)		3	
MECH	237–238 Machine Design I–II		4	4
MECH	246 Metallurgy I	4		
MECH	264 Thermodynamics I	4		
MECH	298 Sem. & Proj. or Coop. Ed.			2
Tech. Elect.	(or MATH 123)		3–4	3–5
	Total Credits	17	15-16	13-15

Total minimum credits for Mechanical Engineering Technology major - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

MEDICAL LABORATORY TECHNOLOGY

Associate in Applied Science Degree

Purpose: The curriculum is designed to prepare the students for employment, upon graduation and certification, as Medical Laboratory Technicians in hospital laboratories, private laboratories, physicians' 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 Technician 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 seven quarter program. Students should not take BIOL 176 prior to entering the 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.

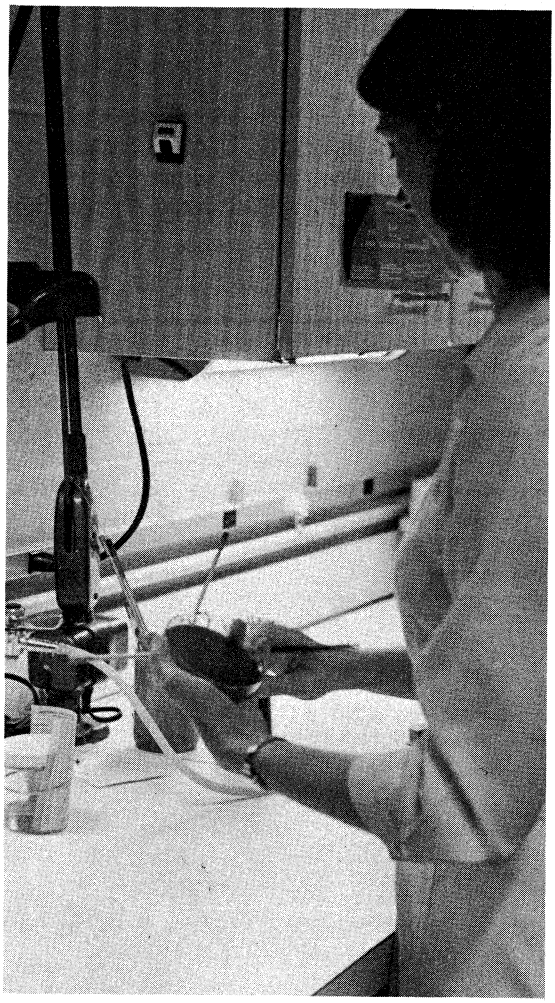
Special Curriculum Completion Requirements: (1) Students must maintain a "C" in all courses in the Medical Laboratory sequence to remain in the program. (2) Students are responsible for transportation to the hospital laboratories. (3) Student liability insurance and uniforms are the financial responsibility of the student. (4) Laboratory placement may require students to spend varying hours in the clinical affiliates.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.	
BIOL	176 Microbiology			4	
BIOL	251–252 Anatomy & Physiology	4	4		
CHEM	101–102–103 Gen. Chem. or CHEM 111–112–113 Coll. Chem.	4	4	4	
*ENGL	111–112–113 English Comp.	3	3	3	
GENL	100 Orientation	1			
MATH	181–182–183 Gen. Coll. Math. or MATH 191–192–193 or MATH 161–162–163	3	3	3	
MDLB	100 Intro. to Med. Lab. Sci.	3			
MDLB	116 Intro. to the Clinical Lab.		4		
MDLB	118 Intro. to Diag. Microbiology				3
MDLB	126 Prin. of Hematology			4	
MDLB	290 Coord. Internship				3
*Social Science Electives					6
	Total Credits	18	18	18	12

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
MDLB	225 Clin. Hematology	7		
MDLB	230 Blood Banking		5	
MDLB	259 Diag. Microbiology	4		
MDLB	264–265 Clin. Chem.		5	8
MDLB	277 Clin. Microbiology	6		
MDLB	278 Clin. Lab. Instrumentation		2	
MDLB	287 Clin. Blood Bkg. & Serology			7
MDLB	298 Sem. & Proj.			2
PHED	100 Fund. of Phys. Act. + 2 Electives	1	2	
*Social Science Elective			3	
	Total Credits	18	17	17

Total minimum credits for Medical Laboratory Technology major A.A.S. degree = 118.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.



MEDICAL RECORD TECHNOLOGY
Associate in Applied Science Degree

Purpose: The curriculum is designed to prepare students to work as medical record technicians in a health record service located in hospitals, nursing homes, and ambulatory care facilities.

The medical record technician is trained in all of the functions normally performed by a health record service which can include: analyzing and technically evaluating health records and reports; compiling, interpreting and utilizing hospital and health care statistics. Coding symptoms, diseases and operations according to a recognized classification system; assisting with medical facility committee procedures; releasing confidential information in accordance with legal requirements; abstracting and retrieving medical information; utilizing a variety of health record storage and retrieval systems; maintaining specialized health information registries; transcribing medical reports; providing data to the health care facility staff in patient care evaluation and utilization review activities.

In addition, the technician is prepared to accept the responsibilities of supervising health record operations. Job opportunities currently exist within a variety of health care facilities, insurance companies, federal, state and local health agencies, and research groups.

Graduates are eligible 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) with a minimum grade of "C". 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) Past achievement should reflect a "C" average. (3) Minimum typing proficiency of 40 wpm. (4) 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 Medical Record Science, medical terminology or concepts of disease course must obtain permission from the Program Head to repeat the course and should 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 coordinated practical experience. In addition, students are responsible for purchasing laboratory jackets and accessories prior to beginning their practical experience.

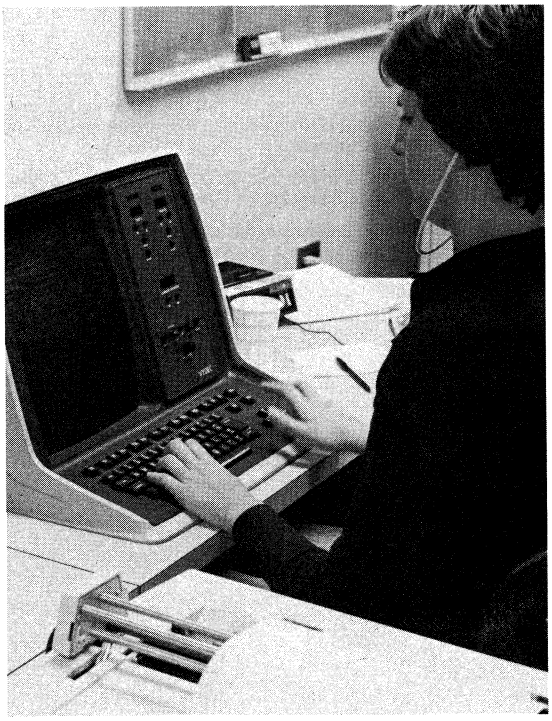
Special Accreditation Status: The program is approved by the Committee on Allied Health Education and Accreditation in cooperation with the American Medical Record Association.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
DAPR	106 Prin. of Data Processing			3
*ENGL	111–112–113 Eng. Comp	3	3	3
GENL	100 Orientation	1		
HLTH	124–125 Med. Terminology	3	2	
MDRS	100 Med. Report Transcription			3
MDRS	111–112 Med. Record Science	4	4	
MDRS	130 Intro. to Health Rec. Appl		1	
MDRS	221 Clinical Practice I			3
NASC	111–112–113 Health Science	4	4	4
PHED	100 Fund. of Phys. Act. + 2 Electives	1	1	1
SECR	111 Typewriting I or Elective		3	
	Total Credits	16	18	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BUAD	110 Human Relat. & Ldrshp. Tng.			3
BUAD	164 Bus. Mgt.			3
HLTH	150 Concepts of Disease	3		
MDRS	213–214 Medical Record Science III–IV	4	4	
MDRS	215 Medical Record Science		4	
MDRS	222–223 Clinical Practice II–III		1	1
MDRS	231–232–233 Advanced Health Rec. Applications I–II–III	3	3	3
MDRS	235 Hosp. Appl. of Data Processing	3		
MDRS	298 Seminar & Project			2
*SOSC	101–102–103 Contemp. Amer. Civ.	3	3	3
	Total Credits	16	15	15

Total minimum credits for Medical Record Technology major - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.



MERCHANDISING

Associate in Applied Science Degree

Purpose: The curriculum is designed for persons who seek full-time employment in areas involving the merchandising 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 curriculum offers specialization in Fashion Merchandising and Retail Merchandising. These specializations are 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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year (Common to both Specializations)		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]ACCT	111–112–113 Accounting or ACCT 211–212–213 Prin. of Accounting	(3)4	(3)4	(3)4
BUAD	100 Intro. to Bus.	3		
*ECON	160 Amer. Econ.	3		
*ENGL	111–112 Eng. Comp. I–II	3	3	
*SPDR	136 Oral Comm. (or ENGL 180)			3
[2]BUAD	121–122–123 Bus. Math I–II–III	3	3	3
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act. & 2 Elect.	1	1	1
BUAD	164 Prin. of Bus. Mgt. I		3	
MKTG	100 Prin. of Marketing		3	
MKTG	136 Retail Organization Mgt.			3
*PSYC	110 Prin. of Applied Psyc.			3
	Total Credits	18	17	17

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]Three elective credit hours will be required to meet degree requirements if ACCT 211–212–213 are selected.

[2]A business-related elective may be substituted for BUAD 123, and ACCT 113, 213.

Fashion Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
*GOVT	180 Amer. Const. Govt.	3		
MKTG	109 Prin. of Salesmanship	3		
MKTG	110 Fund. of Fashion	3		
MKTG	217 Color, Line, & Design in Retailing	3		
BUAD	110 Human Relat. & Ldrshp. Tng.	3		
BUAD	241 Bus. Law & BUAD 242 or Elect.		3	3
MKTG	218 Fashion Mdse. (Buying & Control)		3	
MKTG	225 Prin. of Advertising		3	
MKTG	216 Mdse. Infor.		3	
ACCT	241 Prin. of Fed. Tax. I (or Bus. Elect.)		3	
BUAD	276 Personnel Mgt.			3
MKTG	219 Fashion Sales Prom.			3
MKTG	209 Sales Mgt.			3
MKTG	298 Sem. & Proj.			3
	Total Credits	15	15	15

Total minimum credits for Fashion Merchandising specialization - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

Retail Specialization

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BUAD	254 Appl. Bus. Statistics or Bus. Elect.	3		
DAPR	106 Prin. of Data Proc. or Elect.	3		
MKTG	109 Prin. of Salesmanship	3		
*GOVT	180 Amer. Const. Govt.	3		
BUAD	110 Human Relat. & Ldrshp. Tng.	3		
MKTG	216 Mdse. Infor.		3	
BUAD	241–242 Bus. Law or Elect.		3	3
MKTG	226 Mdse. Buying & Control		3	
MKTG	225 Prin. of Advertising		3	
ACCT	241 Bus. Taxes or Bus. Elect.		3	
BUAD	276 Personnel Mgt.			3
MKTG	228 Sales Prom.			3
MKTG	209 Sales Mgt.			3
MKTG	298 Sem. & Proj.			3
	Total Credits	15	15	15

Total minimum credits for Retail Merchandising specialization - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

MUSIC

Associate in Arts Degree

Purpose: The Associate in Arts Degree curriculum in Music is designed primarily for students who wish to transfer to a four-year college or university to complete the baccalaureate degree in music or music education. The curriculum offers emphasis in four different areas of musical interest. These are designed for the second year of the curriculum after a common first year.

Special Curriculum Admission Requirements: An audition and interview by the music faculty is necessary prior to final acceptance in this program.

Special Curriculum Completion Requirements: Applied music students: Tuition fees are payable to the College. Studio charges are payable directly to applied music instructors.

First Year (Common to all four Specializations)	Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL 111–112–113	3	3	3
HIST Amer. Hist. or Hist. of West. Civ.	3	3	3
PHED 100 Fund. of Phys. Act. & 2 electives	1	1	1
MUSC 111–112–113 Music Theory	4	4	4
MUSC Applied Music (Major)	2	2	2
MUSC Applied Music (Minor)	1	1	1
MUSC Chorus/Band/Orch/Ensemble	1	1	1
GENL 100 Orientation	1		
*Elective			3
Total Credits	16	15	18

Fine Arts Specialization

Second Year	Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
MUSC 211–212–213 Adv. Music Theory	4	4	4
MUSC 221–222–223 Music History	3	3	3
MUSC Appl. Music (Major)	2	2	2
MUSC Appl. Music (Minor)	1	1	1
MUSC Chorus/Band/Orch/Ensemble	1	1	1
ENGL Amer., Engl., or World Literature	3	3	
*Elective			5
Science Elective	4		
Total Credits	18	14	16

Religious Specialization

Second Year	Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
MUSC 110 Choral Organization		3	
MUSC 146 Liturgical Music			3
MUSC 120 Hymnology	3		
MUSC 244–245 Service Playing I, II		3	3
MUSC Appl. Music (Major)	2	2	2
MUSC 214–215 Composition I, II	2	2	
MUSC 226 Twentieth Century Music and Music Cultures			3
MUSC Chorus/Band/Orchestra/Ensemble	1	1	1
ENGL American, English, or World Lit.	3	3	
[1]MUSC Choral Directing	3	3	
*Electives			3
Science Elective (with Lab)	4		
Total Credits	18	17	15

[1]This requirement may be met with MUSC 117, 118, Cooperative Education, Coordinated Internship, or Supervised Study.

Liberal Arts Specialization

Second Year	Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL American, English, or World Lit.	3	3	3
MUSC Appl. Music (Major)	2	2	2
MUSC Appl. Music (Minor)	1	1	1
MUSC Chorus/Band/Orchestra/Ensemble	1	1	1
MUSC 121–122–123 Music Appreciation I, II, III (or approved MUSC elective)	3	3	3
*Electives	2	2	2
[1]Science Elective (with Lab)	4	4	4
Total Credits	16	16	16

[1]Science courses may be selected from Biology, Chemistry, Physics, Geology or the Natural Science 121, 122, 123 courses.

Entertainment Specialization

Second Year	Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
MUSC 158 Improvisational Techniques	3		
MUSC 258 Advanced Improvisational Techniques		3	
MUSC 220 The History of Jazz	3		
MUSC 214–215 Composition I, II		2	2
MUSC Appl. Music (Major)	2	2	2
MUSC Appl. Music (Minor)	1	1	1
MUSC Chorus/Band/Orchestra/ Ensemble	1	1	1
MUSC Electives		3	5
ENGL American, English, or World Lit.	3	3	
*Electives Science Elective	4		5
Total Credits	17	15	16

*Electives should be chosen carefully and after investigation of transfer requirements of the institution to which the transfer is contemplated. Total minimum credits for Music major - A.A. degree = 97.

NURSING

Associate in Applied Science Degree

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 Virginia State Board of Nursing examinations leading to licensure as a registered nurse (R.N.).

Special Curriculum Admission Requirements: (1) High School courses: 1 unit each of Biology, Algebra, and Chemistry, with a minimum grade of "C". Deficiencies may be corrected in the Developmental Program before entering the Nursing 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. The Nursing Program reserves the right to determine the student's final acceptance. (4) Students majoring in nursing are admitted in September; early application is desirable. Students may take support courses prior to entering the Nursing seven quarter 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 will be evaluated on an individual basis. Advanced Placement Exams for NURS 121 & 122 are available for Licensed Practical Nurses wishing to enter this major.

Special Curriculum Completion Requirements: Satisfactory health must be maintained for continuance in the program. Any student who receives a final grade less than "C" in any of the courses in the Nursing and the Natural Science sequence must obtain permission from the Program Head to continue the major in nursing 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 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 laboratory and the library. Student uniform and accessories, and Nursing student Liability Insurance are the financial responsibility of the individual Student.

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

Special Accreditation Status: The program is accredited by the Virginia State Board of Nurse Examiners and by the National League for Nursing, Department of Associate Degree Programs.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
NACS	111–112–113 Health Science.	4	4	4	
ENGL	111–112–113 Eng. Comp.	3	3	3	
PSYC	201–202–203 Gen. Psyc.	3	3	3	
NURS	121–122–123 Fund. of Nursing	5	6	8	
GENL	100 Orientation	1			
NURS	221 Nurs. in Major Hlth. Prob.				8
HLTH	100 Orient. Allied Health Careers	1			
	Total Credits	17	16	18	8

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
*SOSC	101–102–103 Contemp. Amer. Civil.	3	3	3
SOCI	101–102–103 Intro. Soc.	3	3	3
NURS	222–223–224 Nurs. in Major Hlth. Prob.	8	8	8
NURS	298 Sem. & Proj.			2
	Total Credits	14	14	16

Total minimum credits for Nursing major - A.A.S. degree = 103.

*For further explanation of Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

OCCUPATIONAL SAFETY & HEALTH TECHNOLOGY

Associate in Applied Science Degree

Industrial Safety Specialization

Purpose: A major objective of the Occupational Safety and Health Act of 1970 is the education and training of persons to meet the manpower requirements needed to protect the health and safety of our workers. This curriculum is designed to meet that objective by developing safety specialists/technicians who possess the managerial and technical skills necessary to the recognition, evaluation and control of workplace hazards. Occupational objectives include safety management, safety engineering, inspection and loss control. The curriculum is appropriate for persons seeking their first employment as well as those who already have jobs.

Special Curriculum Admission Requirements: Entry into the curriculum requires completion of the equivalent of 2 units of high school math and 1 unit (2 units preferred) of laboratory science.

Program Requirements: The program requires that 45 of 97 quarter hours needed for graduation be taken in specialized subject matter and the remainder to be in general education and supporting science courses. Upon completion of the six-quarter program, the graduate will be awarded an Associate in Applied Science Degree with specialization in Industrial Safety.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
CHEM	101–102–103 Gen. Chem. (or CHEM 111–112–113 or PHYS 101–102–103)	4	4	4
[1]MATH	161–162–163 College Math (or MATH 181–182–183)	3	3	3
*ENGL	111–112 Eng. Comp.	3	3	
*SPDR	136 Oral Comm. or ENGL 137			3
INDT	127 Safety & Hlth. Stand., Reg. & Codes	3		
INDT	136 Indus. Safety Design & Layout			3
GENL	100 Orientation	1		
HLTH	146 Occupational Injury & Disease Control		3	
INDT	130 Safety Prog. Org. & Adm.	3		
PHED	100 Fund. of Phys. Act.		1	
INDT	116 Instrumentation for OSHA			3
INDT	134 Power Source Hazards Control		3	
	Total Credits	17	17	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
PSYC	201–202–203 Gen. Psych.	3	3	3
ARCH	250 Constr. Safety & Hlth.	3		
INDT	227 Sound and Noise	3		
INDT	251–252–253 Occup. Environ. I II III	3	3	3
PHED	Elect.	1		1
[2]FIRE	120 Fire Protection Equipment & Systems		3	
INDT	236 Workplace Maintenance	3		
Drafting or Fire Elect.			3	
BUAD	110 Human Relat. & Ldrshp. Tng.		3	
INDT	225 Human Factors & Safety Psyc.			3
INDT	246 Manuf. Process Analysis			3
[2]FIRE	116 Fund. of Fire Prevention			3
	Total Credits	16	15	16

Total minimum credits for Occupational Safety & Health Technology/Industrial Safety specialization - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

Substitution for these courses can be made subject to division approval.

[1]Students may substitute MATH 118–119 or MATH 121–122 with division approval.

[2]EMDT 111 and EMDT 112 may be substituted for FIRE 120 and FIRE 116.

Industrial Health Specialization

Purpose: Increased emphasis on health standard promulgation and enforcement by the Federal, State and local agencies has generated a need for technically qualified personnel to assist in the task of effecting and evaluating compliance with industrial health standards. This program provides the basic science background and specialized courses to prepare individuals for employment in the field of occupational safety and health as industrial hygiene technicians, industrial health technicians or health inspections specialists.

Special Curriculum Admission Requirements: Entry into the curriculum requires completion of the equivalent of 3 units of high school math, and 2 units of laboratory science to include chemistry.

Program Requirements: Program requires that 34 of the 99 quarter hours needed for graduation be taken in a specialized subject matter and the remainder be in general education and supporting science courses. Upon completion of the six-quarter program, the graduate will be awarded an Associate in Applied Science Degree with specialization in Industrial Health.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

Industrial Health Specialization *(continued)*

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
[1]ENGL	111–112–113 Engl. Comp.	3	3	3
CHEM	111–112–113 College Chemistry	4	4	4
*MATH	161–162–163 College Math.	3	3	3
INDT	127 Safety & Health Standards, Codes/Regulations	3		
PHED	100 Physical Education & 2 Electives	1	1	1
INDT	130 Safety Program Organization and Administration		3	
HLTH	146 Occupational Injury and Disease Cont.		3	
INDT	180 Introduction to Industrial Health			3
FIRE	111 Hazardous Materials			3
	Total Credits	15	17	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BIOL	101–102 General Biology I–II	4	4	
INDT	225 Human Factors & Safety Psychology			3
INDT	227 Sound & Noise		3	
INDT	246 Manufacturing Process Analysis			3
INDT	251–252–253 Occupational Environment I–II–III	3	3	3
INDT	254–255–256 Occupational Environment Lab I–II–III	1	1	1
PHYS	201–202–203 General College Physics	4	4	4
PSYC	201–202–203 General Psychology I–II–III	3	3	3
	Total Credits	15	18	17

[1]May substitute SPDR 136, or ENGL 137 for ENGL 113.

*Qualified students may take MATH 141–142–143.

Total minimum credits for Occupational Safety and Health Technology/Industrial Health Specialization - A.A.S. Degree = 99.

Also see Safety Technician

OFFICE ADMINISTRATION AND MANAGEMENT

Associate in Applied Science Degree

Purpose: The curriculum is designed to prepare students in the administration and supervision of large office in terms of selecting, 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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
BUAD	100 Intro. to Bus.	3		
BUAD	164 Prin. of Bus. Mgt.		3	
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
DAPR	106 Prin. of Data Proc.			3
*ECON	160 Amer. Econ.			3
*SPDR	136 Oral Comm.			3
*ENGL	111–112 Eng. Comp.	3	3	
BUAD	121, 122 Bus. Math	3	3	
ACCT	211–212–213 Prin. of Acct.	3	3	3
SECR	111–112–113 Typewriting	3	3	3
	Total Credits	16	16	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
	Business or DAPR Elective	3	3	
BUAD	110 Human Relat. & Ldrshp. Tng.	3		
*GOVT	180 Amer. Const. Govt.	3		
SECR	236 Specialized Type. App.		3	
*PSYC	110 Prin. of Appl. Psyc.		3	
PHED	Elect.		1	
SECR	136 Filing & Records Mgt. (or DAPR 281)			3
BUAD	276 Personnel Mgt.			3
BUAD	114 Prin. of Supervision			3
SECR	158 Elements of Transcription			3
BUAD	241–242 Bus. Law	3	3	
SECR	211–212–213 Off. Sys. & Proced.	4	4	4
	Total Credits	16	17	16

Total minimum credits for Office Administration and Management major - A.A.S. degree = 97.

*Substitutes for English and Social Science course for an A.A.S. degree are listed in General Requirements For A.A.S. Degrees section.

PHYSICAL THERAPIST ASSISTANT

Associate in Applied Science Degree

Cooperative Education: 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) High School courses: 1 unit each of Biology and Chemistry, with a minimum grade of "C". Deficiencies may be corrected in the Developmental Program before entering the technical program. (2) past achievement reflects a "C" average; (3) good physical and mental health which may need to be substantiated by a physician's report; (4) personal interview; (5) clinic visitation; (6) 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 six quarter 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 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.

Special Accreditation Status: The program is approved by the American Physical Therapy Association.

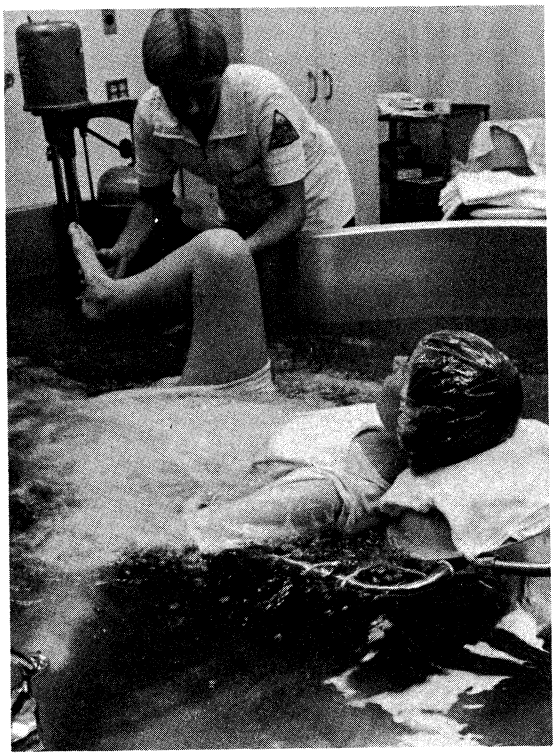
First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
*ENGL	111–112–113 Eng. Comp.	3	3	3
[1]PSYC	110 Prin. of Appl. Psyc.	3		
[1]PSYC	116 Psyc. of Per. Adj.		3	
[1]PSYC	Elect.			3
NASC	111–112–113 Hlth. Sci.	4	4	4
GENL	100 Orientation	1		
PSTH	111–112–113 Therapeutic Skills	4	4	6
PSTH	100 Intro. to Phys. Ther. Asst.	2		
PSTH	190 Coord. Practice		4	
PSTH	120 Medical Reporting			2
	Total Credits	17	18	18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
*SOSC	101–102–103 Contemp. Amer. Civ.	3	3	3
PHED	100 Fund. of Phys. Act. & 2 Elect.	1	1	1
HLTH	150 Concepts of Disease	3		
PSTH	210 Psyc. Aspects of Therapy	3		
PSTH	290 Coord: Practice	5		5
PSTH	211 Therapeutic Skills		6	
PSTH	220 Clinical Kinesiology		4	
Elective		3		
PSTH	298 Sem. & Proj.			5
	Total Credits	15	17	14

Total minimum credits for Physical Therapist Assisting major - A.A.S. degree = 99.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]PSYC 201–202–203 may be substituted for PSYC 110, 116 and PSYC Elect.



POLICE SCIENCE

Associate in Applied Science Degree

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: A personal interview with a member of the Police Science faculty is required. 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 L.E.E.P. grants and loans. See financial aids counselor for details.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	100 Intro. to Law Enforce.	3		
ADJU	110 Patrol Admin.	3		
ADJU	117 Special Enforce., Prob.		3	
[1]ADJU	187 Traffic Admin. & Control		3	
ADJU	126 Prev. & Control of Juv. Del.			3
[1]ADJU	158 Intro. to Law Enforce. Photo.			3
*ENGL	111–112 Eng. Comp.	3	3	
*SPDR	136 Oral Comm. or ENGL 113 Eng. Comp.			3
SOCI	101–102–103 Intro. Soc.	3	3	3
PHED	100 Fund. of Phys. Act. & 2 Elect.	1	1	1
ADJU	176 Criminology		3	
GENL	100 Orientation	1		
[1]ADJU	140 Intro. to Security Admin.	3		
ADJU	237 Admin. of Justice			3
	Total Credits	17	16	16

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	114–115–116 Police Organ. & Administration	3	3	3
ADJU	228 Law Enforce. & the Comm.			3
ADJU	231–232–233 Crim. Law Evidence & Proc.	3	3	3
ADJU	246–247 Crim. Invest.	3	3	
ADJU	298 Seminar & Project			3
GOVT	281–282 U.S. Govt.		3	3
PSYC	201–202–203 Gen. Psyc.	3	3	3
[2]Elective in Lab. Science		4		
	Total Credits	16	15	18

Total minimum credits for a Police Science major - A.A.S. degree = 98.

[1]Substitution for these courses can be made subject to division approval.

[2]Laboratory Science course may be selected from Biology, Chemistry, Geology, Natural Science or Physics.

This is a terminal A.A.S. degree Program. Adjustments in course requirements to suit the needs for transfer to a 4 year institution may be made with faculty approval.

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	100 Intro. to Law Enforce.	3		
ADJU	110 Patrol Admin.		3	
ADJU	114–115 Police Organ. & Admin.	3	3	
ADJU	231–232–233 Crim. Law Evidence & Proc.	3	3	3
ADJU	140 Intro. to Security Admin.	3		
ADJU	117 Spec. Enforcement Prob.			3
ADJU	187 Traffic Admin. Control		3	
ADJU	246 Prin. of Crim. Invest.		3	
ADJU	126 Prev. & Control of Juv. Del.			3
GENL	100 Orientation	1		
ENGL	111 Eng. Comp.			3
Soc. Sci. Elect.		3	3	3
	Total Credits	16	18	15

Total minimum credits for Police Science major - certificate = 49.

RADIOGRAPHY

Associate in Applied Science Degree

Purpose: The curriculum is designed to prepare students to qualify as contributing members of the health care delivery team who will care for patients under the supervision of qualified physicians. Upon successful completion of all requirements, the student may be eligible to write the National Registry Examination leading to certification.

Special Curriculum Admission Requirements: (1) High School 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.

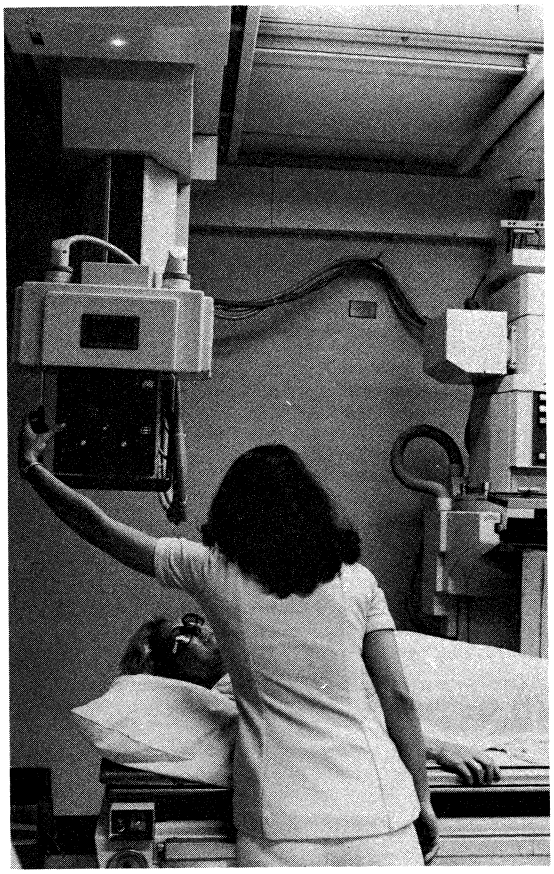
Special Curriculum Completion Requirements: Satisfactory health must be maintained for continuance in the program. Any student who receives a final grade less than "C" in any of the courses in the Radiography sequence must obtain permission from the Program Head to continue the major in Radiography and 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 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. In addition to the requirements for the degree, the American Society of Radiologic Technicians requires one (1) additional quarter of supervised clinical experience in order to be eligible to take the certifying examination.

Special Accreditation Status: The major is accredited by the Joint Review Committee on Education in Radiologic Technology, AMA Committee on Allied Health Education and Accreditation.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
ENGL	111–112–113 Eng. Comp. I–II–III	3	3	3	
GENL	100 Orientation	1			
HLTH	100 Orientation to Allied Health Careers		1		
HLTH	124 Medical Terminology I				3
NASC	111–112–113 Health Science I–II–III	4	4	4	
PSYC	128 Human Relations				3
RADL	100 Intro. to Radiological Protection	2			
RADL	114–115 Principles of Exposure I–II		4	4	
RADL	124–125 Positioning I–II		4	4	
RADL	136 Patient Care Procedures	2			
RADL	190 Coordinated Practice	2	2	2	5
RADL	210 Protection and Patient Safety	2			
RADL	298 Seminar and Project				3
	Total Credits	16	18	17	14

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SOSC	Social Science Elective	3		3
PHYS	101–102 Introductory Physics I–II	4	4	
RADL	216 Applied Radiation Physics			4
RADL	250 Radiologic Specialties		3	
RADL	256 Special Procedures	3		
RADL	290 Coordinated Practice	5	5	5
RADL	298 Seminar & Project	1	3	3
	Total Credits	16	15	15

Total minimum credits for Radiography Major = 111.



REAL ESTATE
Associate in Applied Science Degree

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 students should possess a proficiency in high school English and a strong background in basic arithmetic operations.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]ACCT	111–112–113 Accounting or ACCT 211–212–213 Prin. of Accounting	(3)4	(3)4	(3)4
BUAD	100 Intro. to Bus.	3		
BUAD	121–122 Bus. Math I–II	3	3	
MKTG	166 Real Estate Math			3
*ENGL	111–112 Eng. Comp. I–II	3	3	
*SPDR	136 Oral Comm.			3
*ECON	160 Amer. Econ.	3		
GENL	100 Orientation	1		
BUAD	164–165 Prin. of Bus. Mgt. I–II		3	3
MKTG	164–165 Prin. of Real Estate I–II		3	3
PHED	100 Fund. of Phys. Act.		1	
	Total Credits	17	17	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BUAD	241–242 Business Law	3	3	
SECR	111 Typewriting or Elect.	3		
MKTG	268 Property Mgt.	3		
MKTG	267 Real Estate Appraisal	3		
PSYC	110 Prin. of Applied Psyc.	3		
PHED	Elect.	1		1
GOVT	180 Amer. Const. Govt.			3
MKTG	266 Real Estate Sales		3	
MKTG	269 Real Estate Finance		3	
MKTG	278 Real Estate Econ. or Elect.			3
MKTG	276 Land Planning & Use		3	
MKTG	277 Legal Aspects of Real Estate			3
ACCT	241 Prin. of Fed. Taxation		3	
MKTG	279 Real Estate Investment			3
Elective			3	
	Total Credits	16	15	16

Total minimum credits for Real Estate major - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]Three elective credit hours will be required to meet degree requirements if ACCT 211–212–213 are selected.

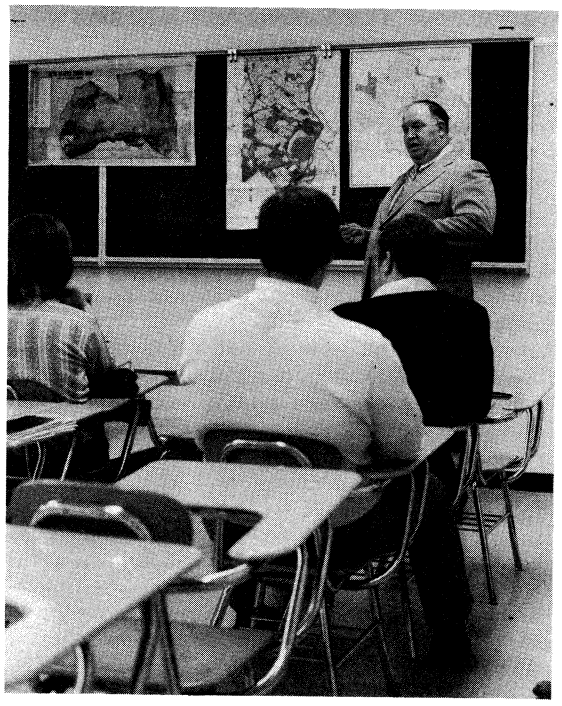
REAL ESTATE
Certificate

Purpose: The curriculum is designed for present or future practioners 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 Qtr.	2nd Qtr.	3rd Qtr.
BUAD	100 Intro. to Bus.	3		
MKTG	109 Salesmanship or Acct. Elect.	3		
MKTG	164–165 Prin of Real Estate I–II	3	3	
Soc. Sci. or Humanities Elect.		3		
MKTG	166 Real Estate Math		3	
BUAD	164 Prin of Bus. Mgt.		3	
MKTG	269 Real Estate Finance		3	
PSYC	Psyc. Elect.			3
MKTG	266 Real Estate Sales			3
MKTS	277 Legal Aspects of Real Estate			3
MKTG	Real Estate Elect.			3
	Total Credits	12	12	12

Total minimum credits for Real Estate major - certificate = 36.



RECREATION AND PARKS

Associate in Applied Science Degree

Purpose: The curriculum is designed to prepare for entry into the field of Recreation and Parks in both public and private agencies. It also has the objective of providing those already employed in these fields an opportunity to improve and upgrade their skills. The occupational objectives include: Assistant Recreation Supervisor / Recreation Leader / Park Manager / Assistant Park Manager / Park Ranger.

Special Curriculum Admission Requirements: Proficiency in high school English and background in basic arithmetic operation.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL	111–112 Eng. Comp.	3	3	
GENL	100 Orientation	1		
SOCI	101 Intro. to Sociology	3		
RCPK	100 Intro. to Rec. & Park Field	3		
RCPK	160 The Arts in Rec.	1		
*Soci. Sci. Elective		3	3	3
BUAD	121 Bus. Math I	3		
[1]NASC	100 Survey of Science		4	
RCPK	101 Rec. & Park Mgt. I		3	
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
[2]Approved Rec. Art Elect.			2	
HORT	147 Hort. Methods & Materials for Rec. & Park			3
RCPK	126 Nat. Resources & Urban Envir.			2
RCPK	136 Program Planning, Org. & Group Leadership			2
RCPK	137 Org. & Mgt. of Sports Act.			3
[3]Approved Rec. Elect.				3–4
	Total Credits	17	16	17–18

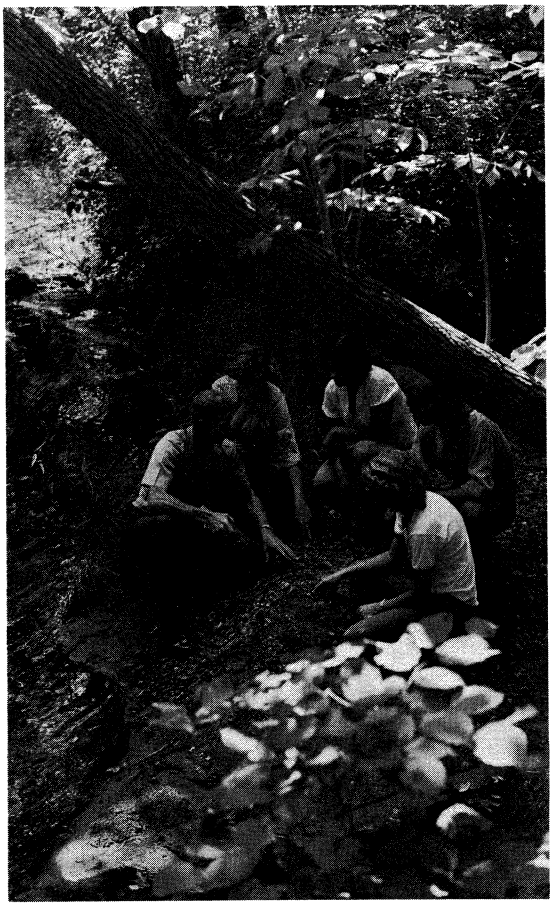
Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ACCT	111 Accounting I	4		
BUAD	174 Small Bus. Mgt. I	3		
RCPK	150 Private, Comm. & Indus. Rec.	3		
HORT	240 Turf Green Mgt.	3		
BUAD	241 Business Law I	3		
HORT	148 Landscape Planning for Rec. Areas		3	
RCPK	102–103 Rec. & Parks Mgt. II–III		3	3
PHED	Elect.		1	
SPDR	136 Speech Communications		3	
RCPK	127 Park Planning		2	
RCPK	224, 225 Natural & Historical Interpretation in the Urban Env. I–II		2	2
RCPK	298 Seminar & Project			3
[3]Approved Rec. Elect.			2–4	7–8
	Total Credits	16	16–18	15–16

Total Minimum credits for Recreation & Parks major - A.A.S. degree = 97.

[1]Substitutions of other lab sciences may be made with approval of Program Head.

[2]Approved Recreation Art Electives: RCPK 110 Applied Arts Major, RCPK 207 Rec. Drama, MUSC 296 Recreation Music.

[3]Recommended Electives (with Program Head Approval): RCPK 108 Rec. for Special Groups, RCPK 299 Supervised Study, RCPK 116 Soc. Rec. Leadership, FORE 117 Dendrology, RCPK 138 Fund. of Camp Mgt. & Oper., FORE 131 Fish. & Wildlife Mgt., RCPK 146 Comm. & Family Rec., HORT 146 Hort. Botany, RCPK 297 Co-op Ed., HRIM 156 Club Management.



RECREATION VEHICLE/MARINE MECHANICS
Certificate

Purpose: This curriculum is designed to train the student to be a safe, knowledgeable and well-equipped 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 are included in all powerboat systems.

Special Curriculum Admission Requirements: Automotive Shop or equivalent.

Cooperative Education: Students are urged to investigate the potential benefits of Cooperative Education.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
*AUTO	176 Small Gasoline Engines	3		
BUAD	174 Small Business Mgt			3
DRFT	144 Auto. Drawing Interp.	2		
ENGL	111 English Comp. I		3	
ENGL or SPDR	Elective	3		
MATH	118 Intro. to Tech. Math.	5		
PSYC	128 Human Relations or Social Science Elective			3
RVEH	116 Motorcycle Machine Lab.		3	
RVEH	140 Marine Cooling, Fuel & Elect. Syst.			3
RVEH	146 Coutboard Engines	3		
RVEH	147 Inboard/Outdrives			3
RVEH	148 Outboard Drive Trains		3	
RVEH	149 Powerboat Rigging		3	
RVEH	299 Supervised Study or RVEH 298 Sem. & Proj.			3
	Total Credits	16	12	15

Total minimum credits for Marine Mechanics certificate = 43.

*Pre- or co-requisite for all marine mechanics courses.

RECREATION VEHICLE/MOTORCYCLE MAINTENANCE
Certificate

Purpose: The curriculum is designed to train the student to be a safe, knowledgeable motorcycle mechanic with the basic working experiences 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.

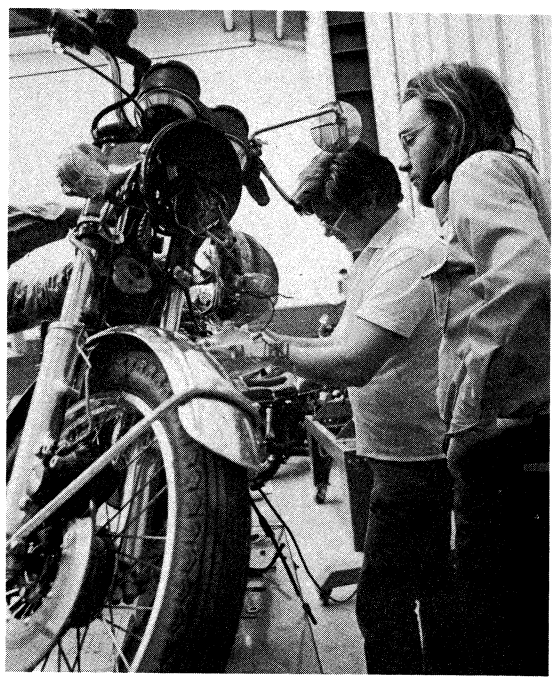
Special Curriculum Admission Requirements: Automotive Shop or equivalent.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]RVEH	120 Intro. to Motorcycle Mech.	3		
RVEH	176 Two-Stroke Engines	3		
RVEH	177 Four-Stroke Engines	3		
MATH	118 Intro. to Tech. Math	5		
RVEH	126 Fuel Systems		3	
RVEH	156 Drive Trains		3	
RVEH	267 Suspensions		3	
ENGL/SPDR	Elective		3	3
PSYC	128 Human Relat.		3	
RVEH	116 Machine Lab.			3
RVEH	127 Elec. Systems			3
RVEH	197 Sem. & Proj. or Coop. Ed.			2
BUAD	174 Small Bus. Mgt.			3
	Total Credits	14	15	14

Total minimum credits for Motorcycle Mechanics major certificate = 43.

[1]Pre or Co-Requisite to all RVEH courses.



RESPIRATORY THERAPY
Associate in Applied Science Degree

Purpose: The curriculum is designed to prepare students as effective members of the health care team in assisting with diagnosis, treatment, management, control 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 Admission Requirements: (1) High School courses: 1 unit each of algebra, biology, & 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 Natural 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.

Advanced Standing: The program considers advanced standing for work experience and previous education on an individual basis.

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 Natural 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 uniform and accessories, and Respiratory Therapy Student Liability Insurance are the financial responsibility of the individual student.

Special Accreditation Status: The Program is approved by the Joint Review Committee for Respiratory Therapy Education, A.M.A. Committee on Allied Health Education and Accreditation.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
NASC	141–142–143 Fund. Sciences for Respiratory Therapy	4	4	4	
NASC	111–112–113 Health Science.	4	4	4	
RPTH	136 Fund. Arts	3			
RPTH	144–145–242 Fund. Theory & Proc.	4	4		4
RPTH	231–232 Cardiopulmonary Sci.			3	4
RPTH	190, 290 Coord. Practice		2	2	4
*ENGL	111–112 English Comp		3	3	
PHED	100 Fund. of Phys. Act. & 1 Elect.	1		1	
GENL	100 Orientation	1			
	Total Credits	17	17	17	12

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
RPTH	241–243 Fund. Theories & Proc.	4	4	
RPTH	290 Coord. Practice	4	4	4
RPTH	234–235 Cardiopulmonary		2	2
RPTH	236 Fund. Arts			3
RPTH	298 Seminar & Project			3
*ENGL	113 Eng. Comp.	3		
*PSYC	201–202–203 Psychology	3	3	3
PHED	Elective		1	
	Total Credits	14	14	15

Total minimum credits for Respiratory Therapy major - A.A.S. degree = 106.

*For further explanation of English and Social Science course requirements for A.A.S. degree, see General Requirements For A.A.S. Degrees section.

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, construction safety, industrial hygiene, and instrumentation, as well as electives in fire prevention or emergency medical technology. Graduates of the certificate program may continue in the Occupational Safety and Health Technology major to earn an A.A.S. degree with a specialization in either Industrial Safety or Industrial Health.

Cooperative Education: Students are encouraged to participate in Cooperative Education. See the section on Cooperative Education for further information.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ARCH	250 Construction Safety & Health	3		
EMDT	111–112 Emerg. Med. Serv. Tech. I–II or approved electives	4	4	
ENGL	111 English Comp. I	3		
FIRE	116 Fund. of Fire Prevention			3
HLTH	146 Occup. Injury & Disease Control.		3	
INDT	116 Instrum. for Occ. Safety & Health			3
INDT	127 Safety & Health Standards, Reg. & Codes	3		
INDT	130 Safety Program Org. & Admin.		3	
INDT	134 Power Source Hazard Control			3
INDT	180 Intro. to Ind. Health			3
MATH	118 Intro. to Tech. Math. I		5	
PSYC	110 Prin. of Appl. Psych.	3		
SPDR	136 Oral Communication			3
	Total Credits	16	15	15

Total minimum credits for Safety Technician certificate = 46.

Substitutions for these courses can be made subject to division approval.

SCIENCE
Associate in Science Degree

Purpose: The curriculum is designed for persons who are interested in a pre-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 / Dentistry / Forestry / Geology / Home Economics / Mathematics / Pre-Medicine / Nursing / Physics / Physical Therapy / Pharmacy / Science Education.

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 sciences.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
Science (with lab.)		4	4	4
[2]MATH	141–142–143 or 161–162–163	3–5	3–5	3–5
ENGL	111–112–113 Eng. Comp.	3	3	3
[3]HIST	101–102–103 or 111–112–113	3	3	3
PHED	100 Fund. of Phys. Act. & 2 Elect.	1	2	
GENL	100 Orientation	1		
Elective			3	
	Total Credits	15-17	15-17	16-18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[1]Science (with lab.)		4–5	4–5	4–5
Science Electives, MATH 241–242–243 or MATH 261–262–263 or Science (with lab.)[1]		3–5	3–5	3–5
[5]Social Science Elective		3	3	3
[4]ENGL	Amer., Eng. or World Lit.	3	3	3
Electives		3	3	3
	Total Credits	16-18	16-18	16-18

Total minimum credits for Science major - A.S. degree = 97, of which 30 must be taken in Laboratory Science for Science major, 30 combined Math and Science for Math major.

[1]Science with lab may be selected from the following: Biology 101–102–103, Chemistry 111–112–113, Physics 201–202–203 or Physics 221–222–223–224, Geology 101–102–103 or any 200 level Biology or Chemistry.

[2]Math 141–142–143 is strongly recommended for students majoring in Math, Physics or Chemistry. Math 191–192–193 may be taken by Biology majors with division approval. Students not adequately prepared for MATH 141 are advised to take MATH 161–162 first.

[3]Students with a good background in math and science may take two beginning Laboratory Science courses the first year and History the second year.

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

[5]Three quarter sequence Social Science courses may be selected from one of the following: Economics, Geography, Government, History, Psychology, Social Science or Sociology (Anthropology).

SECRETARIAL SCIENCE
Associate in Applied Science Degree

Administrative Assistant Specialization

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. The curriculum offers a specialization for preparation as an Administrative Assistant.

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SECR	111–112–113 Typewriting I–II–III	3	3	3
*ENGL	111–112 Eng. Comp.	3	3	
*ENGL	180 Bus. Eng.			3
[1]BUAD	121–122–123 Bus. Math	3	3	3
GENL	100 Orientation	1		
BUAD	100 Intro. to Bus.	3		
BUAD	164 Prin. of Bus. Mgt.		3	
BUAD	241 Bus. Law			3
SECR	136 Advanced Filing & Records Mgt.	3		
ACCT	211 Accounting or SECR 138		3–4	
ECON	160 Amer. Econ.			3
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
	Total Credits	16	16-17	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SECR	211–212–213 Office Systems & Procedures I, II, III	4	4	4
SECR	236 Spec. Typwr. Applications	3		
SECR	254–255 Adv. Mach. Trans. I, II	3	3	
*PSYC	110 Prin. of Appl. Psyc.	3		
*GOVT	180 Amer. Const. Govt.		3	
BUAD	242–243 Bus. Law or ACCT 112–113	3–4	3–4	
SECR	158 Elements of Trans. or SECR 156 Personal Dev.			3
BUAD	276 Personnel Mgt.			3
SECR	298 Sem. & Proj. or Bus. Elective			3
PHED	Elect.	1		
[2]Electives		3	3	
	Total Credits	17	16-17	15-16

Total minimum credits for Administrative Assistant Specialization - A.A.S. degree = 97.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]DAPR 106 or elective may be substituted for BUAD 123.

[2]Suggested Electives include SECR 121–122 or Related Business Electives.

Executive Secretary Specialization

Purpose: The curriculum is designed to prepare students for initial employment or advancement in present employment in the executive secretary specialization.

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SECR	111–112–113 Typewriting I–II–III	3	3	3
SECR	121–122–123 Shorthand	4	4	4
*ENGL	111–112 Eng. Comp.	3	3	
*ENGL	180 Bus. Eng.			3
BUAD	100 Intro. to Bus.	3		
ACCT	211 Accounting or SECR 138		3–4	
[1]BUAD	121–122–123 Bus. Math	3	3	3
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Act. & 1 Elect.		1	1
SECR	136 Filing & Records Mgt.			3
	Total Credits	17	17-18	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SECR	221–222–223 Adv. Shorthand Transcription I, II, III	3	3	3
SER.	211–212–213 Office Systems & Procedures I, II, III	4	4	4
*ECON	160 Amer. Econ.	3		
*PSYC	110 Prin. of Appl. Psyc.		3	
*GOVT	180 Amer. Const. Govt.			3
SECR	236 Spec. Typwr. Applications	3		
SECR	254 Adv. Mach. Transcription I		3	
PHED	Elect.	1		
BUAD	241 Bus. Law	3		
BUAD	164 Prin. of Bus. Mgt.		3	
SECR	158 Elements of Transcription or SECR 156 Personal Dev.			3
SECR	298 Sem. & Proj.			2
	Total Credits	17	16	15

Total minimum credits for Executive Secretary Specialization - A.A.S. degree = 99.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.S.S. Degrees section.

[1]DAPR 106 or Elect. may be substituted for BUAD 123.

Legal Secretary Specialization

Purpose: The curriculum is designed to prepare students for initial employment or for advancement in present employment in the Legal Secretary Specialization.

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SECR	111–112–113 Typewriting I–II–III	3	3	3
SECR	121–122–123 Shorthand	4	4	4
*ENGL	111–112 Eng. Comp.	3	3	
*ENGL	180 Bus. Eng.			3
[1]BUAD	121–122–123 Bus. Math	3	3	3
BUAD	100 Intro. to Bus.	3		
GENL	100 Orientation	1		
PHED	100 Fund. of Phys. Acct. & 1 Elect.		1	1
ACCT	211 Accounting or SECR 138		3–4	
SECR	136 Filing & Records Mgt.			3
	Total Credits	17	17-18	17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
[2]SECR	231–232–233 Legal Trans. I, II, III	3	3	3
[2]SECR	251–252–253 Legal Procedures	4	4	4
SECR	236 Spec. Typewriter App.	3		
SECR	254 Adv. Mach. Transcription I		3	
*PSYC	110 Prin. of Appl. Psyc.	3		
*ECON	160 Amer. Econ.		3	
*GOVT	180 Amer. Const. Govt.			3
BUAD	241–242 Bus. Law	3	3	
PHED	Elect.		1	
SECR	158 Elements of Transcription or SECR 156 Personal Dev.			3
SECR	298 Sem. & Proj.			2
	Total Credits	16	17	15

Total minimum credits for Legal Secretary Specialization - A.A.S. degree = 99.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

[1]DAPR 106 or Elective may be substituted for BUAD 123.

[2]SECR 231–232–233 should be taken concurrently with SECR 251–252–253.

Medical Secretary Specialization (Inactive)

Purpose: The curriculum is designed to prepare students for initial employment or for advancement in present employment in the Medical Secretary Specialization.

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 curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SECR	111–112–113 Typewriting I, II, III	3	3	3
SECR	121–122–123 Shorthand I, II, III or Bus. Elect.	3–4	3–4	3–4
*ENGL	111–112 Eng. Comp. I, II	3	3	
*ENGL	180 Bus. Eng.			3
BUAD	121–122 Bus. Math I, II	3	3	
BUAD	123 Bus. Math III or Elect.			3
BUAD	100 Intro. to Business	3		
GENL	100 Orientation	1		
SECR	136 Filing & Records Mgt.		3	
PHED	100 Fund. of Phys. Act & 1 Elect.		1	1
ECON	160 Amer. Econ.			3
	Total Credits	16-17	16-17	16-17

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
SECR	221–222 Adv. Shorthand Trans. I, II or Bus. Elect.	3	3	
SECR	227 Medical Trans. or Elect.			3
SECR	271–272–273 Med. Sec. Pro. I, II, III	4	4	4
SECR	236 Spec. Typewriter App.	3		
NASC	130 Body Structure & Function	3		
HLTH	124–125 Medical Terminology	3	2	
PHED	Elect.	1		
SECR	254 Adv. Mach. Trans. I		3	
SECR	257 Adv. Mach. Trans.-Medical			3
ACCT	211 Accounting I		3	
PSYC	110 Prin. of Appl. Psyc		3	
GOVT	180 Amer. Const. Govt.			3
HLTH	106 First Aid & Safety			3
	Total Credits	17	18	16

Total minimum credits for Medical Secretary Specialization - A.A.S. degree = 99.

*For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

SECRETARIAL SCIENCE/OFFICE SYSTEMS

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 be equipped to pass a Civil Service examination for typewriting (and for shorthand if students elect to take SECR 121, 122, and 123.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
BUAD	100 Intro. to Business	3		
BUAD	121 Business Math I	3		
ENGL	111 English Comp. I	3		
DAPR	106 Princ. of Data Proc.		3	
ENGL	180 Fund. of Bus. Eng.		3	
SECR	158 Elements of Transcription or SECR 156 Personal Dev.			3
SECR	111–112–113 Type. I–II–III	3	3	3
SECR	136 Filing & Records Mgt.		3	
SECR	139 Clerical Procedures or SECR 211*			3
SECR	254 Machine Trans. I			3
	Total Credits	12	12	12

* SECR 211 may be taken only with the approval of program head.

SECURITY ADMINISTRATION

Associate in Applied Science Degree

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: Entry into the Security Administration curriculum requires a personal interview with a representative of the Administration of Justice Program. Students are advised that many criminal justice agencies require excellent moral character and a written record of conduct prior to consideration for employment.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	140 Intro. to Security Admin.	3		
ADJU	181 Investigations for Security		3	
ADJU	182 Legal Aspects of Security			3
ADJU	184 Personnel Security	3		
ADJU	185 Physical Security		3	
ADJU	186 Interrogation & Report Writing			3
*ADJU	Elective			3
*BUAD	100 Intro. to Business	3		
*BUAD	164 Prin. of Bus. Mgmt. or BUAD 276 Personnel Mgmt.		3	
*DAPR	106 Prin. of Data Proc.	3		
ENGL	111–112 English Comp. I–II	3	3	
ENGL	113 English Comp. III or SPDR 136 Oral Communication			3
*FIRE	116 Fund. of Fire Prev. or FIRE 237 Arson Detection & Inv.		3	
GENL	100 Orientation	1		
*INDT	130 Safety Program or INDT 134 Power Source Hazards			3
PHED	100 Fund. of Phys. Act. + 2 PHED Electives	1	1	1
	Total Credits	17	16	16

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ADJU	183 Computer Security		3	
ADJU	206 Security Mgmt.			3
ADJU	207 Information Security		3	
ADJU	208 Retail Security			3
ADJU	209 Substances Abuse in Security	3		
ADJU	231–232–233 Crim. Law Evidence & Procedure	3	3	3
ADJU	246 Prin. of Crim. Invest.	3		
ADJU	247 Advanced Crim. Invest.		3	
ADJU	278 Emergency Planning	3		
*FIRE	111 Hazardous Materials			3
*INDT	127 Safety & Health Standards, Req'. & Codes			3
**Social Science Electives		3	3	3
	Total Credits	15	15	18

Total minimum credits for Security Administration major - A.A.S. degree = 97.

*or elective approved by faculty advisor.

**For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

SERVICE STATION OPERATION AND MANAGEMENT
Certificate

Purpose: The curriculum is designed for those who want to operate their own service station business either by leasing or outright ownership, or for those who want a management career in the service station or petroleum marketing field. The program includes courses which will benefit those who wish to work in, as well as manage or own, a retail automotive service station.

Special Curriculum Admission Requirements: One year high school shop program or equivalent. Students not meeting these requirements may correct this deficiency by successfully completing AUTO 128 - Auto Mechanics.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
AUTO	100 Auto Shop Pract. & Safety	3		
AUTO	143–144–145 Service Station Operations I–II–III	4	4	4
AUTO	287–288 Auto Shop Mgt.		3	3
AUTO	290 Coordinated Practice	3	3	3
BUAD	121–122 Bus. Math I–II	3	3	
ENGL or SPDR Elective		3		
Social Science Elective				3
	Total Credits	16	13	13

Total minimum credits for Service Station Operation and Management Certificate = 42.

TECHNICAL ILLUSTRATION
Certificate

Purpose: The curriculum is designed for persons who seek full-time employment in Technical Illustration or for those presently in the drafting field who are seeking specializations or promotion. The occupational objectives include: Technical Illustrator / Patent Draftsman / IPB (Illustrated Parts Breakdown) Draftsman.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
ENGL/SPDR Elective		3	3	
MATH	118–119 Intro. to Tech. Math	5	5	
DRFT	111–112–113 Tech. Draft	4	2	
DRFT	154–155 Tech. Illus.		3	3
DRFT	Electives or			
ARTS	Electives		2–3	4–6
ENGR	100 Intro to Engr. Tech.	2		
Tech. Elect.				3
DRFT	198 Sem. & Proj.			2
Soc. Sci. Elect.		3		3
	Total Credits	17	15-16	15-17

Total minimum credits for Technical Illustration major - certificate = 47.

URBAN-REGIONAL PLANNING AND DEVELOPMENT

Associate in Applied Science Degree

Purpose: This curriculum is designed to provide students an opportunity to become familiar with urban-regional problems and planning theory; provide preparation in urban-regional studies; and prepare for employment at the Paraprofessional level. Graduates will be able to assist in phases of planning such as data gathering and analysis, in studies of land use, public facilities, transportation, housing, community services and population studies. The curriculum is concerned with laws and regulations dealing with planning and development, environmental impact and zoning. Occupational objectives include: Paraprofessional Positions in Planning and Development.

Cooperative Education: Students in this curriculum are urged to investigate the potential benefits of Cooperative Education. For further information, see Cooperative Education Program section.

First Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
GENL	100 Orientation	1		
URPD	100 Survey of Plan. & Dev.	3		
URPD	106 Tech. of Assessment	3		
DRFT	120 Intro. to Graphic Rep.	3		
URPD	108 Urban Reg. Plan. Etiology & Theory		3	
URPD	104 Land Use Plan. & Dev.		3	
CIVL	126 Topographic Drafting		3	
PHED	100 Fund. of Phys. Act.		1	
*ENGL	137 Tech. Writing			3
*Social Science Elective				3
CIVL	169 Applied Erosion & Sediment Control			3
URPD	116 Urban Reg. Legis. & Reg.			3
BLDG	124 Princ. of Public. Fac. Insp.			3
DAPR	106 Prin. of Data Proc.			3
*ENGL	111–112 Eng. Comp.	3	3	
MATH	118–119 Intro. to Tech. Math	5	5	
	Total Credits	18	18	18

Second Year		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
URPD	200 Facilities Plan. & Dev.	3		
URPD	201 Plan. Procedures I	3		
ARCH	210 Site Planning	3		
*Social Science Elective		3		
PHED	Elective	1		
BUAD	254–255 Appl. Bus. Stat.	3	3	
URPD	207 Transportation Plan.		3	
URPD	202 Plan. Procedures II		3	
*Social Science Elective			3	
PHED	Elective		1	
URPD	203 Plan Procedures III			3
URPD	206 Admin. of Planning			3
URPD	298 Sem. & Project			2
URPD	209 Adv. Tech. in Plan			3
URPD	297 Coop. Educ.		2	2
	Total Credits	16	15	13

Total minimum credits for Urban-Regional Planning and Development major - A.A.S. degree = 97.

For further explanation of English and Social Science course requirements for A.A.S. degrees, see General Requirements For A.A.S. Degrees section.

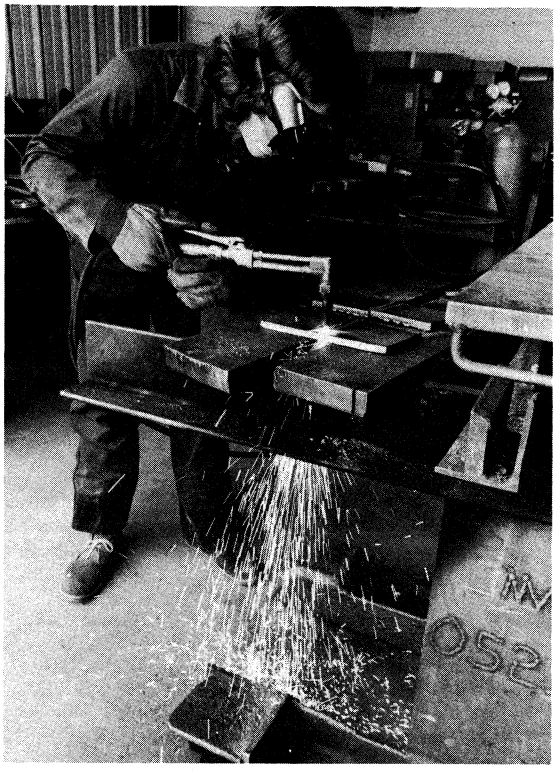
WELDING

Certificate

Purpose: The Welding Curriculum is designed primarily to prepare students for industrial employment as welder apprentices, welding instructors, structural steel inspectors, quality control inspectors, welding equipment salesmen and metallurgical and welding laboratory assistants.

		Credits 1st Qtr.	2nd Qtr.	3rd Qtr.
DRFT	111 Tech. Drafting I	2		
WELD	51 Oxyacetylene Welding I	3		
ENGL	100 Occupational English		3	
WELD	106 Pipe Welding			3
BUAD	116 Personal Finance			3
PSYC	128 Human Relations			3
WELD	30 Inert Gas Welding		3	
WELD	60 Welding Quality Control			2
MATH	118–119 Intro. to Tech. Math	5	5	
WELD	21–22–23 Arc Welding	3	3	3
WELD	41–42–43 Welding Tests	2	2	2
DRFT	76 Welding Blueprint Reading	2		
	Total Credits	17	16	16

Total minimum credits for Welding major certificate = 49.



Description of Courses

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, certificate or diploma.

Courses numbered 010–099 are freshman level courses for the diploma and 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. They may also be used in certificate and diploma courses.

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 quarter-hour credit or two-thirds of a 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 cut-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

If any prerequisites are required before enrolling in a course, they will be identified in the course description. Courses in special sequences (usually identified by the numerals I–II–III) require that prior courses or their equivalent be completed before enrolling in the advanced courses; usually the 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.

General Usage Courses

The following "General Usage Courses" apply to multiple curricula and may carry a variety of prefix designations. The descriptions of the courses are identical for each different prefix and are as follows:

90–190–290 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.

90–190–290 Coordinated Internship (1–5 cr.)
Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio not to exceed 1:5 hrs. May be repeated for credit. Variable hrs.

97–197–297 Cooperative Education (1–5 cr.)
Supervised on-the-job training for pay in approved business, industrial and service firms 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.

98–198–298 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.

99–199–299 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

ACCT 111–112–113
Accounting I–II–III (4 cr.) (4 cr.) (4 cr.)
Fundamentals of accounting. The accounting cycle, journals, ledgers, working papers, and the preparation of financial statements under the various forms of business ownership. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

ACCT 114–115 Applied Accounting I–II (3 cr.) (3 cr.)
Practical accounting as applied to retail stores, professional individuals in forms, and to personal service occupations; accounting forms and practical accounting procedures. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

ACCT 126 Hotel/Restaurant Accounting (3 cr.)
Prerequisite ACCT 111 or 211. The application of accounting principles and practices to the hospitality industry. Analysis of financial statements as the basis for managerial decisions. Lect. 3 hrs. per wk.

ACCT 146 Analyzing Financial Statements (3 cr.)
Prerequisite ACCT 111–112–113 or equivalent. An understanding and interpretation of financial statements including characteristics and financial statement analysis. Lect. 3 hrs. per wk.

ACCT 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

ACCT 211–212–213 Principles of Accounting I–II–III (3 cr.) (3 cr.) (3 cr.)
Accounting principles and their application to various forms of business inventory valuation, internal control systems, manufacturing processes, budgeting, and analysis of financial statements. Lect. 3 hrs. per wk.

ACCT 221–222–223 Intermediate Accounting I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisite ACCT 111–112–113 or ACCT 211–212–213. Extensive analysis of the principle elements of accounting systems and statements. Lect. 4 hrs. per wk.

ACCT 229 Auditing (3 cr.)
Prerequisite ACCT 111–112–113 or ACCT 211–212–213. Purposes of audit, relationships of auditor and client, kinds of audits, working papers, internal controls and examination of accounting systems, audit reports. Lect. 3 hrs. per wk.

ACCT 234–235 Cost Accounting I–II (3 cr.) (3 cr.)
Prerequisite ACCT 111–112–113 or ACCT 211–212–213. Studies in accounting systems, methods and statements involved in process and job cost accounting: use of standards and cost controls. Lect. 3 hrs. per wk.

ACCT 241 Principles of Federal Taxation I (3 cr.)
Principles of Federal Taxation as applied to individual income tax returns. Emphasis is made on preparation of tax forms and problems. Lect. 3 hrs. per wk.

ACCT 242 Principles of Federal Taxation II (3 cr.)
Prerequisite ACCT 241 or Division Approval. Principles of federal taxation as applied to corporate and partnership tax concepts and problems. Emphasis is placed on minimizing income tax burden through evaluation of business transactions. Lect. 3 hrs. per wk.

ACCT 243 Principles of Federal Taxation III (3 cr.)
Prerequisite ACCT 242 or Division Approval. A study of the law of federal income taxation designed to provide the student with a working knowledge of federal estate and federal gift taxes. Special emphasis is placed on federal tax questions, profit sharing plans, and foreign income. Lect. 3 hrs. per wk.

ACCT 256 Governmental Accounting (3 cr.)
Prerequisites ACCT 111–112–113 or ACCT 211–212–213 or divisional permission. Application of general accounting principles to governmental and institutional unit. Special emphasis placed upon auditing and financial reporting through budgetary accounting and its potential usefulness in planning and controlling revenues and expenditures. Lect. 3 hrs. per wk.

ACCT 274 Computerized Augmented Accounting I (3 cr.)
Prerequisite ACCT 211. Allows students who have completed at least one quarter of Accounting Principles to use the computer in solving accounting problems. The course will cover keypunching, balance sheet, the recording procedure, adjusting and closing entries, simple interest, valuation of inventory, depreciation, bank reconciliation, and computerized payroll system. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

ACCT 275 Computerized Augmented Accounting II (3 cr.)
Prerequisites ACCT 212, 274. Deals with managerial accounting, and covers goodwill, bonds, contract and effective rates of interest, sinking fund, long-term investments, process cost, job order cost, standard cost, present value, patents, replacement of equipment, discounted cash flow, break-even analysis, price-level accounting, and financial analysis. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

ACCT 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

ACCT 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

ACCT 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

ADMINISTRATION OF JUSTICE

ADJU 100 Introduction to Law Enforcement (3 cr.)
The philosophy and history of law enforcement, overview of crime and police problems; organization and jurisdiction of local, state, and Federal law enforcement agencies; survey of professional career opportunities and qualifications required. Lect. 3 hrs. per wk.

ADJU 109 Security Officers — Duties and Responsibilities (3 cr.)
A broad overview of the theory and practice of duties of security officers, guards, watchmen, merchant police and private police—leading toward the objective of licensing and professionalization. Lect. 3 hrs. per wk.

ADJU 110 Patrol Administration (3 cr.)
Examines the various types of patrol and their importance to the overall police function. Emphasis is upon the responsibilities and problems of the administrators and supervisors of a field level law enforcement office; the most efficient methods of the assignment of personnel in order to prevent crime, provide needed police services and protect the community. Lect. 3 hrs. per wk.

ADJU 114 Police Organization and Administration I (3 cr.)
Prerequisite ADJU 100 & 110. A consideration of police problems at the administrative level. The organization and management of line operations as well as staff and auxiliary services are examined, including investigative, juvenile, and vice units. Lect. 3 hrs. per wk.

ADJU 115 Police Organization and Administration II (3 cr.)
Prerequisite ADJU 114 or divisional approval. A continuation of the analysis of the administrative function begun in ADJU 114. Among the topics included are the organization and management of the personnel, internal control, planning and research, and housing and materiel functions. Lect. 3 hrs. per wk.

ADJU 116 Police Organization and Administration III (3 cr.)
Prerequisite ADJU 114–115. Principles of organization and administration as applied to the records and communication systems of an urban department, including police utilization of data processing, and the concepts of custody, central services, and logistics. Lect. 3 hrs. per wk.

ADJU 117 Special Enforcement Problems (3 cr.)
Crowd control during civil demonstrations, picketing, rioting and other emergency situations, the police role in civil defense; police problems caused by narcotics addiction; the handling of mentally or emotionally abnormal persons. Lect. 3 hrs. per wk.

ADJU 120 Introduction to Corrections (3 cr.)
(Corrections) The philosophy and overview of Corrections and related problems as an important dimension in the administration of justice; history of corrections, career opportunities, purposes of correctional jurisdictions. Lect. 3 hrs. per wk.

ADJU 124 Jail Operations and Management I (Basic) (3 cr.)
(Corrections) Correctional history as a frame of reference: security procedures in jail operation; the effect of the jail climate on inmates and personnel; criteria for effective supervision of prisoners; correctional aspects of inmate discipline; handling special prisoners. Lect. 3 hrs. per wk.

ADJU 125 Jail Operations and Management II (Advanced) (3 cr.)
(Corrections) The functions of jail management as it relates to jail and community programs, planning of jail operation, legal problems in jail administration, community relations, personnel supervision. Lect. 3 hrs. per wk.

ADJU 126 Prevention and Control of Juvenile Delinquency (3 cr.)
Survey of youth crime stressing the police role in community programs of prevention and control. The philosophy and functioning of the juvenile courts are studied and related to the juvenile program. Lect. 3 hrs. per wk.

ADJU 127 Criminal Offenses (3 cr.)
(Corrections) The study of particular types of crime with emphasis on the pathology of criminals. Lect. 3 hrs. per wk.

ADJU 128 Criminal Behavior (3 cr.)
(Corrections) Analysis of relationship of society, socialization, and deviancy. Social responses to deviancy and criminal offenders. Lect. 3 hrs. per wk.

ADJU 129 Treatment of the Offender (3 cr.)
(Corrections) The theory, practice and problems in the fields of probation and parole as well as in institutional and community treatment of juvenile and adult offenders. Lect. 3 hrs. per wk.

ADJU 140 Introduction to Security Administration (3 cr.)
The historical, philosophical, and legal basis of security. The role of security in a modern society. A survey of the administrative, personnel, and physical aspects of the security field. Lect. 3 hrs. per wk.

ADJU 144 Correctional Law I (3 cr.)
Prerequisite ADJU 120. A study of the consequences of convictions of criminal acts committed by adults and juveniles; the sentencing process; the various types of attack upon the validity of convictions. Lect. 3 hrs. per wk.

ADJU 146 Special and Current Security Problems (3 cr.)
An analysis of special problem areas such as security education and training, community relations, whitecollar crime, drug abuse, theft control, shoplifting, document control, subversion and sabotage, protection of classified information and business espionage, labor problems, civil disturbances, natural and man-made disasters. Lect. 3 hrs. per wk.

ADJU 155 Assessment of the Correctional Process (3 cr.)
(Corrections) The effectiveness of the courts, penal institutions, probation and parole agencies, and community based correctional facilities in improving and rehabilitating the offender will be assessed. Emphasis will be placed on evaluating standards for effective correctional institutions and programs. Lect. 3 hrs. per wk.

ADJU 156 Corrections and the Community (3 cr.)
(Corrections) The relationship of social norms to both conforming and deviant behavior. Emphasis on the rehabilitation aspects of criminals and their return to the community. Lect. 3 hrs. per wk.

ADJU 157 Assessment of Criminology (3 cr.)
(Corrections) The nature and theories of criminal assessment including the techniques and tests used in assessing the behavior and rehabilitative aspects of the criminal. Lect. 3 hrs. per wk.

ADJU 158 Introduction to Law Enforcement Photography (3 cr.)
Techniques of photography and their application to law enforcement situations. Dark room operations, theory and practice; field and laboratory exercises; fundamentals of court room presentation of photographic evidence. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

ADJU 159 Legal Challenge to Corrections (3 cr.)
(Corrections) Examines legal changes occuring within and without the criminal process which have implications for corrections; analysis of legal problems related to sentencing, probation, parole, prisoners' rights, loss and restoration of civil rights. Lect. 3 hrs. per wk.

ADJU 169 Crisis Intervention and Current Critical Issues (3 cr.)
Basic problems involved in crisis intervention situations and current critical issues in Administration of Justice with emphasis on practical approaches and methodology to control and effect solutions. Lect. 3 hrs. per wk.

ADJU 176 Criminology (3 cr.)
Volume and scope of crime, and the background of criminal behavior in the American setting; organized crime and its affiliated problems; subjective theories and explanation of crime; the control, treatment and rehabilitation of the criminal offender. Lect. 3 hrs. per wk.

ADJU 178 Current Problems in Dangerous Drug Enforcement (2 cr.)
A survey of current techniques and procedures used by law enforcement agencies in the identification and field testing of suspected drugs, as well as enforcement techniques and the current laws and interpretation of the law, including information on the extent and patterns of national and international drug traffic. Lect. 2 hrs. per wk.

ADJU 181 Investigations for Security (3 cr.)
A study of the various techniques, resources, procedures, and technical aids used in investigations by the competent security investigator. Lect. 3 hrs. per wk.

ADJU 182 Legal Aspects of Security (3 cr.)
A study of the rights and liabilities from a legal standpoint for the security officer in the various roles he plays. The rights of individuals and the employer in accordance with the Virginia code will be reviewed. Lect. 3 hrs. per wk.

ADJU 183 Computer Security (3 cr.)
Access controls at the computer and at terminals. Shutdown alternatives. Software and hardware security considerations. Contingency planning. Data encryption. Lect. 3 hrs. per wk.

ADJU 184 Personnel Security (3 cr.)
A study of the personnel security processes in both government and proprietary organizations. The process for developing comprehensive personnel systems, employee recruitment, screening, and termination will be studied. Lect. 3 hrs. per wk.

ADJU 185 Physical Security (3 cr.)
A study of the natural and structural barriers, including all perimeter barriers that impact on security operations. The course will also include the consideration of UL certification, insurance, fire codes, and safety and health considerations. Lect. 3 hrs. per wk.

ADJU 186 Interrogation and Report Writing (3 cr.)
Presents the mechanics for obtaining background information, selecting the location, and other aids to con-

ducting the interrogation; the personal influence and psychological factors involved and the rudiments of report writing. Lect. 3 hrs. per wk.

ADJU 187 Traffic Administration and Control **(3 cr.)**
Traffic problems confronting the field law enforcement administrator, modern methods of traffic facilitation and control, techniques of selective enforcement and police responsibilities in special situations. Lect. 3 hrs. per wk.

ADJU 188 Traffic Accident Investigation **(3 cr.)**
Conduct at the scene of a traffic accident; required tests and measurements, collection and handling of evidence, interviewing and interrogations, note-taking, case preparation and court appearances, practical exercises. Lect. 3 hrs. per wk.

ADJU 190 Coordinated Internship **(1–5 cr.)**
(See General Usage Courses Section)

ADJU 197 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

ADJU 206 Security Management **(3 cr.)**
The major management operations of organizing, planning, staffing, directing and controlling will be discussed within the context of security management. The functions of general management and institutional program and staff development will be reviewed. Lect. 3 hrs. per wk.

ADJU 207 Information Security **(3 cr.)**
A study of the means of protection of both government classified information and private, proprietary information. Identification of sensitive information: investigations, clearances, transmission, storage, destruction, necessary records. Lect. 3 hrs. per wk.

ADJU 208 Retail Security **(3 cr.)**
A study of internal and external thefts that affect retail security operations. A review of factors related to loss and procedures required for preventive loss is also included. Lect. 3 hrs. per wk.

ADJU 209 Substance Abuse in Security Administration **(3 cr.)**
A review of the use and abuses of prescription and non-prescription drugs and their impact on security operations. The student will learn to recognize the symptoms of drug abuse and the societal impact and response to drug abuse. Lect. 3 hrs. per wk.

ADJU 228 Law Enforcement and the Community **(3 cr.)**
An examination of the current efforts undertaken by the police to achieve an effective working relationship with the community. Among the topics studied in depth are the police image, crisis areas, public and police attitudes, and community relations activities. Lect. 3 hrs. per wk.

ADJU 231–232–233 Criminal Law Evidence and Procedures I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Prerequisite 2nd year standing or permission of program. Note: ADJU 231–232–233 may be taken out of sequence with divisional approval. Major crimes; their classification, elements of proof, intent, conspiracy, responsibility, parties and defenses. Emphasis on the common law and Virginia adaptions. Kinds, degrees, and admissibility of evidence; methods and techniques of its acquisition, use in criminal proceedings, moot court activities. Review of court systems with emphasis on procedures from incident to final disposition of the accused and on applicable principles of criminal and civil law. Intended to satisfy transfer requirements for one year of Criminal law. Lect. 3 hrs. per wk.

ADJU 237 Administration of Justice **(3 cr.)**
Review of court systems with emphasis on procedures from incident to final disposition of the accused and on applicable principles of criminal and civil law. Includes field trips and guest lectures by representatives of local agencies and tribunals. Lect. 3 hrs. per wk.

ADJU 238 Basic Questioned Documents Investigation **(2 cr.)**
Prerequisite ADJU 246. A survey of current techniques used by forensic scientists in identifying, collecting, and examining questioned and known documents, from their discovery in the field to their being examined and prepared for the use as evidence in court. The relationship of the duties of the field officer to the laboratory forensic scientist is explored. Lect. 2 hrs. per wk.

ADJU 239 Firearms & Toolmark Examination **(2 cr.)**
Prerequisite ADJU 246. A survey of current techniques and laboratory practices utilized by police laboratory technicians in examining and identifying firearms and toolmark evidence, from discovery at the scene through laboratory examination and court room presentation as evidence. Lect. 2 hrs. per wk.

ADJU 246 Principles of Criminal Investigation **(3 cr.)**
Conduct at the crime scene; collection and handling of evidence; interviewing and interrogations; obtaining statements, admissions and confessions; testifying in court. Practical exercises are included. Lect. 3 hrs. per wk.

ADJU 247 Advanced Criminal Investigation **(3 cr.)**
Prerequisite ADJU 246. Continued study of the investigative process; introduction to scientific aids and examinations; application of investigative techniques to specific offenses. Practical exercises are included. Lect. 3 hrs. per wk.

ADJU 248 Special Investigation Techniques **(3 cr.)**
The development and retention of unique information systems such as informants, surveillance, under-cover assignments, and use of electronic aids. Lect. 3 hrs. per wk.

ADJU 254 Criminal Investigation Techniques I **(4 cr.)**
Prerequisite 2nd year standing or permission of program. Crime scene searches; collection and preservation of evidence; interrogations and interviews; obtaining statements, admissions and confessions; testifying in court. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

ADJU 255 Criminal Investigation Techniques II **(4 cr.)**
Prerequisite ADJU 254. A continuation of the study begun in ADJU 254. Advanced laboratory work relating to investigations; introduction and use of scientific aids and examinations; application of investigative techniques to specific offenses. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

ADJU 267 Organized Crime and Corruption (3 cr.)
Problems in the Administration of Justice, including organized crime, vice, prostitution, homosexuality, pornography, gambling, bookmaking and corruption. Lect. 3 hrs. per wk.

ADJU 276 Industrial and Commercial Security (3 cr.)
Organization, methods, techniques and equipment for physical protection of industrial and commercial facilities and prevention of theft of merchandise and valuables by persons within and without those facilities. Practical exercises are included. Lect. 3 hrs. per wk.

ADJU 277 Proprietary and Governmental Security (3 cr.)
Prerequisite ADJU 276, or departmental approval. Parallel Course ADJU 254. Continuation and expansion of principles and procedures begun in ADJU 276. Field work and visits to various types of establishments and installations. Inquiry into internal controls of organization. Application of investigative procedures and techniques. Lecture and demonstrations. Lect. 3 hrs. per wk.

ADJU 278 Emergency Planning (3 cr.)
A course designed to aid the Security Director in developing a cost conscious, effective plan of operations for various types of facilities under adverse circumstances. Lect. 3 hrs. per wk.

ADJU 287 Elementary Principles of Probation and Parole (3 cr.)
Prerequisite ADJU 120. Probation and Parole as methods for treating offenders; history; organization and administration; eligibility; selection; revocation and termination; procedures and techniques; trends. Lect. 3 hrs. per wk.

ADJU 289 Correctional Counseling (3 cr.)
The principles and processes of counseling in correctional facilities; and other related fields. Major aspects of counseling theory and principles along with practical applications of same. Lect. 3 hrs. per wk.

ADJU 290 Coordinated Internship (1–5 cr.)
(See General Usage Courses Section)

ADJU 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

ADJU 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

AGRICULTURE

AGRI 116 Animal Breeds and Identification (3 cr.)
Common breeds of large and small domestic animals. Breed characteristics and fundamental breeding and management procedures. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AGRI 151–152–153–154 Laboratory Techniques I–II–III–IV (2 cr.) (4 cr.) (4 cr.) (4 cr.)
Prerequisite division permission. Hematology, urinalysis, bacteriology, mycology, radiology, and restraint procedures as related to assisting in the practice of veterinary medicine. Lect. 0–2–2–2 hrs., Lab. 6–6–6–6 hrs., Total 6–8–8–8 hrs. per wk.

AGRI 155–156 Anatomy and Physiology I–II (4 cr.) (4 cr.)
Applied study of structure and function of the normal body of domestic and laboratory animals. Lect. 2–2 hrs., Lab. 6–6 hrs., Total 8–8 hrs. per wk.

AGRI 161–162–163–164 Clinical Practices I–II–III–IV (3 cr.) (4 cr.) (4 cr.) (4 cr.)
Prerequisite division permission. Study of practical experience in sterilization, sanitation, surgical procedures, record keeping, professional ethics and other necessary practices and procedures related to assisting in the practice of Veterinary Medicine. Lect. 2 hrs., Lab. 3–6–6–6 hrs., Total 5–8–8–8 hrs. per wk.

AGRI 214–215 Animal Diseases I–II (2 cr.) (2 cr.)
Discussion of animal health and disease, surgical techniques, and animal behavior. Demonstrations and selected observation and practice in animal hospitals, clinics or research laboratories are included as applicable. Lect. 1–2 hrs., Lab. 3–0 hrs., Total 4–2 hrs. per wk.

AGRI 219 Animal Pharmacology (4 cr.)
Prerequisite division permission. Drugs and other medical substances of veterinary importance, including characteristics, usage, measurement, administration and storage. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

AGRI 260 Animal Nutrition (3 cr.)
The principles of nutrition, digestion, and metabolism and their application to feed practices. Analysis of individual feeds and ration requirements. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

AGRI 290 Coordinated Internship (1–5 cr.)
(See General Usage Courses Section)

AGRI 298 Seminar and Project (2 cr.)
(See General Usage Courses Section)

AIR CONDITIONING AND REFRIGERATION

AIRC 101–102–103 Principles of Refrigeration I–II–III (4 cr.) (4 cr.) (4 cr.)
A study of refrigeration principles and systems, characteristics of refrigerants, compressors, condensers, evaporators, float valves, expansion valves; compression and absorption systems; temperature and pressure control; electrical controls for climate control units; electrical motors and motor controls, starters, relays, overloads, and control circuits. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AIRC 110 Principles of Air Conditioning (4 cr.)
Heat load calculations psychrometrics, and systems for control of temperature and humidity. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AIRC 111–112–113 Air Conditioning & Refrigeration Electricity I–II–III (3 cr.) (3 cr.) (3 cr.)
Study of electronic theory, magnetism, Ohm's Law, resistance, current flow, instruments for electrical measurements, transformers, inductance, capacitance, AC motors and controls, power transmission and distribution, pictorial and schematic circuit diagrams used in air conditioning, refrigeration, and heating for home, commercial, and light industrial installations. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

AIRC 120 Principles of Heating and Ventilating (4 cr.)
Types of systems and equipment used in the field and applications in obtaining and maintaining comfort in

residential and commercial use. Types of heating systems; steam, hot water, and forced air. Calculations for deriving overall heat losses; electric panels and elements; heat-loss calculation forms used by industry; actual system components are made available. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AIRC 131–132–133 Circuits and Controls I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A study of the types of circuits and controls which are used in air conditioning, heating and refrigeration for the home, industry, and commercial refrigeration systems, including electrical, electronic, pneumatic, and combination circuits. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AIRC 150 Air Distribution and Design **(4 cr.)**
Prerequisite AIRC 110. The selection and layout of equipment, duct design, and principles of low velocity air distribution. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AIRC 154–155 Combustion Devices I–II **(3 cr.) (3 cr.)**
Fuels, types of burners and their components, installation and servicing will be studied. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AIRC 156 Climate Control Heat Pump **(3 cr.)**
Theory of operation and control of the heat pump. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AIRC 199 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

AIRC 200 Hydronics **(4 cr.)**
The design and installation of hydronic systems for heating and cooling. "Hydronics" includes steam heated and chilled water systems; primarily concerns systems using water under forced circulation. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

AIRC 211–212–213 Air Conditioning Controls I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Electrical, pneumatic and electronic control circuits as applied to year round air conditioning systems. Reading wiring and schematic diagrams, trouble shooting, and designing high and low voltage control systems. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

AIRC 246 System Balancing and Testing **(4 cr.)**
Solutions to field problems experienced by test and balance engineers in the prevention of post-installation problems. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

AIRC 251–252–253 Air Conditioning Systems I–II–III **(4 cr.) (4 cr.) (4 cr.)**
Study of equipment used in cooling, heating, humidification, dehumidification, and air cleaning. Equipment components, installation, servicing and maintenance will be studied. Residential and commercial equipment will be covered. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AIRC 266 Industrial and Low Temperature Applications **(4 cr.)**
Use of primary, secondary, and expendable refrigerants in environmental testing; medical and clinical application; physical properties and uses of cryogenic fluids; use of refrigeration in manufacture of ice, construction of skating rinks, and in heavy construction industry. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

AIRC 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

ANTHROPOLOGY

(See Sociology Section)

APPLIANCE SERVICING

APPL 120 Appliance Principles **(2 cr.)**
Operational physics related to the electrical-mechanical functions of home appliances. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

APPL 121–122–123 Major Appliance I–II–III **(4 cr.) (4 cr.) (4 cr.)**
The maintenance, repair and installation of major appliances including laundry appliances, kitchen appliances and commercial food preparation appliances. Emphasis is placed on proper installation and practical repair procedures. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

APPL 124 Appliance Components and Circuits **(3 cr.)**
The principles of operation of functional components and fundamental circuits in home appliances. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

APPL 125 Appliance Control Circuits **(4 cr.)**
The application of controls and control circuits to home appliances. Emphasis on analysis, operation and troubleshooting of functional control circuits. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ARCHITECTURE

ARCH 100 Introduction to Architecture **(3 cr.)**
An intensive course outlining the history and impact of architecture. Emphasis on the dynamics and social aspects of architecture and society. Lect. 3 hrs. per wk.

ARCH 111 Architectural Drafting I **(3 cr.)**
Designed to provide a fundamental knowledge of the principles and techniques of architectural drafting used in professional offices. Skills in the use of architectural drafting materials and equipment are developed. Geometric construction, orthographic instrument drawing of principal views, isometric and oblique drawing, lettering, basic dimensioning, notation, significance of line weights, line quality, and diagrammatic working drawing techniques are introduced in the development of simple plans, sections, elevations and details. Freehand sketching. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARCH 112 Architectural Drafting II **(3 cr.)**
Prerequisite ARCH 111 or equivalent. Continuing the development of architectural drafting techniques and skills in the production of a limited set of working drawings for a house or a small commercial or civic structure, introducing materials indications, crossreference systems and symbols, analytic solutions of drafting problems involving auxiliary views, intersections and developments, development of construction details, and the drawing of scale and full size details from preliminary sketches. Freehand sketching. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARCH 113 Architectural Drafting III **(3 cr.)**
Prerequisite ARCH 112 or equivalent. Continuing the development of architectural drafting skills in the process of relating plan, sections, and elevations to site conditions and development using a topographic site

survey in the production of a preliminary architectural site plan. Quick freehand perspective and rendering techniques used in architect's offices are introduced, and a set of preliminary drawings of the project reflecting design decisions are produced by the students. Freehand sketching. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARCH 164 Materials and Methods of Construction I **(3 cr.)**
Designed to introduce the materials used in erection of structures, the physical properties and structural characteristics of steel, concrete, timber, glass, related materials and the methods used in testing materials. Lect. 3 hrs. per wk.

ARCH 165 Materials and Methods of Construction II **(3 cr.)**
Prerequisite ARCH 164. Designed to introduce the practical use of materials and methods of structures. The architectural and structural relationship of concrete, steel, and timber structures are analyzed with an introduction to cost analysis and the economic aspect involved in construction. Lect. 3 hrs. per wk.

ARCH 171 Specification Writing for General Construction I **(3 cr.)**
Relationship of specifications to design and working drawings, graphical versus narrative presentation, relating trades and materials, quality control for labor materials. Types of specifications, format and writing procedures; general conditions, requirements and responsibility of specifications; source of information, evaluation and language involved in specification writing. Legal aspects of specifications including bonds and insurance, bidding procedures, types of contracts and pre-bid documents. Lect. 3 hrs. per wk.

ARCH 204–205 History of Architecture I–II **(3 cr.) (3 cr.)**
The history of architecture from ancient times to the present but with emphasis on the designs and forms of twentieth century developments. Lect. 3 hrs. per wk.

ARCH 210 Site Planning **(3 cr.)**
The fundamentals of surveying required for site evaluation and planning. Principles of horizontal measurements, leveling, profiles, direction, coordinate systems, topographic maps, contours, horizontal and vertical curves, boundaries. Surveying methods and instruments demonstrated. Lect. 3 hrs. per wk.

ARCH 211 Architectural Drafting IV **(3 cr.)**
Prerequisite ARCH 113 or equivalent. Introduction to professional office organization and to working on a complex structure under simulated architectural office conditions. Coordinated preparation of architectural and structural plans, elevations, sections, details, schedules and specifications. Preparation of preplanned sheet layouts using a specific cross-reference system. Research and use of reference data. Stating of problems and possible solutions as a means of actively contributing to the process of obtaining prompt and accurate decisions. Special attention to clarity, brevity and completeness of information shown, and firm and authoritative drawing and lettering techniques for effective reproduction. Freehand sketching. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARCH 212 Architectural Drafting V **(3 cr.)**
Prerequisite ARCH 211. Reintroduction of the design process for the purpose of developing drawings and details within the context of a design concept and demonstrating the entire production process within which the architectural draftsman works. Working on coordinated architectural, structural, mechanical and electrical design, working drawings, and specifications, of commercial or industrial structures under simulated architectural office conditions with the aid of faculty consultants. Use of building codes. Final assembly of the complete document for construction purposes. Time limits and the broad scope of the instruction demand a simple design quickly arrived at, with typical undivided floor plans and typical details. Freehand sketching. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARCH 213 Architectural Drafting VI **(3 cr.)**
Prerequisite ARCH 212. The course concentrates on problems and solutions of the urban design context of the structure worked out in ARCH 212 and its immediate vicinity. Foundations and parking facilities under the structure are designed. Vehicular and pedestrian circulation, site development including pavements, planting, storm water drainage, street furniture, orientation, sunlight and air are considered. An actual site is chosen and local zoning regulations are used. The overall urban site is developed in block form with consideration of the major elements of economic feasibility. Special attention is given to scale and the environmental quality for the individual user. Freehand sketching. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARCH 236 Building Electric Equipment **(3 cr.)**
Prerequisite ARCH 237. Study of equipment, materials, and symbols. Building code requirements, pertaining to residential and commercial construction; reading and interpretation of working drawings by electrical engineers; coordination of electrical features with architectural and structural design. Lect. 3 hrs. per wk.

ARCH 237 Building Mechanical Equipment **(3 cr.)**
General study of heating, air conditioning, plumbing and electrical equipment, materials and symbols. Building code requirements pertaining to residential and commercial structures; reading and interpretation of working drawings by mechanical engineers; coordination of mechanical and electrical features with structural and architectural designs. Lect. 3 hrs. per wk.

ARCH 240 Field Inspections **(3 cr.)**
Provide working knowledge of methods and procedures of building construction inspection and technical reporting on the project site. Lect. 3 hrs. per wk.

ARCH 250 Construction Safety and Health **(3 cr.)**
An introduction into construction industry safety and health operations hazards control. Includes safety and health aspects and procedures relative to site clearing, demolition, excavation, building and highway construction with special emphasis placed on planning a safety program in the construction industry. Lect. 3 hrs. per wk.

ARCH 276 Construction Estimating **(3 cr.)**
Interpretation of working drawings for a project; preparation of material and labor quantity surveys from plans and specifications; approximate and detailed estimates of cost. The student will study materials take-off, subcontractors estimates of cost, and bid and contract procedures. Detailed inspection of the construction by comparing the finished work to the specifications. Lect. 3 hrs. per wk.

ARCH 277 Building Codes and Contract Documents **(3 cr.)**
A study of building codes and their effect in relation to specifications and drawings. The purpose and writing

of specifications will be studied along with their legal and practical application to working drawings. Contract documents will be analyzed and studied for the purpose of client-architect-contractor responsibilities, duties and mutual protection. Lect. 3 hrs. per wk.

ARCH 279 Critical Path Method Program (3 cr.)
Working knowledge of C.P.M. programming and its implication for the building industry as a vehicle for control of project construction. Lect. 3 hrs. per wk.

ARCH 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

ARCH 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

ARCH 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

ARTS

ARTS 110 Art Appreciation (3 cr.)
A survey of art from prehistoric times to the present day. Architectural styles, sculpture, and painting by lecture and slide illustrations. Lect. 3 hrs. per wk.

ARTS 111–112–113 History and Appreciation of Art I–II–III (3 cr.) (3 cr.) (3 cr.)
The history and interpretation of architecture, sculpture and painting. The course begins with prehistoric art and follows the mainstream of western civilization to the present. Lect. 3 hrs. per wk.

ARTS 115 Art in World Culture (5 cr.)
The conceptual approach rather than historic with emphasis on the contemporary period. Designed to develop a non-technical, general, cultural understanding of the space arts such as architecture, painting, sculpture, graphics, and industrial design. Lect. 5 hrs. per wk.

ARTS 116 History of Printmaking (3 cr.)
A chronological history of the development of Printmaking techniques, including woodcut, etching, and engraving, lithography and serigraphy, from medieval to the present time. Emphasis on printmaking techniques in relation to art forms. Lect. 3 hrs. per wk.

ARTS 124–125–126 Drawing I–II–III (4 cr.) (4 cr.) (4 cr.)
Introduction to drawing skills, concepts, and media including pencil, ink, charcoal, pastel, and watercolor. Related gallery assignments and field trips. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 136–137–138 History of Far Eastern Art I–II–III (3 cr.) (3 cr.) (3 cr.)
A survey of the history of Far Eastern Art from the prehistoric period to the present. The first quarter will cover the Art of India and Southeast Asia from 2500 B.C. to the present, the second quarter the Art of China from 3000 B.C. to the present, the third quarter the Art of Japan and Korea from 200 B.C. to the present. Emphasis will be placed on architecture, painting, and sculpture, with additional instruction on printmaking and the decorative arts. Lect. 3 hrs. per wk.

ARTS 154–155–156 Design I–II–III (3 cr.) (3 cr.) (3 cr.)
Introduction to the concepts of two and three dimensional design and the theory and use of color. Field trips related to design concepts. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 157–158–159 Ceramics I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisites Design I or divisional permission. Problems in the design and production of functional and nonfunctional ceramic works, including handbuilding, use of the wheel, study of clays and glazes. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARTS 161–162–163 Fundamentals of Design I–II–III (4 cr.) (4 cr.) (4 cr.)
Introduction to and application of the basic concepts of two and three dimensional design and the theory and use of color. Field trips related to design concepts and other outside assignments. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 166–167 Fundamentals of Lettering I–II (3 cr.)
Calligraphy as an introduction to script and the constructed letter; creative, freehand, and mechanical lettering; other forms of letters used in today's graphic layout and design. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 169 Visual Communications (4 cr.)
Prerequisites ARTS 154, 170. Advanced 2 and 3-dimensional design concepts applicable to all fields of commercial art. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 170 Introduction to Graphic Skills (3 cr.)
Designed to provide basic studio skills necessary for the commercial art student. Emphasis is placed on the proper use of drafting equipment and other materials such as knives, pencils, pens, brushes, glues and papers. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 171–172–173 Typography I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite ARTS 170. Instruction in the historical elements of letter forms, typefaces and their use in contemporary communications media. The emphasis is on application of this knowledge to specific design problems. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ARTS 181–182–183 Gallery Management I–II–III (3 cr.) (3 cr.) (3 cr.)
Lectures on the history and development of museums; problems of museum administration, connoisseurship, cataloging, accessing installation, conservation, and educational services. Field trips to galleries and museums observing how the above are dealt with on a day-to-day basis. Students will participate in the management of the school gallery and intern in professional galleries under the instructor's supervision. Lect. 3 hrs. per wk.

ARTS 191–192–193 History of American Art I–II–III (3 cr.) (3 cr.) (3 cr.)
A survey of the history of American art from the 1600's to the present. The first quarter (3 cr.) will cover the period from 1600–1850, the second from 1850–1935 and the third from 1935 to the present. Architecture, painting, sculpture, and printmaking will be emphasized and crafts, the decorative arts, and photography included. Lect. 3 hrs. per wk.

ARTS 196 Art Workshop (2 cr.)
A workshop for individual special projects in art and crafts. Lab. 6 hrs. per wk.

ARTS 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

ARTS 200 Introduction to Primitive Art (3 cr.)
Survey of the visual arts of primitive cultures, including those of pre-history; of North and South American Indians, of Tribal Africa and Australia, of the Eskimos, etc. Lect. 3 hrs. per wk.

ARTS 201–202–203
Sculpture I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisite ARTS 156 or divisional permission. Introduction to sculptural concepts and methods of production both traditional and contemporary, including work in plastics and metals. Field trips and other related assignments. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 206 The Growth of American Art (3 cr.)
A survey of the development of the fine arts in the United States from their colonial beginning to the present. Special emphasis will be given to the relationship between American crafts and fine arts, and the influence of historical events and economic ideals on the quality of the art produced. Lect. 3 hrs. per wk. Also offered as a videocourse—continuous registration, 24 wk. course that requires on-campus viewing of video cassettes (through the Extended Learning Institute).

ARTS 211–212–213
Painting I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisite ARTS 126 and ARTS 155 or divisional permission. Introduction to painting styles, materials, and techniques, both traditional and contemporary. Gallery Trips and other related assignments. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 214–215 Graphic Techniques I–II (4 cr.) (4 cr.)
Prerequisites ARTS 170, 171. The use of drawing instruments and materials; introduction to engraving processes; and the mechanics of reproduction. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 216 Functional Ceramics (4 cr.) (4 cr.)
Prerequisite ARTS 159 or divisional permission. Problems in the design and production of functional ceramics, including handbuilding and use of the wheel. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARTS 217 Sculptural Ceramics (4 cr.)
Prerequisite ARTS 159 or divisional permission. Problems in the design and production of sculptural ceramics, including handbuilding and use of the wheel. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARTS 218 Museum Resources (3 cr.)
Prerequisite: Divisional Permission. Designed to make fine arts and art history majors familiar with the museums and architectural landmarks of the local area. The resources investigated will include not only works of art but also audio-visual materials available, museum libraries where one might do research and the circumstances under which an artist would be allowed to copy paintings in the museums. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 219 Ceramic Decoration (4 cr.)
Prerequisite ARTS 159 or divisional permission. Problems in execution of various ceramic decoration techniques. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

ARTS 227–228–229
Drawing IV–V–VI (3 cr.) (3 cr.) (3 cr.)
Prerequisite ARTS 126 or divisional permission. Advanced study of concepts with emphasis on the drawing as a work of art, and on creative independence. Related gallery assignments. Lab. 6 hrs. per wk.

ARTS 234–235 Theory and Practice of Watercolor Painting I–II (3 cr.) (3 cr.)
Prerequisites ARTS 126 and ARTS 154. Abstract and representational painting in watercolor with emphasis on design, color, composition, and value. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 240 History of Design (3 cr.)
A study of the development of visual communication with examples from art history, graphic design and illustration. The influence of style, cultural trends and technological processes on the development of art forms with emphasis on the 19th and 20th centuries. Required for commercial art majors. Lect. 3 hrs. per wk.

ARTS 248–249 Visual Communications I–II (3 cr.) (3 cr.)
Prerequisites ARTS 154, ARTS 170. Advanced two dimensional design concepts applicable to all fields of commercial art. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 251–252–253 Advanced Design I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite ARTS 156 or divisional permission. Concerned with the ordering and interpretive application of design elements (line, shape, form, texture, color, space, etc.) in two and three dimensions. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 254–255 Experimental Fabric Design I–II (3 cr.) (3 cr.)
Prerequisites ARTS 154–155. Introduction to simple fabric design techniques such as frame weaving, dye techniques, and printing design and application. Emphasis on creative design approach. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 256 Printing: Intermediate Intaglio (4 cr.)
Prerequisite ARTS 280. Continued experimentation with the Intaglio Printmaking techniques with an introduction to color and photographic technique, and edition printing. Curatorial and display methods to be covered. Emphasis on individual expressive needs and an overview of the history of Intaglio Printmaking. Related field trips. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 257 Magazine Design (3 cr.)
Prerequisites ARTS 170, ARTS 154 and ARTS 171. Design and production of the campus literature and arts magazine. Designing promotion material for its sale and the editing of art work submitted for entry. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ARTS 258 Newspaper Layout (3 cr.)
Prerequisites ARTS 170, ARTS 154 and ARTS 171. Design and production of the campus biweekly newspaper. Layout and possible contribution of graphics, cartoons, illustration, and photography for story assignments. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 259 Printmaking: Advanced Intaglio (4 cr.)
Prerequisite ARTS 256. Emphasis on independent work, seeking a more complete creative expression on the students' part. A concentration on the works of contemporary artists and an introduction to the field of professional printmaking. Related field trips to artists' studios and print collections. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 260 Painting Techniques for Illustrators **(3 cr.)**
Prerequisites: ARTS 124, ARTS 125, ARTS 154, ARTS 155 or divisional permission. An introduction to the materials and techniques of water-based paints (watercolor, acrylics and gouache) as used in illustration. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 261–262–263 Advertising Design I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Prerequisites ARTS 154, ARTS 170, ARTS 171 and ARTS 248. A study of the principles of optical communications applied to advertising design in newspaper, magazines, and direct mail advertising. Analysis of the influence of contemporary art on layout. Lect. 2 hrs., Lab 3 hrs., Total 5 hrs. per wk.

ARTS 264–265 Silkscreen Design and Production I–II **(3 cr.) (3 cr.)**
Prerequisite ARTS 154. A study of silkscreen techniques with emphasis on design and communication. Design of products such as posters. Introduction to photo silkscreen techniques. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 266–267–268 Illustration I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Prerequisite ARTS 126 or Division permission. Introductory courses of methods and materials used in the following fields of Illustration: spot, product, story (book and magazine), fashion, furniture, news, reporting and cartooning. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 269 Printmaking: Lithography **(4 cr.)**
Prerequisite ARTS 126, 155. Introduction to lithographic processes and techniques, with emphasis on stone lithography. Related field trips. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 270 Design Studio **(4 cr.)**
Prerequisites ARTS 126, 162, 214, 261, and PHTG 101 (or equivalent). Advanced commercial design in a studio situation. Experiences are provided in: conceptualizing designs based on client needs; solving "real" problems of instructional value from a limited market; all practical aspects of production; art direction; contract writing; client contact; some inter-relationship of design, illustration, commercial photography. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 271–272–273 Graphic Techniques I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Prerequisites ARTS 154, ARTS 170, and ARTS 171. The use of drawing instruments and materials; introduction to engraving processes; and the mechanics of reproduction. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

ARTS 278 Printmaking: Silk Screen **(4 cr.)**
Prerequisites ARTS 126 and ARTS 155 or divisional permission. Introduction to silk screen stencil techniques, styles, and materials. Field trips related to screen printing. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 279 Printmaking: Relief Printing **(4 cr.)**
Prerequisites ARTS 126 & 155 or Divisional permission. Introduction to relief printing processes and techniques including woodblock, linocut, and collograph. Field trips related to relief printing. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 280 Printmaking: Intaglio Printing **(4 cr.)**
Prerequisites ARTS 126 & 155 or Divisional permission. Introduction to intaglio printmaking processes including etching, engraving, dry point, and related techniques. Related Field trips. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 281-282-283 Advanced Drawing I-II-III **(4 cr.)(4 cr.)(4 cr.)**
Prerequisite ARTS 126 or divisional permission. Advanced exploration of drawing concepts and techniques. Related gallery assignments. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 284-285-286 Illustration I-II-III **(4 cr.)(4 cr.)(4 cr.)**
Prerequisites ARTS 126, 155, 170, 248 or divisional approval. An introduction to the concepts, methods and skills involved in the following fields of illustration: Editorial (book, magazine, newspaper); institutional (government, corporate) and advertising. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 287-288-289 Advertising Design I-II-III **(4 cr.)(4 cr.)(4 cr.)**
Prerequisite ARTS 154, 169, 170, 171 or divisional permission. A study of the principles of visual communications as applied to advertising and graphic design. Analysis of the influence of contemporary art on layout. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 291–292–293 Design IV–V–VI (4 cr.) (4 cr.) (4 cr.)
Prerequisite ARTS 156 or divisional permission. Concerned with the application of basic design concepts to more complex problems, and the development of a questioning and problem solving method of thinking. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ARTS 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

ARTS 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

ARTS 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

AUTOMOTIVE

AUTO 100 Automotive Shop Practices **(3 cr.)**
Shop practices for the automotive laboratory and shop safety, identification and use of hand tools, general power equipment and maintenance of an automotive shop. Basic operating procedures of installed shop equipment. Occupational Safety and Health act standards. A prerequisite for all automotive courses, except those in the Auto Machinist curriculum. Lect. 3 hrs. per wk.

AUTO 104–105 Automotive Electrical Component Rebuilding I–II **(4 cr.) (4 cr.)**
A study of special equipment and procedures used in the component rebuild shop. Emphasis is on batteries, generators, and cranking motors. AUTO 105 is a continuation of AUTO 104. Emphasis is on alternators, distributors, and speedometers. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 106 Auto Mechanics for the Layman **(2 cr.)**
A brief study of the automobile with emphasis on operation and maintenance. Topics include tires, brakes, cooling, lubrication, ignition, fuel system, and suspension. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

AUTO 107 Automotive Disassembly and Inspection Techniques (3 cr.)
A study of disassembly procedures, cleaning methods and inspection techniques, including the proper use of measuring devices. Magnetic Particle and Dye Penetrant inspection is included with parts ordering procedures. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AUTO 109 Automotive Shop Fabrication Techniques (3 cr.)
A study and experience in the methods of fabricating equipment and fixtures for the Automotive Repair and Machine Shop. The course includes project planning, layout work, gas welding, arc welding, fasteners, and tool and fixture making. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AUTO 111–112–113 Automotive Engines I–II–III (4 cr.) (4 cr.) (4 cr.)
Analysis of power, cylinder condition, valves, and bearings in the automotive engine to establish the present condition, repairs or adjustments. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 114 Cylinder Block Service (4 cr.)
Basic cylinder block reconditioning to include boring, resleeving, line-boring and deck resurfacing. Repair techniques for damaged block and cylinder head castings to include cold welding, brazing, welding and epoxy. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 115 Cylinder Head Service (4 cr.)
Prerequisite AUTO 114. A study of cylinder head reconditioning to include valve seat grinding, refacing valves, servicing valve guides, valve seat inserts, cutting for valve seals and springs, thread repair and resurfacing mating surfaces. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 118 Automotive Turning Operations (4 cr.)
Principles and methods of lathe operations for fabrication, modifications and tool making. Includes brake drum and disc lathes. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 119 Crankshaft, Camshaft and Connecting Rod Service (4 cr.)
A study of the techniques of crankshaft and camshaft reconditioning to include grinding, polishing, straightening, welding, and balancing. Connecting rod service to include installing and reaming bushings, straightening, aligning, and balancing. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 120 Introduction to Automotive Machine Shop (4 cr.)
Pre-or corequisite for all other machinist courses. An introductory course in automotive machining operations emphasizing shop safety and the safe use of machine shop tools. The course survey's basic machining operations and specialized auto machining techniques necessary for reconditioning engine and chassis components. A basic set of machinists hand tools is required for this course. Lect. 3 hrs., Lab 3 hrs., Total 6 hrs. per wk.

AUTO 121–122 Automotive Fuel Systems I–II (4 cr.) (4 cr.)
Analysis of automotive fuel systems to include carburetors, fuel injection, superchargers, fuel pumps, filters, instruments, tanks and connecting lines. Complete overhaul, repairs and adjustment of fuel system components. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 126 Antipollution Systems (4 cr.)
Prerequisite AUTO 122. A study of various antipollution systems used on modern automobiles, installation, inspection, repair and service. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 128 Auto Mechanics (4 cr.)
The automobile, its systems, operating principles, problems, and basic repair techniques. The introductory diagnosis, disassembly, inspection, repair reassembly and adjustment of automobile components. AUTO 100 is co-requisite or pre-requisite. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 134 Automotive Parts Management I (3 cr.)
A study of the duties and qualifications, including catalog and telephone use, invoicing, parts classification, salesmanship and customer relations. 3 Lect. hrs. per wk.

AUTO 135 Automotive Parts Management II (3 cr.)
Prerequisite AUTO 134. A study of the duties and qualifications, including collections and collection practices, fleet and other accounts, techniques of product demonstration, salesmanship and customer relations. 3 Lect. hrs. per wk.

AUTO 136 Automotive Lubrication and Cooling Systems (3 cr.)
Testing and analysis of lubrication systems to include lubricants, pumps, lines, filter, and vents. Analysis of cooling systems, coolants, pumps, fans, lines and connections. Estimating repairs, adjustments needed and their costs. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AUTO 137 Consumer Auto Repair (2 cr.)
The basic study and practice of home maintenance and repair of automotive vehicles. To include basic theory of the automobile, hand tool selection and use, and the repair tasks able to be accomplished in the home garage without power equipment. For non-Automotive degree/certificate students only. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

AUTO 138 Automotive Vehicle Inspection (3 cr.)
This course is designed to provide information on how to perform an automotive vehicle safety inspection. Emphasis is placed on the inspection of brakes, lighting and electrical, steering and suspension, tires, wheels and rims, vehicle glazing, body and sheet metal, muffler and exhaust systems, and air pollution control systems. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AUTO 143 Service Station Operation I (4 cr.)
Covers career opportunities, importance, growth, type and trends of service stations. Emphasis is placed upon preparation for service station operation and getting started in business. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 144 Service Station Operation II (4 cr.)
Prerequisite AUTO 143. Operation and maintenance to include housekeeping, safety, retail sales, customer relations and petroleum products. Other products such as tires, batteries and accessories will also be studied. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 145 Service Station Operation III (4 cr.)
Prerequisite AUTO 144. Covers financial management, personnel management, planning and develop-

ment. Inventory controls, protecting investment and safeguarding inventory and cash are also covered. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 147 Automotive Radiator Repair (4 cr.)
This course is designed to provide the student with a comprehensive and detailed description of the operations and techniques involved in the repair and service of automotive radiators. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 149 Emissions Control Mechanic (3 cr.)
Prerequisite practicing auto mechanic. For Motor Vehicle Mechanics who wish to specialize in emission controls. Requirements for the Control of Vehicle pollutants, inspection, repair, and service as determined by the latest test equipment and scientific methods and accomplishing needed repairs, replacement or adjustment. Lect. 3 hrs. per wk.

AUTO 151–152 Auto Power Trains I–II (4 cr.) (4 cr.)
The operation, design, construction and repair of power train components: clutches, propeller shaft, universal joints, rear axle assemblies, fluid couplings, torque converters: 2, 3, and 4 speed standard, overdrive and automatic transmissions. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

AUTO 160 Basic Sheet Metal Operations (4 cr.)
Use of metal straightening tools, basic straightening operations, shrinking, filing, sheet metal damage and repair procedures. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

AUTO 165 Automotive Painting (4 cr.)
Knowledge and use of spray painting and painting materials including thinners, primers, lacquer, enamel, acrylics, rubbing components, waxes and cleaners. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

AUTO 167 Auto-Body Repair (4 cr.)
Understanding collision straightening procedures and equipment, planning repair procedures, disassembly techniques, body fastening systems, glass removal and replacement and panel repair and alignment. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

AUTO 168 Automotive Sheet Metal Preparation (4 cr.)
Using the materials, processes and equipment to prepare straightening metal and old finishes for painting. Includes sanding, cleaning, solvents, special materials, fillers and priming. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

AUTO 169 Automotive Frame Repair (4 cr.)
Determining frame and unit construction straightening processes, equipment use and measurement processes. Practice using pulling set-ups, typical repair procedures, pushing set-ups and gauges, and frame and body checking. Lect. 1 hr., Lab. 9 hrs., Total 10 hrs. per wk.

AUTO 176 Small Gasoline Engines (3 cr.)
A study of small gasoline engine operating principles, construction, design, variety and their many purposes. Instruction on the two-cycle and four-cycle small gas engines, their construction, design, fuel system, ignition system, and lubricating systems. The disassembly, reconditioning, overhaul and reassembly is demonstrated in the lab. Thorough study and practice in trouble-shooting and tune-up. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AUTO 181 Automotive Diagnostic Technology I (3 cr.)
Introduction to the principles of automotive maintenance using modern diagnostic methods. Theory and laboratory experiments designed to explain and illustrate the scientific basis of modern electronic and mechanical diagnostic procedures. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AUTO 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

AUTO 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

AUTO 201–202–203 Automotive Systems IV–V–VI (4 cr.) (4 cr.) (4 cr.)
Prerequisites AUTO 103 and MATH 113 or equivalent. Advanced theory and detailed study of automobile systems. Laboratory periods provide the student with actual field practice in trouble-shooting. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 238 Automotive Air Conditioning (3 cr.)
Principles of refrigeration, air conditioning controls, and the adjustment and general servicing of automotive air conditioning systems. Lect. 3 hrs. per wk.

AUTO 241–242–243 Automotive Electricity I–II–III (4 cr.) (4 cr.) (4 cr.)
The theory of electricity and electrical circuitry as it applies to the automobile. The construction, operation, diagnosis and service of the automotive battery, starting, charging, ignition, lighting and power accessory systems. Diagnosis and testing performed with modern test equipment. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 246 Automotive Electronics (4 cr.)
Prerequisite AUTO 241–242. An introduction to the field of electronics as it applies to the modern automobile. Emphasis is on basic circuit operation, diagnosis and repair of electronic ignition, fuel control, pollution control, braking control, digital indicator, and warning systems. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 267 Automotive Suspension & Braking Systems (4 cr.)
Analysis of front end suspensions and adjustment. Rear springs, braking system, and tire inflation check. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AUTO 268 Automotive Alignment (2 cr.)
Use of alignment equipment in diagnosing, adjusting, and repairing suspension problems. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

AUTO 281–282 Automotive Diagnostic Technology IV–V (3 cr.) (3 cr.)
Application of modern electronic and mechanical diagnostic procedures in the evaluation of the operational condition of automobiles. Safety and economy of operation are stressed. The student acquires actual diagnostic experience in the laboratory. Course content is: AUTO 281-Power Train diagnosis; AUTO 282 Brake and Suspension diagnosis. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AUTO 284–285 Automotive Service Procedures & Tune-Up I–II (3 cr.) (3 cr.)
Diagnostic and service procedures for automotive electrical and mechanical systems; use of tools and test equipment, evaluation of test results, estimation of repair cost, and performance of required service. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

AUTO 287–288 Shop Management and Customer Relations I–II **(3 cr.) (3 cr.)**
A study of shop layout, personnel and management, cost analysis, record keeping and quality control. The shop manager, service salesman, and service writer's role in customer relations. Lect. 3 hrs. per wk.

AUTO 290 Coordinated Internship **(1–5 cr.)**
(See General Usage Courses Section)

AUTO 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

AUTO 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

AVIATION

AERO 110 History of Air Transportation **(3 cr.)**
An informative, historical survey of the effort of manned flight, the development of aircraft, milestones in aviation, noted pioneers, and the socio-economic impact of flight upon modern civilization. Lect. 3 hrs. per wk.

AERO 126 Aviation in the United States **(3 cr.)**
The development and present status of air transportation. Federal legislation, characteristics and classifications of air carriers; the organization and functions of the Federal Aviation Administration and Civil Aeronautics Board. The state of aviation in the U.S. and other advanced countries. Potentials and problems. Survey of equipment and techniques in present day technology. Lect. 3 hrs. per wk.

AERO 127 Fundamentals of Flight **(3 cr.)**
Introduction to the basic principles of flight including applications of aerophysics, theory of flight, aircraft standards and specifications, basic airplane construction, weight and balance fundamentals. Lect. 3 hrs. per wk.

AERO 136 The National Airspace System **(3 cr.)**
A survey of the common system of facilities, equipment, regulations, procedures, and personnel providing services and standard procedures for the safe and efficient movement of aircraft. Lect. 3 hrs. per wk.

AERO 137 Aviation Safety **(3 cr.)**
A study of the fundamentals essential to safe flight; instruments used and the evaluation and interpretation of their indications. Weight and balance problems. Federal Aviation Regulations pertaining to safe flight. Use of the Airmen's Information Manual. Lect. 3 hrs. per wk.

AERO 140 Flight Attendants Orientation **(3 cr.)**
A history and background of the Air Hostess Career. The advantages and disadvantages of the career, to include stewardess/steward training schools, the subjects taught and standards levied by the various airlines. Lect. 3 hrs. per wk., includes field trips.

AERO 146 Flight Attendants Duties **(3 cr.)**
A step by step outline of the duties expected of a flight attendant from the 1st day of hire to separation from the airline. These include while in school, preflight, flight, and post flight. Lect. 3 hrs. per wk., includes field trips.

AERO 147 Flight Attendants Personal Requirements **(3 cr.)**
A complete overview of the vital statistics required by the airlines including health, weight, height, posture, personality, sense of humor, and other qualities. Lect. 3 hrs. per wk.

AERO 176 Primary Flight **(1 cr.)**
A specific introduction to flight through actual flying experience in modern, safe, fully equipped aircraft. Sixteen hours of instruction are provided of which 10 hours are spent in dual flight and 6 hours in oral instruction and briefing. The program is sufficient to qualify a student pilot for solo flight. Optional for all Aviation Technology Programs. Estimated cost: $350. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk. NOTE: Solo flight is not permitted in this course.

AERO 197 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

AERO 246 Meteorology **(4 cr.)**
The interpretation of meteorological phenomena affecting aircraft flight. A study of the basic concepts of aviation meteorology: temperature, pressure, moisture, stability, clouds, air masses, fronts, thunderstorms, icing, fog. Analysis and use of weather data for flight planning and safe flying; interpretation of U.S. Weather Service maps, reports, and forecasts. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

AERO 247 Aviation Laws and Regulations **(3 cr.)**
The course provides insight which is pertinent to Federal Aviation Agencies as well as international, federal and local laws forming the present structure of Aviation Law. Lect. 3 hrs. per wk.

AERO 248 Aircraft Support Operations **(4 cr.)**
Logistics and services necessary to insure and support safe, efficient flight operations. Aviation supply and maintenance; loading and unloading; pre-flight checks and services. Logistical support enroute. Scheduled maintenance and operations. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AERO 249 Airline and Airport Security **(3 cr.)**
Federal Aviation Administration rules and regulations pertaining to airport and airline security. History of air piracy and terrorism and the methods and techniques used to control and combat these threats nationally and internationally. Lect. 3 hrs. per wk.

AERO 256 AIR Navigation **(3 cr.)**
The basic elements of air navigation; the fundamentals and practical application of pilotage and dead reckoning, including the use of plotter, computer, aerial charts. Navigation Systems, and Federal Aviation Administration publications pertinent to flying. Lect. 3 hrs. per wk.

AERO 257 Radar, Radio Aids, and Communications **(4 cr.)**
Radar theory and use. Basic radio fundamentals used by the pilot. Description and practical use of various radio aids to safe aerial navigation, including Very High Frequency Omni Direction Range (VOR), Instrument Landing System (ILS), Direction Finding (DF), and others. Charts and approach plates as adopted to radio navigation and the application of the Airmen's Information Manual. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

AERO 258 Airline Marketing **(3 cr.)**
The function of marketing in airline operations; market research; demand analysis; advertising and promotion; sales, traffic, and the theory of price determination. Lect. 3 hrs. per wk.

AERO 266 Airport Operations and Management **(3 cr.)**
A presentation of the major functions of airport management: organization, zoning, adequacy, financing, revenues, expenses, evaluation and safety. A study of the airport and its social-economic effect on the community. Lect. 3 hrs. per wk.

AERO 267 Airline Operations and Management **(3 cr.)**
The functions of management in airline operation; air carrier familiarization; effect of Federal regulations; organization, uniform system of accounts and reports, rules of practice in economic proceedings; industrial, financial and economic implications relative to decision making. Lect. 3 hrs. per wk.

AERO 290 Coordinated Internship **(3 cr.)**
This course is unique and desirable for Air Traffic Control students. Opportunities to place students in the Air Route Traffic Control Center and towers in the Washington, D.C. area, in a learning situation are possible for the duration of the course.

AERO 297 Cooperative Education **(3 cr.)**
(See General Usage Courses Section)

AERO 298 Seminar and Project **(3 cr.)**
(See General Usage Courses Section)

AERO 299 Supervised Study **(3 cr.)**
(See General Usage Courses Section)

BIOLOGY

BIOL 01 Biology **(1–5 cr.)**
A developmental course in general biology designed to develop a basic understanding of plant and animal life. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

BIOL 101–102–103 General Biology I–II–III **(4 cr.) (4 cr.) (4 cr.)**
Fundamental characteristics of living matter from the molecular level to the ecological community with emphasis on general biological principles. Diversity of living organisms; their structure, physiology and evolution. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BIOL 104–105 General Biology I–II **(6 cr.) (6 cr.)**
Fundamental characteristics of living matter from the molecular level and the ecological community with emphasis on general biological principles. Diversity of living organisms; their structure, physiology and evolution. Lect. 4 hrs., Lab. 6 hrs., Total 10 hrs. per wk.

BIOL 151–152–153 Human Anatomy and Physiology **(4 cr.) (4 cr.) (4 cr.)**
Prerequisite one unit of laboratory science or departmental approval. An integrated study of the systems of the human body including cell structure, physiology, tissues, skeletal and muscular systems. A study of the metabolic systems including circulatory, respiratory, digestive and excretory systems. A study of the control and functions of the human body in the nervous, endocrine and reproductive systems. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BIOL 156 Foundations of Zoology **(4 cr.)**
Prerequisite high school biology. Fundamental biological principles of structure and function as applied to animals from the cell to organ systems. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BIOL 158 Parasites of Domestic Animals **(3 cr.)**
Classification, life history, and control measures of the common species of parasites of domestic animals (internal and external). Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

BIOL 164 Pathology I **(3 cr.)**
The basic principles regarding alteration of the structure and function in disease and the genesis and effect of disease in the various organ systems. Lect. 3 hrs. per wk.

BIOL 176 Microbiology **(4 cr.)**
The characteristics and activities of micro-organisms, showing their essential relation to diagnosis, treatment, and prevention of disease. Fundamentals of bacteriology, mycology, and parasitology, emphasizing their relationships to individual community health. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BIOL 198 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

BIOL 199 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

BIOL 206 Biological Problems in Contemporary Society **(3 cr.)**
Prerequisites: BIOL 103 or permission of instructor. A course designed for understanding some of the major problems of today's living. Contemporary readings will include topics on population problems, pollution, drug abuse, famine, ecology, conservation, disease, genetics, and evolution. Lect. 3 hrs. per wk.

BIOL 214 Introduction to Non-Vascular Plants **(4 cr.)**
Prerequisites BIOL 103 or equivalent or approval of division. Designed to cover the lower plants including the algae, fungi, and bryophytes. Studies of major taxonomic groups — their morphology, life cycles, ecology, physiology, economic importance. Sight recognition and collections may be required. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BIOL 215 Introduction to Vascular Plants **(4 cr.)**
Prerequisites BIOL 103 or equivalent or approval of division. Designed to cover the higher plants beginning with those that have vascular tissue, and including flowering and non-flowering plants. Studies of major taxonomic groups — their morphology, life cycles, ecology, physiology, economic importance. Sight recognition and collections may be included. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BIOL 221–222–223 Introductory Invertebrate and Vertebrate Zoology **(4 cr.)(4 cr.)(4 cr.)**
Prerequisites BIOL 103 or equivalent or approval of division. Fundamentals of invertebrate and vertebrate anatomy, physiology, embryology, classification and evolution. Lect. 3 hrs., Lab. 3 hrs., Total of 6 hrs. per wk.

BIOL 224–225 Introductory Vertebrate Zoology I–II (3 cr.) (3 cr.)
Prerequisite BIOL 103 or equivalent or approval of division. Fundamentals of vertebrate anatomy, physiology, embryology, classification and evolution. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

BIOL 234–235 Introductory Invertebrate Zoology I–II (3 cr.) (3 cr.)
Prerequisites BIOL 103 or equivalent or approval of division. The biology of invertebrate animals with special reference to structure, embryology, function, ecology, classification and evolution. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

BIOL 251–252 Human Anatomy and Physiology I–II (4 cr.) (4 cr.)
Prerequisites BIOL 103 and one year of college chemistry, or divisional permission. Consideration of basic biological principles as revealed by anatomical and physiological studies. An integrated study of the systems of the human body including gross and microscopic structures and their physiology. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BIOL 254–255 General Genetics I–II (3 cr.) (3 cr.)
Prerequisite one year of general biology or division approval. An introductory course in the science of genetics including the biochemical nature and function of the gene, classical Mendelian inheritance, cytogenetics, developmental and population genetics human genetics and aspects of genetic counseling. Students will also receive experience in experimental design and elementary statistical analysis of data. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

BIOL 258 Comparative Anatomy of Vertebrates (6 cr.)
Prerequisite BIOL 103. A study of the evolution of the larger taxonomic groups of chordates with a comparative study of their gross morphology. Lect. 3 hrs., Lab. 6 hrs., Total 9 hrs. per wk.

BIOL 264–265 General Ecology I–II (3 cr.) (3 cr.)
Prerequisite BIOL 103 or divisional permission. Study of the inter-relationships between organisms and the natural cultural environments with emphasis on survey of populations, communities and ecosystems. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

BIOL 268 Microbiology (6 cr.)
Prerequisite BIOL 103 and one year of college chemistry or division approval. Introduction to the morphology, genetics, physiology, ecology and control of microorganisms and to the nature of infectious diseases and immunity. The laboratory emphasizes standard microbiological techniques. Lect. 3 hrs., Lab. 6 hrs., Total 9 hrs. per wk.

BIOL 276 Regional Flora (3 cr.)
Family characteristics of vascular plants including principal phylogeny and classification based principally on local flora. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs., per wk.

BIOL 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

BIOL 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

BROADCAST ENGINEERING

BCST 116 Broadcast Equipment Operation (5 cr.)
An overview of theory and operation of AM, FM and TV systems. Introduction to wave propagation, audio, and video recording. Individual laboratory research in the various areas of broadcasting. Lect. 4 hrs., Lab. 3 hrs., Total 7 hrs. per wk.

BCST 126 Broadcast Instruments and Measurements (4 cr.)
Prerequisite ELEC 116 and ELEC 126 Operation of meters, scopes, signal generators, digital counters and picture monitors. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BCST 146 Federal Broadcast Regulations (1 cr.)
Students will read systematically through the applicable portions of the FCC Rules and Regulations and will be tested on each reading assignment, taking a final examination similar to the actual FCC Examination. Lect. 1 hr., Lab. 1 hr., Total 2 hrs. per wk.

BCST 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

BCST 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

BCST 264 Television Systems I (3 cr.)
Prerequisite ELEC 227 & 241. An overview of theory and operation of video cameras, studio lighting, film chain quadruplex and helical video tape recorders and on line studio equipment operation. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

BCST 265 Television Systems II (3 cr.)
Prerequisite BCST 264. Maintenance and operation of video tape recorders, electronic news gathering equipment, video cameras. Study of FCC signal standards. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

BCST 274 Audio Systems I (4 cr.)
Prerequisite ELEC 227 & 241. Theory and operation of audio broadcast equipment—consoles, reel to reel and cartridge recorders, turntables and proper wiring techniques. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BCST 275 Audio Systems II (4 cr.)
Prerequisite BCST 274. Introduction to AM and FM transmitter operation and maintenance. Antenna phasing equipment operation and maintenance. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

BCST 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

BCST 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

BUILDING

BLDG 100 Introduction to Construction Inspection and Safety (3 cr.)
Introduction to the construction inspection profession, qualifications of the inspector, methods and procedures for field report writing, records and public relations, safety on construction sites, and the legal aspects governing the construction inspector. Lect. 3 hrs. per wk.

BLDG 107 Plan Review and Building Codes (3 cr.)
Corequisite BLDG 100. A study and interpretation of the basic building codes as they relate to construction of residential, commercial and public facilities. Interpretation of working drawings and construction specifications for compliance to the basic building codes. Lect. 3 hrs. per wk.

BLDG 111 Principles of Residential Building Construction Inspection (3 cr.)
Corequisite BLDG 100. Introduction to the general principles of residential building inspection to include materials, foundations, framing, finishing and building codes. Lect. 3 hrs. per wk.

BLDG 112 Principles of Concrete and Concrete Inspection (3 cr.)
Prerequisite BLDG 100 or equivalent field experience. Fundamentals of concrete and new developments that directly apply to modern construction technology. Develop 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. Lect. 3 hrs. per wk.

BLDG 113 Principles of Steel Frame Construction and Inspection (3 cr.)
Prerequisites BLDG 100 or equivalent field experience. Fundamentals of modern steel framing methods and non-destructive testing methods. Introduction of the 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. Lect. 3 hrs. per wk.

BLDG 121 Principles of Electrical Inspection (3 cr.)
Prerequisite BLDG 100 or equivalent field experience. Fundamentals of electrical wiring systems used in residential, commercial and industrial buildings. Introduction to the principle of computing loads on circuits, services and equipment. The understanding of the national and local electrical codes for safe installation of wiring systems to include outlets, feeders and direct services. Lect. 3 hrs. per wk.

BLDG 122 Principles of Mechanical Inspection (3 cr.)
Prerequisite BLDG 100 or equivalent field experience. Fundamentals and theory of heating, cooling and refrigeration, terminology and symbols as used in layouts for the various systems. Introduce the code requirements for installation and safety and inspection problems. Lect. 3 hrs. per wk.

BLDG 123 Principles of Plumbing Inspection (3 cr.)
Fundamentals of sanitary plumbing systems, terminology and symbols as used in layout of the various systems. Introduce the code and inspections problems for commercial, industrial and residential public and private sanitary systems. Lect. 3 hrs. per wk.

BLDG 124 Principles of Public Facilities Inspection (3 cr.)
Prerequisite BLDG 100 or equivalent field experience. Fundamentals of highway, curb and gutter, and storm water drainage systems. Develop an understanding of the materials, and construction methods used in roadway construction. Introduction to the construction methods, inspection and testing techniques of drainage systems to include collection basins, interceptors, flow gradient and piping materials. Lect. 3 hrs. per wk.

BLDG 131–132–133 Woodworking and Millwork I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite BLDG 130. Designed to provide an introduction to the use of hand and power tools used in woodworking and millwork fabrication. The use of all tools to be developed through the development of basic woodworking projects to the more complex fabrication and construction of cabinet and custom furniture items. Lect. 1 hr., Lab. 5 hrs., Total 6 hrs. per wk.

BLDG 156 Dwelling Maintenance (3 cr.)
The basic study and practice of dwelling (house or apartment) maintenance and repair. To include basic theory for energy conservation, hand tool selection and use, repair task able to be accomplished by owner-occupant without special tools and building permit. Introduction of the type projects that can be accomplished with basic hand tools in limited space. Lect. 3 hrs.

BLDG 176 Shop Safety Practices (2 cr.)
Shop practices and shop safety, identification and use of hand tools, general power equipment and maintenance of building trades shops, occupational safety and health act standards, and first aid building trades and vocational shops. Lect. 2 hrs. per wk.

BLDG 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

BLDG 234 Materials Take-Off (3 cr.)
Prerequisite ARCH 113 or equivalent. Interpreting and computing data from working drawings and specifications for estimating and fabricating purposes. Includes systems used in computing excavation, concrete, masonry block, brick, wood frame, steel, and various building materials. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

BLDG 235 Cost Estimating (3 cr.)
Prerequisite BLDG 234 or equivalent. Principle and methods of pricing materials, transportation and handling cost, mark-up discount procedures, equipment cost, and wage rates. Preparing estimate forms for various types of estimates as itemized, approximate, lumpsum, unit-cost, and comparative. Lect. 3 hrs. per wk.

BUSINESS MANAGEMENT AND ADMINISTRATION

BUAD 100 Introduction to Business (3 cr.)
The role and function of business enterprise within our economic framework. Includes organization, finance, marketing, personnel administration, production and economics. Designed primarily to help students select their field of business specialization. Lect. 3 hrs. per wk.

BUAD 109 Applied Business Machines (1 cr.)
A self-instructional laboratory course designed to develop a stated proficiency in the operation of standard business machines. Credit will not be granted to anyone having completed BUAD 121–122–123. Lab. 2 hrs. per wk.

BUAD 110 Human Relations & Leadership Training (3 cr.)
The task of management involved in getting things done through people; understanding of human motivation and behavior patterns, performance, and analysis of manpower growth in an organization. Lect. 3 hrs. per wk.

BUAD 114 Principles of Supervision I (3 cr.)
Fundamentals of supervision including responsibilities of the supervisor, factors relating to his work and that of his subordinates, aspects of job leadership and effective human relations as related to efficient supervision. Lect. 3 hrs. per wk.

BUAD 116 Personal Finance (3 cr.)
A course designed to build a framework of money management concepts. Content includes establishing values and goals, earning income, managing income, developing consumer buying ability, using credit, understanding savings, insurance, and responsibilities as a consumer. Lect. 3 hrs. per wk.

BUAD 117 Principles of Securities Investment (3 cr.)
Designed to aid the student in developing a broad perspective in the area of stocks and bonds. Mechanics of stock exchanges, types of securities, types of orders, and specific investment objectives. Lect. 3 hrs. per wk.

BUAD 121–122–123 Business Mathematics I, II, III (3 cr.) (3 cr.) (3 cr.)
A sequence of three courses with instruction, review and drill in solving mathematical problems arising from normal business activities, integrating the use of calculating machines as a tool. Theories of mathematics are applied to business activities emphasizing the use of concepts and procedures concerning payroll computations, ratios, discounts, interest, sales and property tax, pricing mark-up and mark-down, and annuities. Lect. 3 hrs.

BUAD 157 Principles of Bank Operations (3 cr.)
The economic importance of banks, the receiving functions, processing of cash items, bookkeeping operations, posting systems, paying teller operations, collection services, legal relationship with depositors, characteristics of negotiable instruments, the savings and time deposit function, management of bank funds, loans and investments, general bank accounting, account analysis and service charges, internal controls, international financial services, trust services, safe deposit services, growth of the American banking system, the Federal Reserve System, government supervision, banking and public service. Lect. 3 hrs. per wk.

BUAD 158 Bank Letters and Reports (3 cr.)
An introduction to the written banking communications; letter forms, fundamental principles underlying modern correspondence, and different types of bank letters. Lect. 3 hrs. per wk.

BUAD 164 Principles of Business Management I (3 cr.)
Prerequisite BUAD 100. Management and management functions; planning, organizing, staffing, directing, and controlling. Management examined as both a science and art with emphasis on both the body of knowledge and the personal abilities to be successful as a manager. Lect. 3 hrs. per wk.

BUAD 165 Principles of Business Management II (3 cr.)
Prerequisite BUAD 164. The application of management principles to realistic management situations. The case method of study in analyzing management problems with emphasis on application to various types of business enterprises. Lect. 3 hrs. per wk.

BUAD 167 Introduction to Labor Relations (3 cr.)
History of the labor movement, survey of labor legislation, labor problems, collective bargaining techniques and trends. Examination of labor relations from social, legal, and economic viewpoints. An analysis of public policy and the current state of the labor movement. Lect. 3 hrs. per wk.

BUAD 174–175 Small Business Management I–II (3 cr.) (3 cr.)
A study of management problems that relate to the small-scale entrepreneur. Includes problems in initiating the business, financial and administrative control, marketing programs and policies, management of business operations, legal and governmental relationship. Also includes case studies involving actual business situations. Lect. 3 hrs. per wk.

BUAD 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

BUAD 241 Business Law I (3 cr.)
An introduction to the field of law, how it developed and how it operates as a method of control; study of the purpose of law in our present-day complex society, the law of contracts, and the law of the agency. Lect. 3 hrs. per wk.

BUAD 242 Business Law II (3 cr.)
Prerequisite BUAD 241. A continuation of Business Law I (BUAD 241). The main topic to be studies is the Uniform Commercial Code as adopted in the various states. Lect. 3 hrs. per wk.

BUAD 243 Business Law III (3 cr.)
Prerequisite BUAD 241–242. Continuation of Business Law I & II (BUAD 241–242). Employment, bailment, partnerships, corporations, property. Lect. 3 hrs. per wk.

BUAD 246 Business Finance (3 cr.)
Problems involved in the acquisition and use of funds necessary to the conduct of business. Sources and instruments of capital and finance, financial organization, and financing of operations and adjustments. Lect. 3 hrs. per wk.

BUAD 247 Bank Investments (3 cr.)
The economic background of investments; federal government, federal agency and municipal securities; general obligation and revenue bonds; markets for Treasury and municipal securities; general nature of bank liquidity; primary and secondary reserves; security prices; yield curves and their uses; safety considerations; tax and related considerations; investment policies. Lect. 3 hrs. per wk.

BUAD 251 Business Statistics I (3 cr.)
Prerequisite MATH 181–182–183, MATH 161–162–163, or MATH 191–192–193. Aspects of statistical methodology such as the collection, organization, presentation and analysis of data; specific concentration with measures of central tendency, dispersion, probability concepts, the normal distribution, sampling distribution, and basic hypothesis testing such as T-test, Z-test, and Chi-Square. Lect. 3 hrs. per wk.

BUAD 252 Business Statistics II (3 cr.)
Prerequisite BUAD 251. Estimation of barametric values, advanced methods and techniques of hypothesis testing and experiment design. Statistical quality control, analysis of variance, linear regression and correlation analysis both simple and multiple measurement of business and economics activity through index

numbers, seasonal and secular variation; computer application where practical. Lect. 3 hrs. per wk.

BUAD 253 Business Statistics III **(3 cr.)**
Prerequisite BUAD 252. The applications of statistical techniques and methodology in business. Includes expedited payoff, game theory, linear programming, transportation models, queuing theory, and demand estimations. Lect. 3 hrs. per wk.

BUAD 254 Applied Business Statistics I **(3 cr.)**
An introductory course in statistics. Collection, presentation, and analysis of data through ratios, percentages, and averages. Emphasis on the practical application of statistical measures to business situations. Lect. 3 hrs. per wk.

BUAD 255 Applied Business Statistics II **(3 cr.)**
Prerequisite BUAD 254. A continuation of the application of principles taught in BUAD 254 with emphasis on the graphic presentation of data concerning business activity and some advanced statistical concepts such as probability and sampling. Lect. 3 hrs. per wk.

BUAD 256 Trust Functions and Services **(3 cr.)**
The services rendered by institutions engaged in the trust business. An introduction to the services and duties involved in trust operations; the distinction between the business and legal aspects of trust functions. Lect. 3 hrs. per wk.

BUAD 258 Credit Administration **(3 cr.)**
The techniques of installment lending including establishment of credit, obtaining and checking information, servicing the loan, and collecting amounts due. Lect. 3 hrs. per wk.

BUAD 266 Financial Management **(3 cr.)**
Prerequisite BUAD 246. A basic course in Financial Management that includes the study of Capital Budgeting, Working Capital Management, Cost of Capital, and Long-term Financing. Both Theoretical and Applied Techniques will be studied from the viewpoint of the supplier and user of funds. Lect. 3 hrs. per wk.

BUAD 268 Bank Management **(3 cr.)**
Presents new trends which have emerged in the philosophy and practice of management. Study and application of the principles provide new and experienced bankers with a working knowledge of bank management. Utilizes the case method of solving management problems. Lect. 3 hrs. per wk.

BUAD 269 Purchasing and Materials Management **(3 cr.)**
Principles of purchasing and management of inventories including determination of requirements, pricing, source selection, and inventory policy and control. Lect. 3 hrs. per wk.

BUAD 276 Personnel Management **(3 cr.)**
The problems and issues in the administration of personnel actions. Includes organization and tasks of personnel development, significant personnel considerations and an appraisal of labor in business today. Lect. 3 hrs. per wk.

BUAD 287 Public Relations in Management **(3 cr.)**
A survey of public relations as a management responsibility. Includes philosophy and techniques of public relations; application of employee, public, customer, and practical application. Lecture 3 hours per week.

BUAD 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

BUAD 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

BUAD 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

CHEMISTRY

CHEM 06 Chemistry **(1–5 cr.)**
A developmental course in general chemistry designed to develop a basic understanding of inorganic and organic chemistry. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

CHEM 99 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

CHEM 101–102–103 General Chemistry I–II–III **(4 cr.) (4 cr.) (4 cr.)**
This is a beginning course for the non-science major, intended for students who will take no further chemistry courses. The experimental and theoretical aspects of the various branches of chemistry are discussed and emphasis is placed on the concepts and ideas of the science. Particular attention is given to introductory organic and biochemistry and the role of chemistry in human affairs is treated. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CHEM 110 Horticultural Chemistry **(4 cr.)**
Introduction to chemical principles, inorganic and organic structural chemistry and theory and practice of pH. The role of the chemical elements including trace elements in plant growth. Chemicals used such as fungicides, insecticides, fertilizers, and growth regulators. Chemical nomenclature, pH and other general and specific measurements will be practiced. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CHEM 111–112–113 College Chemistry I–II–III **(4 cr.) (4 cr.) (4 cr.)**
Prerequisite high school chemistry or division approval and pre-test. This is a beginning course primarily for science and engineering majors. The course covers the fundamental laws & theories of chemistry. The student is expected to have a strong background in mathematics. Lect., 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CHEM 114–115 General Inorganic Chemistry I–II **(6 cr.) (6 cr.)**
Fundamental principles and laws underlying chemical action with special emphasis on the non-metals and their compounds, theories and problems. Laboratory for the first half of the course deals with the non-metallic elements and their compounds. The second half deals with the theories of qualitative analysis. Lect. 4 hrs., Lab. 5 hrs., Total 9 hrs. per wk.

CHEM 140 Introduction to Organic Chemistry **(2 cr.)**
Prerequisite 1 year high school chemistry or the equivalent. Topics of modern organic chemistry which include the atoms, molecules and bonds of saturated and unsaturated hydrocarbons, alcohols, ethers, amines, thiols, halides, aldehydes, ketones and heterocyclic compounds. Special emphasis on stereoisomerism, mechanisms, and structure determination by spectral analysis. Lect. 2 hrs. per wk.

CHEM 151–152 Health Science Chemistry I–II (4 cr.) (4 cr.)
An introduction to chemistry for students in the health sciences. Principles of inorganic, organic and biological chemistry. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CHEM 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

CHEM 199 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

CHEM 241–242–243 Organic Chemistry I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisite CHEM 103 or 113, or equivalent. The fundamentals of organic chemistry. The structure, physical properties, synthesis, and typical reactions of the various series of aliphatic, alicyclic and aromatic compounds with attention to reaction mechanisms. Representative carbon compounds are synthesized with emphasis on basic laboratory techniques. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CHEM 246–247–248 Organic Chemistry I–II–III (5 cr.) (5 cr.) (5 cr.)
Prerequisite high school and freshman college chemistry or equivalent. The fundamentals of organic chemistry; chemical properties, bonding, synthesis, typical reactions, mechanisms and geometry of molecules. The laboratory includes basic techniques, organic synthesis, qualitative analysis and instrumentation. Lect. 3 hrs., Lab. 6 hrs., Total 9 hrs. per wk.

CHEM 260 Instrumental Chemical Analysis (2 cr.)
Prerequisite approval of division. Introduction to the use of special apparatus in chemical analysis. Includes study and use of pH meter, visible and infrared spectrophotometers, gas chromatograph, refractometer, polarimeter, special balances. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

CHEM 266 Instrumental Analysis (4 cr.)
Prerequisite CHEM 113 or permission of Division. Introduction to the principles and applications of special apparatus in chemical analysis. Includes the study of electrochemistry, spectroscopy, chromatography, and radiochemistry. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CHEM 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

CHINESE

CHIN 101–102–103 Elementary Chinese (Mandarin) I–II–III (4 cr.) (4 cr.) (4 cr.)
Elementary Chinese (Mandarin) is the basic course for beginners with major emphasis on learning to comprehend and speak the Chinese (Mandarin) language within a limited context of vocabulary and structure. Intensive aural-oral drilling is used throughout. The development of skills is in the following order—comprehension, speaking, reading, writing. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

CIVIL ENGINEERING

CIVL 126 Topographic Drafting (3 cr.)
Prerequisites DRFT 120, MATH 118. Development of the techniques used in topographic data computation, to include the drawing and interpretation of symbols used for cultural, hydrographic, soils and relief, and vegetation presentation on maps and charts. Preparation of maps from survey field data and terrestrial and aerial photography. The use of scale rectification and duplication equipment for map and chart preparation. The techniques for use of color in topographic presentation of special conditions. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

CIVL 140 Construction Planning (3 cr.)
Introduction to the equipment used in civil engineering construction and the principles of construction planning. Lect. 3 hrs. per wk.

CIVL 169 Applied Soil Erosion and Sediment Control (3 cr.)
Provides instruction for those who will have responsibility for application, implementation, and inspection of Local Erosion and Sediment Control programs in accordance with the Virginia law and the Virginia Erosion and Sediment Control Handbook. Lect. 3 hrs. per wk.

CIVL 181–182 Surveying I–II (4 cr.) (4 cr.)
Prerequisite Plane Geometry and Basic Trigonometry. Introduction to surveying, chaining and pacing, direct and profile leveling, measurement of angles, transit-tape traversing, traverse analysis, calculation of areas, adjustment of instruments. Vertical curves, basic and complex horizontal curves, stadia surveying, topographic surveying, preparation and analysis of topographic maps. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CIVL 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

CIVL 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

CIVL 201 Suburban Development I (3 cr.)
Prerequisite CIVL 182. Preparation of preliminary plans, subdivision computations and preparation of record plats for residential areas. Lect. 2 hr., Lab. 2 hrs., Total 4 hrs. per wk.

CIVL 202 Suburban Development II (3 cr.)
Prerequisite CIVL 182. Corequisite CIVL 281. Calculating flow quantities, design of sanitary sewer laterals, street grades and storm sewers as are pertinent to Virginia "3–B" Land Surveyor Registration laws. Preparation of plans and profiles. Lect. 2 hr., Lab. 2 hrs., Total 4 hrs. per wk.

CIVL 203 Suburban Development III (3 cr.)
Prerequisite CIVL 202. Preparation of residential development plans. Flood plain studies. Lect. 2 hr., Lab. 2 hrs., Total 4 hrs. per wk.

CIVL 217 Structural Steel Design (4 cr.)
Prerequisite ENGR 152 or equivalent. Design, investigation, and detailing of basic structural steel members. Lect. 4 hrs. per wk.

CIVL 218 Reinforced Concrete Design (4 cr.)
Prerequisite ENGR 152 or equivalent. Design, investigation and detailing of basic reinforced concrete structural members. Lect. 4 hrs. per wk.

CIVL 227–228 Structural Drafting I–II (2 cr.) (2 cr.)
Fundamentals of structural drafting including the design and fabrication of frame connections, column detailing, welding connections, shop details, and gener-

al drafting room procedure. Laboratory includes drawings of timber, steel, and reinforced concrete structures. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

CIVL 246 Soil Mechanics (3 cr.)
Soil in its relationship to engineering construction. Includes soil weight-volume relationships, stress, shear and strain, bearing capacity, sampling procedures, consolidation, settlement, slope stability, with introduction to retaining walls, piles, underground conduits, and earthdams. Lect. 3 hrs. per wk.

CIVL 247 Soil Mechanics Laboratory (1 cr.)
Corequisite CIVL 246 or equivalent. Practical soil sampling, classification by Unified Soil Classification System and by ASTM and AASHO specifications for classifying soils. Laboratory testing of soils to predict engineering performance. Lab. 3 hrs. per wk.

CIVL 254 Civil Materials I (Concrete) (3 cr.)
Prerequisite or Co-requisite CIVL 246 or equivalent. Properties of portland cement concrete, methods of mix design, use and placement of concrete. Lect. 3 hrs. per wk.

CIVL 255 Civil Materials II (Asphalt) (3 cr.)
Prerequisite or Corequisite CIVL 246 or equivalent. Properties of bituminous materials, particularyly asphalt cement used in construction, methods of mix design, use and placement of asphalt. Lect. 3 hrs. per wk.

CIVL 257 Concrete Laboratory (1 cr.)
Corequisite CIVL 254. Mixing, curing, testing and quality control of concrete. Lab. 3 hrs. per wk.

CIVL 258 Bituminous Laboratory (1 cr.)
Corequisite CIVL 255. Testing and quality control of bituminous materials. Mixing, testing, and quality control of asphalt cements. Lab. 3 hrs. per wk.

CIVL 276 Traffic and Transportation Technology (4 cr.)
Introduction to the techniques of traffic and transportation surveys. The application of survey data to the planning, design and operation of modern transportation systems. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CIVL 281 Advanced Surveying I (4 cr.)
Prerequisite CIVL 182. Layout of curves under complex field conditions, route surveying earthwork, slope stakes, land surveying, legal aspects of surveying, public land surveys, introduction to the use of the more sophisticated surveying instruments and traversing equipment, precise leveling. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CIVL 282 Advanced Surveying II (4 cr.)
Prerequisite CIVL 281. Plane table surveying, surveying astronomy and celestial observations, triangulation, introduction to photogrammetry, scratch pad computer programming of stereotyped surveying problems. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

CIVL 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

CIVL 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

COURT & CONFERENCE REPORTING

CTCR 121 Court & Conference Machine Shorthand I (8 cr.)
Corequisite ENGL 101 or satisfactory score on the English Placement Test, and Prerequisite SECR 111. Designed to cover computer compatible machine shorthand theory and build a minimum speed of 70 words per minute. Lect. 6 hrs., Lab. 4 hrs., Total 10 hrs. per wk.

CTCR 122 Court & Conference Machine Shorthand II (8 cr.)
Prerequisite CTCR 121. Theory review and short forms with speed development to a minimum of 100 words per minute on unfamiliar material. Punctuation reviewed and frequently occurring words drilled for high speeds. Lect. 6 hrs., Lab. 4 hrs., Total 10 hrs. per wk.

CTCR 123 Court & Conference Machine Shorthand III (8 cr.)
Prerequisite CTCR 122. Speed development to a minimum of 120 words per minute for 5 minutes on unfamiliar material. Question and answer material at low speeds and an emphasis on punctuation. Lect. 6 hrs., Lab. 4 hrs., Total 10 hrs. per wk.

CTCR 124 Court & Conference Machine Shorthand IV (8 cr.)
Prerequisite CTCR 123. Phrases and short forms with speed development to a minimum of 140 words per minute on unfamiliar material for five minutes. Question and answer are continued and emphasis on punctuation, grammer, and vocabulary is continued. Lect. 6 hrs., Lab. 4 hrs., Total 10 hrs. per wk.

CTCR 221 Court and Conference Reporting I (8 cr.)
Prerequisites CTCR 124 & LEGL 110. Two-voice testimony continued, practice in specialized vocabulary, jury charge dictation introduced, and speed development to a minimum of 160 words per minute for five minutes on unfamiliar material. Lec. 6 hrs., Lab. 4 hrs., Total 10 hrs. per wk.

CTCR 222 Court and Conference Reporting II (8 cr.)
Prerequisites CTCR 221 and LEGL 126. Continued testimony, jury charge dictation, and speed development to a minimum of 180 words per minute on testimony, 160 on jury charges, and 140 on literary. Lect. 6 hrs., Lab. 4 hrs., Total 10 hrs. per wk.

CTCR 223 Court and Conference Reporting III (8 cr.)
Prerequisites CTCR 222 and HLTH 124. Congressional-literary dictation, testimony and jury charge dictation, and speed development to a minimum of 200 words per minute on question and answer, 180 on jury charges, and 160 on literary. Lect. 6 hours, Lab. 4 hrs., Total 10 hrs. per wk.

CTCR 224 Court and Conference Reporting IV (8 cr.)
Prerequisites CTCR 223 and HLTH 125. Literary, two-and-four-voice testimony, jury charge dictation, and speed development to meet the National Shorthand Reporters Association Certificate of Proficiency standards. Minimum speed of 225 words per minute on testimony, 200 words per minute on jury charges and 180 on literary. Lect. 6 hrs., Lab. 4 hrs., Total 10 hrs. per wk.

CTCR 231–232–233–234–235 Court and Conference Reporting **(6 cr.)**
Prerequisite CTCR 135. Two-and-4-voice testimony, jury charge, and literary dictation with speed development to 160 words per minute in CTCR 231; to 180 words per minute in CTCR 232; to 190 words per minute in CTCR 233; to 210 words per minute in CTCR 234; and to 225 words per minute in CTCR 235. Prerequisites for CTCR 233 is BUAD 241; for CTCR 234 is LEGL 110 and HLTH 114; for CTCR 235 is HLTH 125 and LEGL 126. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

DATA PROCESSING TECHNOLOGY

DAPR 106 Principles of Data Processing **(3 cr.)**
An introduction to principles, methods, and techniques of data processing, with emphasis on electronic data processing, capabilities and limitations of automatic data processing equipment; computer languages and applications; organization of data processing systems. Lect. 3 hrs. per wk.

DAPR 120 Computers and Their Application **(1 cr.)**
An introduction to computational systems, analysis techniques, programming languages. The BASIC language will be used in problem solving. Not for Data Processing majors. Lect. 1 hr. per wk.

DAPR 124 Structured Computer Programming Concepts (Logic) **(3 cr.)**
Prerequisite DAPR 106 or Division Approval. Introduce student to fundamentals and logic underlying problem solving when using an electronic digital computer. Teaches methods and styles of "structured" or "modular" flowchart design. Introduces "pseudo code" as an alternative or supplement in planning the logic of a well structured program. Course utilizes a limited subset of the COBOL programming language as the vehicle to demonstrate problem solutions. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

DAPR 125 Structured Computer Programming (COBOL) **(4 cr.)**
Prerequisite DAPR 124 or Division Approval. Designed for students who wish to learn COBOL programming. Incorporates the learning of COBOL with the methods and styles of "Structured" and "Modular" programming. Provides actual experience in the use of basic programming structures. COBOL logic, the basic COBOL language subset, auxiliary storage, and the program development process. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 138 Computer System Architecture **(3 cr.)**
Prerequisite DAPR 106. The study of computer system configuration and its operation under a control program. A detailed study of the components and operation of the CPU and of the interaction between I/O channels and the CPU to achieve overlap between processing and input/output. Lect. 3 hrs. per wk.

DAPR 149 Computer Programming (PASCAL) **(4 cr.)**
Prerequisite DAPR 124 or division approval. Designed for students who want to learn to program using a simple, high-level structured programming language that is being used on large computers as well as on microcomputers. Emphasis is not only on the syntax of PASCAL, but also on programming techniques that are applicable to other languages, such as COBOL, FORTRAN and PL/1. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 197 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

DAPR 226 Microcomputers **(4 cr.)**
Prerequisite DAPR 106. Computer architecture, languages, and operating systems are studied as they relate to microcomputers. Peripheral equipment that may be used will be emphasized. Applications including the scope and variety of packaged programs will be discussed. Programming using a microcomputer will be required. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 236 Data Processing Management **(3 cr.)**
Prerequisite DAPR 106. Survey of ADP management, covering staff and operating functions; ADP planning, analysis of requirements, system selection, contractual consideration, lease/purchase studies, costing of tangible and intangible benefits. Lect. 3 hrs. per wk.

DAPR 237 Data Base Management **(4 cr.)**
Prerequisite DAPR 147. Theory, concepts, and practical exercises that involve working with a data base system. Includes the study of several kinds of integrated data structures and the creation, maintenance, and use of an actual data base using the college's computer and data base software. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 256 Computer Programming (Advanced COBOL) **(4 cr.)**
Prerequisite DAPR 125. Experience in programming in an operating system environment. The characteristics of OS, use of job control language, files, utility programs, and analysis of error messages. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 258 Computer Programming: BASIC **(3 cr.)**
Prerequisite DAPR 106 and instructor's permission. The study and development of programming capabilities in Basic All Purpose Symbolic Instruction Circle (BASIC); including program logic, file manipulations, file development, solving of business oriented problems. The BASIC language is used in an interactive mode of communication with a computer. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

DAPR 266 Computer Programming (FORTRAN) **(4 cr.)**
Prerequisite DAPR 124 or Division Approval. The business applications of Fortran including input—output, floating point arithmetic, loop control, and functions. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 268 Computer Programming (PL/1) **(4 cr.)**
Prerequisite DAPR 124 or Division Approval. The study and development of programming capability in the IBM System 360 computer language PL/1. Provides student capability to program in this language. Includes relative advantages and disadvantages of this higher level language in installations using medium scale and large scale computer systems and continuation of the study of magnetic tape and random access programming. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 269 Computer Programming (Assembler) **(4 cr.)**
Prerequisite DAPR 124 or Division Approval. The study and development of a manufacturer's assembly

language. The student will write and debug programs in an assembler language, and also be capable of employing this language in a total programming system. The principles of a de-bugging and core-dump reading will be given major emphasis. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 271 Computer Programming (Advanced Assembler) **(4 cr.)**
Prerequisite DAPR 269. A study of the development of programming capabilities utilizing peripheral devices in addition to the card reader/punch and the printer. Among the peripherals will be direct-access devices and magnetic tape devices. The study of typical applications essential for a business programmer to have a knowledge of the uses, the instructions, and programming techniques required to utilize these devices. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 276 Computer Programming (Advanced FORTRAN) **(4 cr.)**
Prerequisite DAPR 266. Experience in programming in a disk and/or tape environment. Modularization and overlay structure. Computational error processing and debugging techniques. Data management techniques. Extensive practical problem solution using control software and command language, assembly language subroutines, and utility packages. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 277 IBM OS/Job Control Language **(3 cr.)**
Prerequisite DAPR 124 or equivalent. Use and theory of IBM OS/JCL. Practical experience in coding several problems usinf JCL will be included. The course is oriented toward students currently working as programmers with a requirement for greater familiarity with JCL as well as advanced programming students preparing for programming careers. Lect. 3 hrs. per wk.

DAPR 281 Systems Analysis **(3 cr.)**
Prerequisite DAPR 106. A study of the overall computer based system analysis and design process; information problems of business organization and the interrelationships of functions; nature of business problem isolation and definition; initial phase of systems analysis and evaluation. Lect. 3 hrs. per wk.

DAPR 286 Computer Program Applications **(4 cr.)**
Prerequisite DAPR 281. The characteristics and requirements of basic business applications. Design of a computer solution to an application as a case study. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

DAPR 287 Computer Software Systems **(3 cr.)**
Prerequisite DAPR 125 or Division Approval. A study of components, functions and relationships of computer operating systems and their interactions with user programs. Lect. 3 hrs. per wk.

DAPR 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

DAPR 298 Seminar and Project **(4 cr.)**
(See General Usage Courses Section)

DAPR 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

DECORATING

DECO 104–105 Introduction to Interior Decorating I–II **(3 cr.) (3 cr.)**
Learning the principles and applications of residential interior decorating with emphasis on color theory and space planning as well as presentation methods. Lect. 3 hrs. per wk.

DENTAL

DENT 108 Introduction to Dental Health Care Delivery **(3 cr.)**
Introduction to dental profession and supporting personnel, history and development of dentistry; the role of the dental auxiliaries in clinical setting and to members of dental laboratory craft and others of the dental health team; dental ethics and jurisprudence; professional and educational opportunities. Lect. 3 hrs. per wk.

DENT 110 Introduction to Dental Materials **(4 cr.)**
Introduction to the physical and chemical characteristics, uses and manipulation of materials used in dental procedures, clinical and laboratory. Emphasis on the general principles of physical properties and the specifications program of the American Dental Association. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

DENT 116 Dental Laboratory Materials **(4 cr.)**
A study of the chemical composition, physical properties, and uses of metallic and non-metallic dental materials, denture and tooth resins, porcelain, waxes and duplicating materials. The lab exercises are designed to illustrate the properties and uses of the materials studied including their inherent limitations. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

DENT 121–122 Chairside Assisting I–II **(4 cr.) (4 cr.)**
The proper procedures of reception and preparation of the patient; care of all dental equipment and instruments, charting of teeth, seating of patient, adjustment of dental chair, preparation of trays and instrument stands, layout, and exchange of instruments and materials. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

DENT 123 Chairside Assisting III **(6 cr.)**
A continuation of DENT 122. The student will be involved in the actual experience of clinical procedures and chairside assisting. Lect. 1 hr., Lab. 15 hrs., Total 16 hrs. per wk.

DENT 124 Chairside Assisting IV **(5 cr.)**
Prerequisite DENT 123. A continuation of 123 with a practicum course designed to involve the student in clinical procedures and chairside assisting. Laboratory 15 hours per week.

DENT 125 Chairside Assisting V **(5 cr.)**
Prerequisite DENT 124. A continuation of Chairside Assisting IV. Lab. 15 hrs. per wk.

DENT 126 Oral Anatomy **(3 cr.)**
Prerequisite Admission to Dental Hygiene Program. The study of the anatomy, structure, morphology and function of the oral structures including primary and permanent dentition. Laboratory procedures to include identification, eruption sequence, reproduction of tooth form through drawings, study of skulls, principles of occlusion and root anatomy with correlation of tooth form and position to intra-oral arch. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

DENT 127 General and Oral Histology (3 cr.)
The minute structure of the tissues of the body with particular reference to the teeth and the supporting tissues. Morphology of different tissues, early embryonic development, histologic features of the structures of the oral cavity. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

DENT 128 Head and Neck Anatomy (2 cr.)
The anatomy and physiology of the structures of the head and neck. Lect. 2 hrs. per wk.

DENT 130 Introduction to Preventive Dentistry (2 cr.)
Prerequisite Admission to Dental Hygiene Program. Orientation to the dental hygiene profession; its history, basic ethics, professional obligations, and professional organizations. Laboratory procedures will include introduction to preventive procedures—plaque control, dental cares, and periodontial disease. Lect. 2 hrs., Lab. 1 hr., Total 3 hrs. per wk.

DENT 134 Dental Radiography I (4 cr.)
Prerequisite Placement in Dental Assist. Program. An introduction to the principles of radiographic procedures used in dentistry. Emphasis on identification of hazards in taking radiographs, identification of x-ray films, exposure, development and mounting and operation of tube x-ray head, timer and control panel. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

DENT 135 Dental Radiography II (4 cr.)
Prerequisite DENT 134. The physics of radiation, practice in advanced specialized dental exposure techniques and recognition of anatomical landmarks and pathological lesions of the head and neck region. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

DENT 136 Pharmacology (2 cr.)
The chemical therapeutic agents used in dentistry, including their preparation, effectiveness, and specific applications. Lect. 2 hrs. per wk.

DENT 137 Dental Anatomy and Physiology (4 cr.)
Introduction to human anatomy and physiology. Emphasis on regions of the head and neck and the primary and permanent teeth. Laboratory exercises include: accurate scale drawings of all teeth except the permanent third molars; tooth carvings, coronal and root portions; and the four permanent teeth; maxillary central incisor, maxillary cuspid, maxillary first bicuspid, and maxillary first molar. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

DENT 138 Community Dental Health (4 cr.)
Introduction of the dental hygienist to community health problems, public health, and related institutions. An opportunity will be provided for student teaching in dental health education at various grade levels in area public schools. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

DENT 139 Dental Assisting (2 cr.)
Dental hygiene students will receive instruction in phases of chairside assisting as members of the dental health team. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

DENT 140 Introduction to Dental Hygiene (1 cr.)
Introduction to the dental hygiene profession through seminar and laboratory. A review of the role of the dental hygienist in dentistry; dental history, ethics and professional organizations. Students will be oriented in the basic skills of dental hygiene prevention and nomenclature appropriate to the dental profession. Lab. 2 hrs. per wk.

DENT 141 Dental Laboratory Technology I (7 cr.)
Designed to assist students in acquiring the knowledge, understanding, appreciations and attitudes basic to effective construction of complete dentures. Beginning skills in dental laboratory technology methods are developed through planned laboratory exercises and other supervised activities. Lect. 3 hrs., Lab. 12 hrs., Total 15 hrs. per wk.

DENT 142 Dental Laboratory Technology II (7 cr.)
An introduction to the procedures and methods used in the construction of cast removable partial dentures. Emphasis is on making of refractory models, waxing, spruing, burnout casting and the finishing and polishing of the partials. Lect. 3 hrs., Lab. 12 hrs., Total 15 hrs. per wk.

DENT 143 Dental Laboratory Technology III (7 cr.)
The purpose of this course is to develop an understanding of, and some abilities in, the techniques of crown and bridge construction employed by the commercial laboratories in and around the area. Emphasis will also be placed on the construction of inlays and ceramic restorations. Lect. 3 hrs., Lab. 12 hrs., Total 15 hrs. per wk.

DENT 144 Dental Hygiene I (5 cr.)
The introduction to clinical knowledge and skills for the performance of dental hygiene services; and medical and dental emergencies, basic skill components, lab manikins, and patient practice. Lect. 3 hrs., Lab. 6 hrs., Total 9 hrs. per wk.

DENT 145 Dental Hygiene II (5 cr.)
Prerequisite DENT 144. Clinical performance of dental hygiene services; includes the use and techniques of dental radiology. Lect. 2 hrs., Lab. 9 hrs., Total 11 hrs. per wk.

DENT 146 Oral Radiographic Techniques (3 cr.)
A study of the nature, physical behavior, biological effects, methods of control, safety precautions, and techniques for exposing, processing and mounting x-rays. Laboratory procedures will include the application of these techniques. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

DENT 147 Nutrition (3 cr.)
Study of nutrition as it relates to dentistry and general health. The principles of nutrition as applied to the clinical practice of dental hygiene. Lect. 3 hrs. per wk.

DENT 148 Office Practice and Ethics (2 cr.)
The principles of dental ethics and economics as they relate to the dental hygienist. The course will also include a study of jurisprudence and office procedures. Lect. 2 hrs. per wk.

DENT 150 General and Oral Pathology (3 cr.)
Introduction to 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. Lect. 3 hrs. per wk.

DENT 154–155 Periodontics for Dental Hygiene I–II (2 cr.) (2 cr.)
Introduction of periodontics to the dental hygienist—anatomy and physiology, periodontal pathology and clinical determination of cases. Techniques in prevention and management of periodontics and special patient problems. Lect. 2 hrs. per wk.

DENT 161 Dental Care Science I (3 cr.)
Prerequisite Entrance into Dental Assist. Program. An introductory course stressing oral dental anatomy with emphasis on the deciduous and permanent dentition and specified oral structures. Lect. 3 hrs. per wk.

DENT 162 Dental Care Science II (3 cr.)
Prerequisite DENT 161. Basic microbiology, pathology, and oral pathological conditions as related to the role of the Dental Assistant. Lect. 3 hrs. per wk.

DENT 163 Dental Care Science III (3 cr.)
Prerequisite DENT 162. Pharmacology as related to dentistry and the principles involved in dental health education programs. Lect. 3 hrs. per wk.

DENT 166 Orthodontic and Pedodontic Appliances (3 cr.)
Prerequisite DENT 142. An introductory self-paced course developing the student's ability to fabricate and repair pedodontic and orthodontic appliances. This laboratory-didactic course will utilize programmed instruction augmented by individualized assistance and demonstration. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

DENT 190 Coordinated Practice (1–5 cr.)
(See General Usage Courses Section)

DENT 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

DENT 244 Dental Laboratory Technology IV (7 cr.)
A practical laboratory course designed to introduce the student to the study of articulation and occlusion and to the basic principles of surveying and designing cast removable partial dentures. Efforts will be made to produce, under the instructor's direction, a variety of restorations, in the specialty chosen by the student, which must closely parallel those cases found in the average dental practice. Lect. 3 hrs., Lab. 12 hrs., Total 15 hrs. per wk.

DENT 245 Dental Laboratory Technology V (8 cr.)
An advanced and intensified study of the specialties covering areas diverging from the normal. The case and problem method is stressed. Lect. 3 hrs., Lab. 15 hrs., Total 18 hrs. per wk.

DENT 246 Dental Laboratory Technology VI (8 cr.)
A continuation of DENT 245 in which the student is placed in an environment closely paralleling conditions found in the field. Emphasis will be placed on the construction of dental restorations requiring the efforts of 2 or more of the specialties. Lect. 1 hr., Lab. 21 hrs., Total 22 hrs. per wk.

DENT 261 Dental Hygiene III (6 cr.)
Lecture to include oral surgery, anesthesia, endodontics, and seminars. Laboratory—Dental prophylaxis and oral hygiene preventive procedures to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, and plaque control. Lect. 2 hrs., Lab. 12 hrs., Total 14 hrs. per wk.

DENT 262 Dental Hygiene IV (5 cr.)
Lecture to include oral diagnosis, orthodontics and seminar. Laboratory—Dental prophylaxis and oral hygiene preventive procedures to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lect. 1 hr., Lab. 12 hrs., Total 13 hrs. per wk.

DENT 263 Dental Hygiene V (5 cr.)
Lecture to include pedodontics and seminars. Laboratory—Dental prophylaxis and oral hygiene preventive procedures to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lect. 1 hr., Lab. 12 hrs., Total 13 hrs. per wk.

DENT 264 Dental Hygiene VI (5 cr.)
Lecture to include dental research and seminars. Laboratory—Dental prophylaxis and oral hygiene preventive procedures to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lect. 1 hr., Lab. 12 hrs., Total 13 hrs. per wk.

DENT 290 Coordinated Practice (1–5 cr.)
(See General Usage Courses Section)

DENT 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

DENT 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

DENT 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

DIETETICS

DIET 100 Introduction to Dietetics (1 cr.)
Orientation to the field of dietetics, roles and relationships within the profession, and interrelationships with other health professions. Lect. 1 hr. per wk.

DIET 106 Dietetics and the Health Field (3 cr.)
A study of the role of the dietetic profession in the health care field, history of the growth and development of the profession; techniques of effective interaction with patients and other members of the nutritional care and health care teams; ethics and standards of conduct; educational and career opportunities. Lect. 3 hrs. per wk.

DIET 130 Nutritional Care (3 cr.)
A study of nutrition for both normal and basic modified diets as applied to food service supervision in schools, hospitals, nursing homes, and other health care facilities and institutions. Covers: Nutritional care throughout the life cycle and the application of such diet modification as high/low caloric, bland, controlled fat, low sodium, diabetic, etc. Lec. 3 hrs. per wk.

DIET 134–135 Nutrition I–II (3 cr.) (3 cr.)
Food sources, digestion, absorption and metabolism of nutrients essential to the health of individuals and groups throughout the life cycle; the application of the principles of good nutrition to various segments of society in the community. Lect. 3 hrs. per wk.

DIET 136 Diet for Living (3 cr.)
A course, designed for the non-dietetic major, in the importance of diet related to health and well-being in daily life; includes food facts and fiction, weight control, fad diets, vegetarianism, diet and heart disease, and a sound eating pattern for everyone for the maintenance of good health and prevention of disease. Lect. 3 hrs. per wk.

DIET 137 Basic Nutrition for School Children (3 cr.)
Course designed for school food service personnel currently employed or wishing to enter food service field. Covers basic principles of nutrition applied to child feeding programs, with emphasis on the importance of good nutrition to the health of the school child, and educational techniques to assist in the development of wholesome food habits in children. Lecture 3 hours per week.

DIET 140 Food Preparation and Management Systems (3 cr.)
A course in quality control applied to food service supervision in schools, hospitals, nursing homes, and other health care facilities. Includes principles of food preparation, recipe standardization, purchasing, equipment, sanitation and safety; concepts of management, cost control, and merchandising. Lect. 3 hrs. per wk.

DIET 146 Menu Planning for Nutrition Programs (3 cr.)
A course designed for persons currently employed or seeking employment in the field of nutrition. Menu planning based on guidelines for federally regulated nutrition programs with emphasis on nutritional adequacy and acceptability. Includes mechanics of menu planning, food preferences of school children, advantages and disadvantages of different types of systems conventional and convenience foods, vending and satellite systems. Lecture 3 hours per week.

DIET 147 Financial Management for Nutrition Programs (3 cr.)
Identification and allocation of costs in school food service programs. Course includes food service accounting, budgeting, fiscal information on total program and by-program basis, expenses, fiscal data, organization data, and revenues. Lect. 3 hrs. per wk.

DIET 190 Coordinated Practice (1–5 cr.)
(See General Usage Courses Section)

DIET 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

DIET 234–235 Therapeutic Nutrition (4 cr.)(3 cr.)
Prerequisite DIET 135, or equivalent, or permission of division. Application of nutrition principles to the dietary treatment of hospital patients. Lect. 3–2 hrs., Lab. 3 hrs., Total 6–5 hrs. per wk.

DIET 246 Quantity Food Production and Purchasing (3 cr.)
Principles of quality control in the production of large quantities of foods through the use of standardized recipes, accurate measuring and weighing techniques, and food purchasing and storage of quantity food production. Lect. 3 hrs. per wk.

DIET 247 Training and Supervision of the Dietetic and School Food Service Worker (3 cr.)
Supervisory practice and training related to dietetic workers in health care institutions and school food service operations. Covers problems and methods required in training and directing activities related to equipment and food production, as well as methods of indoctrinating the unskilled worker in sound nutritional practices. Lect. 3 hrs. per wk.

DIET 290 Coordinated Practice (1–5 cr.)
(See General Usage Courses Section)

DIET 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

DRAFTING

DRFT 76 Welding Blueprint Reading (2 cr.)
Welding procedures and applications, structural steel, symbology, design, layout, and industrial symbols. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

DRFT 111 Technical Drafting I (2 cr.)
Introduction to the techniques and instruments required for success as a draftsman in industry. Use of instruments, lettering, simple descriptive and analytic geometry principles as applied to drafting and freehand sketching, basic principles of orthographic projection in the preparation of simple drawings. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

DRFT 112 Technical Drafting II (2 cr.)
Prerequisite DRFT 111 or equivalent. Sections and conventions, threads and fasteners, pictorial drawings, auxiliaries and revolutions. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

DRFT 113 Technical Drafting III (2 cr.)
Prerequisite DRFT 112 or equivalent. Assembly and detail drawings, working from the simple to the complex. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

DRFT 114 Technical Drafting IV (2 cr.)
Continuation of DRFT 113 with emphasis on production standards. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

DRFT 120 Introduction to Graphic Representation (3 cr.)
The use of instruments, lettering, sketching, and drawing conventions; neat, legible drawings and the value of visual presentations in technology. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

DRFT 144 Automotive Drawing Interpretation I (2 cr.)
Reading and interpretation of automotive shop drawings, including assembly and exploded drawings of automotive assemblies. Lect. 2 hrs. per wk.

DRFT 154–155 Advanced Technical Illustration I–II (3 cr.) (3 cr.)
Prerequisite DRFT 112 or divisional approval. The development of axonometric (pictorial) projections, perspectives, exploded illustrations, industrial shading, inking techniques, and instrument lettering. DRFT 155 will include patent illustrating, photo high-lighting, retouching, schematics and diagrams presentation drafting, pressure tape drafting, and continuation of inking techniques and instrument lettering. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

DRFT 170 Electrical Drawing Interpretation (2 cr.)
Designed for the appliance repair student. Reading and interpretation of electrical, electronic and elec-

tromechanical drawings, convention symbols, terminology, and principles used by the electrical and mechanical draftsman, wiring diagrams, schematic drawings, printed circuits. Lect. 2 hrs.

DRFT 177 Architectural Blueprint Reading **(3 cr.)**
Emphasis on reading, understanding and interpreting standard types of architectural drawings including plans, elevations, sections and details. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

DRFT 197 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

DRFT 198 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

DRFT 211 Advanced Technical Drafting V **(3 cr.)**
Prerequisite DRFT 113. Use of drafting machines with emphasis on the knowledge and skill required for typical industrial drawing. Electrical and electronic symbols and drawings, piping, complicated gearing drawings, sections, and layout; skill in lettering of all types. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

DRFT 212 Advanced Technical Drafting VI **(3 cr.)**
Prerequisite DRFT 211. Electronic and electromechanical drawings, sheet metal fabrication, radii, fillets, and tolerances; use of ink in lettering and ruling. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

DRFT 213 Advanced Technical Drafting VII **(3 cr.)**
Prerequisite DRFT 212. Design drafting in all aspects as a means of communication. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

DRFT 256 Electronics Drafting **(2 cr.)**
Fundamental principles, practices and methods of presenting electromechanical information through the graphic language. Principles of projection, fastening, materials and finishes, chassis design and fabrication, electronic symbology, diagrammatic drawings, printed circuit drawings and checking of electronic drawings. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

DRFT 266 Computer Graphics **(3 cr.)**
The use of the digital plotter and the mini-computer in solving graphics problems by computer. BASIC language will be used to assist students in programming the computer to solve graphics problems: nomigraphs, bar graphs, simple machine drawings and electrical schematics. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

DRFT 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

DRFT 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

ECONOMICS

ECON 147 Consumer Economics **(3 cr.)**
Designed to foster an understanding of the American economic system and the individual's role as a consumer in that system. Lect. 3 hrs. per wk.

ECON 160 American Economics **(3 cr.)**
A survey of the history, principles, and policies of the American economic system. Some comparison with alternative economic systems. Lect. 3 hrs. per wk.

ECON 198 Seminar and Project **(1–5 cr.)**
Prerequisite division permission.
(See General Usage Courses Section)

ECON 211–212–213 Principles of Economics I–II–III **(3 cr.) (3 cr.) (3 cr.)**
The principles of economics and the bearing of these principles on present American conditions, structural and functional aspects of the economy. Analysis, problems and issues relating to organization of business, labor and government institutions and economic stability and growth. Measurements of economic activity. Private enterprise, economic growth and stabilization policies, monetary and fiscal policy. International economic relationships, alternative economic systems. Lect. 3 hrs. per wk.

ECON 214–215 Principles of Economics I–II **(5 cr.) (4 cr.)**
The principles of economics and the bearings of these principles on present American conditions; structural and functional aspects of the economy. Analysis, problems and issues relating to the organization of business, labor, and government institutions and their economic stability and growth. Measurements of economic activity. Private enterprise, economic growth and stabilization policies, monetary and fiscal policy. International economic relationships, alternative economic systems. Lect. 5–4 hrs. per wk.

ECON 241 Money and Banking I **(3 cr.)**
A review of the history of American banking institutions; banking theories, principles and practices; emphasis is placed on relationship of finances to business structure, operation and organization; present-day financial structures, agents, problems and institutions are examined in depth. Lect. 3 hrs. per wk.

ECON 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

ECON 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

EDUCATION

EDUC 100 Orientation to Childhood Development and Education **(2 cr.)**
The course is designed to provide an entering overview of the basic theories, activities, responsibilities, and practice involved in Educational Services curricula at the community college level. Topics include program expectations, field placement responsibilities and guidelines, and career opportunities. Students will recognize and understand expectations and responsibilities of early childhood, educational associate, and special education fields. Lect. 2 hrs. per wk.

EDUC 106 Language Arts for Young Children **(3 cr.)**
The techniques and methods for encouraging the development of language skills in the young child. Improvement of vocabulary, speech and discussion stimulation will be emphasized. Surveys the best prose and verse, examines techniques of story telling, and stresses use of audio-visual materials. Lect. 3 hrs. per wk.

EDUC 109 Early Intervention for the Physically Handicapped Preschooler (3 cr.)
Designed to introduce the student to, and enable the student to work with, the multiplicity of physical handicaps prevelant in the preschool age population. Emphasis on exploration of movement, gross and fine motor skills, play, recreational, and rhythmic activities as they pertain to the physically handicapped preschool age child. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

EDUC 111–112–113 Educational Techniques in Child Study I–II–III (3 cr.) (3 cr.) (3 cr.)
Methods, skills, and techniques of gathering observational data on young children. Running records, timed observations, behavior check-lists, sociograms and other techniques of observing children will be considered. Emphasis on understanding developmental patterns in the physical, social, emotional, and intellectual areas of a child's development through analysis of the records. Lect. 3 hrs. per wk.

EDUC 116 Library Utilization for Instructional Aides (3 cr.)
Familiarization and utilization of library materials for preparation of instructional materials by instructional aides. Current literature and its application to the classroom. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

EDUC 117 Introduction to Reading Methods (3 cr.)
Introduction to the current practices of teaching reading in the elementary school. Familiarization with materials currently in use, observation of various reading techniques and trends in the classroom. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

EDUC 121–122–123 Childhood Education I–II–III (3 cr.) (3 cr.) (3 cr.)
Theory and concepts of early childhood education (121), elementary age education (122), and adolescent education (123). Characteristics for each age group covering the following categories: general relations with adults; intellectual skills; physical growth; and relations with children in their own peer group. Lect. 3 hrs. per wk.

EDUC 126 Learning Disabilities (3 cr.)
Designed for early childhood and primary grades personnel and primarily concerned with identification, assessment, and amelioration of specific learning problems from a preventive rather than remedial standpoint. Includes a survey of both in-depth and informal assessment procedures and devices, with application to "matching" differential diagnosis with specific instructional materials and strategies. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

EDUC 127 Problem Solving in Early Childhood Education (3 cr.)
Educational techniques to help the instructional aide to deal with emotional problems in the normal child in the classroom situation. Lect. 3 hrs. per wk.

EDUC 128 Perceptual Motor Development of the Preschooler (2 cr.)
Content underlines the importance and implications of selected activities influencing the development of perceptual motor skills during the youngster's early years. Perceptual motor theory and practical application of theory in utilizing readily obtainable resources which will encourage the child's development. Lect. 2 hrs. per wk.

EDUC 130 Instructional Equipment Laboratory (1 cr.)
The operation and use of standard instructional equipment with emphasis upon audiovisual equipment such as movie projectors, tape recorders, slide projectors, and tutorial machines; general procedures for obtaining films and other special learning materials. Lab. 3 hrs. per wk.

EDUC 136 Materials and Equipment for Instructional Aides (3 cr.)
The preparation of view graphs, the construction of graphic charts, and other aides; how to select slides and develop material for classroom presentation. The operation, care and use of instructional equipment, including audio-visual equipment most used in the classroom. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

EDUC 137 Creative Activities for Children (3 cr.)
This course is designed to prepare individuals for working with young children in art and other creative activities. Emphasizes coverage of suitable materials and the laboratory application. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

EDUC 140 Modern Mathematics Concepts (3 cr.)
The techniques and materials used to develop mathematical patterns and concepts in pre-school and primary modern mathematics programs. Instructional aides will learn to prepare, collect and work with materials used to develop mathematical concepts in children. Lect. 3 hrs. per wk.

EDUC 150 Modern Science Concepts (3 cr.)
The content and methods of teaching science in the elementary school, beginning with the everyday environment of the child and leading to basic generalizations in science. Lect. 3 hrs. per wk.

EDUC 161–162 Educational Techniques I–II (3 cr.) (3 cr.)
Provides instructional assistants who are not already employed in a school situation with the supervised practical experience necessary for effective assistance to the classroom teacher. Supervised experience with children at selected schools, child care centers, and other institutions of learning to give prospective instructional assistants opportunities to observe, participate in & evaluate the interaction of teachers, instructional assistants and children. Lectures will include preparation for practicum experiences, and the review and evaluation of those experiences. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

EDUC 167 Education Skills for Urban Areas (3 cr.)
Designed to sensitize students to the needs of residents in urban areas by helping them understand the social, psychological and economic complexities of the urban environment while developing professional education skills to work in urban areas. Lect. 3 hrs. per wk.

EDUC 176 Single Parent Families (3 cr.)
Discusses the issues surrounding single-parent families and the casual factors including: separation, divorce, death, teenage pregnancies and the effect on both the parent and the child. A study will be made to familiarize the student with services available in the community which support the single-parent family. Lect. 3 hrs. per wk.

EDUC 177 Fathering **(3 cr.)**
A study of the historical and social changes in the perception of the father in child development. Discussion of the nature of the father-child interaction and the influence this relationship has upon the child. Lect. 3 hrs. per wk.

EDUC 178 Parents of the Special Needs Child **(3 cr.)**
This course will focus on guiding the parent to cope with special problems of the child including: mental retardation, learning disorders, and physical handicaps. An investigation of services available in the community which support both parent and child will be made. Lect. 3 hrs. per wk.

EDUC 179 Deaf Education **(3 cr.)**
A comprehensive awareness of all aspects of deafness. Acquisition of language skills, principles, and techniques with the deaf. Materials evaluation, and instructional needs of the deaf. Communication with the deaf. Knowledge of the Alphabet system used in sign language. Lect. 3 hrs. per wk.

EDUC 186 Child Study **(3 cr.)**
Prerequisite PSYC 130. An advanced course in child development including methods of child study, theories of child development, implications for direct work with children, and a case study of an individual child. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

EDUC 190 Coordinated Internship **(1–5 cr.)**
(See General Usage Courses Section)

EDUC 197 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

EDUC 198 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

EDUC 210 Introduction to Special Education **(3 cr.)**
Prerequisite PSYC 130 and EDUC 121. A brief overview of the history of special education. The role and responsibilities of the paraprofessional in special education. Emphasis will be on working with educationally and neurologically handicapped. Lect. 3 hrs. per wk.

EDUC 217 Models of Child Development Programs **(3 cr.)**
Study and discussion of purposes, licensing and staff requirements. Various models and theories of child care will be emphasized. Field trips to various child care centers. Lect. 3 hrs. per wk.

EDUC 236 Child Development Programs Planning and Management **(3 cr.)**
Prerequisites PSYC 130 and EDUC 121. An intensive course in program planning, methods and materials for activities with young children including theoretical bases. An integral part of the course will be emphasis upon professionalism, personality, and interpersonal skills in the teacher-paraprofessional roles. Positive guidance techniques and classroom management and its relation to healthy personality development. Lect. 3 hrs. per wk.

EDUC 246 Educational Law **(3 cr.)**
The application of rules of law to the operation of the public schools in Virginia. Legal aspects of the principal instruments of school activities, rights and liabilities of school employees, legal aspects of negotiable instruments and securities. Lect. 3 hrs. per wk.

EDUC 267 Diagnostic/Prescriptive Teaching **(3 cr.)**
Prerequisites PSYC 231, EDUC 121, and EDUC 126 or 128. Survey of the rationale, operational models, techniques, and problems relevant to implementation of Diagnostic/Prescriptive Teacher programs. Students will gain skills in implementing diagnostic prescriptions for learning disabled children. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

EDUC 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

EDUC 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

ELECTRONIC TECHNOLOGY

ELEC 110 Introductory Electricity **(4 cr.)**
Principles of electricity covering voltage (AC and DC), resistance, and current. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 114 Fundamentals of Direct Current **(4 cr.)**
MATH 121 must have been taken previously or must be taken concurrently. A study of current flow and direct current circuits. The course presents work with magnetic circuits. This course utilizes mathematical tools as they are developed in the mathematics course. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 115 Fundamentals of Alternating Current **(4 cr.)**
Prerequisite ELEC 114. MATH 122 must have been taken previously or must be taken concurrently. The study of time varying currents: The student will use complex numbers and vector concepts in dealing with AC impedances. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 116 Introduction to Circuit Analysis **(4 cr.)**
Prerequisite ELEC 115. A course emphasizing AC circuit theory and both AC and DC network theorem and provides a continuation of the background information needed to analyze networks with both active and passive elements present. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 120 Tubes and Transistors **(4 cr.)**
Pre or corequisite ELEC 114. A course concerned with how electronic devices work and the characteristics of these devices. Both tube and solid state device characteristics are covered. This course utilizes the mathematical tools as they become available and the ideas of electronic flow and circuit analysis as they are developed in the fundamentals of electricity course. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 125 Introduction to Electronics **(5 cr.)**
Pre or corequisite ELEC 115. Prerequisite ELEC 120. The theory, properties, and application of vacuum tube and solid state devices, including power supplies. Lect. 4 hrs., Lab. 3 hrs., Total 7 hrs. per wk.

ELEC 126 Amplifiers **(5 cr.)**
Prerequisite ELEC 125. Amplifiers, both transistor and tube types, with emphasis on methods of analysis and design procedures. Lect. 4 hrs., Lab. 3 hrs., Total 7 hrs. per wk.

ELEC 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

ELEC 217–218 Circuits I–II (2 cr.) (3 cr.)
Corequisite MATH 242. Fundamentals of circuit theory. Elements of network topology, mesh currents and mode voltages. Methods used for solving one-port and two-port networks. Lect. 2–3 hrs. per wk.

ELEC 227 Pulse and Switching Circuits (3 cr.)
Prerequisite ELEC 116 and ELEC 126. Linear and nonlinear wave shaping providing base for further study in the areas of computers and automatic controls. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ELEC 241 Communications I (4 cr.)
Prerequisite ELEC 116 and ELEC 126. A study of modulation and power in modulated waves; sinusoidal oscillations and oscillators, RF amplifiers and detectors, and AM receivers. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 242 Communications II (4 cr.)
Prerequisite ELEC 241. A study of transmitters and receivers. Topics included are FM receivers, RF power amplification, AM, SSB and FM transmitters, and an introduction to transmission lines and antennas. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 243 Communications III (4 cr.)
Prerequisite ELEC 242. A study of Microwave systems. Topics included are microwave tubes, waveguides, antennas and measurements at microwave frequencies. Also, an introduction to radar and television systems is presented. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 249 Television Electronics (3 cr.)
Prerequisites ELEC 242 and ELEC 227. A lecture-demonstration course dealing with the special devices and techniques associated with monochrome and color, broadcast and industrial television transmission and reception. Specifically included are the standards of American television electronics as set down by the National Association of Broadcasters (NAB). Cameras and television receivers are given special emphasis. Lect. 3 hrs. per wk.

ELEC 250 Introduction to Computers (4 cr.)
Prerequisite ELEC 227. A general introduction to concepts and basic features of electronic computers. Topics include: fundamentals of internal operations; number systems, digital circuits, Boolean algebra, basic logical design techniques, analysis of input-output devices, control and arithmetic units, memory units and limited programming. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 260 Control Circuits (4 cr.)
Prerequisite ELEC 227. The principles and applications of electrical controllers are covered in this course, which serves as an introduction to automation. Devices for differentiation, integration and proportioning are studied in detail. Hardware and circuitry for AC and DC industrial control devices, including contractors, starters, speed controllers, time delays, limit switches and pilot devices. Application in the control of industrial equipment-motors, servo units and motor-driven actuators. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 276 Instruments and Measurements (4 cr.)
Co or prerequisite ELEC 227 and ELEC 241. A study of basic circuits in electronic measurements and application of these circuits in test instruments such as oscilloscopes, vacuum tube voltmeters and bridges. Further study concerned with the accuracy of measurements, how instruments work, proper use of instruments, and calibration technique. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

ELEC 287 Advanced Circuits and New Devices (2 cr.)
Prerequisite division approval. This is a unique course, since it depends so heavily on the judgment of the teaching staff. It is composed of lectures and demonstrations concerned with the latest developments in electronics. Lect. 2 hrs. per wk.

ELEC 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

ELEC 298 Seminar and Project (1–5 cr.)
Prerequisite division approval
(See General Usage Courses Section)

EMERGENCY MEDICAL SERVICES TECHNOLOGY

EMDT 111 Emergency Medical Services Technology I (4 cr.)
A study of the current status of the emergency medical system and the role and responsibilities of an Emergency Medical Technician/Ambulance (EMT/A). The anatomy and physiology of the chest, abdomen, and head are studied as well as the practical application of the techniques of patient assessment, basic life support, hemorrhage control, and the bandaging of soft-tissue trauma. Cardiopulmonary Resuscitation Certification by the American Heart Association will be included. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

EMDT 112 Emergency Medical Services Technology II (4 cr.)
Prerequisite EMDT 111, CPR Certification. A study of the musculo-skeletal and central nervous systems with practical application of the techniques of immobilization of related trauma. Environmental and medical emergencies, childbirth, pediatric emergencies, vehicular extrication and the emergency vehicle laws are studied. At the completion of this course and EMDT 190, the student should be prepared to take the examination leading to State and National Registry Certification as an EMT/A. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

EMDT 113 Emergency Medical Services Technology III (4 cr.)
Prerequisite EMDT 112, EMT/A Certification. The anatomy and physiology of respiration and the assessment and management of suspected respiratory distress is reviewed and the techniques of esophageal airway insertion and endotrachael intubation are studied and practically applied. The skills of handling individuals in crisis situations, and the counter-measures for the treatment of shock are studied and applied. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

EMDT 190 Coordinated Practice (1–5 cr.)
(See General Usage Courses Section)

EMDT 211 Advanced Emergency Medical Services Technology I (4 cr.)
Prerequisite EMDT 113. A review of the anatomy and physiology of the cardiovascular system with emphasis upon the structure, function, and electrical conduction of the heart. Assessment of the suspected cardiac patient and pathiophysiology of coronary heart/artery disease.

The interpretation and treatment of basic arrhythmias, electrocardiogram monitoring, defibrillation, carotid sinus massage, pacemakers, and mechanical heart/lung machines are included. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

EMDT 212 Advanced Emergency Medical Services Technology II (4 cr.)
Prerequisite EMDT 211. A study of therapeutic drugs with emphasis upon their effect, indications, contraindications, dosages, side effects, and techniques of administration. The assessment and management of central nervous system, soft-tissue and musculo-skeletal trauma, as well as neonatal, pediatric, obstetrical and gynecological emergencies and studies. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

EMDT 213 Advanced Emergency Medical Services Technology III (4 cr.)
Prerequisite EMDT 212. Federal communications regulations, the utilization of multiplex radio-telemetry equipment, and established procedures are covered. Includes clinical rotation in the emergency department, intensive/coronary care unit, labor and delivery, pediatric unit, morgue, and mobile intensive/coronary care unit. This is the final course for preparing the student to take the examination leading to State and National Registry Certification as an EMT/Paramedic. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

EMDT 216 Principles of Extrication (4 cr.)
Prerequisite EMDT 112, EMT/A Certification. An in-depth study and practical application of the techniques utilized for gaining access, disentanglement, and transport of an injured individual. Techniques of vehicle extrication, ropes, forceable entry, cutting torches, electrical emergencies, bus and aircraft crashes, radiation hazards, and elevator accidents are included. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

EMDT 217 Introduction to Cardiology (4 cr.)
Prerequisite EMDT 112 or equivalent. A review of the anatomy and physiology of the cardiovascular system covering the structure, function, and electrical conduction of the heart. Includes assessment of the suspected cardiac patient and pathiophysiology of cardiovascular dysfunction, interpretation of the normal electrocardiogram, recognition and treatment of basic arrhythmias. Special emphasis on the electrophysiologic principles, ECT analysis and treatment. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

EMDT 226 Paramedic Procedures I (7 cr.)
Prerequisite EMDT 112 or equivalent (concurrent enrollment with EMDT 217). The role and responsibilities of the Emergency Medical Technician/Paramedic and the parameters under which they operate. Course includes medical history and physical assessment techniques, the pathiophysiology and care techniques for shock, and a review of the anatomy and physiology of the respiratory system and the assessment and management of suspected respiratory distress. Lect. 5 hrs., Lab. 6 hrs., Total 11 hrs. per wk.

EMDT 227 Paramedic Procedures II (9 cr.)
Prerequisite EMDT 226. A continuation of the pathiophysiology, assessment, management of respiratory and circulatory distress. The assessment and management of central nervous system, soft-tissue, and musculo-skeletal trauma, as well as neonatal, pediatric, obstetrical and gynecological emergencies are studied. Lect. 5 hrs., Lab. 12 hrs., Total 17 hrs. per wk.

EMDT 228 Paramedic Procedures III (6 cr.)
Prerequisite EMDT 227. A continuation of the assessment and management of musculoskeletal trauma. The pathiophysiology, assessment, and management of various medical emergencies (i.e., diabetes, convulsive disorders, environmental emergencies, etc.), assessment and management of psychiatric emergencies. An introduction into inter-agency relationships, emergency vehicle operation and disaster management are included. Lect. 4 hrs., Lab. 6 hrs., Total 10 hrs. per wk.

EMDT 290 Coordinated Practice (1–5 cr.)
(See General Usage Courses Section)

EMDT 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

ENGINEERING

ENGR 10 Introduction to Technical Engineering (2 cr.)
An introductory course to the work of the Engineering Technician. Simple engineering problems; electronic digital calculator applications. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

ENGR 53 Elements of Statics and Strength of Materials (3 cr.)
Prerequisite ENGR 10 or MATH 11. An introductory course for technicians of the basic principles of Statics (forces, equilibrium, moments, etc.) and Strength of materials (centroids, moments of inertia, stress and deformation, shear and moment diagrams, etc.). Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ENGR 100 Introduction to Engineering Technology (2 cr.)
Professional fields of engineering; the work of the engineer, requirements of training and character, professional ethics, the division of industrial practice and competition. Pure and simple problems from the various schools of engineering are used with electronic digital calculator applications. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

ENGR 104 Introduction to Engineering (3 cr.)
Introduction to professional fields of engineering; historical background; professional ethics and responsibilities of engineers. Application of hand calculator to engineering problem solving. Basic graphic techniques and U.S. customary and S.I. units and their conversions. Lecture 3 hours per week.

ENGR 105 Introduction to Engineering Methods (3 cr.)
Prerequisite ENGR 104. Introduction to the digital computer. Use of scientific language, Programming engineering problems. Lecture 3 hours per week.

ENGR 106 Computer Programming for Engineers (4 cr.)
Prerequisite ENGR 101. An introduction to EDP systems, the associated hardware and their function in solving typical engineering problems. The FORTRAN IV source program language will be covered with emphasis on writing FORTRAN programs and providing all input necessary to accomplish actual machine processing of engineering-type problems. Scientific subroutine packages along with special engineering programs such as ECAP, and STRESS will be introduced. Lecture 3 hours, Total 6 hours per week.

ENGR 116 Computer Applications for Engineering Technology (3 cr.)
Prerequisite MATH 121. Introduction to electronic computation and programming of the digital computer using BASIC language and other machine languages with emphasis on writing programs and computer applications to problems in engineering technology. Lect. 3 hrs. per wk.

ENGR 124–125 Engineering Graphics I–II (3 cr.) (3 cr.)
Fundamentals of drawing and theories of projection, Multiview drawings, pictorial drawings and sketching, geometric construction, lettering and auxiliary views. Applied spatial relationships including points, lines, planes, revolutions, connectors, intersections, and developments. A study and analysis of graphical representations and methods for solving engineering problems including: Perspectives, sections, conventions, dimensions, tolerances, fasteners, and working drawings. Lect. 2–1 hrs., Lab. 2–4 hrs., Total 4–5 hrs. per wk.

ENGR 140 Statics of Particles and Rigid Bodies (3 cr.)
Prerequisite MATH 142. Review of vector algebra. Vector treatment of concept of force, mass, space, and time. Units of measurement (including both U.S. customary and S.I. units). Equilibrium of discrete force systems; centroids, dry friction; distributive forces. Truss and simple frame analysis. Lect. 3 hrs. per wk.

ENGR 151 Mechanics I (Statics) (4 cr.)
Corequisite MATH 122 or MATH 119. Principles and applications of free body diagrams for force systems. Analysis of frames and trusses, methods of joints and sections, friction, centroids and moments of inertia of areas. Lect. 4 hrs. per wk.

ENGR 152 Mechanics II (Strength of Materials) (3 cr.)
Prerequisite ENGR 151. Properties of materials, stress, strain, elasticity, shear and moment diagrams, design of statically determinate beams, and axially loaded columns. Lect. 3 hrs. per wk.

ENGR 153 Mechanics III (3 cr.)
Prerequisite ENGR 151 or equivalent. The study of rigid body mechanics, including kinetics and kinematics. Lect. 3 hrs. per wk.

ENGR 154 Mechanics Laboratory (1 cr.)
Prerequisite or corequisite ENGR 152. Laboratory experiments and solution of problems related to properties and strength of materials (ENGR 152). Lab. 3 hrs. per wk.

ENGR 160 Applied Fluid Mechanics (3 cr.)
Prerequisite MATH 122 or equivalent. Properties of fluids and fluid flow, study of fluid statics and flow measuring devices and the use of Bernoulli's equation in flow of real fluids. Lect. 3 hrs. per wk.

ENGR 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

ENGR 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

ENGR 206 Engineering Economy (3 cr.)
Economic decision process in the engineering design environment. Investment, financing, depreciation, manufacturing costs, economic selection replacement Lect. 3 hrs. per wk.

ENGR 241 Mechanics of Particles (3 cr.)
Prerequisite ENGR 140. Vector treatment of planar and three-dimensional kinematics and kinetics of particles; relative motion, Newton's laws, work and energy, impulse and momentum, vibration of particles. Lect. 3 hrs. per wk.

ENGR 242 Dynamics of Rigid Bodies (3 cr.)
Prerequisite ENGR 241. Corequisite MATH 242. Vector treatment using index notation of planar and three-dimensional kinematics and kinetics of rigid bodies; mass moments of inertia, Newton's laws, work and energy, impulse and momentum, vibration applied to rigid bodies. Lect. 3 hrs. per wk.

ENGR 243 Mechanics of Deformable Solids (5 cr.)
Prerequisite or corequisite MATH 242. Structural mechanics applied to trusses, frames; introductory mechanics of continuous media; concepts of stress, strain, stress-strain relations; stress and deformation due to longitudinal loads, torsion, and bending; eccentric loads on short posts. Euler column theory. Lect. 5 hrs. per wk.

ENGR 251 Engineering Mechanics I (Statics) (4 cr.)
Corequisite MATH 241. Vector treatment of concepts of force, mass, space, & time, gravitational systems of measurements, forces, moments & vector quantities; analysis of discrete & distributed force systems & their application to bodies in external equilibrium including cranes, trusses; principles of dry friction, centroids & fluid statics. Lect. 4 hrs. per wk.

ENGR 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

ENGR 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

ENGR 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

ENGLISH

ENGL 01 Verbal Studies Laboratory (1–5 cr.)
A developmental course in composition designed for students who need help in all areas of writing to bring their proficiency to the level necessary for entrance into their respective curricula. Emphasis on individualized instruction. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

ENGL 02 Developmental Spelling Laboratory (1–5 cr.)
A developmental course designed to help students overcome spelling difficulties through the study of the sound-letter relationships in the English language and through familiarization with common spelling problems. Emphasis will be placed on the specific needs of the individual. Variable hrs.

ENGL 05 English as a Second Language (1–5 cr.)
A developmental course in the English language for persons whose native language is not standard English. Emphasis on production of English phonemes, intonation patterns, structural patterns, grammar, vocabulary, and idioms. Students are expected to spend a minimum of 3 hours weekly in the language laboratory. Students

may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

ENGL 06 Intensive Course in English for Speakers of Other Languages (1–5 cr.)
Enables speakers of other languages to become fluent in spoken and written English as rapidly as possible by providing the students with as much training and practice as is necessary to meet their individual needs. A student may reregister in subsequent quarters until his language skills are adequate to meet his needs. Variable hrs.

ENGL 07 Verbal Expression (1–5 cr.)
A developmental course designed to improve the student's written and spoken communication. Review of effective writing practices. Emphasis on practical application; the writing of instructions, explanations, business letters, job applications, summary paragraphs, methods of informative writing; outlining, reading for understanding, and vocabulary building; unity, development and organization in writing. Practice in listening and speaking, giving and following instructions, short informative talks. Intensified practice in varied speaking and writing problems. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 08 Reading Improvement (1–5 cr.)
A developmental course using modern techniques, equipment, and materials to increase the student's comprehension, skill, and speed in reading. Students may reregister for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

ENGL 11–12–13 Communication Skills for the Foreign Born (5 cr.) (5 cr.) (5 cr.)
A preparatory course for students whose native language is not English. The course will emphasize the student's development of speaking, writing, reading, and listening skills in preparation for the student's admission to a college curriculum. Lect. 3 hrs., Lab. 6 hrs., Total 9 hrs. per wk.

ENGL 100 Occupational English (3 cr.)
Develops basic, practical English skills in oral and written communication. The emphases are basic organization principles, approaches to media analysis, job-related vocabulary building, listening, writing, and speaking skills. Practical skills such as handling customer complaints, writing various types of letters, preparation for a job interview are included. This course is intended for certificate students. Lect. 3 hrs. per wk.

ENGL 110 English Grammar: Its Logic and Function (3 cr.)
The traditional grammar rules of the English language; their logic, system, and development. Current adaptations of conventional rules will be examined in order to provide the students with an opportunity to understand the function of grammar as applied to written communication. Lect. 3 hrs. per wk.

ENGL 111–112–113 English Composition I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite satisfactory score on appropriate English proficiency examinations and 4 units of high school English or equivalent. Expository and argumentative writing, ranging from single paragraphs to essays of some length and complexity. Study of logical, rhetorical, and linguistic structures; the methods and conventions of preparing research papers; and the practical criticism of literary types. These courses must be taken in sequence. Lect. 3 hrs. per wk.

ENGL 114–115 English Composition I–II (5 cr.)(4 cr.)
Prerequisite satisfactory score on appropriate English proficiency examinations and 4 units of high school English or equivalent. Expository and argumentative writing, ranging from single paragraphs to essays of some length and complexity. Study of logical, rhetorical, and linguistic structures; the methods and conventions of preparing research papers; and the practical criticism of literary types. Lect. 5–4 hrs. per wk.

ENGL 118 Advanced Reading and Study Development (3 cr.)
A multi-level reading course with emphasis on structural analysis, critical reading, and study techniques for the development of individual skill; laboratory provides enrichment and application of techniques. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ENGL 119 Critical Reading and Study Skills (3 cr.)
Development of skills necessary to succeed in college work, including, according to student needs, time management; effective listening; note taking from books, in books, and from lectures; previewing a textbook; critical textbook reading; applied study; use of the library; effective memory techniques; preparing outlines and summaries; and preparing for and taking examinations. Lect. 3 hrs. per wk.

ENGL 126 Introduction to Journalism (3 cr.)
Prerequisite freshman English or divisional approval. This course is designed to acquaint the student with the functions of the news media and the forces which shape them. It provides beginning instruction and practice in gathering, writing, and evaluating the news. It offers practice in copy preparation and production. Lect. 3 hrs. per wk.

ENGL 127 History of Journalism (3 cr.)
Prerequisite freshman English or divisional approval. This course is a survey of American Journalism from the colonial period to the present with emphasis on freedom of the press, propaganda and censorship. Lect. 3 hrs. per wk.

ENGL 128 Survey of Mass Media (3 cr.)
Prerequisite freshman English or divisional approval. This is a survey of radio, television, newspapers, magazines, books and motion pictures. Emphasis is placed on the nature of change in, and the social implications of communications media today. Lect. 3 hrs. per wk.

ENGL 137 Technical Writing (3 cr.)
Designed to develop writing proficiency in technical fields. Emphasis on collecting, organizing, and presenting materials applicable to various specialized areas. Lect. 3 hrs. per wk.

ENGL 146 Literature for Children (3 cr.)
Surveys the history of children's literature, recognizes learning theory and developmental factors influencing reading and reading interests, and utilizes bibliographic tools in selecting books and materials for children. Emphasizes extensive reading and examination of books for recreational interests and educational needs of children. Lect. 3 hrs. per wk.

ENGL 157 American Folklore (3 cr.)
Folklore of the various regions of America. Includes folk speech, proverbs, songs, beliefs and customs of

various groups including American Indians, Louisians, French, Spanish American, Pennsylvania Dutch, Appalachians and others. Lect. 3 hrs. per wk.

ENGL 166 College Reading (3 cr.)
A course designed to facilitate college reading improvement in a variety of areas including rate of comprehension, vocabulary, study skills, and help in alleviating special problems in reading. Using modern equipment, materials, and techniques, the student will pursue a course of study set up between him and the instructor based on his needs, abilities, and goals as ascertained by test results and diagnostic interviews. Lect. 3 hrs. per wk.

ENGL 180 Fundamentals of Business English (3 cr.)
An intensive study of the qualities and techniques required in the preparation of business correspondence, reports, articles, and memoranda. A practical course in the reading and writing of business-related materials with emphasis on comprehension, analysis, and organization of ideas in a logical pattern. Lect. 3 hrs. per wk.

ENGL 191–192–193 Workshop in Reporting and Writing (3 cr.) (3 cr.) (3 cr.)
Designed to provide instruction and practical experience in gathering, evaluating and writing news and feature stories for the college paper. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

ENGL 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

ENGL 199 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

ENGL 207 Film and Literature (3 cr.)
This course studies the translation of several works of literature into films. In doing so, it addresses the corresponding qualities of these two artistic forms, as well as qualities unique to each. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

ENGL 221 Journalism-News Writing (3 cr.)
Prerequisite ENGL 126 or divisional approval. Intensive practice in reporting and news writing for local newspapers or the college newspaper under supervision of the journalism faculty and other professional journalists. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ENGL 222 Journalism-Feature Writing (3 cr.)
Prerequisite ENGL 126 or divisional approval. Intensive practice in writing feature articles for newspapers and magazines under the supervision of professional journalists and the journalism faculty. Articles will be submitted for publication. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ENGL 223 Journalism-Editing (3 cr.)
Prerequisite 9 hours of journalism and divisional approval. Qualified students will receive practical experience working with professional journalists in the preparation and production of copy. Emphasis on selective judgement, editing as a creative process, managerial functions of the editor. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ENGL 227 Investigative Reporting (3 cr.)
Prerequisite 9 hours of journalism and division approval. Qualified students will receive intensive practice in doing in-depth investigations of political, social, consumer and environmental problems, and in writing lengthy news stories based on their research. Lectures will familiarize the students with such areas of concern and will discuss techniques of exploring governmental agencies and other institutions for suitable topics of investigation. Lect. 3 hrs. per wk.

ENGL 228 Creative Writing (3 cr.)
Prerequisites ENGL 111, 112, 113 or division approval. Designed to introduce the student to the fundamentals of writing creatively, involving primarily the use of the imagination. Samples of creative writings will be studied to observe the methods employed in writing poetry, essays, and short stories. Lect. 3 hrs. per wk.

ENGL 229 Creative Short Story Writing (3 cr.)
Designed to involve the student in the creative and imaginative writing of short stories as a form of literary expression. Lect. 3 hrs. per wk.

ENGL 230 Creative Poetry Writing (3 cr.)
Designed to involve the student in the creative and imaginative writing of poetry as a form of literary expression. Lect. 3 hrs. per wk.

ENGL 237 Freelance Writing (3 cr.)
Prerequisites ENGL 111–112–113, or divisional approval. Instruction and practice in writing articles, features and reviews for newspapers and magazines. Analysis of assigned readings and preparation of manuscripts for publication. Lect. 3 hrs. per wk.

ENGL 240 Backgrounds to Modern Drama (3 cr.)
A study of significant plays by authors of the 17th through 20th centuries, emphasizing dramatic techniques, influences on contemporary drama, and the historical and social backgrounds of the works. The intent of the course is to help introduce the beginning student to the drama and provide further reading for the more experienced student. Lect. 3 hrs. per wk.

ENGL 244 Literature of Science Fiction (3 cr.)
The study of literary and social aspects of science fiction. Emphasis will be ideas, themes, characteristics and trends as they have developed from the 1930's to the present. Lect. 3 hrs. per wk.

ENGL 246 The Modern Novel (3 cr.)
Prerequisite freshman English or divisional approval. A study of the modern novel. Emphasis on appreciation and interpretation of selected novels. Lect. 3 hrs. per wk.

ENGL 247 The Modern Drama (3 cr.)
Prerequisite freshman English or divisional approval. A study of the modern drama. Emphasis on the understanding and enjoyment of dramatic literature. Lect. 3 hrs. per wk.

ENGL 248 The Modern Short Story (3 cr.)
Prerequisite freshman English or divisional approval. A study of the short story as a literary form. Emphasis on appreciation and interpretation of selected stories. Lect. 3 hrs. per wk.

ENGL 249 Modern Poetry (3 cr.)
Prerequisite freshman English or divisional approval. A study of modern poetry. Emphasis on appreciation and interpretation of selected poems. Lect. 3 hrs. per wk.

ENGL 250 Major American Writers (5 cr.)
Prerequisite ENGL 113 or divisional approval. A study of selected American writers representative of various periods. Students may not receive credit for both Survey

of American Literature (ENGL 251–252–253) and ENGL 250 nor any combination of ENGL 250 and ENGL 251–252–253. Lect. 5 hrs. per wk.

ENGL 251–252–253 Survey of American Literature I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite ENGL 113 or divisional approval. American Literature from Colonial times to the present. Emphasis on the ideas, themes, and characteristics of our national literature. Lect. 3 hrs. per wk.

ENGL 257 Existential Literature (3 cr.)
A survey of existentialism as a literary movement. Emphasis is on short stories, poetry, drama and novels which express an existential attitude. Related essays in philosophy, theology and literary criticism may be included. Lect. 3 hrs. per wk.

ENGL 259 Afro-American Literature (3 cr.)
An examination of selected works by Black writers in America from early times to the present with emphasis upon the twentieth century. Primary concern will be the tracing in these works of major themes which reveal the Black man's vision of America and his place in it. Lect. 3 hrs. per wk.

ENGL 260 Major English Writers (5 cr.)
Prerequisite ENGL 113 or divisional approval. A study of selected English writers representative of various periods. Students may not receive credit for both Survey of English Literature (ENGL 261–262–263) and ENGL 260 nor any combination of ENGL 260 and ENGL 261–262–263. Lect. 5 hrs. per wk.

ENGL 261–262–263 Survey of English Literature I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite ENGL 113 or divisional approval. A survey of major English writings from early times to the modern period. Emphasis on the ideas, themes, and characteristics of English literature. Lect. 3 hrs. per wk.

ENGL 266–267–268 Shakespearean Plays I–II–III (3 cr.) (3 cr.) (3 cr.)
A study of selected Shakespearean plays in conjunction with the PBS television series. Each play will be examined through viewing the television production, reading the text of the play, and class discussion. Staging, plot, characterization, and the use of language are discussed within the context of particular plays. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ENGL 270 Major Writers in World Literature (5 cr.)
Prerequisite ENGL 113 or divisional approval. A study in depth of writers of various cultures. Students may not receive credit for both Survey of World Literature (ENGL 271–272–273) and ENGL 270 nor any combination of ENGL 270 and ENGL 271–272–273. Lect. 5 hrs. per wk.

ENGL 271–272–273 Survey of World Literature I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite ENGL 113 or equivalent. A course designed to familiarize the student with master works of world literature. Analytical reading and critical writing toward understanding of the periods, the writers, the literary works. Lect. 3 hrs. per wk.

ENGL 278 Women in Modern Literature (3 cr.)
An examination of selected female figures in fiction and drama as they search for identity and self-realization in the modern world. Parallel readings dealing with contemporary issues also will be examined in order to further explore the expanding role of women in society. Lect. 3 hrs. per wk.

ENGL 291–292–293 Editing and Makeup I–II–III (4 cr.) (4 cr.) (4 cr.)
Designed to provide instruction and practical experience in all production aspects of the college paper. Principles of editing, page design, photo display, handling advertising copy and paste-up will be emphasized, as well as the functions and responsibilities of page editors. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

ENGL 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

ENGL 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

ENVIRONMENTAL SCIENCE

ENVR 60 Basic Concepts for Water and Wastewater Treatment (3 cr.)
Scientific and institutional principles necessary to operate water and wastewater treatment facilities. Lect. 3 hrs. per wk.

ENVR 106 Introduction to Sanitation (3 cr.)
A study of methods of disease transmission, hygienic excrete disposal, municipal and industrial wastewater removal and treatment, characteristics of water, water treatment, protection of ground water, insect and rodent control, solid waste collection and disposal, milk and food sanitation, swimming pool and industrial hygiene. Lect. 3 hrs. per wk.

ENVR 108 Environmental Microbiology (4 cr.)
The characteristics and activities of micro-organisms, showing their essential relation todiagnosis, treatment, and prevention of disease. Fundamentals of bacteriology, mycology, and parasitology, emphasizing their relationships to individual community health. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ENVR 110 Introduction to Water and Wastewater Treatment Technology (3 cr.)
Designed to provide entry level personnel with a general overview of the entire water supply and treatment system. Will trace the water supply from the raw state in the stream through treatment storage, distribution, use, waste collection, treatment, and discharge back to the environment. Historical and legal aspects of water supply and waste disposal together with basic aspects of public relations for water and wastewater treatment plant personnel. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ENVR 120 Introduction to Air Pollution (3 cr.)
Air pollution in relation to public health; study of the scientific, engineering, and legal aspects of pollution; sources and classifications of pollutants, pollution meteorology; sampling and measuring techniques; remedies and controls currently available. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ENVR 166 Wastewater Treatment Plant Operation (5 cr.)
Environmental principles and practices and desired function and operation of a variety of wastewater treatment unit processes. The evaluation of operation of these processes by determination of the information and testing required for evaluation and performing the subsequent necessary calculations. Lect. 3 hrs., Lab. 4 hrs., Total 7 hrs. per wk.

ENVR 167 Fundamentals of Solids Processing (4 cr.)
The engineering principles and practices and the desired function and operation of a variety of solid waste and sludge treatment unit processes. The evaluation of the operation of these processes by determination of the information and testing required for evaluation and performing the subsequent necessary calculation. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

ENVR 168 Wastewater Treatment Plant Control (4 cr.)
Analytical and control procedures required in the operation of the unit processes which will be used in wastewater treatment plants. The procedures to operate the treatment plants during routine and emergency conditions as well as use of these procedures to "trouble shoot" isolated or anticipated operational problems. Lect. 3 hrs. Lab. 3 hrs., Total 6 hrs. per wk.

ENVR 216 Water Supply and Wastewater Collection (3 cr.)
The engineering aspects of water supply, water distribution, waste water collections and waste water removal and disposal. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

ENVR 218 Industrial Waste Treatment (3 cr.)
Principles and methods of contemporary industrial waste treatment; relationships between the characteristics of industrial wastes and their effects on receiving waters; differences and similarities between industrial and sanitary waste treatment. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

FIRE SCIENCE

FIRE 100 Introduction to Fire Science (3 cr.)
History and philosophy of fire service at the local, state, and national level with emphasis on the organization of the individual fire department; analysis of the overall fire problem, communications, maintenance, training, company fire fighting capabilities, apparatus and equipment. Lect. 3 hrs. per wk.

FIRE 106 Fundamentals of Fire Service Administration (3 cr.)
A study of department and company organization and management, administrative procedures and methods, budgeting and reporting, control of resources, and maintenance of records. Lect. 3 hrs. per wk.

FIRE 108 Fundamentals of Fire Suppression (3 cr.)
Basic concepts involved in fire suppression including fire behavior, principles of fire fighting as applied to small and large scale fires, problems involving the use of tactics, size-up, strategy and employment of equipment and manpower at various echelons. Lect. 3 hrs. per wk.

FIRE 109 Fire Suppression Operations (3 cr.)
Prerequisite FIRE 108. The distribution and use of equipment, organization for major fires, pre-planning, command post operations, communications, equipment design and maintenance, and tactics. Lect. 3 hrs. per wk.

FIRE 111 Hazardous Materials I (3 cr.)
Identification and characteristics of materials contributing to fire hazards including chemical, gases, flammable liquids, and radiological materials, and an examination of their storage, handling and transportation, and related fire science problems. Lect. 3 hrs. per wk.

FIRE 112 Hazardous Materials II (3 cr.)
Prerequisite FIRE 100 and FIRE 111. Hazardous materials covering storage, handling, laws, standards, and fire fighting techniques associated with chemicals, gases, flammable liquids, and radio-active materials. Lect. 3 hrs. per wk.

FIRE 116 Fundamentals of Fire Prevention (3 cr.)
An introduction to fire safety through study of fire causes, inspection and investigation procedures. Lect. 3 hrs. per wk.

FIRE 119 Industrial Fire Protection (3 cr.)
Prerequisite FIRE 116, 120 or permission of division. A study of industrial fire protection that fits the needs of every industry, health care facility, business and educational institution. The course deals with organizing for fire safety, hazard control, prefire planning operations and fire control systems. Lect. 3 hrs. per wk.

FIRE 120 Fire Protection Equipment and Systems (3 cr.)
Topics covered are the examination and utilizing of portable extinguisher equipment, sprinkler systems, protection systems for special hazards, and fire alarm and protection systems. Opportunities for visits to local facilities having equipment and systems affording a critical appraisal. Lect. 3 hrs. per wk.

FIRE 137 Fire Fighting Tactics and Strategy (3 cr.)
Prerequisite FIRE 100 and FIRE 108. Review of combustion and extinguishment. The problems during sizeup; developing and implementing tactics and strategy during fires; and the leadership required on the fire ground. Lect. 3 hrs. per wk.

FIRE 141 Fire Administration (3 cr.)
Prerequisite FIRE 100. A study of the personnel responsibility of managers. Centers on line-staff relationships, social change, managerial attitudes and decisions, general organizational planning, and career development for managers. Lect. 3 hrs. per wk.

FIRE 146 Fire Administration and Law (3 cr.)
Application of guideposts relative to firemen and law. Includes introduction to law, the judicial system, city's liability for acts of the fire department, fire prevention bureaus, and general liabilities of firemen. Lect. 3 hrs. per wk.

FIRE 147 Methods of Fire Instruction (3 cr.)
This course is designed to prepare Fire Management Personnel who conduct the in-service training of fire fighters at local Fire Departments. Emphasis will be on development of training methods and aids, such as role-playing, small group discussion & development of individualized learning materials & methods. Each student will be required to develop and present a segment of the fire fighting curriculum of his local fire department. Lect. 3 hrs. per wk.

FIRE 208 Water Distribution Systems (3 cr.)
Principles, techniques, and application of water distribution systems in fire fighting. Emphasis on the use of underground mains, private water supplies, public

water systems, hydrants, hose and standpipes. Laboratory equipment and materials will supplement lectures. Lect. 3 hrs. per wk.

FIRE 216 Fire Hydraulics and Equipment (4 cr.)
Prerequisite FIRE 100. Review of basic mathematics; laws and formulas applied to fire service hydraulics, development of mental ability to solve fire flow requirements, water supply needs, and consideration of equipment standards. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

FIRE 227 Building Construction and Codes (4 cr.)
The various types of construction materials and their properties with emphasis on the effect of heat, water, and internal pressures generated under fire conditions. Familiarization with national, state and local ordinances and codes which influence the fire protection field. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

FIRE 228 Codes and Ordinances (3 cr.)
Familiarization with national, state and local laws; ordinances and codes which influence the field of fire prevention and protection; legal aspects of fire prevention and related problems. Lect. 3 hrs. per wk.

FIRE 237 Arson Detection and Investigation (3 cr.)
Prerequisite FIRE 100. Introduction to arson laws and types of incendiary fires. Determining fire causes, recognizing and preserving evidence; interrogation of adults and juveniles; court procedures. Lect. 3 hrs. per wk.

FIRE 247 Fire Station Management (3 cr.)
Current and new concepts in dealing with fire station management problems. This includes involvement in problem areas such as communities, individual and group behavior, subordinate-supervisor relationships and the decision making process. Lect. 3 hrs. per wk.

FIRE 258 Fire Protection Systems and Building Construction Plans Analysis (3 cr.)
Prerequisite FIRE 120 and FIRE 227 or divisional permission. The course concentrates on providing fundamental knowledge and techniques used in reviewing building plans prior to issuance of building permits. A general review of blueprints and commonly used symbols will be presented as each group of plans are introduced. Check lists will be presented and/or developed that introduces a systematic approach toward building plans analysis. Lect. 3 hrs. per wk.

FIRE 266 Urban Fire Analysis (3 cr.)
Prerequisites FIRE 106, MATH, ENGL 111. A study of current urban fire problems with emphasis on solutions based upon current available technology. Studies include master planning, analysis methodology and prior prediction, second year students only. Lecture 3 hours per week.

FIRE 290 Coordinted Internship (1–5 cr.)
(See General Usage Courses Section)

FIRE 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

FORESTRY

FORE 117 Dendrology (4 cr.)
A survey of the plant kingdom followed by a study of the commercially important trees of the United States. Emphasis upon field characteristics and environment of the trees of the Southeast. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

FORE 131 Wildlife and Fisheries Management (4 cr.)
An introduction to the principles of wildlife and fisheries management. Emphasis on practices in the southeastern United States. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

FORE 132 Forest Recreation (4 cr.)
A study of recreational use of forest resources including an understanding of the psychology of recreation, planning, and design of forest recreation areas. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

FRENCH

FREN 101–102–103 Introductory French I–II–III (4 cr.) (4 cr.) (4 cr.)
Introductory training in the speaking, understanding, reading, and writing of French with emphasis on manipulation of the structure of the language. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk. *Not recommended for students who have, within the past two years, received two years high school or one year college credit for this language.*

FREN 104–105 Introductory French I–II (6 cr.) (6 cr.)
The understanding, speaking, reading, and writing of French with emphasis on manipulation of the structure of the language. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

FREN 106 Review of Introductory French (5 cr.)
An intensive review of French structure and phonology; designed for students who have had some previous training in French, but whose proficiency does not qualify them for French 201. Permission of the division required. Lect. 5 hrs. per wk.

FREN 107–108–109 Conversation in French I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite FREN 103 or equivalent. Practice in speaking French, stressing correctness of structure, pronunciation, fluency, and the vocabulary of everyday situations. Lect. 3 hrs. per wk.

FREN 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

FREN 199 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

FREN 201–202–203 Intermediate French I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisite FREN 103 or successful completion of two years of high school French and division permission. Advanced study in the speaking, understanding, reading and writing of French. French is used in the classroom. Lect. 3 hrs., Lab. and drill 2 hrs., Total 5 hrs. per wk.

FREN 204–205 Intermediate French I–II (6 cr.) (6 cr.)
Prerequisite FREN 105 or successful completion of two years of high school French and division permission. Advanced study in the understanding, speaking, reading, and writing of French. French used in the classroom. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

FREN 231–232–233 Introduction to French Civilization and Literature I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Prerequisite FREN 203 or equivalent. An introduction to the background of French life and culture and to the outstanding contributions of France to world civilization from medieval times to the present. Reading is in the original French and French is used in the classroom. Lect. 3 hrs. per wk.

FREN 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

FREN 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

GENERAL

GENL 98 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

GENL 100 Orientation **(1 cr.)**
This course, required of all beginning college students, is designed essentially as an instrument of group guidance and deals with such problems as adjustment to college; purposes and functions of the college; planning for the future and making the most of the college years and what the college has to offer. Particular emphasis is placed on experiences designed to improve study habits and skills such as reading, listening, and library activities. Lect. 1 hr., Lab. 1 hr., Total 2 hrs. per wk.

GENL 106 New Directions for Women **(2 cr.)**
Today's woman: Exploring individual interests, abilities and values through testing, discussion and group counseling. Lect. 2 hrs. per wk.

GENL 108 Career Education **(3 cr.)**
A survey of the career options available to individuals to facilitate more rational and valid career planning and preparation. The Career Education Program is sequenced and postured to optimize career development and should provide a broad base of understanding of self and the world of work. It is designed so students will have two options at several levels; continuing in higher education or seeking job satisfaction in employment. Lect. 3 hrs. per wk.

GENL 116 Student Leadership Development **(3 cr.)**
A course designed to provide an opportunity for students to learn leadership theory and skills for application in campus organizations, committees and groups. Lect. 3 hrs.

GEOGRAPHY

GEOG 240 Introduction to Physical Geography **(3 cr.)**
A study of the major elements of the natural environment such as land forms, weather and climate, natural vegetation, and soils. Lect. 3 hrs. per wk.

GEOG 250 Introduction to Cultural Geography **(3 cr.)**
A survey of landscape modification through human agencies and the relationships of culture and geography. Lect. 3 hrs. per wk.

GEOG 260 Introduction to Economic Geography **(3 cr.)**
A geographic survey of primary production, manufacturing, mining, and trade, covering agriculture, forestry, and fishing. Lect. 3 hrs. per wk.

GEOG 299 Supervised Study **(1–5 cr.)**
Prerequisite division approval.
(See General Usage Courses Section)

GEOLOGY

GEOL 101–102–103 General Geology I–II–III **(4 cr.) (4 cr.) (4 cr.)**
Physical geology, the various modifying agencies at work upon the earth, and their effects. The composition and structure of the earth as a whole. Historical geology, the history of the earth and its plants and animals from the beginning to the present, with emphasis on the principles involved in interpreting geologic evidence. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

GEOL 104–105 General Geology I–II **(6 cr.) (6 cr.)**
Physical geology, the various modifying agencies at work upon the earth, and their effects. The composition and structure of the earth as a whole. Historical geology, the history of the earth and its plants and animals from the beginning to the present, with emphasis on the principles involved in interpreting geologic evidence. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

GEOL 131–132–133 Oceanography I–II–III **(4 cr.) (4 cr.) (4 cr.)**
Prerequisite one high school science and two math (algebra). An interdisciplinary course covering the principles and applications of physical, chemical, biological and geological oceanography. Field trips to nearby coastal areas. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

GEOL 199 Supervised Study in Geology **(1–5 cr.)**
(See General Usage Courses Section)

GEOL 226 Minerals **(4 cr.)**
Prerequisite GEOL 101. Introduction to the study of minerals. Crystalline state, mineral properties, genesis, occurrence, and uses of most important minerals. Mineral-collecting; field trip. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

GEOL 228 Fossils **(4 cr.)**
Prerequisite GEOL 103 or BIOL 103 or permission. Introduction to invertebrate and vertebrate fossils, their distribution through time, evolution, biostratigraphic and paleoecologic significance; field trip. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

GERMAN

GERM 101–102–103 Introductory German I–II–III **(4 cr.) (4 cr.) (4 cr.)**
Introductory training in the understanding, speaking, reading, and writing of German with emphasis on manipulation of the structure of the language. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk. *Not recommended for students who have, within the past two years, received two years high school or one year college credit for this language.*

GERM 104–105 Introductory German I–II (6 cr.) (6 cr.)
The understanding, speaking, reading, and writing of German with emphasis on manipulation of the structure of the language. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

GERM 106 Review of Introductory German (5 cr.)
Prerequisite divisional permission. An intensive review of German structure and phonology; designed for students who have had some previous training in German, but whose proficiency does not qualify them for German 201. Lect. 5 hrs. per wk.

GERM 107–108–109 Conversational German I–II–III (3 cr.) (3 cr.) (3 cr.)
Three quarter sequence built around German Language films, textbook and taped recordings. Basic conversational German as currently spoken. Includes use of language lab by individual students. Lect. 3 hrs. per wk.

GERM 199 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

GERM 201–202–203 Intermediate German I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisite GERM 103 or successful completion of two years of high school German and division permission. Advanced study in the understanding, speaking, reading and writing of German. German is used in the classroom. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

GERM 204–205 Intermediate German I–II (6 cr.) (6 cr.)
Prerequisite GERM 105 or successful completion of two years of high school German and divisional permission. Advanced study in the understanding, speaking, reading, and writing of German. German is used in the classroom. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

GERM 231–232–233 Introduction to German Literature I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite GERM 203 or equivalent. Readings in selected works of German literature. German is used in the classroom. Lect. 3 hrs. per wk.

GERM 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

GOVERNMENT

GOVT 100 Orientation to State Government (1 cr.)
This course introduces the student to the organization of the Executive Branch of Virginia State Government. It incorporates the concept of public service and dealing with the public as well as other agencies. The course covers the personnel policies of the Commonwealth, including a complete listing of the employees priviliges, rights and responsibilities. Lect. 1 hr. per wk.

GOVT 110 Survey of American Political Parties (3 cr.)
A survey of the development of American political parties. Emphasis on local, state, and federal organization of political parties, conventions, and elections. Lect. 3 hrs. per wk.

GOVT 116 Political Resources of the Community (3 cr.)
The rights and responsibilities of participating in the decision-making processes of local, state and federal government, particularly in relation to the various governments and agencies within the community college districts. Resources available for development of sound child and family patterns. Lect. 3 hrs. per wk.

GOVT 180 American Constitutional Government (3 cr.)
An introductory course in American government, including fundamental concepts and principles of our constitutional system at the national, state and local levels. Lect. 3 hrs. per wk.

GOVT 185 Introduction to Local Government (3 cr.)
An introduction to the theory, structure, and function of local government in the United States, with particular emphasis on municipal government in Virginia. Lect. 3 hrs. per wk.

GOVT 187 American National Government (5 cr.)
The organization, structure and functions of the national government in the United States. If credit was given for either GOVT 180, GOVT 186, or GOVT 281–282–283, credit cannot be obtained for this course. Lect. 5 hrs. per wk.

GOVT 188 State and Local Government (5 cr.)
A study of the theory, structure and functioning of, and interrelationships among, state and local governments in the United States, with illustrations from Virginia jurisdictions. Lect. 5 hrs. per wk.

GOVT 199 Supervised Study (1–5 cr.)
Prerequisite division permission.
(See General Usage Courses Section)

GOVT 211 International Relations I (3 cr.)
An analysis of the international political system. Includes an introduction to theoretical and analytical approaches to the understanding of the international system and an analysis of the economic, geographic, demographic, and ideological factors and problems affecting the behavior of states toward one another. Lect. 3 hrs. per wk.

GOVT 212 International Relations II (3 cr.)
A study of international law and international organizations. The study examines both the origin and the functions of law and organization within the international state system. Lect. 3 hrs. per wk.

GOVT 213 International Relations III (3 cr.)
An examination of the contemporary international political system, concentrating on the policies of the major powers, the motivations and goals of those policies, and the major problems of conflict and adjustment in the contemporary system. May be taken nonsequentially. Lect. 3 hrs. per wk.

GOVT 281–282–283 United States Government I–II–III (3 cr.) (3 cr.) (3 cr.)
Elements of political science, powers, organization and functions of the legislative, executive and judicial branches of the national, state and local governments in the United States; democracy, federalism, the Constitution and civil liberties. These courses need not be taken sequentially. 3 Lect. hrs. per wk.

GOVT 284–285 United States Government I–II (5 cr.) (4 cr.)
Elements of political science, powers, organization, and functions of the legislative, executive, and judicial

branches of the national, state and local governments in the United States; democracy, federalism, the Constitution, and civil liberties. Lect. 5–4 hrs. per wk.

GOVT 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

GOVT 299 Supervised Study (1–5 cr.)
Prerequisite division permission.
(See General Usage Courses Section)

HEALTH

HLTH 100 Orientation to Allied Careers (1 cr.)
An orientation to the interrelated roles and functions of various members of the health team. Lect. 1 hr. per wk.

HLTH 101 Cardiopulmonary Resuscitation Modular System (1 cr.)
Training in coordinated mouth-to-mouth artificial ventilation and heart compression based upon the American Red Cross approved method. Successful completion of all phases of the course results in Red Cross certification in CPR. Lect. 1 hr. per wk.

HLTH 104 First Aid I (2 cr.)
The principles and techniques of safety and first aid according to the accepted content of a standard first aid course. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

HLTH 105 First Aid II (3 cr.)
Safety and first aid according to the accepted content of an advanced first aid course with related safety projects and problems. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

HLTH 106 First Aid and Safety (3 cr.)
The principles and techniques of safety and first aid according to accepted content of a standard first aid course. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HLTH 110 Concepts of Personal and Community Health and Safety (3 cr.)
A course designed to study the concepts related to the maintenance of health, principles of safety, and the prevention of illness at the personal and community level. Lect. 3 hrs. per wk.

HLTH 118 Community and Personal Health (5 cr.)
The study of community and individual health problems involving mental illness, alcohol, tobacco, drugs, venereal disease and communicable diseases; medical care, disease prevention, physical fitness, nutrition and weight control; and community and world health problems and safety. Lect. 5 hrs. per wk.

HLTH 120 Medical Terminology (5 cr.)
Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, stem words, and technical terms with emphasis on proper spelling and usage. Lect. 5 hrs. per wk.

HLTH 124 Medical Terminology I (3 cr.)
Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, stem words and technical terms with emphasis on proper spelling and usage. Lect. 3 hrs. per wk.

HLTH 125 Medical Terminology II (2 cr.)
A continuation of HLTH 124 for those students in health-related curriculums requiring additional understanding of medical terms. Lect. 2 hrs. per wk.

HLTH 136 Human Sexuality (3 cr.)
Designed to provide a basic understanding of human sexuality. Includes anatomy, physiology, pregnancy, family planning, venereal disease, sexual variation and others. Lect. 3 hrs. per wk.

HLTH 146 Occupational Injury and Disease Control (3 cr.)
Prerequisite 1 unit each of high school chemistry and physics or divisional approval. A study of environmental energy, physical and chemical hazards, including gases, vapors, dusts, fumes and mists; the importance of personal protective equipment and contamination control methodology. Lect. 3 hrs. per wk.

HLTH 150 Concepts of Disease (3 cr.)
Prerequisite NASC 113 or divisional permission. A survey course designed specifically for students enrolled in health technology programs. General principles classification, causes and treatment of selected disease processes are presented. Lect. 3 hrs. per wk.

HLTH 156 Child Health and Nutrition (3 cr.)
Understanding the physical needs of the pre-school child and the methods by which these are met. Emphasis upon health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety as related to health growth and development. Lect. 3 hrs. per wk.

HLTH 216 Infant-Toddler Development and Care (3 cr.)
Prerequisite HLTH 110 and PSYC 130. Growth and development during pre-natal period to toddlerhood. Various infant programs throughout the U.S. will be analyzed and discussed. The importance of good physical and psychological environment will be studied as related to overall development of child. Lect. 3 hrs. per wk.

HISTORY

HIST 101–102–103 History of Western Civilization I–II–III (3 cr.) (3 cr.) (3 cr.)
The development of civilization from ancient times to the present. The second and third quarters deal with the survey of the periods from the Renaissance and Napoleonic Wars respectively. Preferable but not mandatory that courses be taken sequentially. Lect. 3 hrs. per wk.

HIST 104–105 History of Western Civilization I–II (5 cr.) (4 cr.)
The development of western civilization from ancient times to the present. Lect. 5–4 hrs. per wk.

HIST 109 Genealogy (3 cr.)
A study of the methodology for investigating ancestry and family history. Lect. 3 hrs. per wk.

HIST 111–112–113 United States History I–II–III (3 cr.) (3 cr.) (3 cr.)
A survey of United States history from its beginning in early colonial times to the present. Preferable but not mandatory that courses be taken sequentially. Lect. 3 hrs. per wk.

HIST 114–115 United States History I–II **(5 cr.)(4 cr.)**
A survey of the United States history from its beginning in early colonial times to the present. Lect. 5–4 hrs. per wk.

HIST 121–122–123 History of Civilization I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Prerequisite pre-test. A study of the genius of western man as he builds the nation-states of Europe, of eastern man as he molds the great dynasties of China and India, and of global man as he enriches the past. Provides new understanding of man by careful examination of his legacy in government and philosophy, in architecture and engineering, in the fine arts and literature, and in the sciences. Lect. 3 hrs. per wk.

HIST 160 Women in History **(3 cr.)**
A survey of the role of women and attitudes towards women in the Western world, with emphasis on women in American History. An inquiry into the origins of these attitudes will be followed by a survey of the role of women in various societies. Finally, the contemporary women's movement will be examined in the light of historical perspective. Lect. 3 hrs. per wk.

HIST 170 History of the American Indian **(3 cr.)**
A survey study of Indians of North America, concentrating on Indians before Columbus, with a briefer look at contact with Europeans and present status. Special attention will be given to certain cultural aspects, including procurement of food, housing, religion, and tribal government. Lect. 3 hrs. per wk.

HIST 187–188–189 Black History I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A survey of Black history, his relationships and contributions to the American society; the period of slavery; the period of caste subordination; the period of new mobility and growing Black protest. Preferrable but not mandatory that courses be taken sequentially. Lect. 3 hrs. per wk.

HIST 206 American History Since World War II **(3 cr.)**
An in-depth investigation of modern history from 1945 to the present with special emphasis on American involvement in international affairs. Lect. 3 hrs. per wk.

HIST 215 American Revolution **(3 cr.)**
A detailed examination of the factors that led to the separation of the American colonies from Great Britain, the war that ensued, the problems faced by the revolutionary government, and the subsequent events leading to the adoption of the U.S. Constitution. Lect. 3 hrs. per wk.

HIST 216 The American Civil War **(3 cr.)**
A detailed examination of the factors that led to the rupture of the union, the war that ensued, the internal affairs of the United States and the confederate states, and the ultimate results of the conflict. Lect. 3 hrs. per wk.

HIST 221–222–223 American Economic History I–II–III **(3 cr.) (3 cr.) (3 cr.)**
First quarter deals with economic history of the 19th century and early 20th century in the United States. The second quarter places emphasis on the 1920's and 1930's. The third quarter covers the period since 1930. Preferable but not mandatory that courses be taken sequentially. Lect. 3 hrs. per wk.

HIST 231–232–233 Survey of Asian Civilization I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A survey of the civilizations of Asia, from their origins to the present day, with emphasis on their cultural aspects. The first quarter considers the Indian subcontinent; the second quarter, China, Japan, and Korea; and the third quarter, the countries of Southeast Asia. Preferable but not mandatory that courses be taken sequentially. Lect. 3 hrs. per wk.

HIST 234–235–236 Middle East Civilization I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A survey of dominant intellectual, cultural, social, economic and religious patterns in the civilizations of Semitic, Indo-European and Turkic-speaking peoples of the Mid-East from pre-Islamic to modern times. Lect. 3 hrs. per wk.

HIST 256–257–258 Survey of Russian History I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Prerequisite permission of the instructor. The history of Russia from the Kievian state to the present. Study includes the political, economic, social, and cultural aspects of Russia and its various ethnic groups. Lect. 3 hrs. per wk.

HIST 271–272–273 The History of Virginia I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A survey of the cultural, political, economic history of the Commonwealth from its Elizabethan beginnings to the present. The first quarter covers the period ending in 1789; the second, from 1789 through 1900; the third, the twentieth century. Lect. 3 hrs. per wk.

HIST 277–278 Family History I–II **(3 cr.) (3 cr.)**
Equips students with the competencies needed to document their families' past and understand the families' responses to community, state or national developments. The emphasis is on data collection at various archival sites. Lect. 3 hrs. per wk.

HIST 281–282–283 A Survey of Latin American Civilization I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A survey of Latin American civilization—in its political, economic, and social aspects—from Iberian and Pre-Columbian origins down to the present day. Preferable but not mandatory that courses be taken sequentially. Lect. 3 hrs. per wk.

HIST 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

HIST 299 Supervised Study **(1–5 cr.)**
Prerequisite division permission.
(See General Usage Courses Section)

HORTICULTURE

HORT 100 Introduction to Horticulture **(4 cr.)**
An introduction to the commercial horticulture industry and an overview of horticultural technology including occupational opportunities. Survey of basic structures, equipment, facilities, and physical arrangements of nurseries, green houses and floral establishments. An introduction to growing, facility maintenance, transplanting and planting will form the laboratory experience. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

HORT 107 Plant Propagation **(3 cr.)**
Principles and applied practices of sexual and asexual methods of commercial and home propagation of horticultural plants. Skill-oriented emphasis placed on

propagation techniques using seed, cuttings, grafting, budding, layering, and division. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 120 Soils (4 cr.)
Theoretical and practical knowledge of soils in terms of horticultural activity. Includes soil identification, properties, analysis, fertilizers, sterilization, mixtures, and safety measures involving equipment used in soil work. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

HORT 126 Landscape Construction and Maintenance (3 cr.)
Development of skills and competencies in practical application of landscape design theory. Construction, planting, and maintenance of a class landscaping project required. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

HORT 130 Environmental Factors in Plant Growth (3 cr.)
Environmental factors which affect plant growth including rainfall, humidity, wind, temperature, sunlight, irrigation, heating, and shading methods. The relationship of day-length and flowering, supplemental lighting and darkening systems, dormancy, and methods of inducing and breeding dormancy. Lect. 3 hrs. per wk.

HORT 136 Interior Landscaping (2 cr.)
Examines theoretical principles and applied practices of design, layout, selection, planting and maintenance of plant materials suitable for indoor use in residential and public buildings. Includes assessment of client needs; preparation of contracts and specifications and construction materials. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

HORT 137 Plantscaping for Interior Design (3 cr.)
A survey course for the non-horticulture technology student which deals with the concepts, principles, and applied practices of innovative interior designing with plants for commercial and residential environments. Includes identification, selection, and cultural requirements and design characteristics of appropriate plant materials. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 146 Horticulture Botany (4 cr.)
An elementary study of the principles of botany with application in commercial horticulture, considers fundamental aspects of taxonomy, anatomy, reproduction, morphology, physiology, and genetics of plants. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

HORT 147 Horticulture for Recreation and Parks (3 cr.)
Designed to introduce Recreation and Park students to horticultural methods and materials as they apply to the field of Recreation and Parks. The course will cover the types of plant materials used in Recreation and Parks, and methods developed for their use. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

HORT 148 Landscaping in Recreational Areas (3 cr.)
Designed to give the students experience and knowledge in proper landscape design for recreation areas. Emphasis will be placed on proper design of plantings and environmental improvement. Lect. 1 hr., Lab., 4 hrs., Total 5 hrs. per wk.

HORT 156 Greenhouse Crop Production (3 cr.)
Examines commercial practices related to production of major floricultural crops. Consideration of production requirements, environmental control and management, and cultural techniques affecting production of pot plants and cut flowers. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 157 Fruit Production (3 cr.)
Principles and applied practices of home and commercial production of soft and tree fruits. Considers selection, culture, handling, storage and processing of major fruit types. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 158 Vegetable Production (2 cr.)
A study of principles and practices of home and commercial vegetable production; examines crops of major economic importance in regard to classification, culture, soil preparation, cultivation, weed control, crop rotation, insect and disease control, marketing, and storage. Lect. 2 hrs. per wk.

HORT 190 Coordinated Internship (1–5 cr.)
(See General Usage Courses Section)

HORT 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

HORT 199 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

HORT 216 Horticultural Entomology (4 cr.)
A study of the major insect pests which attack horticultural crops. Considers insect identification as well as appropriate control practices, methods and materials. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

HORT 217 Horticultural Plant Pathology (3 cr.)
A study of the major diseases which attack horticultural crops. Considers methods for accurate identification and diagnosis of disease problems and appropriate control measures. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs per wk.

HORT 220 Nursery Management (3 cr.)
The aspects of nursery work including plant growing, planting, transplanting, balling, burlaping, business methods in the nursery, buying and stocking the nursery and merchandising in this specialized area. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 226 Garden Center Management (3 cr.)
the commercial practices of garden center operations. Examines planning, layout and landscaping of premises, the selection, buying, maintenance and display of plant materials for the home gardening market. The pricing and merchandising methods of plants, and customer relations. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 230 Greenhouse Management (3 cr.)
The phases of greenhouse activity including seedbed preparation, plant selection, and utilizing the materials presented in prerequisite courses as they apply to growing under glass; business and selling practices peculiar to this phase of the industry. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 240 Turf Green Management (3 cr.)
The study of turf grasses in use in this geographical area including propagation and production, planting, maintenance, weed control, insect and disease control, trouble shooting problems, studies regarding the relationships between turf grasses, soils, fertilizers, irrigation and drainage requirements. Practical experience in turf grass management in park areas and golf courses. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 250 Landscape Planning (2 cr.)
The basic symbols used in landscape plans. Drafting and blue print reading, the preparation of simple landscape plans, and the interpretation of plans designed by a landscape architect. Includes the fundamentals of landscape design, planning areas, walks, drives, and the effective use of trees, lawn, shrubs, ground cover, and foundation planting. Lab. 4 hrs., Total 4 hrs. per wk.

HORT 256 Woody Plants (3 cr.)
Identification, culture, and uses of woody plants used in landscaping. Includes deciduous and evergreen, wild and cultivated shrubs and trees. Lab. 6 hrs. per wk.

HORT 257 Herbaceous Plants (3 cr.)
Identification, culture and uses of annuals, biennials, and perennials used in landscaping. Lab. 6 hrs., Total 6 hrs. per wk.

HORT 260 Flower Shop Management (3 cr.)
The art of floral design as to form, style, and composition. Considers location, management, and operation of a flower shop, and the arrangement of flowers for home, church, hotels, and public buildings. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 266 House and Conservatory Plants (3 cr.)
Identification, culture, and propagation of pot and conservatory plants. Considers the environmental problems unique to the growth of indoor plants and their use in indoor landscaping. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HORT 270 Floral Design and Arranging I (2 cr.)
A practical introduction to floral design. Student practice in the basic methods of design and in producing arrangements. Lab. 6 hrs. per wk.

HORT 276 Floral Design and Arranging II (2 cr.)
A continuation of floral design and arranging with emphasis on acquisition of basic skills related to floral designs created by retail florists. Students will design and create wreaths, baskets, sprays, wedding flowers and corsages in the laboratory. Lab. 4 hrs. per wk.

HORT 290 Coordinated Internship (1–5 cr.)
(See General Usage Courses Section)

HORT 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

HRIM 100 Introduction to Hotel/Restaurant Management (3 cr.)
A survey of the history, organization, opportunities, and problems of the hospitality industry. Includes departmental functions, personnel practices, credit procedures, security routines, and typical job requirements. Emphasis will be on current trends and developments in the industry. Lect. 3 hrs. per wk.

HRIM 111–112–113 Food Science I–II–III (3 cr.) (3 cr.) (3 cr.)
Interrelationship of the physical, biological and chemical principles of food, food preparation, food equipment, and food manufacturing processes. Lect. 3 hrs. per wk.

HRIM 124–125 Principles of Food Preparation I–II (4 cr.) (4 cr.)
Applications of scientific principles and techniques to food preparation. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

HRIM 126 Principles of Commercial Food Preparation (4 cr.)
A study of the principles of commercial cooking in large quantities, use of equipment and cooking techniques. Presentation of the problems and potentials of cooking in large quantities to include: work flow, alternate cooking methods, different types of food establishments. Lect. 2 hrs., Lab. 4 hrs., Total 6 hrs. per wk.

HRIM 140 Principles of Baking (4 cr.)
Application of scientific principles and techniques of baking. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

HRIM 150 Introduction to the Travel Industry (3 cr.)
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. Examines in-depth the retail travel agency's role in marketing travel as well as basic operating techniques. Lect. 3 hrs. per wk.

HRIM 154 Geography of Tourism I (3 cr.)
Provides the student with the geographic knowledge necessary to provide efficient, effective service to clients of a travel agency. North America, Central America, the Caribbean and Western Europe will be studied to determine the following information: (1) important physical features, (2) climate, (3) areas of touristic importance, and (4) primary routings from the Washington area. Lect. 3 hrs. per wk.

HRIM 155 Geography of Tourism II (3 cr.)
This is the second phase of the study of Geography of Tourism, designed to cover more distant destinations in South America, Eastern Europe, Asia, Africa, and the Western and Southwestern Pacific. The course will again emphasize features of touristic importance such as visit documentation, climate and physical features, accomodations and attractions, and accessibility. Lect. 3 hrs. per wk.

HRIM 156 Club Management (3 cr.)
Problems peculiar to the organization and management of private clubs such as boards of directors, committee organization, legal aspects, and financial considerations. Lect. 3 hrs. per wk.

HRIM 159 Ground Transportation, Tours, Cruises, and Services Planning (3 cr.)
Prerequisite HRIM 150. A study of travel agency products and procedures to include 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. Lect. 3 hrs. per wk.

HRIM 164–165–166 Tourism Principles and Practices I–II–III (3 cr.) (3 cr.) (3 cr.)
Covers the day to day procedures, practices and systems of travel agencies, including ticketing, routing, reservations, etc. Utilizes the workshop approach. Lect. 3 hrs. per wk.

HRIM 167 International Travel and Tourism (3 cr.)
An analysis of the international organization of tourism; the role of the physical environment and cultures; and tourism as a factor in the economic development of these societies. Lect. 3 hrs. per wk.

HRIM 168 Executive Housekeeping (3 cr.)
A detailed study of the housekeeping department with emphasis on organization, staffing and scheduling, staff development, work methods improvements, equipment, cleaning materials and cleaning procedures; maintenance and refurnishing, room design and safety engineering. Lect. 3 hrs. per wk.

HRIM 169 Travel Destination Geography (3 cr.)
To provide the student with the geographic knowledge necessary to provide efficient, effective service to clients of a travel agency. All regions of the world will be studied to determine the following information: (1) Important physical feafures (2) Climate (3) Areas of touristic importance (4) Primary routings from Washington area (5) Primary types of tourism and (6) Documentation needed for visit. Lect. 3 hrs. per wk.

HRIM 170 Introduction to Cafeteria Management (3 cr.)
Survey of the management functions of planning, organizing, staffing, directing, and controlling and their application to public school cafeterias. The case study method will be used to analyze cafeteria management problems. Lect. 3 hrs. per wk.

HRIM 176 Cafeteria Record Keeping (3 cr.)
Cash register operations and lunch count, bank deposits, and daily record of cash and expenditures; keeping state and federal records (sl 12 and sl 13), monthly reports, perpetual inventories of equipment, and food purchasing and receiving records; personnel and payroll systems. Lect. 3 hrs. per wk.

HRIM 177 Domestic Air Travel Planning (3 cr.)
Prerequisite HRIM 150. A study of basic domestic tariff and ticketing to include interpreting and preparing domestic itineraries, applying the domestic airline tariff, interpreting rules for fare construction, ticket preparation and issuance, procedures for credit sales, and explanation and use of ticket refund, exchange and reissue procedures. Lect. 3 hrs. per wk.

HRIM 178 International Air Travel Planning (3 cr.)
Prerequisite HRIM 177. A study of basic international tariff and ticketing to include use of the worldwide O.A.G., the mileage system, normal, excursion and special fares, I.A.T.A. ticketing procedures, and interpreting the rules for calculating F.C.U.'s, add-ons, surcharges, and other government taxes. Lect. 3 hrs. per wk.

HRIM 179 Principles of Group Travel Planning (3 cr.)
Introduces the advanced travel student to those procedures and practices commonly used in the travel industry to plan travel programs for various sized groups. Studies how to set up a system and organization within a travel agency to handle group business. Lect. 3 hrs. per wk.

HRIM 184–185 Hotel-Restaurant Organization and Management I–II (3 cr.) (3 cr.)
The nature and scope of departmental functions in the hospitality industry with emphasis on operation practices and problems. Lect. 3 hrs. per wk.

HRIM 186 Equipment Layout-Design (3 cr.)
Design, layout and specification requirements of food service equipment. Work measurement studies applied to quantity food production and its interrelationship to manpower and equipment requirements. Lect. 3 hrs. per wk.

HRIM 188 Marketing of Hospitality Services (3 cr.)
Principles and practices of marketing the services of the Hotel & Restaurant Industry. Consideration of the marketing concept; methods leading to customer satisfaction with attention to internal and external stimulation of sales. Lect. 3 hrs. per wk.

HRIM 189 Marketing and Sales Management for Travel Industry (3 cr.)
Applies marketing sales promotions and advertising theories and techniques to the sales problems of retail travel agencies. Emphasis is placed on the identification of new markets and methods suggested for reaching and selling these markets. Cases are drawn from tourist motivational organizations, such as travel agencies, tour companies, travel wholesalers, transport companies, travel publications, and governmental promotional organizations. Lect. 3 hrs. per wk.

HRIM 190 Coordinated Internship (1–5 cr.)
(See General Usage Courses Section)

HRIM 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

HRIM 226 Menu Planning and Food Merchandising (3 cr.)
Covers menu cycles, nutritional needs, geographical acceptance, costs, prices, holiday menus, and special occasions (birthdays, weddings). How to prepare display, and "sell" food to take the food out of the mediocre into the realm of artistry. Practice in menu planning, forecasting, and presentation. A look at the menu structure and how it communicates the ethnic menu. The relationship between menu planning and personnel. How to project your food so customer is satisfied from standpoint of total eating experience. Lect. 3 hrs. per wk.

HRIM 227 Advanced Foods (3 cr.)
Prerequisite HRIM 126. Experimental techniques and procedures applied to standard recipe development, testing procedures and preparation techniques used in a commercial operation. Emphasis will be on sensory quality evaluation to determine general palatability and customer acceptance. In addition, modification of convenience food products, redi-food systems, and microwave techniques will be presented in the laboratory. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

HRIM 236 Sanitation (3 cr.)
Prerequisite high school general science, biology, or chemistry. The moral and legal responsibilities involved in assuring sanitary conditions in the food service establishment. Emphasis on the causes and prevention of food poisoning. Lect. 3 hrs. per wk.

HRIM 246 Labor Cost Control (3 cr.)
Prerequisite HRIM 126. Control of payroll in the hospitality industry based on job analysis, individual and master work schedules to maximize the efficiency of the labor force in a manner consistent with the standards of quality and service established and to improve the profit potential of the operation. Lect. 3 hrs. per wk.

HRIM 264–265 Food and Beverage Cost Controls I–II **(3 cr.) (3 cr.)**
Pre-cost, pre-control methods relative to the menu, production control, purchasing, receiving, inventory control, and profit of food service system. Lect. 3 hrs. per wk. (HRIM 264 is the prerequisite to HRIM 265.)

HRIM 266 Food Purchasing **(3 cr.)**
Methods and procedures for purchasing food for hotels, restaurants and institutions; markets, federal and trade grades, governmental regulations, packaging, comparative versus price buying, yields and quality controls. Lect. 3 hrs. per wk.

HRIM 277 Personnel Management and Training for Hotel, Restaurants, and Institutions **(3 cr.)**
A course involving personnel management in the hospitality industry; a discussion of the sensitivities of management to the "human problems" of employees, the definition of goals, and the communication of enthusiasm toward these goals. Emphasis will be placed on the goal of proper training for services required in this industry. Lect. 3 hrs. per wk.

HRIM 286 Catering **(3 cr.)**
Prerequisite division permission. An applied course in banquet planning. Emphasis is placed on menu planning, purchasing, preparation, service details, sanitation, analysis and management. Students fill typical employee/supervisory positions in the presentation of a series of banquets. Total 5 hrs. per wk.

HRIM 287 Hotel/Motel Front Office Procedures **(3 cr.)**
An analysis of the jobs in the hotel-motel front office and procedures involved in registering, accounting for, and checking out guests. Lect. 3 hrs. per wk.

HRIM 289 Hotel and Motel Law **(3 cr.)**
A study of the laws applicable to the ownership and operation of hotels and motels. The duties to guests, ejection of undesirables, liabilities for personal injuries, damage, arrest and detention of offenders. Lect. 3 hrs. per wk.

HRIM 290 Coordinated Internship **(1–5 cr.)**
(See General Usage Courses Section)

HRIM 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

HRIM 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

HUMAN SERVICES

HMSV 106 Introduction to Human Services **(3 cr.)**
An overview of human service as a career field. Emphasis will be on developing the generalist concept and the role of the associate degree graduate to other human service personnel. Lect. 3 hrs. per wk.

HMSV 128 Community Resources and Services **(3 cr.)**
A study of federal, state, and local agencies, their functions, limitations and interrelationships. Emphasis is placed on determining stated purpose of an agency as related to delivery of human services, and procedures for referrals, team-building, and regional cooperation. Lect. 1 hr., Lab. 5 hrs., Total 6 hrs. per wk.

HMSV 134–135 Helping Relationships I–II **(3 cr.) (3 cr.)**
Development of skills needed to function effectively in helping relationships. A major emphasis will be to increase students' self-awareness in order to enable them to relate and help others more effectively. Students will learn to identify personal skill strengths and deficits, to set goals, and to develop plans for achieving personal and program goals. Second quarter emphasis will be transfer of these skills to client needs. Helping Relationships I is prerequisite for Helping Relationships II. Lect. 3 hrs. per wk.

HMSV 144–145 Group Process I–II **(3 cr.) (3 cr.)**
A study of the stages of group development, the role of the group leader and the various kinds of groups. Students will be introduced to various models of group processes that are involved in the helping process. Second quarter students will increase their skill development through increased experiences in group facilitating and leadership. Lect. 3 hrs. per wk.

HMSV 201–202–203 Gerontology I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A study of the process of aging and its implications in relation to health, recreation, education, transportation, meaningful work or activity, and to community resources. Students will be provided opportunities for field experience and in-depth study of agencies concerned with senior adults. Emphasis will be on expanding awareness and knowledge in order to care for, and work with senior adults, both individuals and in agencies. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

HMSV 211–212–213 Alcohol/Drug Abuse Rehabilitation Programs I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A comprehensive 3-quarter course designed to provide knowledge, skills, and insight for working with drug and alcohol abuse programs. The courses will emphasize personal growth, goal and value assessment, development of "helping relationships" and counseling for individual and group needs. Students will be provided opportunities for field experience in treatment center. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

HMSV 217 Recreation Activities for Senior Adults **(3 cr.)**
Provides competency in planning, evaluating and implementing programs and activities for senior adults, with special emphasis on awareness of limitations and aspirations for senior adults as individuals, in groups, and in institutions. Lect. 1 hrs., Lab. 5 hrs., Total 6 hrs. per wk.

HMSV 290 Coordinated Internship **(1–5 cr.)**
(See General Usage Courses Section)

HMSV 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

HMSV 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

HUMANITIES

HUMN 150 Explorations in Natural Living (3 cr.)
An introductory study of the basic philosophical orientations associated with natural living. This course explores the values, rationale, means, and various expressions of the simple life. Lect. 3 hrs. per wk.

HUMN 201–202–203 Survey of Western Culture I–II–III (3 cr.) (3 cr.) (3 cr.)
A survey of the Western world which correlates the art, music and literature of the following periods: Greek and Roman, Middle Ages, Renaissance, Elizabethan, Neo-classical, Victorian and Modern. Lect. 3 hrs. per wk.

HUMN 204–205 Survey of Western Culture I–II (5 cr.)(4 cr.)
A survey of the Western world which correlates the art, music and literature of the following periods: Greek and Roman, Middle Ages, Renaissance, Elizabethan, Neo-Classical, and Modern. Lect. 5–4 hrs. per wk.

INDUSTRIAL ENGINEERING

INDT 111–112 Materials and Processes of Industry I–II (3 cr.) (3 cr.)
The objective of this course is to familiarize the student with the materials and processes of modern industry from the drafting and design point of view. The physical properties of industrial materials such as ferrous, non-ferrous metals, woods, plastics and clay products will be studied in terms of design application, processing and fabricating methods. Students will be introduced to cutting, cold forming, hot working, welding, foundry and chipless manufacturing processes which are widely employed in contemporary industry. In addition, the science of precision measurement as applied to inspection practices will be studied. Lect. 3 hrs. per wk.

INDT 116 Instrumentation for Occupational Safety and Health (3 cr.)
Prerequisites HLTH 146. A practical course in the instrumentation utilized in occupational safety and health hygiene. A study of the working principles, calibration methods and use of field instruments and sampling devices. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

INDT 127 Safety and Health Standards, Regulations and Codes (3 cr.)
The development of safety standards and sources of standards, including an examination of government regulatory codes and an appraisal of consensus, advisory, and proprietary standards. Lect. 3 hrs. per wk.

INDT 130 Safety Program Organization and Administration (3 cr.)
An introduction to the techniques of organizing and administering practical safety programs, emphasizing safety as a management function. Lect. 3 hrs. per wk.

INDT 134 Power Source Hazards Control (3 cr.)
An examination of the physical hazards of the work environment and methods of control. Application of guarding principles and techniques pertaining to mechanical, electrical, pneumatic and hydraulic processes. Lect. 3 hrs. per wk.

INDT 136 Industrial Safety Design and Layout (3 cr.)
A study of the significant aspects of sites and facility planning, process and equipment layout, transportation facilities, illumination standards and color dynamics. Lect. 3 hrs. per wk.

INDT 137 Material Handling and Storage (3 cr.)
A comprehensive coverage of material handling equipment (lift truck operation, rigging, elevators, conveyors), handling hazardous materials, safe storage, methods of preventing handling injuries, and damage to equipment and materials. Lect. 3 hrs. per wk.

INDT 170 Industrial Management (3 cr.)
A study of organizational structure: operational, financial, accounting and marketing activities, management responsibilities, planning, control, personnel, safety, labor relations, and factors essential to effective management. Lect. 3 hrs. per wk.

INDT 176 Industrial Safety (2 cr.)
Principles and practices of accident prevention, analysis of accident causes, mechanical safeguards, fire prevention, housekeeping, occupational diseases, first aid, safety organization, protection equipment and general safety principles and promotion of same. Lect. 2 hrs. per wk.

INDT 180 Introduction to Industrial Health (3 cr.)
The interrelationships of industrial medicine and industrial hygiene. A study of various occupational illnesses. Lect. 3 hrs. per wk.

INDT 190 Coordinated Internship (1–5 cr.)
(See General Usage Courses Section)

INDT 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

INDT 225 Human Factors and Safety Psychology (3 cr.)
A study of the stresses on the human system, both physiological and psychological, that contribute to the severity of industrial accidents. Lect. 3 hrs. per wk.

INDT 226 Plant Layout (3 cr.)
Arrangement and layout of physical facilities for maximum efficiency of production including stock arrangement, machines, layout of aisles, use of space and techniques for model construction. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

INDT 227 Industrial Sound and Noise (3 cr.)
A study of the physics of noise, the physiology of hearing, and the impact upon the worker of noise in the industrial environment. Includes sound level measurement, analysis, principles of audiometry, hearing protection and noise control techniques. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

INDT 236 Work Place Maintenance (3 cr.)
A study of the hazards and conditions involving floors, walkways, ramps, stairs, ladders, mechanical and personal protective equipment, the maintenance management, schedules and controls and their relationship to the prevention of accidents. Lect. 3 hrs. per wk.

INDT 237 Preventative Maintenance (3 cr.)
Various types of maintenance programs, including maintenance management, schedules and controls, and

the relationship of these operational matters to the prevention of accidents, injuries, and exposure to health hazards. Lect. 3 hrs. per wk.

INDT 246 Manufacturing Process Analysis **(3 cr.)**
Discussion and analysis of occupational safety and health based upon visits to commercial enterprises and surveying safety activities. Visits and discussions related to special industries. Lect. 3 hrs. per wk.

INDT 251 Occupational Environment I **(3 cr.)**
A study of sampling and analysis of chemical contaminants especially vapor and gases in the industrial environment. Includes sampling techniques and study of working principles and applications of field instruments and sampling devices. Lect. 3 hrs. per wk.

INDT 252 Occupational Environment II **(3 cr.)**
A study of sampling and analysis of chemical aerosals and solid particulates in the occupational environment. Includes sampling techniques and study of working principles and applications of field instruments and sampling devices. Lect. 3 hrs. per wk.

INDT 253 Occupational Environment III **(3 cr.)**
A study of measurement and analysis of the physical hazards posed by ionizing and non-ionizing radiation; heat and light. Includes methodology for evaluating industrial exposure to these hazards and study of appropriate instrumentation and of measures for protection of personnel. Lect. 3 hrs. per wk.

INDT 254 Occupational Environment Laboratory I **(1 cr.)**
Prerequisite INDT 251. Sampling and analysis of vapor and gaseous contaminants in the industrial environment. Emphasis on sampling devices and techniques and on instrumental analysis. Experiments and/or demonstrations. Lab. 3 hrs. per wk.

INDT 255 Occupational Environment Laboratory II **(1 cr.)**
Prerequisite INDT 252. Sampling and analysis of chemical aerosols and solid particulates in occupational environment. Emphasis on sampling devices and techniques and on instrumental analysis. Experiments and/or demonstrations. Lab. 3 hrs. per wk.

INDT 256 Occupational Environment Laboratory III **(1 cr.)**
Prerequisite INDT 253. Measurement and analysis of physical hazards posed by ionizing and non-ionizing radiation, heat stress and work place illumination. Includes methodology and instruments for evaluating physical hazards and illumination levels. Experiments and/or demonstrations. Lab. 3 hrs. per wk.

INDT 286 Quality Control **(3 cr.)**
Principles of inspection and quality control, with special emphasis on setting up, maintaining and interpreting control charts. Course content includes dimensional control, basic sizes, and applications of tolerances, allowances, limits, precision measurements, comparison measurements, industrial applications, optical, electrical and air limit gauges, comparator; inspection techniques, control charts, and statistics are introduced as quality control instruments. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

INDT 288 Production Planning and Control **(3 cr.)**
The preparation and analysis of production, planning based on sales forecasts, operation sheets, routing, scheduling, dispatching, follow-up, inventory control, receiving stores and shipping, control forms and reports. Lect. 3 hrs. per wk.

INTERIOR DESIGN

INDG 104 Techniques of Interior Design **(3 cr.)**
Evolution and development of an Interior Design problem. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

INDG 105 Drafting Techniques for the Interior Designer **(3 cr.)**
Introduction to designing, drafting and rendering residential and commercial floor plans and the spatial arrangement of furnishings. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

INDG 106 Isometrics and Model Construction **(3 cr.)**
Prerequisite INDG 105. Projecting floor plans into three dimensions and techniques of constructing architectural models. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

INDG 107 Perspective and Rendering **(3 cr.)**
Two and three point perspective, elevations and the execution of rendering for presentation. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

INDG 108 Color and Space Theories **(3 cr.)**
Communication through Interior Design. The psychological implications of the use of color and space with related problem solving in color arrangements as they relate to the interaction of light and space. Lectures in the history and evolution of color theory. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

INDG 109 Styles in Furniture and Interiors **(3 cr.)**
Prerequisite ARTS 111–112. Lectures and discussion of trends in furniture design and interior treatments as they parallel trends in architecture. Lect. 3 hrs. per wk.

INDG 206 Textiles, Floorcoverings, Wall and Window Treatments **(3 cr.)**
Survey of styles, techniques, problem solving and research into related manufactures and business techniques of estimating and pricing. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

INDG 207 Furniture, Lighting Equipment and Accessories **(3 cr.)**
Survey of styles in furniture, lighting, equipment and accessories, problem solving and research into related manufacturers and estimating. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

INDG 208 Advanced Drafting Technique **(3 cr.)**
Prerequisite INDG 105 or divisional approval. Advanced problems in residential and commercial blueprint drafting and interior arrangements. Lect. 1 hr., Lab. 4 hrs., Total of 5 hrs. per wk.

INDG 216 Business Procedures for Interior Designing **(3 cr.)**
Development and solving of problems in total job estimating, measuring, pricing and installation/labor techniques. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

INDG 217 Interior Design Trade Sources (3 cr.)
Comparative analysis of the major sources of supply and their products. Field trips and research with local manufacturers' showrooms. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

INDG 218 Interior Designing of Commercial Space (3 cr.)
Advanced problems in the handling of large scale interiors. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

INDG 219 Furniture Design, Construction & Upholstery (3 cr.)
Solving of practical problems in furniture fabrication. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

INDG 226 Fabric Design and Weaving (3 cr.)
Introduction to weaving and printing techniques for the Interior Designer. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

INDG 227 Fabrication & Construction of Wall & Window Treatments (3 cr.)
Methods of design and construction of wall and window treatments. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

INDG 228 Antiques (3 cr.)
Introduction to methods of evaluation, determining provenance and authenticity of antiques. Lect. 3 hrs. per wk.

INDG 229 Modern Interiors and Designers (3 cr.)
Philosophics and forms of modern architectural, interior, furniture and accessory design. Lect. 3 hrs. per wk.

INDG 236 Advanced Rendering and Presentation (3 cr.)
Prerequisite INDG 205. Continuation of rendering and presentation techniques. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

INDG 290 Coordinated Internship (1–5 cr.)
(See General Usage Courses Section)

INDG 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

LATIN

LATN 101–102–103 Elementary Latin I, II, III (3 cr.) (3 cr.) (3 cr.)
Essentials of Latin grammar and composition; introduction to the translation of Latin literature, with special selections from Caesar and other writers. Lect. 3 hrs. per wk.

LATN 104–105 Introductory Latin I–II (6 cr.) (6 cr.)
Essentials of Latin grammar and composition; introduction to the translation of Latin literature, with special selections from Caesar and other writers. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

LEGAL

LEGL 110 An Overview of the Legal Process (3 cr.)
A review of the processes of basic American law as legal decisions are made by the judicial, legislative and administrative agencies. An overview of the American judicial system, the sources of law, and the general relationship between the federal and state court system. Lect. 3 hrs. per wk.

LEGL 126 Legal Research (3 cr.)
Provides an understanding of the function of the law library and will assist in developing research skills through the use of digests, encyclopedias, reporter systems and practice manuals. Lect. 3 hrs. per wk.

LEGL 134 Domestic Relations (3 cr.)
Elements of valid marriage, grounds for divorce and annulment, separation, defenses, custody, support, alimony, tax consequences; out-of-state divorces and validity; jurisdiction and service. Review and analysis of separation and custody agreements, documents in divorce proceedings, change of name proceedings and adoptions. Lect. 3 hrs. per wk.

LEGL 136 Law Office Management (3 cr.)
Management principles and systems applicable to law firms, including record keeping, accounting, filing, work processing, time keeping, billing, administrative services, purchasing and procurement of supplies and equipment; maintaining effective relationships between legal assistants, attorneys, clients, and secretarial staff; computer applications to legal systems; effective employment and supervision of lay personnel; legal ethics related to law office management. Lect. 3 hrs. per wk.

LEGL 226 Trial Practice (3 cr.)
Includes a thorough study of the court system; federal state and local. The student will be introduced to legal drafting, and will examine the commencement and trial of cases in detail, including drafting of the various pleadings, motions, and other matters, which are ordinary components of civil action. Lect. 3 hrs. per wk.

LEGL 234 Estate Planning I (3 cr.)
An introduction to various devices used to plan estates, including wills, revocable and irrevocable trusts, joint ownership, powers of appointment, life insurance and the like. Students consider the utility of various plans, in the light of different property arrangements, family situations, and estate objectives of typical decedents. Lect. 3 hrs. per wk.

LEGL 236 Real Estate Abstracting (3 cr.)
Complete review of the aspects of abstracting titles to real estate: review and discussion of the record room; recordation of land transactions; priority of liens; dissent and distribution; descriptions of land; grantor-grantee indices; special liens on real estate assessed by localities; bankruptcy; title insurance; warranties; covenants; restrictions; dower and curtesy rights; petition suits; easements; adverse possession; and riparian rights. Lect. 3 hrs. per wk.

LEGL 240 Corporate Law (3 cr.)
The fundamental principles of corporate law including capitalization, articles of incorporation, by-laws, tax returns, reports, financial statements and minutes, officers, employment contracts and special problems. Lect. 3 hrs. per wk.

LEGL 246 Law of Income Taxation (4 cr.)
A study of the law of income taxation—state, federal, and local—including preparation of income tax returns and related materials. A survey of the various administrative and judicial tribunals, and their jurisdiction, involved in the determination of income tax controversies. Lect. 4 hrs. per wk.

LEGL 256 Legal Aspects of Real Estate (4 cr.)
The law of real property and an in-depth survey of the more common types of real estate transactions and conveyances, such as deeds, contracts, leases, and deeds of trust, drafting problems involving these various instruments; special research projects; a study of the system of recording and search of public documents. Lect. 4 hrs. per wk.

LEGL 258 Administration of Decedents (3 cr.)
The course is designed to teach students how to administer an estate efficiently. It includes instruction on substantive areas of law, as well as instruction on preparation of forms and provides samples for the efficient administration of decedents' estates. Lect. 3 hrs. per wk.

MARKETING

MKTG 100 Principles of Marketing (3 cr.)
The principles, methods, and problems involved in the distribution and marketing of goods and services. The various marketing agents: wholesaler, broker, agent, cooperative, and trade associations. Discussions of present day problems and policies connected with the distribution and sale of commodities, pricing, advertising and promotion, and buyer motivation. Lect. 3 hrs. per wk.

MKTG 109 Principles of Salesmanship (3 cr.)
The place of sales in a customer oriented marketing organization. The development of an effective sales presentation. Emphasis on sales principles, methods and standards. Study of consumer buying habits and methods. Lect. 3 hrs. per wk.

MKTG 110 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 effect the modern merchandising world. Emphasis on changing consumer characteristics which influence demand for fashion products and effect that fashion marketing activities have on the economy. Lect. 3 hrs. per wk.

MKTG 131–132–133 Traffic and Transportation I–II–III (3 cr.) (3 cr.) (3 cr.)
The requirements for traffic managers in such fields as railroading, trucking, and air travel. Each quarter is based on the Chicago College of Traffic materials which are required for licensing examination. The course outlines the development of transportation, transportation regulations, and the regulations and applications of traffic management. Lect. 3 hrs. per wk.

MKTG 136 Retail Organization & Management (3 cr.)
The organization of businesses to accomplish their goals in the most effective and efficient manner. Location, layout, internal management, policy development, methods of operation, merchandise control and protection, property maintenance, and analysis of results. Lect. 3 hrs. per wk.

MKTG 150 Principles of Insurance (3 cr.)
A course in insurance principles and practices. Includes an examination of risks and applications in the principal fields of insurance including life, accident and health, fire, liability, surety, and property. Lect. 3 hrs. per wk.

MKTG 164 Principles of Real Estate I (3 cr.)
Practical applications of real estate management principles. Includes a study of contracts, deeds, mortgages, bonds, leases, search, real property leasing and appraisal. Lect. 3 hrs. per wk.

MKTG 165 Principles of Real Estate II (3 cr.)
Prerequisite MKTG 164. Continued examination of marketing fundamentals. Emphasis on techniques required for proper selection analysis and listing of real estate properties. How to determine needed data, how to analyze forms and records for recording and presenting data. Lect. 3 hrs. per wk.

MKTG 166 Real Estate Mathematics (3 cr.)
Designed to apply fundamental mathematics principles to special real estate problems. This includes, but is not limited to, allocation of areas of land, pricing land, computation of commissions, earnings on investment, calculation of escrow funds, and closing costs. Lect. 3 hrs. per wk.

MKTG 180 Introduction to Food Marketing (3 cr.)
Study of food marketing organization, practices, and problems with emphasis on the supermarket. Topics included are: economic importance of food marketing; history and development of food retailing, role of trade groups, systems of food distribution, food industry surveys, supermarket organization and mangement, food industry issues, and the future of the food industry. Lect. 3 hrs. per wk.

MKTG 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

MKTG 209 Sales Management (3 cr.)
From the viewpoint of management, study of the organization and operation of the sales division within the business enterprise. Planning, organizing, and controlling the total sales effort, use of the case method of learning. Lect. 3 hrs. per wk.

MKTG 216 Merchandise Information (3 cr.)
A study of merchandise including durables as well as non-durables. Includes detailed analysis of construction, uses, care and related government regulations. Value and quality standards for consumer use are stressed. Emphasis placed on usefulness of product information as a merchandising tool. Lect. 3 hrs. per wk.

MKTG 217 Color, Line and Design in Retailing (3 cr.)
The vital role played by color and design in almost every aspect of the marketing of consumer goods. Emphasis on styling, packaging, advertising, and professional layouts; basic sketching for art forms, balance and color harmony with recognition of basic period architecture as applied to consumer goods. Lect. 3 hrs. per wk.

MKTG 218 Fashion Merchandising (Buying and Control) (3 cr.)
Develops an understanding of the major considerations involved with the buying and merchandising of fashion products. Emphasis is placed on the dynamics of fashion and consumer buying patterns and courses of buying information are analyzed and studied. Discusses fashion buying and inventory control in the merchandising cycle; techniques used in developing fashion buying plans; model stock, unit control and inventory systems. Merchandising selection policy and pricing for profit. Lect. 3 hrs. per wk.

MKTG 219 Fashion Sales Promotion (3 cr.)
Designed to develop an understanding of the principles and procedures of selling fashion and simulates a creative approach to the promotion of fashion merchandising. Student studies sales promotion activities and selling appeals and approaches. Includes study of fashion advertisements, displays, publicity, and other sales promotion techniques involved in the merchandising of fashion items. Lect. 3 hrs. per wk.

MKTG 225 Principles of Advertising (3 cr.)
Study of the functions, principles, and techniques of advertising, including the role of advertising in the marketing system. Lect. 3 hrs. per wk.

MKTG 226 Merchandise Buying and Control (3 cr.)
The place of buying and inventory control in the merchandising cycle; the techniques used in developing merchandise plans, model stock, unit control, inventory systems, merchandise selection policy and pricing for profits. Lect. 3 hrs. per wk.

MKTG 228 Sales Promotion and Customer Relations (3 cr.)
The scope and total activities of a sales promotion program designed to coordinate advertising, display and publicity. Effective use of the sales forces and store policies to develop favorable customer relationships. Institutional practices which develop goodwill for the store. Lect. 3 hrs. per wk.

MKTG 266 Real Estate Sales (3 cr.)
The fundamentals of sales principles as they apply to real estate. The prospect, his motives, his needs, and his abilities to buy real estate. Relations of broker and salesman, salesman and client and community responsibilities. Writing contracts, closing and settlement, and follow-up relations. Lect. 3 hrs. per wk.

MKTG 267 Real Estate Appraisal (3 cr.)
Fundamentals of real estate evaluation; methods used in determining value; application of procedures and techniques by utilizing actual appraisals. Includes the opportunities available in the appraisal field of real estate activity. Lect. 3 hrs. per wk.

MKTG 268 Property Management (3 cr.)
The field of property management; professional aspects of real estate brokerage, properties, neighborhood analysis, tenants and qualifications, aspects of maintenance and repair. Lect. 3 hrs. per wk.

MKTG 269 Real Estate Finance (3 cr.)
Principles and practices of financing real estate sales and properties, analysis of various types of mortgage payments and contracts, financing homes and industrial properties and buildings; loan application, relations between correspondent and investor, construction loans. Lect. 3 hrs. per wk.

MKTG 276 Land Planning and Use (3 cr.)
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. Lect. 3 hrs. per wk.

MKTG 277 Legal Aspects of Real Estate (3 cr.)
A study of Virginia real estate law including rights incident to property ownership and management, agency contract and application to real estate transfer, conveyancing, probate proceedings, trust transactions. Lect. 3 hrs. per wk.

MKTG 278 Real Estate Economics (3 cr.)
Nature and classification of land economics, the development of property, construction and subdivision, economic values and real estate evaluations, real estate cycles and business fluctuations, residential market trends, rural property and special purpose property trends. Lect. 3 hrs. per wk.

MKTG 279 Real Estate Investments (3 cr.)
An examination of real estate investments with emphasis on tax shelters, limited partnerships, syndications, exchanges and modern techniques or mortgage equity requirements and depreciation guidelines. Lect. 3 hrs. per wk.

MKTG 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

MKTG 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

MKTG 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

MATHEMATICS

MATH 01 Developmental Mathematics (1–5 cr.)
A developmental course which bridges the gap between a weak mathematical foundation and the knowledge necessary for the study of mathematical courses in technical and professional programs. Arithmetic, algebra, geometry and trigonometry will be covered. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

MATH 05 Basic Arithmetic (1–5 cr.)
A developmental course in review of arithmetical principles and computations, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

MATH 06–07 Basic Algebra I–II (1–5 cr.)
A developmental course in review of algebra, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

MATH 08 Basic Geometry (1–5 cr.)
A developmental course in review of geometry, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

MATH 09 Basic Trigonometry (1–5 cr.)
A developmental course in review of trigonometry, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hrs.

MATH 99 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

MATH 101–102–103 Fundamentals of Mathematics I–II–III (3 cr.) (3 cr.) (3 cr.)
A study of concepts of numbers; fundamental operations with numbers, formulas and equations, graphical analysis, binary numbers, Boolean and Matrix algebra, linear programming, elementary concepts of statistics. Lect. 3 hrs. per wk.

MATH 118–119 Introduction to Technical Mathematics I–II (5 cr.) (5 cr.)
Applications of arithmetic, algebra, geometry and trigonometry to technical problems. Lect. 5 hrs. per wk.

MATH 121–122–123 Engineering Technical Mathematics I–II–III (5 cr.) (5 cr.)
A course in algebra, geometry, trigonometry, and introductory calculus stressing technical applications. Prerequisite: Three units of high school mathematics including two units of algebra and one unit of geometry or MATH 119 or equivalent and a satisfactory score on a proficiency test. Topics include functions, systems of linear equations, right triangle trigonometry, logarithms, exponentials, trigonometric functions, conic sections, vectors, complex numbers, differentiation, and integration. Credit cannot be obtained for both this course and MATH 161–162–163. Lect. 5 hrs. per wk.

MATH 141–142–143 Introductory Mathematical Analysis I–II–III (Calculus with Analytic Geometry) (5 cr.) (5 cr.) (5 cr.)
A unified course in analytic geometry and calculus. Prerequisite: Four units of high school mathematics including two units of algebra, one of geometry, one half unit of trigonometry or equivalent and satisfactory score on a proficiency test. Students not adequately prepared for MATH 141 should complete MATH 161–162 prior to enrolling in MATH 141. Topics include functions, limits, derivatives, differentials, definite and indefinite integrals, infinite series, and applications. Lect. 5 hrs. per wk.

MATH 161–162 College Mathematics I–II (3 cr.) (3 cr.)
A course in precalculus mathematics. MATH 161–162 with MATH 163 completes a unified sequence in algebra, trigonometry, analytic geometry, and an introduction to calculus. Prerequisite: Three units of high school mathematics including two units of algebra and one unit of geometry or equivalent and a satisfactory score on a proficiency test. Topics include college algebra, functions, sequences and series, analytic geometry, logarithms, exponentials, matrices, trigonometry, and applications. Lect. 3 hrs. per wk.

MATH 163 College Mathematics III (3 cr.)
MATH 163 with MATH 161–162 completes a unified sequence in algebra, trigonometry, analytic geometry, and an introduction to calculus. MATH 163 with MATH 261–262 provides a one year calculus sequence designed for students with majors other than mathematics, physical sciences, or engineering. Prerequisite: MATH 162 or four units of high school mathematics including two units of algebra, one unit of geometry, and one half unit of trigonometry or equivalent. Topics include limits, continuity, differentiation, and applications. Lect. 3 hrs. per wk.

MATH 164–165 College Mathematics I–II (5 cr.) (4 cr.)
A two quarter version of MATH 161–162–163. Prerequisite and content as for MATH 161–162–163. Lect. 5–4 hrs. per wk.

MATH 181–182–183 General College Mathematics I–II–III (3 cr.) (3 cr.) (3 cr.)
Intended for students with majors other than mathematics, science or engineering. Prerequisite Algebra I and either Algebra II or Geometry and a satisfactory score on appropriate mathematics proficiency examinations. The first two quarters will include sets, the logic of algebra, the real numbers system, algebraic and transcendental functions, relations and graphs. The third quarter will include permutations, combination, probability, elementary statistics, and trigonometry. Lect. 3 hrs. per wk.

MATH 191–192–193 Finite Mathematics I–II–III (3 cr.) (3 cr.) (3 cr.)
This course is intended for students with majors other than mathematics, physical sciences, or engineering. Prerequisite: Three units of high school mathematics including two units of algebra and one unit of geometry or equivalent and a satisfactory score on a proficiency test. Topics include sets, logic, probability, statistics, matrices, markov chains, linear programming, game theory, and mathematical modeling. Lect. 3 hrs. per wk.

MATH 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

MATH 199 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

MATH 241–242–243 Advanced Mathematical Analysis I–II–III (Multivariable Calculus with Analytic Geometry—Differential Equations) (4 cr.) (4 cr.) (4 cr.)
Prerequisite: MATH 143 or equivalent. The first two quarters comprise an integrated program of study in multivariable calculus and linear algebra. Topics include matrices, determinants, vector spaces, eigenvalues; 3 dimensional analytic geometry, partial differentiation, multiple integration and applications. The third quarter consists of a program of study in differential equations. Topics include first order differential equations, linear differential equations, systems of differential equations, and applications. 4 class hrs. per wk.

MATH 261–262–263 Advanced College Mathematics I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite: MATH 163 or equivalent. A continuation of the calculus course begun in MATH 163 for students with majors other than mathematics, physical sciences, or engineering. Topics in the first two quarters include differentiation and integration of algebraic, exponential, logrithmic, and trigonometric functions, calculus of three dimensions, and applications. The third quarter is an introduction to differential equations, including linear and first and second order differential equations and applications. Lect. 3 hrs. per wk.

MATH 274 Applied Mathematics (4 cr.)
Prerequisite or corequisite: MATH 243 or division approval. Topics include power series, Laplace transform, partial differential equations, Legendre polynomials, and Fourier series. Lect. 4 hrs. per wk.

MATH 281–282–283 Statistics I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite MATH 162 or MATH 183 or consent of division. Introduction to the fundamental ideas of statistics, including a brief treatment of elementary probabili-

ty, descriptive statistics, distributions, problems of sampling, normal distributions, measures of central tendency, sampling variances, confidence intervals, estimation, testing of hypotheses, regression, correlation, and analysis of variance. Lect. 3 hrs. per wk.

MATH 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

MATH 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

MECHANICAL ENGINEERING

MECH 116–117 Numerical Control Programming I–II **(4 cr.) (4 cr.)**
A study dealing with the newer concepts of work handling and automatic machining processes. New techniques in metal forming and machine processes; analysis of electrosonic machining, electrolytic metal removal, numerical controls and simplified building block numerical control system. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MECH 118 Tool Design **(3 cr.)**
A basic course in design and layout of cutting tool, stamping tools, punches, gauges, dies, blanking and forming tools, notching tools, progressive dies, embossing dies, instruction in use and application of these tools. Lect. 1 hr., Lab. 5 hrs., Total 6 hrs. per wk.

MECH 119 Jig and Fixture Design **(3 cr.)**
Fundamentals of the construction and design of various types of jigs and fixtures including milling, reaming, tapping, and drilling fixtures. Preparation of complete working drawings from layouts, for interchangeable manufacture: computation of fits, limit dimensions, tolerances, tool drawing principles and methods, fundamentals of cutting tools and gauges. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

MECH 131 Machine Laboratory I **(2 cr.)**
Fundamental machine operations of drilling, reaming, turning between centers, chuck work, thread chasing shaper, layout, finishing, cutting speeds, tool care, tool grinding, surface grinder, milling machine operations and tools. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

MECH 132 Machine Laboratory II **(2 cr.)**
A continuation of Machine Lab I with greater emphasis on practical and industrial applications and setup will be included: inspection tools, gauges, tapers, gear cutting, square threads and fits will also be included. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

MECH 133 Machine Laboratory III **(2 cr.)**
Continued study in which the student will combine the knowledge and skills of the machining, tool, jig and machine design courses to build a simple machine and make the necessary tools for fabrication. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

MECH 141 Materials Laboratory I **(3 cr.)**
Metallurgy, heat treating, tempering, hardening, statics and welding. Testing materials and analysis of effects of industrial processes on materials with emphasis on machine parts. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

MECH 142 Materials Laboratory II **(3 cr.)**
Prerequisite MECH 141. Dynamics including treatment of force, moments, and vectors with emphasis on machine parts. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

MECH 156 Mechanisms **(2 cr.)**
The purpose and actions of cams, gear trains, levers, and other mechanical devices used to transmit control. A study of motions of linkages, velocities and acceleration of points within a link mechanism; layout method for designing cams and gear train. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

MECH 187 Introduction to Instrumentation **(4 cr.)**
Broad introduction to use of industrial electromechanical equipment. Provides an understanding of the methods, techniques, and skills required for installation, services and operation of a variety of industrial control systems. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MECH 197 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

MECH 198 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

MECH 237–238 Machine Design I–II **(4 cr.) (4 cr.)**
The analytical design of bearings, clutches, coupling, brakes, springs, gearing systems, and power shafting. Emphasis on methods of constructing machine parts and specifications of materials and manufacturing processes. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MECH 246 Metallurgy I **(4 cr.)**
Prerequisite INDT 112. Fundamentals of metallurgy, grain size, effect on carbon content, and harness testing devices. Different alloys will be tested to determine the effect of heat treatment. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MECH 247 Metallurgy II **(4 cr.)**
Prerequisite MECH 246. The fundamentals of physical metallurgy, of ferrous and nonferrous alloys, including crystal structure, phase diagrams, coiling curves, solid solutions, eutectic diagrams, grain characteristics, and the application of these to heat treating alloy metals. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MECH 264 Thermodynamics I **(4 cr.)**
Prerequisite MATH 122 or equivalent. Characteristics of gases: applied study of steam cycles and combustion processes. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MECH 265 Thermodynamics II **(4 cr.)**
Prerequisite MECH 264. Advanced thermodynamics with emphasis on applications relating to internal combustion engines and gas turbines. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MECH 286 Precision Measurements **(3 cr.)**
A study of the various precision measuring instruments and their uses in modern industry. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

MECH 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

MECH 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

MEDICAL LABORATORY

MDLB 100 Introduction to Medical Laboratory Technology (3 cr.)
Designed to orient the student to the medical laboratory by introducing the basic principles, techniques and vocabulary applicable to all phases of medical laboratory technology. It is principally a laboratory practicum taught in the hospital laboratories and includes venipuncture, specimen preparation, laboratory safety, laboratory glassware, laboratory and hospital organization and professional relationships. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

MDLB 116 Introduction to the Clinical Laboratory (4 cr.)
Prerequisite MDLB 100. Introduction to the techniques and methods of venipuncture and urinalysis. Students will spend 6 hours a week in the clinical labs performing venipuncture and urinalysis techniques under the supervision of the lab staff. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

MDLB 118 Introduction to Diagnostic Microbiology (3 cr.)
Prerequisite BIOL 268. Introduction to the procedures performed in the medical microbiology lab for the purpose of preparing students for clinical internships. Emphasis on specimen preparation and pre-identification techniques. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

MDLB 126 Principles of Hematology (4 cr.)
Prerequisite MDLB 100 or equivalent. The theory underlying procedures performed in the hematology laboratory and the relationship between these procedures and the diagnosis of disease. Laboratory instruction will include methods of examination including complete blood counts, platelet counts, sedimentation rates, miscellaneous hematology tests and basic coagulation. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

MDLB 190 Coordinated Practice (1–5 cr.)
(See General Usage Courses Section)

MDLB 225 Clinical Hematology II (7 cr.)
Prerequisite MDLB 124. Advanced course in the study of blood. Includes coagulation studies, blood formation, abnormalities, and changes seen in various diseases. Lect. 3 hrs., Lab. 12 hrs., Total 15 hrs. per wk.

MDLB 230 Blood Banking (5 cr.)
A fundamental course in blood grouping and typing, compatibility testing, antibody screening, component preparation, donor selection, and transfusion reactions and investigation. Included is a student laboratory and, after proficiency here, a supervised clinical experience in hospital medical laboratories. Lect. 3 hrs., Lab. 6 hrs., Total 9 hrs. per wk.

MDLB 259 Diagnostic Microbiology (4 cr.)
Prerequisite BIOL 176 or equivalent. Principles of medical microbiology, including theories of handling and identification of pathogenic species of bacteria. Introduction to medical parasitology, mycology, and virology including identification of those species infecting humans. Lect. 4 hrs. per wk.

MDLB 264–265 Clinical Chemistry I–II (5 cr.) (8 cr.)
Prerequisite CHEM 103. Instruction and practice in methods of performing biochemical analysis on biological fluids and clinical specimens. Students are supervised in developing good laboratory techniques and in recognizing technical problems. Lect. 4–3 hrs., Lab. 3–15 hrs., Total 7–18 hrs. per wk.

MDLB 277 Clinical Microbiology (6 cr.)
Prerequisite BIOL 176 or equivalent. Techniques, methods and procedures used in Clinical microbiology, including bacteriology, parasitology and mycology. Emphasis on aseptic technique and identification of microorganisms affecting humans. Lab. 18 hrs. per wk.

MDLB 278 Clinical Laboratory Instrumentation (2 cr.)
Principles, operation and first echelon maintenance of basic laboratory instruments including standardization and troubleshooting. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

MDLB 287 Clinical Blood Banking and Serology (7 cr.)
Prerequisite MDLB 250. Techniques, methods and procedures used in Clinical Blood Banking and Serology, including blood grouping, compatibility testing and diagnostic serology procedures. Lect. 2 hrs., Lab. 15 hrs., Total 17 hrs. per wk.

MDLB 290 Coordinated Practice (1–5 cr.)
(See General Usage Courses Section)

MDLB 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

MEDICAL RECORDS

MDRS 100 Medical Report Transcription (3 cr.)
Prerequisites HLTH 120 or HLTH 124 and ability to type 40 w.p.m. This course is designed to give the student 1) a working knowledge of equipment used in the transcription of medical reports, 2) basic skills needed to transcribe medical reports and 3) a working knowledge of common medical references. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

MDRS 111 Medical Record Science I (4 cr.)
This course is designed to give the medical record technology student an introduction to the history of medicine and historical development of the health care field with emphasis on the organizational structure of health institutions; federal, state and local governmental agencies; and allied health associations. An introduction to the medical record department and an overview of the medical record professional association are included. In addition, the student will begin an indepth study of data sources for patient information systems and will develop skills in analyzing records for completeness and accuracy. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MDRS 112 Medical Record Science II (4 cr.)
Prerequisite MDRS 111. This course is designed to give the student an introduction to the numbering, filing, retention and storage systems involving health records. An emphasis is placed on developing supervisory skills and the use of data processing procedures in these areas. Also, the health record is evaluated as a legal document with special emphasis placed on the policies and procedures concerning the release of medical information. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MDRS 130 Introduction to Health Record Applications **(1 cr.)**
Prerequisites MDRS 111 and HLTH 124. The application of microcomputer technology to health record assessment techniques. In a simulated clinical environment, the student assesses patients' health records and performs video terminal operations. Lab. 3 hrs. per wk.

MDRS 190 Coordinated Practice **(1–5 cr.)**
(See General Usage Courses Section)(see General Usage Courses section)

MDRS 213 Medical Record Science III **(4 cr.)**
Prerequisite MDRS 112. This course is designed to give the student exposure to the various disease and operation classification systems and nomenclatures. Emphasis is placed on coding diagnoses and procedures using the ICD–9CM classification. The course also includes skill development in indexing diagnostic and procedural codes as well as retrieving medical information for research purposes. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MDRS 214 Medical Record Science IV **(4 cr.)**
Prerequisite MDRS 213. This course is designed to give the student an introduction to basic statistical principles as applied in the health care setting. Special emphasis is placed on developing analytical skills for patient care evaluation and utilization review activities. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

MDRS 221 Clinical Practice I **(3 cr.)**
Prerequisite MDRS 112. Supervised practice in a local hospital health record service. The student will perform functions in the admitting, patient index, filing, release of information and health record assessment areas. Lab. 9 hrs. per wk.

MDRS 222 Clinical Practice II **(1 cr.)**
Prerequisite MDRS 213. Supervised practice in the following health record functions: (1) cancer registries, (2) personnel supervision, (3) vital records, and (4) PSRO functions. Lab. 3 hrs. per wk.

MDRS 223 Clinical Practice III **(1 cr.)**
Prerequisite MDRS 215. Supervised practice in a hospital quality assurance program and exposure to health record functions in long-term care, mental health and ambulatory settings. Lab. 3 hrs. per wk.

MDRS 231 Advanced Health Record Applications I **(3 cr.)**
Prerequisite MDRS 100. The application of word processing techniques in preparing health records and reports. Major emphasis is placed upon the use of a text editor in preparing medical reports in a simulated clinical environment. Lab. 9 hrs. per wk.

MDRS 232 Advanced Health Record Applications II **(3 cr.)**
Prerequisite MDRS 213. The application of microcomputer technology to the collection and use of health care data. In a simulated clinical environment, the student reviews, codes and abstracts pertinent data from patients' health records and performs videoterminal operations. Lab. 9 hrs. per wk.

MDRS 233 Advanced Health Record Applications III **(3 cr.)**
Prerequisite MDRS 215. The application of microcomputer technology to health care statistical computations. The collection and use of statistics for health research, registries, quality assurance and health care institutions and agencies is emphasized. In a simulated clinical environment, and using computer logic functions, the student completes a variety of problem-solving projects. Lab. 9 hrs. per wk.

MDRS 290 Coordinated Practice **(1–5 cr.)**
(See General Usage Courses Section)

MDRS 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

MENTAL HEALTH

MENT 104–105 Introduction to Mental Health I–II **(3 cr.) (3 cr.)**
An examination of the concepts of mental health and mental illness. A study of the basic factors involved in any behavior and the quantitative relationship of mental health to mental illness. Laboratory includes observation and practice in various helping agencies. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

MENT 110 Introduction to Abnormal Psychology **(3 cr.)**
An introductory study of the symptoms, causes and treatment of mental deficiency, neurosis, psychosis and character disorders, with specific relationship to the work of the mental health technologist. Lect. 3 hrs. per wk.

MENT 116 Activities Therapies **(3 cr.)**
Prerequisite MENT 104. The use of recreation, art crafts and music as therapeutic tools with the emotionally disturbed and mentally retarded. Planning social programs and special events for the needs of the individual and consistent with his overall treatment plan and/or social goals, current laws affecting activities, use of volunteers and use and care for audio-visual media. Laboratory will include participation in games, crafts, and other activities that could be used with various age groups and persons presenting particular problems. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

MENT 221–222–223 Mental Health I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Principles and methods of interviewing, observing, recording, summarizing, and communicating human reactions (including both verbal and non-verbal communication) and the underlying rationale for various methods. Includes a study of psycho-therapy, group skills (group dynamics, role playing, leadership of group activities, other teaching skills), behavioral modification and related therapies, use of milieu, family therapies, hospital treatment, drug therapies, community resources, mental health professions, coordination of treatment program and participation in development of treatment programs. Special emphasis is placed on therapeutic use of every day experiences in development of therapeutic relationships. Lect. 3 hrs. per wk.

MENT 230 Sociology of Mental Health **(3 cr.)**
The study of mental disorders as social phenomena. Emphasis on the social personality and those social influences that disrupt or thwart the individual's activities and relationships and contribute to instability and mental disorders. Social definitions of mental illness

and deviant behaviors, the social aspects of preventing mental disorders, of rehabilitating disordered persons, and of treating and caring for the mentally ill. Lect. 3 hrs. per wk.

MILITARY SCIENCES

MSCI 101 Military Science I **(1 cr.)**
An introduction to military science, history, organization and mission of the Army ROTC Program. Introduction to equipment, branches, rank and commissioning alternatives. Training includes drill and ceremonies, rifle marksmanship, introduction to the infantry squad and field training. Field training exercise (FTX). Lect. 1 hr., Lab. 1 hr., Total 2 hrs. per wk.

MSCI 102 Military Science II **(2 cr.)**
The U.S. defense establishment and national security. Considers the defense establishment as an instrument of national power. Examines its history, the roles of strategy, deterrence, arms control, military alliances and ongoing negotiations. Lect. 2 hrs. per wk.

MSCI 103 Military Science III **(1 cr.)**
Fundamentals of topographic map reading; principles and techniques of first aid. Field training exercise (FTX). Lect. 1 hr., Lab. 1 hr., Total 2 hrs. per wk.

MSCI 201 Military Science IV (American Military History) **(2 cr.)**
Basic introduction to American military history. Principles of war, strategy, tactics and the impact of technology on these factors. Development of U.S. military policy and forces from the Revolutionary War through 1860. Field training exercise (FTX). Lecture 2 hrs., Lab. 1 hr., Total 3 hrs. per wk.

MSCI 202 Military Science V (American Military History) **(2 cr.)**
Continuation of MSCI 201, American military history from the Civil War to the present. Lecture 2 hrs. per wk.

MSCI 203 Military Science VI (Tactics) **(2 cr.)**
Organization and mission of the rifle squad; combat orders; advanced land navigation; leadership fundamentals. Field training exercise (FTX). Lecture 2 hrs., Lab 1 hr., Total 3 hrs. per wk.

MUSIC

MUSC 08 Fundamentals of Music **(3 cr.)**
Introduction to music theory designed to teach the beginner to read, write and understand the symbols of music notation. The approach is equally suited to those with no prior training in music as well as those who have learned to sing or play without training in fundamentals. A creative approach in music reading and listening to develop performance skills and proficiency in the language of music as well as in the assimilation of factual information. Students may re-register for the course in subsequent quarters as necessary until the course objectives are completed. Lect. 3 hrs. per wk.

MUSC 104-105 History of Instruments I-II **(3 cr.)(3 cr.)**
The study of the evolution and construction of transitional instruments and how various components function in relation to sound production. Also, problems in sound production when using different and new materials in the construction and repair of modern instruments. Lect. 3 hrs. per wk.

MUSC 109 Music for Children **(3 cr.)**
A study of the selection and use of music for children's activities. Music for singing, rhythm, and movements. Use of the keyboard and autoharp. Emphasis on pre-school through elementary grades. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

MUSC 110 Choral Organization **(3 cr.)**
The development of organizational skills necessary for directing a variety of choral ensembles and organizing choral groups, conducting rehearsals and building choral programs. Lect. 3 hrs. per wk.

MUSC 111-112-113 Music Theory I-II-III **(4 cr.) (4 cr.) (4 cr.)**
Elements of musical notation. Structure of scales, intervals, triads and chords. Development of ability to sing at sight and write from dictation melodies in all keys, clefs, and meters. Beginning analysis of the Bach chorale style and construction of cadential phrases in that style. Similar experience at the keyboard. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

MUSC 114–115 Instrument Repair I–II **(3 cr.)**
Introduction to the principles of instrument maintenance and repair using modern diagnostic methods. The course includes theoretical and laboratory experiments designed to explain and illustrate the basics of modern electronic and mechanical diagnostic and remedial techniques. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

MUSC 116 Comprehensive Musicianship **(4 cr.)**
Elements of musical notation including groupings and divisions of beats, scales, intervals, clefs, and performance indications. The course will also cover fundamentals of conducting, beat patterns, cues, upbeats, and fermatas. Transposing instruments will also be covered as will some problems common to both instrumental and vocal programs. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

MUSC 117–118 Choral Directing I–II **(3 cr.) (3 cr.)**
Prerequisite: singing experience in high school, community chorus, or MUSC 138. Choral Directing I will deal with conducting techniques: beat patterns, score heading, functional use of each hand, discussion and study of musical terminology, tempos, dynamics and their relationship to each other. Students will use the class as a laboratory group to conduct and gain experience. Choral Directing II will deal with rehearsal technique, sub-division of conducting patterns, rehearsal routine and selection of music. Students will continue conducting class to gain experience. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

MUSC 120 Hymnology **(3 cr.)**
A study of the development of hymns throughout different historical periods. Includes analysis and performance of different hymn styles for a variety of religous services throughout the liturgical year. Current trends in singing hymns and various accompanimental styles. Lect. 3 hrs. per wk.

MUSC 121-122-123 Music Appreciation I-II-III **(3 cr.)(3 cr.)(3 cr.)**
This course aims to increase the variety and depth of the student's interest in music and related cultural ac-

tivities. Emphasis is upon the relation of music as an art to our daily lives and to society, to promote an understanding of the spirit of the art which will lead to the emotional and aesthetic development of the individual, and enable him to enjoy intelligent listening. Lect. 3 hrs. per wk.

MUSC 124–125 American Music I–II (3 cr.) (3 cr.)
The development of music in America from the Pilgrims to the present, in the light of the philosophical, political, geographical, and sociological developments of the country. Lect. 3 hrs. per wk.

MUSC 128 Folk Music (3 cr.)
An introductory survey study of traditional, Appalachian, and contemporary folk songs, instruments, and performers in American culture. No previous knowledge of music is required. Lect. 3 hrs. per wk.

MUSC 131-132-133 Class Voice
I-II-III (2 cr.)(2 cr.)(2 cr.)
An introduction to the many aspects of a singer from the physical act through the aesthetic experience. The course is designed for the average singer who desires vocal improvement and the voice major as an addition to and extension of skills and knowledge necessary for the artistic development. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

MUSC 134–135 Recording Systems
Services I–II (3 cr.) (3 cr.)
Introduction to the principles of recording systems and recording systems design services. The course is designed to provide students with theoretical understanding and practical experience for developing recording skills in studio and on-location situations. Includes a study of sound studio design and construction, production costs in recording, and distribution. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

MUSC 136 Principles of Tuning (3 cr.)
Provides students with an understanding of the theoretical aspects and principles of piano tuning. Includes theory and laboratory experiments designed to explain and illustrate the principles of tuning pianos as well as the instruments of the orchestra and band. Lect. 3 hrs., Lab. 1 hr., Total 4 hrs. per wk.

MUSC 137 Applied Music-Voice (1–2 cr.)
Singing, proper breath control, diction and development of tone. Standard vocal repertoire will be studied. Departmental permission required. One-two half-hour lessons per week, 4–8 hours practice (laboratory) required. (Estimated cost $8.00 per half-hour.)

MUSC 138 Chorus (1 cr.)
Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Lab. 3 hrs. per wk.

MUSC 139 Small Vocal Ensemble (1 cr.)
Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Lab. 3 hrs. per wk.

MUSC 141-142-143 Class Piano
I-II-III (2 cr.)(2 cr.)(2 cr.)
Instruction in keyboard fundamentals, standard repertoire designed to give students the necessary proficiency to meet the basic keyboard requirement of a non-piano major in music, and for the student who desires improvement in keyboard technique. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

MUSC 146 Liturgical Music (3 cr.)
Familiarizes the student with the standard repertoire of vocal, instrumental and organ literature used in a variety of liturgical services. The study and performances of such repertoire from different historical periods. Lect. 3 hrs. per wk.

MUSC 147 Applied Music-Keyboard (1–2 cr.)
Instruction in piano, organ or harpsichord. Standard repertoire will be studied. Departmental permission required. One-two half-hour sessions per week. 4–8 hours practice laboratory) required. (Estimated cost $8.00 per half-hour.)

MUSC 148 Orchestra (1 cr.)
Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Lab. 3 hrs. per wk.

MUSC 149 Band (1 cr.)
Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Lab. 3 hrs. per wk.

MUSC 151-152-153 Class Woodwinds
I-II-III (2 cr.)(2 cr.)(2 cr.)
An introduction to the fundamentals of woodwind instruments. The course is designed to give the student necessary proficiency to meet the basic requirements for playing in Woodwind Ensemble, Orchestra, or Band Organization. Designed primarily for the non-music major and for the student who desires improvement in technique. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

MUSC 157 Applied Music Woodwinds (1–2 cr.)
Instruction in fundamentals of the woodwind instruments. Standard repertoire will be studied. Departmental permission required. One-two half-hour lessons per week. 4–8 hours practice (laboratory) required. (Estimated cost $8.00 per half-hour.)

MUSC 158 Improvisational Techniques (3 cr.)
Introduction to the principles of improvisation using harmonic structures and progressions from the Period of Common Practice. Includes listening and performing music of the standard jazz and popular repertoire. Students develop performance skills utilizing specific improvisational devices employed in different historical periods. Lect. 3 hrs., Lab. 1 hr., Total 4 hrs. per wk.

MUSC 159 Woodwind Ensemble (1 cr.)
Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Lab. 3 hrs. per wk.

MUSC 161-162-163 Class Strings
I-II-III (2 cr.)(2 cr.)(2 cr.)
An introduction to the fundamentals of string instruments. The course is designed to give the student necessary proficiency to meet the basic requirements for playing in String Ensemble and Orchestra. Designed primarily for the non-music major and for the student who desires improvement in technique. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

MUSC 167 Applied Music-Strings (1–2 cr.)
Instruction in fundamentals of the string instruments. Standard repertoire will be studied. Departmental permission required. One-two half-hour lessons per week, 4–8 hours practice (laboratory) required. (Estimated cost $8.00 per half-hour.)

MUSC 168 Guitar Theory and Practice (3 cr.)
A study of the fundamentals of sound production, music theory, and harmony as it applies to guitar. Building proficiency in both the techniques of playing the guitar and in the application of music fundamentals to these techniques. Exposure to different types of guitars and related instruments. Music as entertainment and as a communications skill. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

MUSC 169 String Ensemble (1 cr.)
Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Lab. 3 hrs. per wk.

MUSC 171-172-173 Class Brass I-II-III (2 cr.)(2 cr.)(2 cr.)
An introduction to the fundamentals of brass instruments. The course is designed to give the student necessary proficiency to meet the basic requirements for playing in Brass Ensemble, Orchestra and Band Organization. Designed primarily for the non-music major and for the student who desires improvement in technique. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

MUSC 177 Applied Music-Brass (1–2 cr.)
Instruction in fundamentals of the brass instruments. Standard repertoire will be studied. Departmental permission required. One-two half-hour lessons per week. 4–8 hours practice (laboratory) required. (Estimated cost $8.00 per half-hour.)

MUSC 179 Brass Ensemble (1 cr.)
Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Lab. 3 hrs. per wk.

MUSC 181-182-183 Class Percussion I-II-III (2 cr.)(2 cr.)(2 cr.)
An introduction to the fundamentals of percussion instruments. The course is designed to give the student necessary proficiency to meet the basic requirements for playing in Percussion Ensemble, Orchestra, and Band Organization. Designed primarily for the non-music major and for the student who desires improvement in technique. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

MUSC 187 Applied Music-Percussion (1–2 cr.)
Instruction in fundamentals of percussion instruments. Standard repertoire will be studied. Departmental permission required. One-two half-hour lessons per week. 4–8 hours practice (laboratory) required. (Estimated cost $8.00 per half-hour.)

MUSC 189 Percussion Ensemble (1 cr.)
Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Lab. 3 hrs. per wk.

MUSC 198 Seminar and Project (1–5 cr.)
Prerequisite permission of instructor. (see General Usage Courses section)

MUSC 199 Supervised Study (1–5 cr.)
Preparation of concert material for recital, supervised by the instructor. (see General Usage Courses section)

MUSC 201 Vocal Methods and Materials (3 cr.)
A study of the problems, materials and techniques of the teaching of voice. Lect. 3 hrs. per wk.

MUSC 203 Keyboard Methods and Materials (3 cr.)
A study of problems, materials and techniques in keyboard teaching. Lect. 3 hrs. per wk.

MUSC 206–207–208 Music for the Classroom Teacher I–II–III (3 cr.) (3 cr.) (3 cr.)
Designed for pre-education majors. Includes basic elements of music and instruction in autoharp, rhythm instruments, folk music, and other classroom songs. Lect. 3 hrs. per wk.

MUSC 211–212–213 Advanced Music Theory I–II–III (4 cr.) (4 cr.) (4 cr.)
Continuation of MUSC 111–112–113. Development of facility in the analysis and usage of diatonic and chromatic harmonies. Continued study in analysis of Bach style, sight-singing, ear-training, and keyboard harmony. Lect. 3 hrs., Lab. 2 hr., Total 5 hrs. per wk.

MUSC 214–215 Composition I–II (2 cr.) (2 cr.)
Prerequisite MUSC 111–112–113 or departmental permission. Individually supervised practice in writing short compositions in specified small forms. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs., per wk.

MUSC 220 The History of Jazz (3 cr.)
A study of the underlying elements of jazz concentrating on its cultural and historical development from its earliest stages to the present. Illustrated by musical examples through recordings and other audio visual devices. No previous knowledge of music is required. Lect. 3 hrs. per wk.

MUSC 221–222–223 History of Music I–II–III (3 cr.) (3 cr.) (3 cr.)
Primarily for music majors. A chronological study of music styles from antiquity to the present time. Relationship of the historical development of music to parallel movements in art, drama, and literature. Development of techniques for listening analytically and critically to Music. I, Music to 1600. II, 1600 to 1820. III, 1820 to present. Lect. 3 hrs. per wk.

MUSC 224–225 The History of Opera I–II (3 cr.) (3 cr.)
Development of operatic style through the study of representative works from 1600 to present. Lect. 3 hrs. per wk.

MUSC 226 Twentieth Century Music and Music Cultures (3 cr.)
A general course on music that uses 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. Lect. 3 hrs. per wk.

MUSC 237 Advanced Applied Music-Voice (1–2 cr.)
A continuation of MUSC 137.

MUSC 238 Chorus (1 cr.)
A continuation of MUSC 138.

MUSC 239 Small Vocal Ensemble (1 cr.)
A continuation of MUSC 139. Courses in ensemble consist of performance from the standard repertories including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Lab. 3 hrs. per wk.

MUSC 244–245 Service Playing I–II (3 cr.) (3 cr.)
A course designed to develop a broad perspective in the art of keyboard playing in a variety of liturgical services. Emphasis is given to developing knowledge and performance skills of basic keyboard repertoire use for different services during the liturgical year. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

MUSC 247 Advanced Applied Music Keyboard (1–2 cr.)
A continuation of MUSC 147. (Estimated cost $8.00 per half-hour.)

MUSC 248 Orchestra (1 cr.)
A continuation of MUSC 148. (Lab. 3 hrs. per wk.)

MUSC 249 Band (1 cr.)
A continuation of MUSC 149. (Lab. 3 hrs. per wk.)

MUSC 257 Advanced Applied Music Woodwinds (1–2 cr.)
A continuation of MUSC 157. (Estimated cost $8.00 per half-hour.)

MUSC 258 Advanced Improvisational Techniques (3 cr.)
In addition to extended listening and performing standard jazz repertoire students develop understanding and performance skills with improvisational techniques based on harmonic progressions, rhythmic patterns, and scalar and arpeggio patterns. Practical application of modal theory to standard jazz and popular repertoire. Lect. 3 hrs., Lab. 1 hr., Total 4 hrs. per wk.

MUSC 267 Advanced Applied Music-Strings (1–2 cr.)
A continuation of MUSC 167. (Estimated cost $8.00 per half-hour.)

MUSC 269 String Ensemble (1 cr.)
A continuation of MUSC 169.

MUSC 277 Advanced Applied Music-Brass (1–2 cr.)
A continuation of MUSC 177. (Estimated cost $8.00 per half-hour.)

MUSC 279 Brass Ensemble (1 cr.)
A continuation of MUSC 179.

MUSC 287 Advanced Applied Music-Percussion (1–2 cr.)
A continuation of MUSC 187. (Estimated cost $8.00 per half-hour.)

MUSC 289 Percussion Ensemble (1 cr.)
A continuation of MUSC 189.

MUSC 296 Recreation Music (1 cr.)
The role and integration of musical activities in recreation and park programs; singing, instruments, rhythm and dance. Introduction to leadership skills, utilization and resource materials. Lab. 3 hrs. per wk.

MUSC 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

NATURAL SCIENCE

NASC 100 Survey of Science (4 cr.)
A general survey course designed to familiarize the student with the basic principles of biological and physical sciences. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

NASC 111-112-113 Health Science I-II-III (4 cr.)(4 cr.)(4 cr.)
An integrated approach to human anatomy and physiology, microbiology, pathology and bacteriology; study of organ tissues, body systems and functions, chemistry as it relates to physiology, principles of physics. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

NASC 121-122-123 Natural Sciences I-II-III (4 cr.)(4 cr.)(4 cr.)
This is a multidisciplinary course primarily for non-science majors. The course integrates the main fields of science, and emphasizes the motivations of the scientific disciplines and how these interact. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

NASC 130 Body Structure and Function (3 cr.)
A survey of the structure and function of the human body. Lect. 3 hrs. per wk.

NASC 141–142–143 Fundamental Sciences for Respiratory Therapy I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisite admission to program. Focus upon the major fields of scientific study; inorganic, organic and physiological chemistry, physics of gases, fluids, and electricity and laboratory mathematics. Course integrates the scientific disciplines as they relate to respiratory therapy. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

NASC 154–155 Astronomy I–II (3 cr.) (3 cr.)
The history of astronomy and the development of astronomical thought leading to the birth of modern astronomy and its most recent developments. Particular stress will be placed on astronomical instruments and measuring techniques, along with an examination of the solar system with emphasis on the earth, moon and adjacent planets, the Milky Way galaxy, and extragalactic objects. Lect. 3–2 hrs., Lab. 0–2 hrs., Total 3–4 hrs. per wk.

NURSING

NURS 121 Fundamentals of Nursing I (5 cr.)
Knowledge of nursing principles and development of Nursing skills for the psych-bio-social needs of individuals. Group and individual instructional approach. Supervised clinical laboratory experience in cooperating health agencies. Lect. 4 hrs., Lab. 3 hrs., Total 7 hrs. per wk.

NURS 122 Fundamentals of Nursing II (6 cr.)
Continuation of NURS 121. Lect. 4 hrs., Lab. 6 hrs., Total 10 hrs. per wk.

NURS 113 Fundamentals of Nursing III (8 cr.)
Continuation of NURS 122. Lect. 4 hrs., Lab. 12 hrs., Total 16 hrs. per wk.

NURS 221–222–223–224 Nursing in Major Health Problems I–II–III–IV (8 cr.)(8 cr.)(8 cr.)(8 cr.)
Prerequisites NURS 113 & NASC 113. Representative problems in nursing care of patients of all age groups with physiological processes and illnesses requiring medical, surgical, maternal-child, pediatric, and psychi-

atric care. Related clinical experience to further develop the knowledge and skills required to provide nursing care for each patient's needs. The scope, prevention, diagnosis, treatment, and control of major areas of illness in the United States. Lect. 4 hrs., Lab. 12 hrs., Total 16 hrs. per wk.

NURS 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

PHILOSOPHY AND RELIGION

PHIL 101–102–103 Introduction to Philosophy I–II–III **(3 cr.) (3 cr.) (3 cr.)**
An introductory study of some philosophical issues concerning the perception and belief of man in society. Lect. 3 hrs. per wk.

PHIL 104–105 Introduction to Philosophy I–II **(5 cr.) (4 cr.)**
An introductory study of some philosophical issues concerning the perception and belief of man in society. Lect. 5–4 hrs. per wk.

PHIL 110 Logic **(3 cr.)**
The study of logic as the scientific investigation of valid reasoning. Lect. 3 hrs. per wk.

PHIL 121 Logic **(3 cr.)**
Traditional Logic of Categorical Propositions, special emphasis on the more practical ways for mastering clear thinking (the proper use of terms, the principles of definition and classification). Lect. 3 hrs. per wk.

PHIL 122 Logic **(3 cr.)**
Modern Symbolic Logic, special emphasis on more practical value for a mastery of straight thinking (valid uses of deductive inferences, truth-functional analysis, and Quantificational arguments). Lect. 3 hrs. per wk.

PHIL 123 Logic **(3 cr.)**
Inductive Logic, special emphasis on practical insights into the patterns of proof in scientific and judicial processes (reasoning by analogy, empirical verification, casual connections, the nature of probability, statistical methods). Lect. 3 hrs. per wk.

PHIL 201–202–203 History of Western Philosophy I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A historical survey of representative philosophers from the Pre-Socratics to the present. Introduces the student to the development of philosophical thought through selected readings of original works and appropriate critical materials. Lect. 3 hrs. per wk.

PHIL 210 Ethics **(3 cr.)**
Prerequisite PHIL 201 or 202. Systematic study of representative ethical systems as they apply to present day living. Lect. 3 hrs. per wk.

PHIL 216 Aesthetics **(3 cr.)**
An examination of a variety of attempts to define beauty and the norms of taste and criticism. Attention is given to problems specific to particular art forms as well as to the more general theories about the nature of art. Lect. 3 hrs. per wk.

PHIL 217 Life and Teachings of Jesus **(3 cr.)**
Study of the major themes in the teachings of Jesus of Nazareth as recorded in the Gospels, and examination of the events of his life in light of modern Biblical and historical scholarships. Consideration of the relation of Jesus' life and teachings to modern life; reading of the four Gospels, and of other ancient and modern source materials. Lect. 3 hrs. per wk.

PHIL 218 Current Problems and Issues in Christianity **(3 cr.)**
An examination of moral and theological problems which trouble Christian communities today, e.g. war and violence; personal faith and social action; Christianity and other religions, wealth, poverty, and material things; women in the church; abortion; work and play; revolution; community and individualism. Lect. 3 hrs. per wk.

PHIL 221 Literature of the Bible I **(3 cr.)**
A study of the literature of the Old Testament. Lect. 3 hrs. per wk.

PHIL 222 Literature of the Bible II **(3 cr.)**
A study of the literature of the New Testament. Lect. 3 hrs. per wk.

PHIL 231 Comparative Religion I **(3 cr.)**
A survey of the religions of India and East Asia-Hinduism, Buddhism, Confucianism, Taoism & Shinto. Lect. 3 hrs. per wk.

PHIL 232 Comparative Religion II **(3 cr.)**
A survey of the four great monotheistic religions—Zoroastrianism, Judaism, Islam and Christianity. Lect. 3 hrs. per wk.

PHIL 236 Old Testament Prophetic Literature **(3 cr.)**
Prerequisite PHIL 221. A study of the major and minor prophetic books of the Old Testament as literary works. The historical and social context in which they were written, their literary and theological purposes; and survey of the ways in which they have been interpreted from pre-Christian times to the present. Lect. 3 hrs. per wk.

PHIL 237 The Poetry and Wisdom Literature of the Old Testament **(3 cr.)**
Prerequisite PHIL 221. A study of the Poetry of the Old Testament as a part of the literary and religious heritage of Western Civilization. Four major types are considered: ancient heroic, secular, national, and individual religious poetry. The special poetic books called "Wisdom Literature" will be considered as a separate genre. Lect. 3 hrs. per wk.

PHIL 246 Christianity **(3 cr.)**
Its origins and historical development; its basic metaphysical and theological assumptions; its essential doctrines and their origins; and the present state of the church in the modern world. Lect. 3 hrs. per wk.

PHIL 271–272–273 Thanatology: Dimensions of Death and Dying **(3 cr.) (3 cr.) (3 cr.)**
A survey of man's attempts to understand the meaning of death, and of his ways of handling its personal and social implications. Examination of dying and death from a variety of perspectives, including psychological, sociological, cultural, and religious views. Lect. 3 hrs. per wk.

PHIL 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

PHIL 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

PHOTOGRAPHY

PHTG 101 Introduction to Photography (3 cr.)
An introduction to the basic principles of photography with laboratory work related to the student's major field of interest. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

PHTG 102 Intermediate Photography (3 cr.)
Prerequisite PHTG 101. An intermediate level photography course designed to improve proficiency in the techniques of black & white photography with discussions and considerations of photo aesthetics. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

PHTG 103 Advanced Photography (3 cr.)
Prerequisites PHTG 101, 102. An advanced level course designed to improve proficiency in the techniques of black & white photography with greater discussion and consideration of photo aesthetics. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

PHTG 116 Visual Literacy: The Photographic Image (3 cr.)
Study and discussion of Photographic images (photographs and films) as forces on 20th century thought. Open to students of all disciplines. Lect. 3 hrs. per wk.

PHTG 117 Nature Photography (3 cr.)
Prerequisite PHTG 101. Exploration of nature and other topics through the use of 35mm slides as a medium. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

PHTG 144-145 History of Photography I-II (3 cr.) (3 cr.)
Survey of the artistic achievements and innovations of photography and analysis of outstanding photographers and their works. Lect. 3 hrs. per wk.

PHTG 146 History of American Photography (2 cr.)
An exploration of the various themes in American Photography. The student becomes aware of the changing nature of the content, purposes, and techniques found in American photography. Students will understand the role of the viewer and the significance of the traditional American public acceptance of the accuracy of the camera image. The role of the photographer in creating the camera image will also be explained. Lect. 2 hrs. per wk.

PHTG 147 Contemporary Trends (3 cr.)
The emphasis of this course is on the most contemporary work of the day. Students will become familiar with the individual photographers, the issues their work represents, and the historical influences that have made their work possible. Lect. 3 hrs. per wk.

PHTG 174–175 Film Making I–II (3 cr.) (3 cr.)
Study of the techniques of shooting and editing, preparing documentaries, producing animated movies. Opportunity for students to create their own films. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

PHTG 201–202–203 Advanced Photography I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 145. Survey of experimental and innovative techniques.

PHTG 206 Large Format Photography (3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 145. A course designed to learn the use and aesthetics of Large Format Cameras including 4x5, 5x7 and 8x10. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

PHTG 207 Photographic Slides (3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 145, or by instructor permission. Study of color slides, their potential and possibilities for creative expression. Students will learn to process their own slides as well as to experiment with their images. Critiques and slide lectures will focus on current use of slides by well known photographers. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

PHTG 211-212-213 Color Photography (3 cr.)(3 cr.)(3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 145, 207. Basic, intermediate, and advanced problems in color photography. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

PHTG 224–225 Studio Lighting I–II (3 cr.) (3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 145, 206. The study and use of large format cameras and studio lighting for commercial use, advertising photography, and formal studio portraiture. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

PHTG 226–227 Commercial Photography I–II (3 cr.) (3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 145, 206, 224. Must be enrolled concurrently in Studio Lighting II. The student will photographically solve a wide range of professional problems relevant to the fields of advertising public relations, communications and publishing. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

PHTG 228 Principles of Photographic Marketing (3 cr.)
Prerequisites 226–227. An advanced Commercial Photography course in which the student will become familiar with the techniques of small photographic business operations including portfolio preparation and presentation, basic marketing, techniques and casting methods. Topics will include the theory of marketing, costing procedures and problems, legal and accounting problems, copyright problems, and the fundamentals of small photographic business operation. Lecture 3 hours per week.

PHTG 234–235 Photojournalism I–II (3 cr.) (3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 145. Techniques of communicating through the photo essay and analysis of newspaper and magazine standards of selection. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

PHTG 266 Advertising Photography (3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 224, 225, 226, 227. A course designed as a sequel to emphasis on sophisticated use of artifical lighting for commercial use. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

PHTG 267 Zone System in Photography (3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 145. Advanced study of the technical processes of photography leading to total control of film, exposure, metering, and development, including accurate previsualization. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

PHTG 268 Communicating through the Photographic Sequence (3 cr.)
Prerequisites PHTG 101, 102, 103, 144, 145. This course, based on the concept that the experience of sequence in photography differs from the tradition of experiencing a single photograph, will involve the stu-

dent in creating a picture book composed of images that have been placed in sequence that has special visual meaning. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

PHTG 269 Advanced Photographic Printing **(3 cr.)**
Prerequisites PHTG 101, 102, 103, 144, 145. Emphasis placed on developing individual style. Students required to produce a portfolio of high quality prints on subject matter of their choice. Lect. 1 hr., Lab. 4 hrs., Total 5 hrs. per wk.

PHTG 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

PHTG 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

PHTG 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

PHYSICAL EDUCATION

PHED 100 Fundamentals of Physical Activity **(1 cr.)**
The role of physical activity in daily living; methods of personal evaluation of physical fitness and performance, meaningful interpretations of such evaluations, and the design of activity programs and patterns. Lect. 1 hr., Lab. 1 hr., Total 2 hrs. per wk.

PHED 106 Physical Performance and Conditioning **(1 cr.)**
Principles underlying the development of performance and conditioning factors such as strength, balance, power, agility, cardiovascular function, coordination. Lect. 1 hr., Lab. 1 hr., Total 2 hrs. per wk.

PHED 107 Movement Fundamentals **(1 cr.)**
Mechanics of the movement process related to efficient and effective physical performance. Movement patterns correlated to human anatomical and physiological design and properties, the processes of motor learning and motor behavior, and the principles of motion with application to human movement and physical activity. Lect. 1 hr., Lab. 1 hr., Total 2 hrs. per wk.

PHED 108 Physical Activities for Children **(3 cr.)**
Methods and materials for teaching simple rhythm, recreational games, singing games and other movement experiences. Emphasis on the pre-school through elementary ages. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk. This course cannot be taken to satisfy the physical education requirement for graduation.

PHED 110 Angling and Casting **(1 cr.)**
The fundamentals of sport fishing, spinning, spin casting, bait casting and fly casting with the related knowledge of conservation and safety. Lab. 2 hrs. per wk.

PHED 111 Archery **(1 cr.)**
The fundamentals of target archery and/or field archery; equipment, safety, and conservation. Lab. 2 hrs. per wk.

PHED 112 Camping **(1 cr.)**
Self-maintenance and survival out-of-doors; food selection, and maintenance; packing, preparation, preservation, and storage; shelter selection, construction, and maintenance; nature, conservation, camping facilities and equipment; application to varying age group; personal and group safety. Lab. 2 hrs. per wk.

PHED 113 Boating **(1 cr.)**
Prerequisite appropriate skill in swimming. The fundamentals used in propelling and handling canoes, row boats, and other small craft; descriptive and functional terminology, construction and care of equipment, conservation, and safety. Lab. 2 hrs. per wk.

PHED 114 Equitation **(1 cr.)**
Riding seats, and preparation for riding; care and grooming of a horse; selection, use and care of equipment, and safety. Lab. 2 hrs. per wk.

PHED 115 Ice Skating **(1 cr.)**
The fundamentals of ice skating; figures, equipment, types of skating, and safety. Lab. 2 hrs. per wk. (Fee may be required—check current "Schedule of Classes" for actual fee.)

PHED 116 Sailing **(1 cr.)**
Prerequisite appropriate skill in swimming. Equipment, descriptive and functional terminology, and safety. Lab. 2 hrs. per wk.

PHED 117 Shooting and Firearm Safety **(1 cr.)**
Shooting and firearm safety; arms, selection and care of equipment, forms of the sport of shooting; personal safety and survival in situations associated with hunting and sport shooting. Lab. 2 hrs. per wk.

PHED 118 Snow Skiing **(1 cr.)**
Snow skiing; equipment and safety. Lab. 2 hrs. per wk.

PHED 120 Game and Upland Bird Hunting **(1 cr.)**
A course designed to introduce fundamental techniques of game and upland hunting in Virginia; hunting laws and regulations; equipment and personal conduct. Lab. 2 hrs. per wk.

PHED 122 Fly Fishing **(1 cr.)**
An introduction to the fundamental concepts, skills, equipment and strategies related to modern fly fishing. Lab. 2 hrs. per wk.

PHED 123 Whitewater Canoeing **(1 cr.)**
An introduction to the history, techniques, and equipment related to whitewater canoeing with field experiences selected according to progress and ability. Lab. 2 hrs. per wk.

PHED 124–125 Outdoor Environmental and Recreational Studies I–II **(3 cr.) (3 cr.)**
The ethical role of the camper is emphasized in terms of practical conservation and ecology. This includes field experience involving the following: backpacking, general mountaineering, orienteering, flat water canoeing, climbing and rappelling, basic first aid techniques, natural floods, and natural habitats. Offered during one calendar week or three weekends for approximately 140 contact hours each. Lab. 9 hrs. per wk.

PHED 127 Orienteering **(1 cr.)**
A brief history of the sport, required equipment, map reading, compass use, orienteering techniques, and types of orienteering meets. Lab. 2 hrs. per wk.

PHED 128-129 Hiking and Backpacking I-II (1 cr.)(1 cr.)
Preparation for and planning a backpacking trip; equipment and clothing selection; personal and group safety; includes actual field practice and experience. Lect. 2 hrs. per wk.

PHED 130 Badminton (1 cr.)
Badminton; equipment, strategy for play, and rules. Lab. 2 hrs. per wk.

PHED 131 Bowling (1 cr.)
A course designed to present the fundamentals of bowling; equipment, rules and personal conduct. Lab. 2 hrs. per wk. (Fee may be required—check current "Schedule of Classes" for actual fee.)

PHED 133 Golf (1 cr.)
The fundamentals of golf; equipment, rules, strategy for play, and personal conduct. Lab. 2 hrs. per wk. (Fee may be required—check current "Schedule of Classes" for actual fee.)

PHED 135 Tennis (1 cr.)
The fundamentals of tennis; rules, strategy for team and individual play, and personal dress and conduct. Lab. 2 hrs. per wk.

PHED 137 Fencing (1 cr.)
Study and practice in fundamentals of foil fencing. Lab. 2 hrs. per wk.

PHED 138 Self-Defense (1 cr.)
An introduction to the history, techniques and movements associated with the martial arts of self-defense. Lab. 2 hrs. per wk.

PHED 139 Intermediate Tennis (1 cr.)
Prerequisite beginning tennis. Emphasis on improvement of basic stroke production; development of wide variety of strokes; improving strategy for singles and doubles play. Lab. 2 hrs. per wk.

PHED 140 Recreational Sports (1 cr.)
Designed to provide students with the opportunity to participate in a variety of recreational sports of their choice. Lab. 2 hrs. per wk.

PHED 141 Weight Training (1 cr.)
Introduction to basic techniques and practices; equipment; safety; rules for both Olympic Lifts and Powerlifting. Lab. 2 hrs. per wk.

PHED 149 Racketball (1 cr.)
The fundamentals of racketball, types of games, rules, equipment, and strategy for team and individual play. Designed to develop an appreciation of the values of the game as a recreational sport. Lab. 2 hrs. per wk. (Fee may be required—check current "Schedule of Classes" for actual fee.)

PHED 150 Diving (1 cr.)
Prerequisite appropriate skill in swimming. The fundamentals of diving; performance and personal safety. Lab. 3 hrs. per wk. (Fee may be required—check current "Schedule of Classes" for actual fee.)

PHED 151 Senior Life Saving (1 cr.)
Prerequisite appropriate skill in swimming. The fundamentals of rescue and survival in the water; first aid safety. Preparation for the examination for the Red Cross Senior Life Saving Certificate. Lab. 3 hrs. per wk. (Fee may be required—check current "Schedule of Classes" for actual fee.)

PHED 152 Skin and Scuba Diving (1 cr.)
The fundamentals of swimming; personal performance and safety. Lab. 3 hrs. per wk. (Fee may be required—check current "Schedule of Classes" for actual fee.)

PHED 153 Swimming (1 cr.)
The fundamentals of swimming; personal performance and safety. Lab. 3 hrs. per wk. (Fee may be required—check current "Schedule of Classes" for actual fee.)

PHED 157 Intermediate Swimming (1 cr.)
Continued development of swimming skills and endurance for students who have mastered the fundamentals of swimming. Lab. 2 hrs. per wk.

PHED 158 Advanced Swimming (1 cr.)
Prerequisite PHED 157. Continued development of swimming skills and endurance for students who have mastered the intermediate skills of swimming and water safety. Lab. 2 hrs. per wk.

PHED 160 Contemporary Dance (1 cr.)
The fundamentals and techniques employed in dance as a creative art form; choreography and performance. Lab. 3 hrs. per wk.

PHED 161 Folk Dance (1 cr.)
The fundamental step patterns, rhythmic patterns, positions, and formations of the traditional and ethnic group and individual dances emphasizing those of foreign origin; dance forms, their cultural environment, social performance, and significance. Lab. 3 hrs. per wk.

PHED 163 Social Dance (1 cr.)
The fundamental step patterns, rhythmic patterns and positions of the social or ballroom dance forms; dance as a significant form of social behavior. Lab. 3 hrs. per wk.

PHED 164 Square Dance (1 cr.)
The fundamental step and movement patterns, rhythmic patterns, and formations of the American square dance; historical significance and development. Lab. 2 hrs. per wk.

PHED 165 Beginning Tap Dance (1 cr.)
The beginning tap dance course will cover tap patterns and coinciding body movements to various rhythms. Lab. 2 hrs. per wk.

PHED 167–168–169 Dance and Movement I–II–III (1 cr.)(1 cr.)(1 cr.)
Practical training in mime, pantomime, fencing, and elementary dance which can be transferred to the stage in production. Lab. 2 hrs. per wk.

PHED 170 Basketball (1 cr.)
Basketball; proper skills, techniques, teamwork and strategy in play, equipment, rules and safety. Lab. 2 hrs. per wk.

PHED 172 Soccer (1 cr.)
Soccer, proper skills, techniques, team play and strategy in play, rules, equipment and safety. Lab. 2 hrs. per wk.

PHED 173 Softball (1 cr.)
Softball; proper skills, techniques, teamwork and strategy in play; rules, equipment and safety. Lab. 2 hrs. per wk.

PHED 174 Volleyball **(1 cr.)**
Volley; proper skills, techniques, team play, and strategy in play; rules, equipment and safety. Lab. 2 hrs. per wk.

PHED 181 Self-Defense—Tae Kwon Do I **(1 cr.)**
Tae Kwon Do is an ancient Korean art of self-defense that literally means the "art of hand and foot fighting." The primary behavioral objective is to develop a fundamental level of understanding and skill in order to progress from a white to a yellow belt. Lab. 2 hrs. per wk.

PHED 182 Self Defense—Tae Kwon Do II **(1 cr.)**
Prerequisite PHED 181. Tae Kwon Do is an ancient Korean art of self-defense that literally means the "art of hand and foot fighting." The primary behavioral objective is to develop a fundamental level of understanding and skill in order to progress from a yellow to green tipped belt. Lab. 2 hrs. per wk.

PHED 183 Self Defense—Tae Kwon Do III **(1 cr.)**
Prerequisite PHED 182. Tae Kwon Do is an ancient Korean art of self-defense that literally means the "art of hand and foot fighting." The primary behavioral objective is to develop a fundamental level of understanding and skill in order to progress from green tips to green belt. Lab. 2 hrs. per wk.

PHED 196 Beginning Jazz-Dance **(1 cr.)**
The study of dance through contemporary jazz movement. Emphasis will center on floor stretches, isolation exercises, barre work, dance patterns to contemporary jazz music, progressive dance routines. Lab. 2 hrs. per wk.

PHED 200 An Introduction to Health, Physical Education and Recreation **(2 cr.)**
An introduction to the terms, aims, objectives, teacher preparation programs, career opportunities, professional organizations, and problems in the fields of health, physical education, and recreation. Primarily for prospective majors in the field. Lect. 2 hrs. per wk. This course cannot be taken to satisfy the physical education requirement for graduation.

PHED 204 Officiating at Games **(3 cr.)**
Application of rules and techniques of officiating team sports with emphasis on basketball, volleyball, and softball; includes practical experience in the intramural program. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

PHED 217 Dance Improvisation **(1 cr.)**
An exploration into the creation of spontaneous movement experiences with emphasis on encouraging freedom of self-expression and creative awareness. Improvisational techniques will utilize the following: awareness of body movements, environment, group dynamics, performance and composition. Lab. 2 hrs. per wk.

PHYSICAL THERAPY

PSTH 100 Introduction to Physical Therapy Assisting **(2 cr.)**
Designed to introduce the health technology student to the field of physical therapy. Ethics, legal implications, job descriptions, and methods of health care delivery are discussed. Emphasis is on the team approach to patient care and the role of the physical therapist assistant within the therapeutic team. Lect. 2 hrs. per wk.

PSTH 111 Therapeutic Skills I **(4 cr.)**
Prerequisite or concurrent enrollment, PSTH 100. The development of elementary therapeutic skills for the physical therapist assistant. Basic patient care, superficial heat and cold, principles of therapeutic exercise, and ambulation with aids are presented and practiced. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

PSTH 112 Therapeutic Skills II **(4 cr.)**
Prerequisite PSTH 111 and PSTH 100. The further development of therapeutic skills for the physical therapist assistant. Use of specialized equipment is emphasized with practice arranged in selected health agencies. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

PSTH 113 Therapeutic Skills III **(6 cr.)**
Prerequisite PSTH 112. A continuation of therapeutic skills for the physical therapist assistant. Massage and treatment techniques for respiratory and cardiac problems are presented. Lect. 3 hrs., Lab. 9 hrs., Total 12 hrs. per wk.

PSTH 120 Medical Reporting **(2 cr.)**
Prerequisite PSTH 112. Principles of medical reporting, including ability to abstract pertinent information from actual medical records. The writing of patient progress notes in standardized formats and medical terminology is emphasized. Lect. 2 hrs. per wk.

PSTH 190 Coordinated Practice **(4 cr.)**
Prerequisite PSTH 111 and PSTH 100. Supervised practice in selected health agencies coordinated by the College. Practice 10 hrs., Seminar 2 hrs., Total 12 hrs. per wk. May be repeated for credit.

PSTH 210 Psychological Aspects of Therapy **(3 cr.)**
Prerequisite PSTH 113, Concurrent enrollment in PSTH 290. A study of the psychological reactions and behavioral changes seen in patients and the techniques of effective interaction between the allied health worker and the patient. Reports based on observation and analysis of patient behavior and relationships in actual clinical practice are required. Lect. 3 hrs. per wk.

PSTH 211 Therapeutic Skills IV **(6 cr.)**
Prerequisites PSTH 113, PSTH 290, HLTH 150, NASC 113. A continuation of therapeutic skills for the physical therapist assistant. Rehabilitation programs for the permanently disabled are emphasized utilizing advanced exercise techniques, prosthetic and orthotic devices, and electrical stimulation. Lect. 3 hrs., Lab. 9 hrs., Total 12 hrs. per wk.

PSTH 220 Clinical Kinesiology **(4 cr.)**
Prerequisites NASC 113, PSTH 113, or divisional permission. A detailed study and analysis of muscle functions, biomechanics and human gait in normal individuals and selected disease processes. Application in kinesiological principles to therapeutic exercise is made in laboratory practice. Lect. 2 hrs., Lab. 6 hrs., Total 8 hrs. per wk.

PSTH 290 Coordinated Practice **(5 cr.)**
Prerequisites PSTH 113, PSTH 190, PSTH 120. Supervised practice in selected health agencies coordinated by the College. Practice 15 hrs., Seminar 2 hrs., Total 17 hrs. per wk. May be repeated for credit.

PSTH 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

PHYSICS

PHYS 101–102 Introductory Physics I–II (4 cr.) (4 cr.)
A study of general physics including mechanics, heat, sound, electricity, and light with practical applications for students in occupational programs. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

PHYS 111-112-113 Technical Physics I-II-III (4 cr.)(4 cr.)(4 cr.)
Prerequisite two units of high school mathematics or equivalent. Precision measurement, properties of matter, hydrostatics and hydraulics, force and motion, Newtonian mechanics, vectors and graphic solution, statics, dynamics, rotary motion, heat and thermodynamics, heat engines, sound acoustics; the theory of wave motion, light and optics, magnetism and electricity, DC and AC circuits and machines. An introduction to electronics and nuclear energy for industrial purposes. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

PHYS 114–115 Technical Physics I–II (6 cr.) (6 cr.)
Prerequisite two units of high school mathematics or equivalent. Precision measurement, properties of matter, hydrostatics and hydraulics, force and motion, Newtonian mechanics, vectors and graphic solutions, statics, dynamics, rotary motion, motion, light and optics, magnetism and electricity, DC and AC circuits and machines. An introduction ot electronics and nuclear energy for industrial purposes. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

PHYS 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

PHYS 199 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

PHYS 201–202–203 General College Physics I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisite three units of high school mathematics or equivalent. General college physics for curricula not requiring calculus. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

PHYS 204-205 General College Physics I-II (6 cr.) (6 cr.)
Prerequisite three units of high school mathematics or equivalent. General college physics for curricula not requiring calculus. Lect. 5–4 hrs., Lab. 3–6 hrs., Total 8–10 hrs. per wk.

PHYS 221–222–223–224 General University Physics I–II–III–IV (4 cr.)(4 cr.)(4 cr.)(4 cr.)
Prerequisite MATH 143 or corequisite MATH 241 or equivalent. General University Physics designed for students in engineering, physics or mathematics. Includes mechanics, relativity, electro-magnetism, ray and wave optics, statistical quantum mechanics, solid state and nuclear physics. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

PHYS 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

PHYS 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

PSYCHOLOGY

PSYC 110 Principles of Applied Psychology (3 cr.)
The general principles of perception, learning, and conscious and unconscious motivation which are operative in all practical applications of psychology to life and work. Lect. 3 hrs. per wk.

PSYC 116 The Psychology of Personal Adjustment (3 cr.)
Characteristics of mental health. Psychological principles applied to the development of a mature personality and to the problems of everyday life. Effective methods in study and work. Lect. 3 hrs. per wk.

PSYC 119 Psychology of Personality (3 cr.)
Introduction to the psychology of self-understanding and the attainment of personal efficiency. Lect. 3 hrs. per wk.

PSYC 120 Experiences in Personal Growth (3 cr.)
An interdisciplinary approach designed to enable an individual to understand himself better in relation to his immediate environment, community and society. Simulation, role playing, and other experiential techniques will be used to accomplish this objective. Some of the experiences will take place off campus. Approval of division is required for admission. Lect. 3 hrs. per wk.

PSYC 128 Human Relations (3 cr.)
The study of human personality and its reaction upon other personalities. The application of psychology to problems in industry and private life. Some introduction to such matters as selection, training and placement of employees. Lect. 3 hrs. per wk.

PSYC 129 Interpersonal Relationships (3 cr.)
The theory and practice of self-discovery working with self, group discovery and relationships. Focalizing on human needs and human problems with emphasis upon attitude, values, motivation, leadership, communications, and group living. Lect. 3 hrs. per wk.

PSYC 130 Child Growth and Development (3 cr.)
The development of the child from one stage of growth to the next, concentrating on the physical, intellectual, social and emotional factors in his personality. Recent studies in child development will be presented. The course is designed to provide a background for those students who intend to become nurses, teachers, or enter other occupations involving continuous work with children. Lect. 3 hrs. per wk.

PSYC 201-202-203 General Psychology I-II-III (3 cr.)(3 cr.)(3 cr.)
PSYC 201 is the prerequisite for either PSYC 202 or 203.

The principles of behavior relating experimental data to practical problems: the measurement of ability, sensory and perceptive processes, organic basis of behavior, hereditary, maturation, learning and thinking, motivation, emotion, personality and social factors in behavior. Lect. 3 hrs. per wk.

PSYC 204–205 General Psychology I–II (5 cr.) (4 cr.)
The study of human behavior relating experimental data to practical problems: the measurement of ability, sensory and perceptive processes, organic basic behav-

ior, heredity, maturation, learning and thinking, motivation, emotion, personality and social factors in behavior. Lect. 5–4 hrs. per wk.

PSYC 208 Psychology of Abnormal Behavior **(3 cr.)**
Prerequisite PSYC 203 or instructor's permission. Exploration of the range of human behavior known as abnormal. Emphasis placed on criteria of abnormality, individual and social causes of psychopathology, major categories for classification of behavior, possibilities for treatment and personal adjustment. Lect. 3 hrs. per wk.

PSYC 210 Social Psychology **(3 cr.)**
A study of the individual in social contexts, his social role and socialization process. Personal and social factors in perceptive attitudes toward individuals and groups: group structures and intergroup relations. Lect. 3 hrs. per wk.

PSYC 217 Theories of Personality **(3 cr.)**
Prerequisites PSYC 202 or Instructor's approval. A study of major personality theories (Psychoanalytic, Cognitive, Gestalt) in which students are encouraged to apply the theories to themselves and their experiences. From this application students will be asked to evaluate, criticize and discuss the theories. Lect. 3 hrs. per wk.

PSYC 226 Psychological Aspects of Management **(3 cr.)**
Prerequisite PSYC 110. Psychological principles applied to business. Supervision, communication, employee relations, group dynamics, employee selection. Lect. 3 hrs. per wk.

PSYC 231–232–233 Human Growth and Development I–II–III **(3 cr.) (3 cr.) (3 cr.)**
The study and interpretation of human behavior through the life cycle. Concepts and principles describing the dynamics of human development and behavior and their relation to the work and purpose of the school. The scientific method, heredity, psychological development, perception, motivation, learning, emotions, cognitive processes, personality, frustration, intelligence, and mental processes. Lect. 3 hrs. per wk.

PSYC 247 Educational Psychology **(3 cr.)**
Prerequisite PSYC 202 or 130. Certain facets of human behavior and learning as they relate to the education processes. Motivation, intelligence, knowledge and their significance for achieving educational goals. Lect. 3 hrs. per wk.

PSYC 254–255 Statistical Methods in Psychology I–II **(3 cr.) (3 cr.)**
Prerequisites PSYC 201, 202, 203 or SOCI 101, 102, 103. Principles of techniques of methodology, problem solving, and statistical analysis. Lect. 3 hrs. per wk.

PSYC 298 Seminar and Project **(1–5 cr.)**
Prerequisite division permission. (see General Usage Courses section)

PSYC 299 Supervised Study **(1–5 cr.)**
Prerequisite division permission. (see General Usage Courses section)

PUBLIC SERVICE

PBSV 100 Introduction to Highway Transportation **(4 cr.)**
Nature and scope of the Highway Transportation System. Survey of the major functional areas of the highway transportation systems with emphasis on their interaction. Lect. 4 hrs. per wk.

PBSV 104 Highway Traffic Administration I **(4 cr.)**
Examination of United States transportation systems, emphasizing efficient, safe and rapid operation. Activities and agencies concerned with increasing efficiency. System's development components, social, economic and political impacts. Survey of present and future needs. Lect. 4 hrs. per wk.

PBSV 105 Highway Traffic Administration II **(4 cr.)**
Police and court traffic administration. Administration and maintenance of motor vehicle and driver records. Traffic direction and control, traffic accident investigation, and traffic law enforcement. Communication aspects of highway traffic administration. Highway traffic education programs and public information. Motor vehicle fleet safety programs. Utilizing traffic safety research. Lect. 4 hrs. per wk.

PBSV 108 Safety Principles in Motor Vehicle Transportation **(3 cr.)**
An investigation of the principles and practices which have a bearing on highway traffic safety and its attendant problems. Topics include: the role of driver education, effect of traffic density, traffic operations and control, influencing driver behavior, economics of highway safety, convenient highway transportation. Lect. 3 hrs. per wk.

PBSV 110 Introduction to Public Administration **(3 cr.)**
Principles and concepts underlying the field of public administration in federal, state, and local government. Includes the role of government in modern society; the relationship of administrative and policy processes; organizational structure and relationships; new and emerging organizational forms and functions of government. Lect. 3 hrs. per wk.

PBSV 116 Public Personnel Administration **(3 cr.)**
Human resource development; historical development of public personnel administration, recruitment, selection, training, classification, grievance procedures, and related processes of public personnel administration; new concepts in personnel administration; manpower programs; overview of labor relations in government employment. Lect. 3 hrs. per wk.

PBSV 117 Public Finance Administration **(3 cr.)**
Organization and functions of fiscal administration; financial planning and control; analysis of the budgeting process; budget preparation; revenue sources; intergovernmental financial relationship; debt management; data processing applications in fiscal administration; analysis of the fiscal process in various government agencies; purchasing; special assessments; capital improvement budgeting. Lect. 3 hrs. per wk.

PBSV 256 Interviewing Skills **(3 cr.)**
A study and analysis of the technique of interviewing. Includes the significance of representing a government

or private agency, human relations, confidentiality, beginning the interview, interchange of information, handling complaints and criticism, ending the interview. Lect. 3 hrs. per wk.

PBSV 257 Group Leadership (3 cr.)
The dynamics of individual behavior and the group process. How individuals function as group members, role of the leader; encouraging participation and group action for achieving group goals. Lect. 3 hrs. per wk.

PBSV 258 Social Change Skills (3 cr.)
Institutions and why they change or fail to change. The differing strategies for effecting change. Examination of techniques employed by people attempting change. Lect. 3 hrs. per wk.

PBSV 259 Social Legislation (3 cr.)
An examination of current and prospective programs dealing with legislation relevant to community service. Covers Federal, State, and municipal programs; interrelationships among governmental agencies; authority and responsibility for administration. Lect. 3 hrs. per wk.

RADIOGRAPHY

RADL 100 Introduction to Radiology and Protection (2 cr.)
A brief history of the radiologic profession, the preliminary code of ethics and conduct for radiologic students, and the basic fundamentals of radiologic protection. The course also covers radiation production, physics, and elements of machine operation. Lect. 2 hrs. per wk.

RADL 114 Principles of Exposure I (4 cr.)
The control and use of radiation to produce safe levels of radioactive energies necessary for the production of radiographs; includes the elements of the developmental process. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RADL 115 Principles of Exposure II (4 cr.)
Prerequisite RADL 114. The controlled use of radiation to produce diagnostic radiographs. The process and chemistry of developing is examined in detail. The causes and prevention of artifacts are introduced. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RADL 124 Positioning I (4 cr.)
Positioning the patients' anatomical structures on the radiograph with emphasis on the extremities, chest, spinal column and gross examination of the abdomen. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RADL 125 Positioning II (4 cr.)
Prerequisite RADL 124. Emphasis on radiographic procedures such as inner-ear studies, skull and facial bones, pediatric radiology and other more complex examinations. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RADL 136 Patient Care Procedures (2 cr.)
The care and handling of the sick and injured patient in the radiology department. The course contains procedures for patient transportation, safety, personal conduct for radiographers, and aseptic technique. Lect. 2 hrs. per wk.

RADL 190 Coordinated Practice (1–5 cr.)
This course provides the student with clinical experience in an active radiology department. Access to an energized laboratory is provided where the student will observe demonstrations and execute those procedures which he/she has learned in lab and lecture. The course is required for each of the four (4) quarters of first year instruction. Clinical hours are: 10 hrs/week, the first three quarters and 20 hrs/week during the fourth quarter.

RADL 210 Protection and Patient Safety (2 cr.)
A study in the protective devices to insure maximum protection for the patient and fellow employees from excessive amounts of radiation and electrical hazards. An overview of radiobiology and safety standards is included. Lect. 2 hrs. per wk.

RADL 216 Applied Radiation Physics (4 cr.)
Prerequisite RADL 114. The circuiting of and electronics of X-ray machines; the structure of radioactive generators and the resultant isotopes. Lect. 3 hrs., Lab. 3 hrs. Total 6 hrs. per wk.

RADL 250 Radiologic Specialties (3 cr.)
Prerequisite PHYS 101. Introduction to the study and treatment of disease as it relates to nuclear medicine, radiation oncology, ultrasound, imaging modalities and other innovations in the field of Radiology. Special emphasis will be placed on Theory, Principles of Operation and Clinical Application of these specialties. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RADL 256 Special Procedures (3 cr.)
Prerequisite RADL 125. The use of special radiographic and surgical equipment employed in the more complicated investigation of internal conditions of the human body. Lect. 3 hrs. per wk.

RADL 290 Coordinated Practice (1–5 cr.)
Prerequisite RADL 190. The course provides the student with more clinical experience in an active radiology department. Classroom lecture is developed in practice. Technical ability is further refined. Lab. 5th, 6th, and 7th quarters - 20 hrs. per wk.

RADL 298 Seminar and Project (1–5 cr.)
Independent study in a field of interest directly related to the science of radiology. The Seminar and Project will be guided by the course instructor and a presentation made. Lab. 3 hrs. per wk. (4th, 5th, 6th, and 7th quarters only).

RECREATION AND PARKS

RCPK 100 Introduction to the Recreation and Parks Field (3 cr.)
Development of the recreation and parks movement. Theory of leisure and environmental awareness. The economic importance, type of areas and facilities. Career opportunities in public, private, and industrial agencies and institutions. Lect. 3 hrs. per wk.

RCPK 101 Recreation and Parks Management I (3 cr.)
Introduction to personnel management, supervision, planning and organization for the recreation and parks field. Community relations. Lect. 3 hrs. per wk.

RCPK 102 Recreation and Parks Management II (3 cr.)
Introduction to elements of fiscal planning and development, budget preparation, documentation and presentation of projects. Lect. 3 hrs. per wk.

RCPK 103 Recreation and Parks Management III (3 cr.)
Problems and practices in maintenance of buildings, areas and equipment. Tree pruning, safety and emergency procedures. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

RCPK 108 Recreation for Special Groups (3 cr.)
Equips students with the competencies needed to direct recreation activities for special groups such as mentally retarded, physically handicapped, and hospitalized. Leadership techniques for conducting social recreation, drama, music, and sports are emphasized. Lect. 3 hrs. per wk.

RCPK 110 Recreational Applied Arts Management (2 cr.)
Planning and practical application of the basic skills of arts and crafts for adoption in the community recreation field. An overview or survey course which includes practical field work in crafts as well as the ordering and issuing of materials for programs and program supervision. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

RCPK 116 Social Recreation Leadership (3 cr.)
The programs for recreation in the schools, home, church, youth groups, and other community organizations and institutions. Practical work in social and recreational activity leadership. Designed for those who may wish to engage or specialize in recreational leadership. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

RCPK 126 Natural Resources and the Urban Environment (2 cr.)
Introduction to the wise use of natural resources in the urban situation. History and philosophy of conservation methods and techniques. Utilization of park facilities and interpretative programs. Interpretative techniques, the web of life. Lect. 2 hrs. per wk.

RCPK 127 Park Planning (2 cr.)
Designed to give the student experience in park design and planning with emphasis on design characteristics and structures, and in working with consultants and contractors. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

RCPK 136 Program Planning Organization and Group Leadership (2 cr.)
Elements and principles of organizing, conducting, and evaluating various types of effective recreation programs for a variety of groups; playgrounds, recreation centers, parks, camps, and senior citizen groups. Lect. 2 hrs. per wk.

RCPK 137 Organization and Management of Recreational Sports Activities (3 cr.)
Officiating and instructional activities; aspects of recreational sports; game rules and administering of tournaments. Lect. 3 hrs. per wk.

RCPK 138 Fundamentals of Camp Management and Operation (3 cr.)
Principles of modern camping; sites, equipment, programming. Managerial responsibility and operation, maintenance, supervision and planning of private and public camp grounds, and day camps. Organization and supervision of recreation group camping and private camps for various ages or family groups. Includes field trips. Lect. 3 hrs. per wk.

RCPK 146 Community and Family Recreation (3 cr.)
Survey of problems, functions and methods of recreation services for the community. Interpretation and importance of community recreation. Family recreational activities. Programs and leadership; recreation services, standards, quality, coordination, and community organizations. Lect. 3 hrs. per wk.

RCPK 150 Survey of Private, Commercial and Industrial Recreation (3 cr.)
Designed to introduce the student to the specialized fields of Private, Commercial and Industrial Recreation. The course will emphasize career opportunities and specialized education needed to attain a position in this field. Lect. 3 hrs. per wk.

RCPK 160 The Arts in Recreation (1 cr.)
An introduction and survey of the cultural, creative and performing arts in recreation. Music, arts and crafts, drama, dance, and cultural programs will be surveyed as to the application and use in the field of recreation and parks. Lect. 1 hr., Lab. 1 hr., Total 2 hrs. per wk.

RCPK 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

RCPK 207 Recreational Drama (1 cr.)
Prepares recreation leaders to direct informal creative dramatics, chiefly for children. Includes improvisation, pantomine, storytelling, charades, dramatic games, and acting combined with other art forms. Lab. 2 hrs. per wk.

RCPK 224 Natural and Historical Interpretation in the Urban Environment I (2 cr.)
Designed to introduce and give the student experience in the development of interpretative materials and use of interpretative methods; includes use of Audio-Visual equipment, photography, lettering, native trail design. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

RCPK 225 Natural and Historical Interpretation in the Urban Environment II (2 cr.)
The theory of interpretation as it applies to the Urban Environment. Discuss various approaches to the philosophy of interpretations and the natural environment. Practice in sensitation and acclimatizing. Lect. 2 hrs. per wk.

RCPK 297 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

RCPK 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

RCPK 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

RECREATION VEHICLE

RVEH 116 Motorcycle Machine Laboratory (3 cr.)
The theory, practice and use of machinery equipment used in reconditioning and repairing motorcycles. Special emphasis will be placed on measuring instruments, valve refinishing, cylinder and piston reconditioning, use of dial indicator, resurfacing and welding. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 120 Introduction to Motorcycle Mechanics **(3 cr.)**
The motorcycle, its systems, operating principles, problems and repair techniques. Introduction to tools, equipment, shop layout, general maintenance and diagnosis. Special emphasis is placed on shop safety and safe use of basic equipment. There is no prerequisite for this course. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 126 Motorcycle Fuel Systems **(3 cr.)**
Analysis of motorcycle fuel systems to include tanks, valves, filters and carburetors (slide type, diaphram, and conventional type) and fuel injection. Special emphasis will be placed on diagnosis and adjustment, especially jetting and needle positioning. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 127 Motorcycle Electrical Systems **(3 cr.)**
Electricity and magnetism symbols and circuitry as applies to the motorcycle electrical system. Includes storage batteries, generators, alternators, regulating systems, starters, lighting systems. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 140 Marine Cooling, Fuel, & Elect. Syst. **(3 cr.)**
Designed to give major technical training in the service and repair of marine cooling, fuel, and electrical support systems. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 146 Outboard Engines **(3 cr.)**
Designed to give major technical training in the installation, service and repair of outboard power plants. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 147 Inboard/Outdrives **(3 cr.)**
Designed to provide major technical training in the service, overhaul and repair of larger inboard power plants and stern drives. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 148 Outboard Drive Trains **(3 cr.)**
Designed to provide major technical training in the design, operation, service, overhaul and repair procedures of outboard motor power units. Lecture 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 149 Powerboat Rigging **(3 cr.)**
Designed to provide major technical training in the installation, operation, service, and repair of marine steering controls, transmission controls and engine speed controls. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 156 Motorcycle Drive Trains **(3 cr.)**
The operation, design, construction and repair of power train components including primary drive systems (both gear and chain), clutches (wet, dry automatic and centrifugal), transmissions. Final drive systems (sprocket, chains, rings and pinion type). Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 176 Motorcycle Two-Stroke Engines **(3 cr.)**
Analysis of piston, cylinder, rods, crankshafts, bearings, cases, lubrication systems. Special emphasis will be placed on diagnosis and rebuilding techniques. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 177 Motorcycle Four-Stroke Engines **(3 cr.)**
Analysis of piston and cylinder conditions, intake and exhaust valve mechanisms, bearings, crankshafts, rods, lubrication systems, and cooling systems. Special emphasis will be placed on diagnosis and rebuilding techniques. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RVEH 198 Motorcycle Seminar and Project • **(1–5 cr.)**
(See General Usage Courses Section)

RVEH 267 Motorcycle Suspensions **(3 cr.)**
Theoretical analysis, and practical service and repair of motorcycle frames, forms, wheels and brakes. Special emphasis will be placed on fork rebuilding, spoked wheel lacing and trueing, and brake repairing. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

RESPIRATORY THERAPY

RPTH 136 Fundamental Arts I **(3 cr.)**
Focus upon historical aspects leading to present status of modern day cardiorespiratory therapy. Also nursing arts relative to psychological, physical and special unit patient care and its interrelationship to therapy, general hospital safety. Lect. 3 hrs. per wk.

RPTH 144 Fundamental Theory and Procedures I **(4 cr.)**
Focus upon gas, aerosol, and humidification therapies emphasizing the techniques, skills and understanding necessary to properly and effectively administer these therapy methods. Focus also upon cleaning, maintenance, storage and safety aspects of equipment involved. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RPTH 145 Fundamental Theory and Procedures II **(4 cr.)**
Prerequisites: RPTH 144, or permission of Program Head. Focus is upon artificial ventilation therapy-controlled and or assisted or intermittent. All basic types of ventilator/respirators emphasizing all techniques, skills and understanding necessary to properly and effectively administer these methods. Focus also upon cleaning, maintenance, storage and safety aspects of equipment involved. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RPTH 190 Coordinated Clinical Practice I **(4 cr.)**
(See General Usage Courses Section)

RPTH 231 Cardiopulmonary Science I **(3 cr.)**
Prerequisites: RPTH 145, or permission of Program Head. Pharmacological basis of drugs used in cardiovascular and respiratory therapy. Focus upon theory, origin, and source of drugs; prescriptions, mathematics of dosages and solutions, action, influencing conditions, preparation, administration. Lect. 3 hrs. per wk.

RPTH 232 Cardiopulmonary Science II **(4 cr.)**
Focus upon anatomy and physiology as it relates to cardiovascular and respiratory systems. Basic normal and abnormal function and patterns of thorax and contents, basic embryology - comparing neonatal states to adult. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RPTH 233 Cardiopulmonary Science III **(4 cr.)**
Pathophysiology of Medical and Surgical diseases treatment. Emphasis upon therapy's relation to basic pathological processes of disease problems from standpoint of etiological, symptomatic, diagnostic, therapeutic, and prognostic point of view. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RPTH 234–235 Cardiopulmonary Science IV–V **(2 cr.) (2 cr.)**
Prerequisites: RPTH 231, RPTH 232 or permission of Program Head. Pathophysiology of cardiopulmonary diseases and disorders of the adult and child. Emphasis is upon current therapeutic modalities in the care of patients with cardiopulmonary diseases. Discussions of etiologic, symptomatic, diagnostic and prognostic facets of each disease presented. Lect. 2 hrs. per wk.

RPTH 236 Fundamental Arts II **(3 cr.)**
Focus upon administration, economics, planning and development of technical department management. Also ethics, professional behavior and responsibility,

RPTH 241 Fundamental Theory and Procedures III **(4 cr.)**
Prerequisites: RPTH 242, RPTH 232 or permission of Program Head. Focus upon advanced techniques of ventilatory management including respiratory monitoring, patient care plans, integration of team care. Emphasis on acute, intensive care patient cardio-respiratory problems. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RPTH 242 Fundamental Theory and Procedures IV **(4 cr.)**
Prerequisites: RPTH 145, RPTH 231, or permission of Program Head. Focus upon cardio-pulmonary resuscitation and air-way management plus management of emergencies involving cardio-respiratory problems in both adults and infants. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RPTH 243 Fundamental Theory and Procedures V **(4 cr.)**
Prerequisites: RPTH 241, or permission of Program Head. Focus upon pulmonary function testing and diagnostic, blood gas analysis and gas analysis emphasizing relation to physiological states and interpolation to patient care objectives. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

RPTH 290 Coordinated Clinical Practice **(1–5 cr.)**
Prerequisites: RPTH 190, RPTH 231 or permission of Program Head. (see General Usage Courses section)

RPTH 298 Seminar and Project **(1–5 cr.)**
Prerequisites: Students must be enrolled in the second year of the RPTH Program. Variable hrs. (see General Usage Courses section)

RUSSIAN

RUSS 101–102–103 Introductory Russian I–II–III **(4 cr.) (4 cr.) (4 cr.)**
Fundamentals of Russian grammar; elementary translation, conversation, and reading. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SCIENCE TECHNOLOGY

SCTE 101–102–103 Science Technology Techniques I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A modularized course in the study of techniques widely used in the scientific, technical occupations within the area. Modules will include: (1) recordkeeping, use of pH meter, colorimeter, solution preparation, care and cleaning of glassware, use of simple and analytical balances; (2) computations of laboratory data, microscopic techniques, titration, pipetting, concepts of biochemistry; (3) bacterial culturing, media making, metric measurements, use of Spectronic 20, serial dilutions, slide specimen preparation. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SCTE 111–112–113 Introduction to Environmental & Science Technology **(4 cr.)(4 cr.)(4 cr.)**
Introduces students to basic sciences which describe their physical environment. Includes fundamental of: Geology, Meterology, Physics, Chemistry and Biology. Basic scientific principles are described and related to commonplace natural phenomena and activities of man, by appropriate emphasis on field experiences and measurements. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

SCTE 120 Fundamentals of Field Biology **(4 cr.)**
A field-oriented study of terrestrial and aquatic systems with emphasis on sampling techniques, vegetation analysis, animal populations and animal behavior. Course work will include field projects and optional weekend field trips. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

SCTE 125 Applied Science Techniques II **(3 cr.)**
Operating laboratory equipment, field settings, and experiences in an on-the-job setting. Modules, some prepared by personnel in the cooperating laboratories, will include air pollution measurements, water sampling, and animal care. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SCTE 198 Seminar and Project **(1-5 cr.)**
(See General Usage Courses Section)

SCTE 199 Supervised Study **(1-5 cr.)**
(See General Usage Courses Section)

SCTE 204–205 Science Technology Techniques IV–V **(3 cr.) (3 cr.)**
Continuation of SCTE 103. Prerequisites: SCTE 103, 125. A modularized course in the study of advanced and specialized techniques widely used in the scientific, technical occupations within the area. Modules will include use of ion exchange apparatus, microtone, radiation techniques, tailored to particular student interests and employment prospects. Emphasis upon understanding concepts underlying techniques and upon ingenuity in modifying techniques for special purposes. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SCTE 221–222–223 Science Technology Applications I–II–III **(3 cr.) (3 cr.) (3 cr.)**
Prerequisites SCTE 103, 125. Technical applications in an on-the-job setting. Emphasis upon specialized equipment, learning in actual laboratory setting, diversity in technique types, the development of capacity for independent work. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SCTE 290 Coordinated Internship **(1–5 cr.)**
(See General Usage Courses Section)

SCTE 298 Seminar and Project **(1–5 cr.)**
(See General Usage Courses Section)

SCTE 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

SECRETARIAL SCIENCE

SECR 100 Secretarial Skill Review (3 cr.)
Designed to provide the educational secretary with the opportunity to review office skills based on individual needs in typewriting, shorthand, machine transcription, and selected office machines. Lect. 3 hrs. per wk.

SECR 110 Personal Typing (2 cr.)
A course in typing designed to teach the keyboard, simple techniques: emphasis on accuracy, preparation of reports, letters, and other typing requirements. Lect. 1 hr., Lab. 2 hrs., Total 3 hrs. per wk.

SECR 111 Typewriting I (3 cr.)
Introductory course in typewriting with emphasis on good keyboard technique and machine operation. Special emphasis on letter format, tabulation and centering problems, and manuscript typing. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SECR 112 Typewriting II (3 cr.)
Prerequisite SECR 111 or equivalent. Continuation of skill building with emphasis on standards required to meet job requirements in production typing. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SECR 113 Typewriting III (3 cr.)
Prerequisite SECR 112 or equivalent. Skill development with high standards required to meet job requirements in production typing. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SECR 121 Shorthand I (4 cr.)
Presentation of shorthand principles in Gregg Shorthand for Colleges, Series 90 with emphasis on basic reading and writing skills, associated vocabulary and grammar. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 122 Shorthand II (4 cr.)
Prerequisite SECR 121 or equivalent. Completion of shorthand theory and reinforcement of shorthand principles, further development of general business vocabularies and English usage. General business dictation. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 123 Shorthand III (4 cr.)
Prerequisite SECR 122 or equivalent. Increased speed in general business dictation. Introduction of specialized business dictation with emphasis on vocabularies. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 131–132–133 Shorthand Machine Skills I–II–III (4 cr.)
Construction and operation of the machine, basic and advanced writing skills, rapidity in writing skills, development of vocabulary in general and technical language, general and technical letters and technical papers, additional dictation practice. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 136 Filing and Records Management (3 cr.)
Indexing principles, filing procedures and techniques as applied to filing systems, establishment of filing system, selection of equipment and supplies. Survey of system using electronics and microfilm, solution of records management problems. Lect. 3 hrs. per wk.

SECR 138 Office Recordkeeping (3 cr.)
Concentration on the types of recordkeeping duties performed by secretaries including financial, tax, payroll, personnel and inventory. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 139 Clerical Procedures (3 cr.)
Designed to fuse skills acquired in typewriting, recordkeeping, business mathematics, and communication classes in performing clerical activities in the office. Special emphasis is placed on development of skills in the operation of stencil and spirit duplicating machines, selection of duplication process, and study of type styles, paper, typewriter ribbons. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 146 School Recordkeeping & Records Management (3 cr.)
The keeping of financial, student, personnel, inventory, and other records with particular emphasis on the student attendance register. Indexing principles review, filing procedures and techniques as applied to educational systems. Lect. 3 hrs. per wk.

SECR 148 Educational Secretarial Procedures (3 cr.)
Secretarial procedures unique to educational organizations including special correspondence, reproduction requirements, preparation of educational reports, proposals, visual aids, and vocabulary development. Lect. 3 hrs. per wk.

SECR 156 Personal Development (3 cr.)
A course designed to develop, enlarge and improve the personality, over-all appearance, ease in handling business and social situations with resulting self-confidence in job interviews, placement and continued employment. Lect. 3 hrs. per wk.

SECR 158 Elements of Transcription (3 cr.)
A comprehensive study of the skills essential to transcription effectiveness; mechanics of spelling, work differentiation, and punctuation; work syllabification, division, and capitalization; and mechanics of sentence structure. Lect. 3 hrs. per wk.

SECR 197 Cooperative Education (1–5 cr.)
(See General Usage Courses Section)

SECR 211-Office Systems and Procedures I (4 cr.)
Prerequisite SECR 113 or divisional permission. Study of word-processing management, office layout and landscape, research in office supplies and equipment, review of copying and duplicating equipment, application of stencil techniques, and in-baskets. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 212 Office Systems and Procedures II (4 cr.)
Prerequisite SECR 211 or divisional permission. Continuation of SECR 211 with special emphasis on secretarial procedures and responsibilities in the following areas: Office receptionist, telephone and appointment calendar techniques, mail handling, communication services including composing of business correspondence, travel and conference arrangements, and in-baskets. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 213 Office Systems and Procedures III (4 cr.)
Prerequisite SECR 212 or divisional permission. Continuation of SECR 212 with special emphasis on secretarial responsibilities in collecting business information,

processing and presenting business data, maintaining records in banking, securities, and insurance transactions, payroll and tax procedures, and in-baskets. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 216 Executive Typewriting (3 cr.)
Prerequisite SECR 113 or equivalent. Further development of speed and accuracy on production typing with emphasis on employment standards. Instruction in use of the executive style typewriters, reports, tabulations, statistical materials and justified copy. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 217 Typewriting Skill Building (3 cr.)
Prerequisite SECR 113. Further development of speed and accuracy on production and in-basket typing with emphasis on employment standards. Preparation for employers' secretarial placement examination. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SECR 219 Magnetic Tape Selectric Typewriter (3 cr.)
Prerequisite SECR 113. Operation of automatic typewriter, procedures for recording and playing back from tapes, revision and updating of tapes, merging information from two tapes. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SECR 220 Magnetic Card Executive Typewriter (1 cr.)
A self-instructional laboratory course designed to develop proficiency in the operation of the Magnetic Card Executive Typewriter. Lab. 3 hrs. per wk.

SECR 221 Advanced Shorthand and Transcription I (3 cr.)
Prerequisites SECR 123 or equivalent. Review of principles of shorthand, development of vocabulary and phrases, speed building on general business dictation and transcription. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 222 Advanced Shorthand and Transcription II (3 cr.)
Prerequisite SECR 221. Continuation of speedbuilding with emphasis on particular areas of general business, developing special vocabularies phrases, and shortcuts. Emphasis on spelling, grammar, and other transcription skills. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 223 Advanced Shorthand and Transcription III (3 cr.)
Prerequisite SECR 222. Speed building in typical business dictation with speed and accuracy in transcription from shorthand notes. Preparation for employers' secretarial placement examinations. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 227 Medical Transcription (3 cr.)
Prerequisite SECR 222. Medical secretary preparation. Skill in taking dictation and transcribing material involving medical shorthand forms and phrases. Proficiency in use of medical vocabulary, forms and procedures. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 231 Legal Transcription I (3 cr.)
Prerequisite SECR 123 or equivalent. Skill in taking dictation and transcription is developed through concentrated study and practice of high-frequency law terminology. The meanings, usage, spelling, pronunciation, and construction of shorthand outlines for the more common legal terms are stressed. Study of foreign-language syllables appearing in law terms is emphasized. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 232 Legal Transcription II (3 cr.)
Prerequisite SECR 231. A further refinement in taking and transcribing material involving legal shorthand forms and phrases. The preparation of client and court documents. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 233 Legal Transcription III (3 cr.)
Prerequisite SECR 232. Further development of skill in taking dictation and transcribing material similar to that used in courts and legal offices. Emphasis is on speed and accuracy in production. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 236 Specialized Typewriter Applications (3 cr.)
Prerequisite SECR 113. Development of proficiency in use of a variety of specialized typewriters, including the executive typewriter and automatic typewriters involving magnetic tape or cards and similar electronic word processing devices. Emphasis on techniques and application with development of speed and accuracy in production operation. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SECR 237 Principles of Word Processing (3 cr.)
Prerequisite SECR 113 or permission. Principles of operating a word processing center. Development of proficiency in the use of a variety of specialized typewriters, including the use of power typing equipment and electronic dictation equipment. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SECR 251 Legal Secretarial Procedures I (4 cr.)
Prerequisite SECR 113 or equivalent. Research into community service agencies that are essential to the law office. Procedures involving legal vocabulary. Techniques required for the form and style of client and legal documents. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 252 Legal Secretarial Procedures II (4 cr.)
Prerequisite SECR 251. Instruction in law office procedures, law office filing, record keeping, and reference materials. The preparation of forms, court documents and instruction necessary to commence, continue, and conclude a legal matter. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 253 Legal Secretarial Procedures III (4 cr.)
Prerequisite SECR 252. Further refinement and simulation of procedures followed in law offices and courts, including specialized machine transcription, field trips, seminars. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 254–255 Advanced Machine Transcription I–II (3 cr.) (3 cr.)
Prerequisite SECR 113 or divisional permission. Introduction to and development of modern machine transcription incorporating efficient operation of transcribing equipment, good listening techniques, grammar, punctuation, correct business English usage and business formats. Emphasis is placed on high production rates of mailable copy. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 257 Machine Transcription-Medical (3 cr.)
Prerequisite SECR 254 and HLTH 125. Development of machine transcription skills, integrating efficient operation of transcribing equipment with understanding of medical terminology. Emphasis is placed on accurate transcription of medical documents in prescribed for-

mats. In addition, experience is provided for operation of dictation unit, with instruction on proper dictation techniques. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SECR 271 Medical Secretarial Procedures I **(4 cr.)**
Prerequisite SECR 113 or division permission. Study of role and qualifications of medical secretary; medical office management, telephone procedure, patient interaction, and record keeping; communication services. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 272 Medical Secretarial Procedures II **(4 cr.)**
Prerequisite SECR 271 or division permission. Study of billing methods, health insurance, maintenance of financial records relating to medical office; medical law and ethics; activity of medical societies. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 273 Medical Secretarial Procedures III **(4 cr.)**
Prerequisite SECR 272 or division permission. Study of medical secretary's responsibilities in assisting with professional reports, making travel arrangements; study of medical specialties, roles of clinical medical assistant and hospital secretary; preparation for the job-hunting campaign and future advancement. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk.

SECR 297 Cooperative Education **(1–5 cr.)**
(See General Usage Courses Section)

SECR 298 Seminar and Project **(1–5 cr.)**
Prerequisite SECR 222 and SECR 212 or program permission. (see General Usage Courses section)

SECR 299 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

SOCIAL SCIENCE

SOSC 101–102–103 Contemporary American Civilization I–II–III **(3 cr.) (3 cr.) (3 cr.)**
An analysis of the factors involved in the development of the American Society and American Culture to develop an understanding of American history. American government, American economics, and man's role in society. These courses need not be taken sequentially. Lect. 3 hrs. per wk.

SOSC 121–122–123 Current American Social Problems I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A survey of contemporary America from the perspective of the Social Sciences designed to provide a basis for the forming of individual judgments on major American domestic issues. The Constitution of the United States provides a primary vehicle for exploration of problems underlying current political, economic, social and individual behavioral patterns and for discussions of relevant applications in the news of today. Lect. 3 hrs. per wk.

SOSC 180 Man in the Modern World **(3 cr.)**
Prerequisite division permission. Survey of contemporary social, political, and economic problems related to industrialization, urbanization, the role of government, national and international tensions. Lect. 3 hrs. per wk.

SOSC 199 Supervised Study **(1–5 cr.)**
(See General Usage Courses Section)

SOSC 201–202–203 Introduction to Urbanization I–II–III **(3 cr.) (3 cr.) (3 cr.)**
An interdisciplinary examination of cities, including factors leading to the growth of old and new world cities, the evolution of America as an urban nation, problems associated with urban life, governments and suburbanization. Lect. 3 hrs. per wk.

SOCIOLOGY

SOCI 101–102–103 Introductory Sociology I–II–III **(3 cr.) (3 cr.) (3 cr.)**
SOCI 101 is prerequisite for either SOCI 102 or SOCI 103. The fundamental concepts and the general principles of sociology; social institutions, population study, human ecology and community study, culture, human nature and personality, social interaction and stratification, and social problems. Lect. 3 hrs. per wk.

SOCI 104-105 Introductory Sociology I-II **(5 cr.) (4 cr.)**
The fundamental concepts and the general principles of sociology; social institutions, population study, human ecology and community study, culture, human nature and personality, social interaction and stratification, and social problems. Lect. 5–4 hrs. per wk.

SOCI 116 Child-Parent-Community Relations **(3 cr.)**
This course is designed to assist the student in learning about and utilizing resources within a given community that are designed to create an environment suitable for the development of children. The course will focus on the standards and interrelationships within the community that influence children's developing concepts concerning education, religion, ethical values, and citizenship. Lect. 3 hrs. per wk.

SOCI 170 Introduction to Black American Culture **(3 cr.)**
An introduction to the study of the Black person in America. A broad historical view, population, family, economic and cultural trends; contributions of civic and political leaders, writers and artists. Lect. 3 hrs. per wk.

SOCI 184–185 Contemporary Social Problems I–II **(3 cr.) (3 cr.)**
Application of sociological concepts and methods to the analysis of current social problems in the United States including family and community disorganization, delinquency and crime, mental illness, and intergroup relations. Lect. 3 hrs. per wk.

SOCI 188 Criminology **(3 cr.)**
Volume and scope of crime, the background of criminal behavior in the American setting; organized crime and its affiliated problems; subjective theories and explanation of crime; the control, treatment and rehabilitation of the criminal offender. Lecture 3 hours per week. (This course is also approved for offering as ADJU 176.)

SOCI 211–212–213 Principles of Anthropology I–II–III **(3 cr.) (3 cr.) (3 cr.)**
A survey of the physical, social, and cultural development and behavior of human beings since their appearance on earth. Included will be several interconnected fields: human evolution, physical anthropology, archaeology, cultural anthropology, ethnology, and scientific linguistics. Lect. 3 hrs. per wk.

SOCI 236 Marriage and the Family (3 cr.)
A study of comparative family systems and problems related to marriage and the family. Lect. 3 hrs. per wk.

SOCI 237 Marriage and the Family (5 cr.)
Prerequisite SOCI 101, 104, or 185. A study of comparative family systems and problems related to marriage and the family. Lect. 5 hrs. per wk.

SOCI 240 Introductory Anthropology (3 cr.)
A study of the origin and evolution of man based upon the fossil record, and an analysis of the status of modern racial grouping. Lect. 3 hrs. per wk.

SOCI 244 Physical Anthropology and Archaeology (5 cr.)
A study of the origin and evolution of man based upon the fossil record, and an analysis of the status of modern racial grouping. Lect. 5 hrs. per wk.

SOCI 246 Cultural Anthropology (3 cr.)
The application of the concept of culture to the study of contemporary societies, both primitive and modern. Such institutional areas as magic and ritual, crime, custom, law, economy, courtship, marriage and childbearing will be analyzed cross-culturally. Lect. 3 hrs. per wk.

SOCI 247 Cultural Anthropology (5 cr.)
The application of the concept of culture to the study of contemporary societies both primitive and modern. Such institutional areas as magic and ritual, crime, custom, law, economy, courtship, marriage and childbearing will be analyzed cross-culturally. Lect. 5 hrs. per wk.

SOCI 248 Case Studies in Cultural Anthropology (3 cr.)
A comparative, in-depth study of the structure and organization of selected primitive societies. Lect. 3 hrs. per wk.

SOCI 266 Death and Society (3 cr.)
Prerequisites SOCI 101–102–103 or equivalent or with division permission. An in-depth study of the theoretical, practical, and historical aspects of death. Attention will also be focused upon the student's own ideas, feelings, and attitude toward death, dying, and the significance and consequences of those attitudes. Lect. 3 hrs. per wk.

SOCI 276 Social Problems (5 cr.)
Prerequisites SOCI 104 or SOCI 101, 102, and 103. Application of sociological concepts and methods to the analysis of current individual and group social problems in the U.S. Areas which might be considered would include: delinquency and crime, mental illness, drug addiction, alcoholism, sexual behavior, population, ethnic and race relations, poverty, human ecology, automation and cybernation, and war and peace. Lect. 5 hrs. per wk.

SOCI 298 Seminar and Project (1–5 cr.)
Prerequisite division permission. (see General Usage Courses section)

SOCI 299 Supervised Study (1–5 cr.)
Prerequisite division permission. (see General Usage Courses section)

SPANISH

SPAN 101–102–103 Introductory Spanish I–II–III (4 cr.) (4 cr.) (4 cr.)
Introductory training in the understanding, speaking, reading, and writing of Spanish with emphasis on manipulation of the structure of the language. Lect. 3 hrs., Lab. 2 hrs., Total 5 hrs. per wk. *Not recommended for students who have, within the past two years, received 2 years high school or one year college credit for this language.*

SPAN 104–105 Introductory Spanish I–II (6 cr.) (6 cr.)
The understanding, speaking, reading, and writing of Spanish with emphasis on manipulation of the structure of the language. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

SPAN 106 Review of Introductory Spanish (5 cr.)
An intensive review of Spanish structure and phonology; designed for students who have had some previous training in Spanish, but whose proficiency does not qualify them for Spanish 201. *Permission of the division required.*

SPAN 107 Conversation in Spanish (3 cr.)
Prerequisite SPAN 103. Practice in speaking Spanish, stressing correctness of sentence structure, pronunciation, fluency, and the vocabulary of everyday situations. Lect. 3 hrs. per wk.

SPAN 108–109 Conversation in Spanish (3 cr.) (3 cr.)
Prerequisite SPAN 107. Emphasizes the increasingly sophisticated development of oral skills in Spanish. The course provides an intensive review of the vocabulary of every day situations and is designed for students who have had previous instruction in or considerable experience with Spanish. Lect. 3 hrs. per wk.

SPAN 134–135 Spanish for Health Professionals I–II (3 cr.) (3 cr.)
An introductory course designed to integrate easily into varied health oriented curricula and/or serve as an enrichment elective. Emphasis is on oral communication and practical application coordinated with appropriate medical vocabulary and activities. The student will learn by "saying and doing" and will be tested accordingly. Lect. 3 hrs. per wk.

SPAN 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

SPAN 199 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

SPAN 201–202–203 Intermediate Spanish I–II–III (4 cr.) (4 cr.) (4 cr.)
Prerequisite Spanish 103, 106, or successful completion of two years of high school Spanish and permission of the instructor. Advanced training in the classroom. Lect. 3 hrs., Lab. and drill 2 hrs., Total 5 hrs. per wk.

SPAN 204–205 Intermediate Spanish I–II (6 cr.) (6 cr.)
Prerequisite SPAN 105 or successful completion of two years of high school Spanish and division permission. Advanced study in the understanding, speaking, reading, and writing of Spanish. Spanish is used in the classroom. Lect. 5 hrs., Lab. 3 hrs., Total 8 hrs. per wk.

SPAN 206–207–208 Intermediate Spanish I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite SPAN 103 or successful completion of two years of high school spanish and divisional permission. Advanced study in the understanding, speaking, reading, and writing of Spanish. Spanish is used in the classroom. Lecture 3 hours per week.

SPAN 221–222–223 Intermediate Spanish Conversation I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite SPAN 203 or equivalent. Additional training in understanding and speaking Spanish with continued but specific emphasis on basic structures and idioms. Reading and writing are minimized. Spanish is used in the classroom. Lect. 3 hrs. per wk.

SPAN 231–232–233 Survey of Spanish Literature and Civilization I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite SPAN 203 or equivalent. An introduction to Spanish life and culture and to the contributions of Spain to world civilization from medieval times to the present. Readings in the original Spanish. Spanish is used in the classroom. Lect. 3 hrs. per wk.

SPAN 234–235–236 Hispanic Culture and Civilization I–II–III (3 cr.) (3 cr.) (3 cr.)
Prerequisite SPAN 103. An introduction to Hispanic Culture with emphasis on Latin American life and civilization and including literature survey. Spanish is used in the classroom. Lect. 3 hrs. per wk.

SPAN 298 Seminar and Project (1-5 cr.)
(See General Usage Courses Section)

SPAN 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

SPEECH AND DRAMA

SPDR 06 Developmental Speech (1–5 cr.)
A developmental course designed for students who need help in oral communication. Emphasis, through oral, auditory and written exercises, will be placed on vocabulary, spelling, articulation, pronunciation, pitch and rate. Students may register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

SPDR 106–107 Introduction to the Theatre I–II (3 cr.) (3 cr.)
The principles of drama; the study of the development of theatre production; study of selected plays as theatrical presentations. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

SPDR 111–112–113 Acting I–II–III (3 cr.) (3 cr.) (3 cr.)
A study of styles of acting. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SPDR 119 Theatre Workshop (1–5 cr.)
Organization and work in the various activities of play production. Practice in set design, stage carpentry, theatre development, sound, costumes, lights, stage managing, props, promotion, and stage crew. May be repeated for credit. Variable hrs.

SPDR 130 Principles of Public Speaking (5 cr.)
Theory and principles of public address. Emphasis will be on preparation and delivery. Lect. 5 hrs. per wk.

SPDR 131–132–133 Fundamentals of Public Speaking I–II–III (3 cr.) (3 cr.) (3 cr.)
Introduction to the art of public speaking, covering analysis of audience and occasion, organization, writing and wording, rhetorical argumentation, and delivery. Practice in forms of expository public speaking, persuasive speaking, and special types of public address. Lect. 3 hrs. per wk.

SPDR 136 Oral Communications (3 cr.)
A study of effective communication with emphasis on speaking and listening. Lect. 3 hrs. per wk.

SPDR 137 Public Speaking (3 cr.)
Development of skill in speechmaking. Lect. 3 hrs. per wk.

SPDR 141-142-143 Voice and Diction (3 cr.)(3 cr.)(3 cr.)
A Study through phonetics of the correct speech sounds, drills in pronunciation, enunciation, and voice usage. Lect. 3 hrs. per wk.

SPDR 157 Debate (3 cr.)
Prerequisite either SPDR 130, 136, 137, or permission of the division. The presentation of oral argument and debate. Emphasis upon effectiveness in the analysis of issues, evidence, the reasoning process and skill in oral presentation. Lect. 3 hrs. per wk.

SPDR 158 Forensics (1–5 cr.)
This course is designed to provide students with an opportunity to improve their communication skills in speaking situations both within the classroom environment and outside of the classroom. The course includes instruction in the preparation and delivery of the various competitive speech activities including persuasive speaking, extemporaneous speaking, impromptu speaking and the oral interpretation of literature. This course may be repeated for credit.

SPDR 184 Industrial and Organizational Communication I (3 cr.)
The course examines the structure, methodology and application of communication theory in the industrial and organizational setting. Lect. 3 hrs. per wk.

SPDR 198 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

SPDR 199 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

SPDR 201–202–203 History of Theatre I–II–III (3 cr.) (3 cr.) (3 cr.)
A survey of theory and history of the theatre from Greeks to the Modern. Lect. 3 hrs. per wk.

SPDR 215–216 Rehearsal and Performance I–II (4 cr.) (4 cr.)
Prerequisite by audition only. Study in acting and production in a college theatre production; each student is expected to devote a minimum of 30 hours per credit per quarter to receive credit. Lab. 12 hrs. per wk.

SPDR 218 Directing (3 cr.)
Fundamentals of stage direction. Lect. 3 hrs. per wk.

SPDR 230 Advanced Public Speaking (5 cr.)
Prerequisite either SPDR 130, 136, 137 or division approval. Preparation and delivery of the various advanced forms and methods of public address. Lect. 5 hrs. per wk.

SPDR 256–257 Group Discussion I–II (3 cr.) (3 cr.)
Techniques and purposes of group discussion. Lect. 3 hrs. per wk.

SPDR 266 The Art of the Film (3 cr.)
An introduction to the art of the film: a survey of the history of the film; viewing, discussion and analysis of selected films; introduction to the film techniques of

composition, shot sequence, lighting, visual symbolism, sound effects, editing. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

SPDR 276 Oral Interpretation (3 cr.)
Prerequisite divisional permission or speech communication course. Introduction to the study of techniques and styles of oral reading. Lect. 3 hrs. per wk.

SPDR 298 Seminar and Project (1–5 cr.)
(See General Usage Courses Section)

SPDR 299 Supervised Study (1–5 cr.)
(See General Usage Courses Section)

URBAN-REGIONAL PLANNING AND DEVELOPMENT

URPD 100 Survey of Planning and Development (3 cr.)
Introduction to planning and development. Advantages of regional approach to planning along with benefits of inter-government cooperation in sound planning efforts. Three principal planning functions are studied: (1) Inventory — collection and analysis of planning and engineering data, (2) plan design, (3) plan implementation. Lect. 3 hrs. per wk.

URPD 104 Land Use Planning and Development (3 cr.)
MATH 118 or equivalent; URPD 100. The student develops an understanding of environmental factors to be considered in land use planning, how to determine best locations for various types of development, the process of analyzing and mapping primary and secondary determinants in land uses. The determinants for each type of land use are examined in light of other factors such as environmental impact. Lect. 3 hrs. per wk.

URPD 106 Technology Assessment (3 cr.)
Overview of need for Technology Assessment as a foundation for Planning and Development. Role of Technology Assessment in relation to Architecture, Engineering, Socio-Political and Legal problems in planning. Lect. 3 hrs. per wk.

URPD 108 Urban-Regional Planning, Etiology and Theory (3 cr.)
The background of orderly planning and development. Concepts in planning processes and insights into urban-regional growth and change, social structure and environmental problems. Examination of political, economic and social causes of growth problems and research in spatial structure. Lect. 3 hrs. per wk.

URPD 116 Urban-Regional Legislation and Regulations (3 cr.)
Prerequisite URPD 100. A study of legislation and the legal aspects of planning and development in a democratic society. Analysis and evaluation of planning policies, enabling legislation, zoning, land development, building codes and urban renewal. The effects of federal legislation on planning. Lect. 3 hrs. per wk.

URPD 200 Facilities Planning and Development (3 cr.)
Prerequisite URPD 104. Consideration of planning services in the economical and effective utilization of various facilities in areas such as a region (combination of local jurisdiction and within the respective jurisdictions). Urban-regional interdependence is stressed in the development of public systems including water resources, education, power, sewer, protection and other public services. Lect. 3 hrs. per wk.

URPD 201 Planning Procedures I— Functional Process of Planning Inventory (3 cr.)
Corequisites: URPD 200; DAPR 106. Students to collect, analyze and disseminate planning data on a continuing, uniform basis; it includes practical studio experience procedures for maintaining a data bank on land use, solid, population, surface and ground water quality, circulation of transportation and on sites having scenic, recreational or cultural value. Students are involved in procedures for pre-designing structures for planning information systems. Lect. 2 hrs. per wk. Lab. 2 hrs., Total 4 hrs. per wk.

URPD 202 Planning Procedures II— Developing Area Design Through Systems Engineering (3 cr.)
Corequisites: BUAD 254; DAPR 120. Emphasizes planned regional development important to attractive, efficient and healthful population distribution. Utilizing data from planning inventory and data bank studied earlier, students are involved in procedures of a systems approach to planning. They seek to achieve good design by (1) setting objectives (2) creating alternative plans (3) team activity (4) relating design to the total environment. Lect. 2 hrs., Studio 2 hrs., Total 4 hrs. per wk.

URPD 203 Planning Procedures III—Plan Programming and Implementation (3 cr.)
Prerequisite URPD 202. Voluntary cooperative local and regional implementation of planning programs is emphasized. The concept of planning unit development is carried out in studio situations. Attention is given to zoning, social service needs, public works and land use control laws. Students gain insight into environmental and other factors that limit areas for urban development. Lect. 2 hrs., Studio 2 hrs., Total 4 hrs. per wk.

URPD 206 Administration of Planning: Role of the Para-Professional (3 cr.)
Prerequisite URPD 201. Basic concepts in Planning Management, growth control techniques, organization and planning policies are studied. The student becomes acquainted with government operation, personnel organization, financial planning and budget analysis and utilization of data processing in fiscal administration. Job descriptions are reviewed and potential employers are identified. Lect. 3 hrs. per wk.

URPD 207 Transportation Planning (3 cr.)
Prerequisite URPD 201. Importance of balance among various modes of transportation is emphasized as well as the impact of energy shortages on the transport system. Transportation planning principles and policy problems are studied along with methods of analyzing demand and choices of systems for circulation of people and goods by land and by air by a balanced total system. Lect. 3 hrs. per wk.

URPD 209 Advanced Techniques in Planning (3 cr.)
Prerequisite URPD 202. Corequisites URPD 203 and 206. Advanced methods and techniques in functional structuring or spaces used for various purposes — Quantitative analysis in planning. Synthesizes planning

data and prepares and conducts planning presentations. Fundamental planning research is carried out including case studies. Proficiency in aerial photograph techniques and visual presentation is emphasized. Lect. 2 hrs., Lab. 2 hrs., Total 4 hrs. per wk.

URPD 297 Planning Cooperative Education **(1 cr.)**

A work-study program in planning and development. The student is engaged in an approved planning agency under qualified supervision.

URPD 298 Seminar in Planning and Development **(2 cr.)**

The seminar requires the successful completion of a research project related to the student's occupational objectives.

WELDING

WELD 21-22-23 Arc Welding I-II-III **(3 cr.)(3 cr.)(3 cr.)**

The operation of AC transformers and DC motor generator arc welding sets. Welding polarities, heats, and electrodes for use in joining various metal alloys by the arc welding process. Running beads, butt and fillet welds in all positions, to detect weakness. Safety procedures emphasized. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

WELD 30 Inert Gas Welding **(3 cr.)**

Introduction and practical operations in the use of inert-gas-shield arc welding. Equipment, operation safety, practice in the various positions, shielding gases, filler rods, process variations and applications, manual and automatic welding. Lect. 2 hrs., Lab. 3 hrs., Total 5 hrs. per wk.

WELD 115 Arc and Gas Welding **(4 cr.)**

Arc and gas welding practices. Safety, general welding practices and effects of welding on metal. Lect. 3 hrs., Lab. 3 hrs., Total 6 hrs. per wk.

WELD 41-42-43 Welding Tests I-II-III **(2 cr.)(2 cr.)(2 cr.)**

Techniques and practices of testing welded joints; destructive and non-destructive tests, guiding, discoloration heat tests, porous examinations, tensile, hammer and free bend tests, visual, magnetic, fluorescent and radiographic tests. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

WELD 51–52 Oxyacetylene Welding and Cutting I–II **(3 cr.) (3 cr.)**

Introduction to the history of oxyacetylene welding, the principles of welding and cutting, nomenclature of the equipment, assembly of the puddle, running flat beads, butt welding in the flat, vertical and overhead position, brazing, hard and soft soldering. Safety procedures in the use of tools and equipment. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

WELD 60 Welding Quality Control **(2 cr.)**

Techniques and practices of inspection, interpretation of tests and measurements and preventive measures to assure accuracy and bending. Lect. 1 hr., Lab. 3 hrs., Total 4 hrs. per wk.

WELD 106 Pipe Welding **(3 cr.)**

Shielded metal, arc welding processes including the welding of pressure piping in the horizontal, vertical, and horizontal — fixed positions. Practices will be in accordance with sections VIII and IX of the ASME Code. Lect. 1 hr., Lab. 6 hrs., Total 7 hrs. per wk.

Faculty and Staff

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 Coll., M.Ed., Shippensburg State Coll., Ph.D., Lehigh Univ.; *English (AN)*

Adams, Muriel H.; *Instructor;* A.A., Central Fla. Jr. Coll., B.S., Medical Coll. of Ga.; *Medical Record Technology (AN)*

Adamson, Alice L.; *Instructor;* B.S., Maryville Coll., M.S., California State Univ.; *Mathematics (AN)*

Aiello, Nancy C.; *Assoc. Prof.;* B.A., M.S., Syracuse Univ., Ph.D., V.P.I. & S.U.; *Chairman, Nat. & Applied Science (LO)*

Alcorn, Fidele L.; *Ass't Prof.;* B.S., M.S., Howard Univ.; *Chemistry (AN)*

Alford, Terry; *Assoc. Prof.;* B.A., M.A., Ph.D., Mississippi State Univ.; *History (AN)*

Allen, Eileen A.; *Assoc. Prof.;* A.B., Univ. of Md., M.A., Geo. Wash. Univ.; *English (AN)*

Allen, W. Gordon; *Instructor;* A.A., No. Va. Comm. College, B.S., U.S. Military Academy, M.B.A., Geo. Washington Univ.; *Accounting (LO)*

Allison, David; *Instructor;* A.B., Wilmington Coll.; *Photography (AL)*

Altomare, Robert E.; *Ass't Prof.;* B.S., Capitol Inst. of Technology; *Electronics (WO)*

Anderson, Carol L.; *Ass't Prof.;* A.S., Ferrum Coll., B.S., M.S., Virginia Commonwealth Univ.; *Business Management & Accounting (AL)*

Anderson, Ellen J.; *Instructor;* B.S., Fayetteville State Univ., M.L.S., Pratt Institute; *Reference Librarian (LO)*

Appleby, Sheila A.; *Ass't Prof.;* B.A., M.S., Florida State Univ., Ph.D., Univ. of Florida; *Community Services Program Developer (AN)*

Arrington, Pamela G.; *Ass't. Prof.;* B.A., Spelman Coll., M.A., Univ. of Michigan; *Coord., Affirmative Action, Minority Affairs & Grant Development (CS)*

Atchison, Evelyn S.; *Assoc. Prof.;* B.S.N., Duquesne Univ., M.S.N., Catholic Univ. of America; *Nursing (AN)*

Atwater, Thomas C.; *Ass't Prof.;* B.S., M.A.C.T., Univ. of N.C.; *Business Management (AL)*

Auvil, Jean R.; *Ass't Prof.;* A.B., Berea Coll., M.A., American Univ.; *Art (AL)*

Avery, Fay; *Professor;* B.A., Parsons Coll., M.Ed., Univ. of Buffalo; *Coordinator, Cooperative Education (AL)*

Bachtell, Janice E.; *Assoc. Prof.;* M.S., Catholic Univ.; *Nursing (AN)*

Bailey, Haroldine; *Ass't Prof.;* B.A., Colby Coll., M.Ed., Howard Univ.; *Counselor (AL)*

Bailey, Raymond C.; *Ass't Prof.;* A.B., Catawba Coll., M.A., Ph.D., Univ. of Georgia; *History/Government (MA)*

Bailey, Sandra; *Ass't Prof.;* B.S., Indiana Univ.; *Head, Medical Record Technology Program (AN)*

Baker, Brian D.; *Ass't Prof.;* A.A.S., Lansing Community Coll.; *Appliance Repair (AL)*

Baldwin, Susan M.; *Ass't Prof.;* B.A., Boston Coll., M.A., Univ. of Ky.; *Foreign Languages (AN)*

Baldwin, Warren J., *Ass't Prof.;* B.S., SUNY Genesco, M.S.Ed., SUNY Plattsburgh; *Counselor (AN)*

Ballmann, Gary E.; *Ass't Prof.;* B.A., Univ. of Missouri, M.S., Texas Christian Univ.; *Medical Lab. Tech. (AL)*

Banas, Edward J.; *Instructor;* B.A., Rutgers Coll., M.B.A., Rutgers Univ.; *Accounting (WO)*

Banks, Anne J.; *Assoc. Prof.;* B.A., Wellesley Coll., M.F.A., George Washington Univ.; *Ass't Division Chairman, Fine Arts & Comm. Art (AL)*

Bannon, John E.; *Instructor;* B.F.A., Maryland Inst. Coll. of Art, M.F.A., Univ. of Pa.; *Art (AN)*

Barbaro, Ronald D.; *Ass't Prof.;* B.A., Providence Coll., M.S., Univ. of Rhode Island, Ph.D., Rutgers Univ.; *Environmental Science (WO)*

Bashir, Farooq; *Instructor;* B.S., George Washington Univ., M.B.A., American Univ., M.A., Catholic Univ.; *Data Processing/Business Administration (WO)*

Bassett, Max L.; *Professor;* B.A., M.A., SUNY at Albany, M.S., Calif. State Coll. at L.A., Ed.S., Ed.D., Univ. of Fla.; *Dean for Student Services (CS)*

Baten, Abdul; *Assoc. Prof.;* B. Com Hons; M. Com, DACCA Univ.; M.B.A., American Univ.; *Accounting (MA)*

Bausch, Richard; *Instructor;* B.A., George Mason Univ., M.F.A., Univ. of Iowa; *English (AL)*

Bausch, Robert; *Instructor;* B.A., M.A., George Mason Univ.; *English (WO)*

Beeson, Sandra J.; *Instructor;* B.A., Purdue Univ. M.S.L.S., Catholic Univ.; *Media Processing Services (CS)*

Belmore, William E.; *Professor;* B.S., State Univ. Coll. of N.Y., M.S., Univ of Oregon, Ed.D., Indiana Univ.; *Coordinator, Learning Laboratory (AN)*

Bennett, Marie A., *Ass't Prof.;* B.S., M.Ed., Virginia Commonwealth Univ.; *Counselor (AL)*

Berg, Lillian D.; *Ass't Prof.;* B.S., Birmingham

Southern Coll., M.S., Emory Univ.; *Chemistry (AN)*

Bergeman, George W.; *Ass't Prof.;* B.A., M.S., Univ. of Iowa; *Mathematics (LO)*

Berger, Morton; *Ass't Prof.;* B.A., Brooklyn Coll., M.A., Ph.D., Yeshiva Univ.; *Psychology (AL)*

Berger, Pamela E.; *Assoc. Prof.;* B.A., Univ. of Mich., M.Phil., Ph.D., George Washington Univ.; *English (AN)*

Bernhardt, Frances A.; *Instructor;* A.E., St. Cloud State Coll., B.S., M.A., Univ. of Minn.; *Acquisitions Librarian (AN)*

Bernier, Joseph W.; *Instructor;* B.S., Univ. of Md., D.D.S., Indiana Univ.; *Coordinator, Dentistry (AN)*

Bigelow, John H.; *Assoc. Prof.;* B.A., San Francisco State Coll., M.A., Ph.D., Michigan State Univ.; *Urban Planning (AL)*

Billups, Fred H.; *Professor;* B.A., Wake Forest Coll., M.Div., Southern Baptist Theological Seminary, M.Ed., Coll. of William & Mary, Ed.D., Univ. of Va.; *Coordinator, Counseling Services (AN)*

Bimstein, Donald; *Assoc. Prof.;* B.S.S., City Univ. of N.Y., M.A., George Washington Univ.; *Administration of Justice (AN)*

Bixler, Linda A.; *Assoc. Prof.;* B.S., M.S., Radford Coll.; *English (AN)*

Bizzaro, Patrick A.; *Assoc. Prof.;* B.A., M.A., SUNY at Brockport, Ph.D., Miami Univ. (Ohio); *English (MA)*

Black, Jacquelyn F.; *Professor;* B.S., B.A., M.S., Univ. of Chicago, Ph.D., Catholic Univ.; *Biology (AL)*

Blackstone, Edith; *Assoc. Prof.;* A.A., Bakersfield Jr. Coll., B.A., Calif. St. Univ., San Jose, M.S., Univ. of Southern Calif.; *Accounting (AN)*

Blair, Katherine K.; *Ass't Prof.;* B.S., State Teachers Coll. at Salem, M.S., V.P.I. & S.U.; *Secretarial Science (LO)*

Blois, Beverly A., Jr.; *Ass't Prof.;* B.A., Stetson Univ., M.A., Univ. of N. Carolina; *History (LO)*

Blois, Marion C.; *Instructor;* B.S., Western Carolina Univ., M.A.T., Univ. of N.C.,; *Biology (MA)*

Blunt, Rosalind; *Ass't Prof.;* B.S., Hampton Inst., M.A., Univ. of Virginia; *English (LO)*

Bodnar, Mary Ellen; *Ass't Prof.;* A.A., Worthington Jr. Coll., B.S., Univ. of Minnesota; *Mathematics (AL)*

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Boltz, Carol; *Ass't Prof.;* B.A., Univ. of N. Carolina, M.Ed., Univ. of Illinois; *English (AN)*

Bone, Gerald P.; *Assoc. Prof.;* B.A., M.A., S.T.B., St. Louis Univ.; *Psychology, Philosophy, Religion (LO)*

Bonette, Samuel J.; *Professor;* B.B.A., Niagara Univ., M.A., George Washington Univ., Ph.D., American Univ.; *Accounting and Business Management (AL)*

Botscheller, John V.; *Assoc. Prof.;* B.S., City Coll. of N.Y., M.S., Univ. of Minnesota; *Chemistry (AL)*

Bowling, Charles Richard; *Ass't Prof.;* A.B., St. Mary's Coll., M.A., Univ. of Ky.; *Counselor (AN)*

Bowling, L. Russell; *Ass't Prof.;* B.S., W. Va. Institute of Technology, M.A., V.P.I. & S.U.; *Head, Automotive (MA)*

Bracke, Peter; *Assoc. Prof.;* B.S., Purdue Univ., M.B.A., Univ. of Chicago, D.B.A., George Washington Univ.; *Planning/Engineering (AL)*

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Bradford, Arnold J.; *Professor;* B.A., Williams Coll., M.A., Cornell Univ., Ph.D., Univ. of Va.; *Div. Chairman, Comm. & Human Studies (MA)*

Bradley, James Lee, III; *Ass't Prof.;* B.F.A., Richmond Professional Institute, M.S., American Univ.; *Ass't to the President for Public Relations (CS)*

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Braun, James F.; *Ass't Prof.;* B.S., U.S. Naval Academy; *Aviation Technology Program (MA)*

Brogan, Barbara L.; *Instructor;* B.A., State Univ. of N.Y., M.E., N. Carolina State Univ.; *Economics (AL)*

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Bulmer, Walter, Jr.; *Assoc. Prof.;* B.S., Salem Coll., M.S., Univ. of Arizona; *Biology (AN)*

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Burdick, Deborah J.; *Instructor;* R.R.T., A.A.S., Forsyth Tech. Inst., B.S., Salem Coll.; *Respiratory Therapy (AN)*

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Burton, Jon C.; *Ass't. Prof.;* B.A., Univ. of Md., M.A., Univ. of Va.; *Ass't. Division Chairman, English (AL)*

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Cady, John C.; *Assoc. Prof.;* B.A., Univ. of Omaha, M.S., Washington State Univ.; *Data Processing (AL)*

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Capps, John R.; *Assoc. Prof.;* B.F.A., M.F.A., Auburn Univ.; *Art (AL)*

Carmichael, Charlene; *Ass't Prof.;* R.D.H., B.S., M.A., New York Univ.; *Program Head, Dental Hygiene (AN)*

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Carter, Thomas E.; *Assoc. Prof.;* B.S., M.S., Va. State College, Ed.D., Temple Univ.; *Mathematics (WO)*

Cavagnaro, Dorothy H.; *Ass't Prof.;* B.H.Sc., McGill Univ., Montreal, Quebec, M.Sc., V.P.I. & S.U.; *Hotel, Restaurant, and Institutional Management (AN)*

Cavert, C. Edward; *Assoc. Prof.;* B.A., North Central Coll., M.S., Syracuse Univ., Ed.D., Univ. of Nebraska; *Coordinator of Learning Systems (ELI)*

Chambers, Barbara F., *Assoc. Prof.;* B.S., M.A., Ph.D., University of Alabama; *Mathematics (WO)*

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Cherner, Nancy; *Instructor;* R.D.H., B.S., Univ. of Maryland; *Dental Hygiene (AN)*

Choate, Robert L.; *Assoc. Prof.;* B.S.E.E., M.S., Physics, Missouri School of Mines; *Electronics (AN)*

Christiana, Gilbert P.; *Instructor;* B.E.E., M.A., George Washington Univ.; *Electronics (WO)*

Chu, Gen Sen; *Professor;* B.A., TamKang Coll., M.S. in L.S., Appalachian State Univ., Ph.D., Univ. of Md.; *Coordinator, Library Services (AL)*

Clark-Lewis, Elizabeth; *Ass't Prof.;* B.A., M.A., Howard Univ.; *History (AL)*

Clarke, Alan R.; *Assoc. Prof.;* ARIC, ARTCS, Univ. of Salford, England, Ph.D., Univ. of Sheffield, England; *Chairman, Environmental and Natural Sciences (WO)*

Clarke, Nancy S.; *Instructor;* B.A., Southwestern Univ. at Memphis, M.S., Univ. of Tennessee; *Coordinator, Cooperative Education (AN)*

Coghlan, Neil C.; *Instructor;* B.S.E.E., Univ. of Wyoming; *Air Cond. and Refriger. (WO)*

Cohen, Eliot I.; *Ass't Prof.;* B.A., Brandeis Univ., M.F.A., Maryland Inst. Coll. of Art; *Photography (LO)*

Cohen, Marietta; *Professor;* B.S.N., Univ. of Wash., M.A., Columbia Univ.; *Nursing (AN)*

Coleman, Edward A.; *Assoc. Prof.;* B.S., The Agricultural & Technical Coll. of N. Carolina, M. Ed., Univ. of Va., *Automotive (MA)*

Coleman, Susan W.; *Ass't Prof.;* A.B., Coll. of William & Mary, M.Ed., Univ. of Va.; *Mathematics (AL)*

Conroy, David E.; *Professor;* B.A., Providence Coll., M.S., Central Connecticut St. Coll., Ed.D., American Univ.; *Ass't Div. Chairman for Developmental Mathematics (AN)*

Conway, Purcell G.; *Ass't Prof.;* B.S., M.S., Madison; *Counselor (WO)*

Cook, Gordon M.; *Professor;* B.S., M.S., Appalachian State Univ., Ph.D., Univ. of Md.; *Director of Learning Resources (WO)*

Cooper, Eunice B.; *Assoc. Prof.;* B.S., Skidmore Coll., M.S.N., Catholic Univ. of America; *Nursing (AN)*

Cooper, James W.; *Instructor;* A.A., Ocean-side Carlsbad Coll., B.A., American Univ.; *Building & Construction (MA)*

Coss, Walter L.; *Ass't Prof.;* B.S.E.E., Carnegie Institute of Technology, M.S.E.E., Univ. of Mich.; *Electronics (AN)*

Cote, James; *Instructor;* B.A., Univ., of Wisc., Eau Claire, M.Ed., Howard Univ.; *Counselor (AL)*

Coughlin, Elizabeth A.; *Instructor;* B.A., Univ. of Rhode Island, M.A., Indiana Univ.; *Speech Communications (AL)*

Creech, Kay F.; *Ass't Prof.;* B.S., East Carolina Univ., M.A., Univ. of Northern Colorado; *Secretarial Science (AN)*

Crippen, Nancy R.; *Instructor;* B.S., George Mason Univ.; M.A., Univ. of Maryland; *Physical Education (WO)*

Croft, Blanton; *Professor;* B.S., Murray State Univ., M.A., Univ. of Michigan, Ann Arbor, Ph.D., Purdue Univ. West Lafayette; *Speech Communications (WO)*

Crossman, Thomas A. H.; *Instructor;* B.A., M.S.Ed., Univ. of Maine; *Counselor (MA)*

Currie, Joyce E.; *Ass't Prof.;* B.A., M.Ed., Univ. of N.C.; *Coordinator, Student Activities (AN)*

Curtin, Bernadette M.; *Instructor;* B.A., Ladycliff Coll., M.S., Univ. of Dayton; *Placement Counselor (AL)*

Daron, Patricia R.; *Assoc. Prof.;* A.B., Upsala Coll., M.S., Long Island Univ., Ph.D., Catholic Univ.; *Biology (AN)*

Daughtry, Jolyne S.; *Ass't Prof.;* B.S., Virginia Commonwealth Univ., M.A., College of William and Mary; *Writer-Editor (ELI)*

Davies, Joanne H.; *Ass't Prof.;* B.A., Mercy Coll., M.B.A., Rutgers Univ.; *Accounting (MA)*

Davis, Mark P.; *Ass't Prof.;* B.A., Univ. of Virginia, M.D., Medical Coll. of Virginia; *Coordinator/Medical Dir., Emergency Medical Tech. (AN)*

Davis, Ronald M.; *Assoc. Prof.;* B.S., Albright Coll., M.A., Univ. of Maryland; *Mathematics (AL)*

Dearing, Stuart Jay; *Assoc. Prof.;* B.A., Western Maryland Coll., M.S., Univ. of Maryland; *Biology (AN)*

Deaton, F. Eric; *Assoc. Prof.;* B.A., Univ. of North Carolina, M.A.C.T., Univ. of Tennessee; *Government (AN)*

DeGastyne, Serge; *Professor;* B.A., Univ. of Portland, M.M., Ph.D., Univ. of Maryland; *Music (AL)*

Delia, Carol A.; *Ass't Prof.;* B.S., Slippery Rock Coll., M.A., Seton Hall Univ.; *Counselor (AN)*

Del Popolo, Anthony J., Sr.; *Professor;* B.S., State Univ. Coll., Buffalo, N.Y., M.A., George Washington Univ., M.S., State Univ. Coll., Albany, N.Y., M.S.C.A., American Univ., D.A.G.S., Univ. of Va.; *Administration of Justice (AN)*

Dempsey, William M.; *Ass't Prof.;* B.A., Univ. of Md., M.S., Colorado State Univ.; *Automotive Tech. (AL)*

Dennin, Marjorie C.; *Assoc. Prof.;* A.B., Mount Union Coll., M.S.L.S., Catholic Univ. of America; *Director of Learning Resources (AN)*

Denton, Irving L.; *Ass't Prof.;* B.S., Indiana Univ., M.B.A., Univ. of Texas; *Accounting (AN)*

Depczenski, Robert G.; *Assoc. Prof.;* B.S., Penn. State Univ., M.Ed., Univ. of Va., Ph.D., American Univ.; *Counselor (LO)*

Devers, Donald R.; *Ass't Prof.;* B.A., Univ. of Hawaii, M.A. (Equiv.), Catholic Univ. of America; *Psychology (AN)*

Devlin, Patrick; *Instructor;* A.A.S., Northern Va. Comm. Coll., B.S., V.P.I. & S.U.; *Automotive Technology (AL)*

Di Pasquale, Paul Albert; *Instructor;* B.A., Univ. of Va., M.F.A., Va. Commonwealth Univ.; *Visual Arts (AN)*

Dickson, Barbara B.; *Instructor;* B.S., Univ. of Maryland, M.S., Univ. of Massachusetts; *Physical Education (AN)*

Dickson, Elizabeth A.; *Professor;* B.A., Eckerd Coll., M.Ed., Univ. of Va., Ed.D., V.P.I. & S.U.; *Counselor (LO)*

Distefano, Ellen; *Instructor;* B.A., M.A., Louisiana State Univ.; *Speech & Theatre Arts (AN)*

DiStefano, Judy M.; *Assoc. Prof.;* B.A., Central Washington St. Coll., Ph.D., Ohio St. Univ.; *History (AN)*

Dixit, Dhruv B.; *Professor;* B.Sc., M.Sc., Univ. of Baroda, M.S., Ph.D., Univ. of California; *Biology (LO)*

Dixon, Christine; *Ass't Prof.;* B.A., N.C. Central Univ., M.S.L.S., Catholic Univ.; *Circulation Librarian (AN)*

doCarmo, Pamela B.; *Assoc. Prof.;* B.S., Central Michigan Univ., M.S., Indiana Univ.; *Emergency Medical Services Technology (AN)*

Dodek, Bernadine W.; *Ass't Prof.;* B.A., M.S., Univ. of Illinois; *Biology (AN)*

Domenichetti, Madonna M.; *Professor;* B.A., Coll. of St. Scholastica, M.S., Ph.D., Catholic Univ. of Amer.; *Psychology (WO)*

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Donohoe, Rosanne T.; *Instructor;* B.A., Seton Hill Coll., M.A., Fordham Univ.; *Developmental Math (AN)*

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William Cox, Community Health Services, Rockville, Maryland
Ken Davis, Washington Hospital Center
Barbara Ferguson, Kensington, Maryland
Dian McKay, Mt. Vernon Hospital
Esther Plotkin, RPT, Arlington Hospital
Mary Surls, Springfield
Jan Tasker, Manassas
Noel Thornburg, RPT
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Margaret Wiener, RPT, Fairfax Hospital
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Leona Henderson, RT, Fairfax Hospital
Joyce Isbel, RT, Alexandria Hospital
Dr. Eugene Jacobs, American Coll. of Radiologists
Jacqueline Jenssen, Radiography student
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Gregory Duatschek, RRT, Arlington Hospital
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Ronald Karpick, M.D., Pulmonary Associates
Nancy Mahoney, RN, NVCC
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Al Schmid, RRT, Fairfax Hospital
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Public Service Technology Related Advisory Committees

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Glenn R. Noffsinger, D.V.M., Va. Veterinary Medical Assn.
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Walter Jensen, Air Transport Association
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Dr. William E. Carr, D.C. Dept. of Corrections, Lorton
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Joseph Gallagher, Probation Specialist
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Wayne Huggins, Sheriff, Fairfax County
Donald L. Lacy, Sheriff, Loudoun County
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James C. Melvin, Juvenile Detention Home
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Peter Stephenson, District 10 Probation & Parole
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June G. Dickinson, R.D., Prince George's Health Dept.
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Margaret Swanson, Annandale
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Patricia Hannington, Fire Services Senior Analysis
B. Harmon, Chief, Alexandria Fire Dept.
Thomas M. Hawkins, Chief, Arlington Fire Dept.
George E. Hubler, Fairfax City Manager
Patrick G. Hunt, Captain, Arlington Fire Dept.
Selby Jacobs, Director, Prince William County Fire Service
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Richard Barrazotto, Clements Distributors
Jack Cockrell, Restaurant Assoc. of Metro. Washington
John Daniel, Springfield Hilton
Muneer Deen, Hotel Washington
John Faraclas, Adam's Rib
Harrison Hartman, Leows L'Enfant Plaza Hotel
Len Hickman, Hotel Assoc. of Washington
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David Oglesby, USDA Food & Nutrition Service
Robert Snukis, Gino's Inc.
James T. Troppman, Columbia Country Club

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Henry Hudson, Commonwealth's Attorney for Arlington County
John E. Kloch, Commonwealth's Attorney for Alexandria
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Delmer Ison, Washington Metropolitan Area Transit Authority
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John M. Kanak, Safety Consultant
Robert Nemchin, Litton Bionetics Inc.
Ronald G. Nygren, U.S. Dept. of Health, Educ. & Welfare
Florence Ryer, U.S. Environmental Protection Agency
Janet Sprickman, U.S. Dept. of Labor

John W. Teske, U.S. Dept. of Agriculture
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Walter Bishop, Chief of Police, Herndon
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Henry Hudson, Commonwealth's Attorney for Arlington County
S.K. Johnson, Chief of Police, Falls Church
Col. Richard A. King, Chief of Police, Fairfax County
Lt. Col. Gerald Lazarro, Commander, Fort Belvoir, Va.
Robert E. Legard, Sheriff, Loudoun County
James D. McKenzie, F.B.I. Academy
Larry Munroe, F.B.I. Academy
Lt. Col. Dennis O'Malley, Law Enforcement Battalion, Ft. Belvoir
Col. George T. Owens, Chief of Police, Prince William County
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Chris Badger, National Recreation & Parks Association
Bruce C. Bartlam, Stafford County Parks & Recreation
Kenneth R. Burnett, Falls Church Recreation Dept.
Donald H. Castleberry, Turkey Run Park
Peter DeFranco, Xerox Corp.
Joe Downs, Fairfax Co. Park Authority
J. Larry Fones, Fairfax Co. Recreation & Community Services
Joseph Hensley, Recreation & Cultural Activities, City of Alexandria
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Constance McAdam, Arlington Co.
James B. Spengler, Prince William Co. Park Authority
James Stup, Loudoun Co. Rec. Dept.
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Capt. Daryl Solomonson, Defense Nuclear Agency
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Ricardo Betancourt, Organization of American States
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Thomas Schwarberg, Va. State Water Control Board
John Sloper, Greater Manassas Sanitary District
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Clarence Weissenstein, Atlantic Research Corp.

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James Crowe, National Botanic Garden
William Harrison, Loudoun Co. Extension Service
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John W. Monday, Smithsonian Institute
John F. Sleter, Hill High Orchard

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