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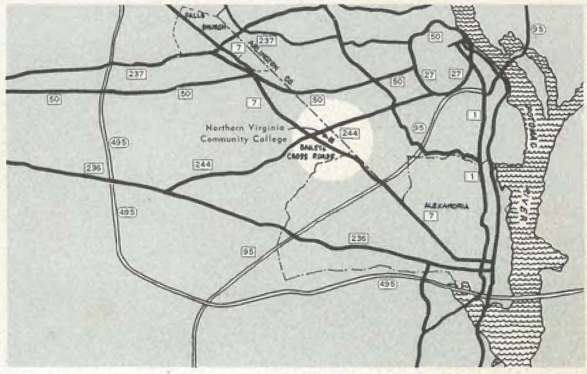
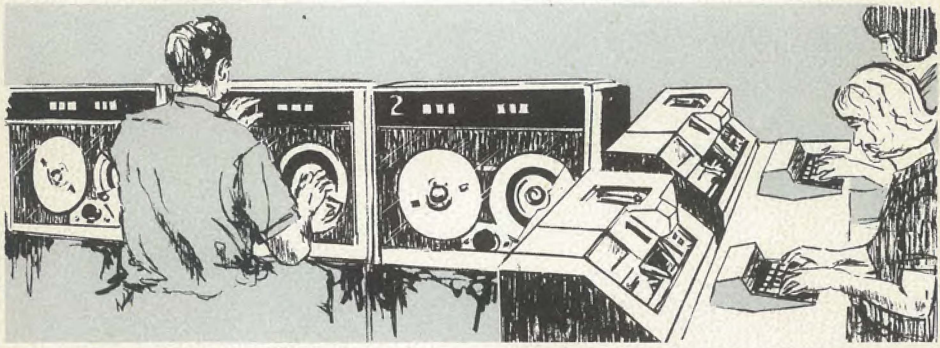
NORTHERN VIRGINIA COMMUNITY COLLEGE

CATALOG 1966-67





DIVISION OF VIRGINIA DEPARTMENT OF COMMUNITY COLLEGES

The CATALOG *of*

NORTHERN VIRGINIA COMMUNITY COLLEGE

1966-1967

3443 S. CARLYN SPRING ROAD
BAILEY'S CROSSROADS, VIRGINIA 22041
TEL: 481-9100

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COLLEGE CALENDAR

1966-1967

Freshman Week ..... September 12-16

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Last day for withdrawal without penalty ..... October 22
Mid-Term grade reports ..... November 5
Veteran's Day ..... November 11
Last day for application procedure to be completed for
Winter Quarter, 1967-68 ..... November 15
Thanksgiving vacation ..... November 24-27
Final Exam days ..... December 14-15-16

WINTER TERM

Registration ..... January 2-3
Classes begin ..... January 4
Last day for registration ..... January 10
Last day for change in program ..... January 17
Last day for withdrawal without penalty ..... January 31
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Registration ..... March 27-28
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Last day for change in program ..... April 11
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Fall Quarter, 1967-68 ..... May 1
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Commencement ..... June 14

SUMMER TERM

Registration ..... June 15-16
Classes begin ..... June 19
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GENERAL INFORMATION

PART I—GENERAL INFORMATION

GOVERNING BOARD
COMMONWEALTH OF VIRGINIA
STATE BOARD FOR COMMUNITY COLLEGES

EUGENE B. SYDNOR, JR., *Chairman*
THOMAS R. GLASS, *Vice Chairman*

MRS. MARY ANNE FRANKLIN
MRS. JOHN GALLEHER
WILLIAM S. HOOFNAGLE
WILLIAM P. KANTO
THOMAS J. LENNON
DANIEL C. LEWIS
S. E. LILES, JR.
JOHN D. MEADE
BENJAMIN W. MEARS, JR.
W. WIRT SHAPARD
D. BOYD THOMAS
HENRY W. TULLOCH
GORDON C. WILLIS

DEPARTMENT OF COMMUNITY COLLEGES

DANA B. HAMEL, *Director*

NORTHERN VIRGINIA COMMUNITY COLLEGE

Advisory Board

BARNARD JOY, *Chairman*	Representing Arlington County
REUBEN B. HICKS, *Vice Chairman*	Representing Prince William County
IRVING BERMAN	Representing the City of Falls Church
HOWARD E. FUTCH	Representing Fairfax County
J. MARCUS GILLESPIE	Representing the City of Alexandria
ROBERT W. GROW	Representing Fairfax County
WILLIAM P. LADSON	Representing Fairfax County
CHARLES S. MONROE	Representing Loudoun County
MERTON S. PARSONS	Representing the City of Fairfax

President of the College

ROBERT L. MCKEE

THE STAFF AND FACULTY

Administration Staff

Mark L. Andrews.....*Assistant to Coordinator of Continuing Education*
B.S.–South Carolina State College
M.A.–New York University

Gerald O. Cannon.....*Dean of Instruction*
B.S.–University of Denver
Ed.D.–Washington State University

Ernest J. Edmands.....*Registrar & Admissions Officer*
B.S.–United States Naval Academy

Robert Q. Grider.....*Business Manager*
B.A.–Southwest Missouri State College
M.A.–George Washington University

Cecil W. Shuler.....*Director of Planning and Development, and*
A.B.–The Citadel *Coordinator of Continuing Education*

James R. Walpole.....*Dean of Student Services*
B.A.–Gannon College
M.B.A.–Syracuse University
LL.B., Js.D.–Blackstone School of Law
Doctoral Candidate–American University

Counseling Staff

Dorothy L. Caraker.....*Counselor*
B.A.–Tift College
M.Ed.–University of Illinois
Doctoral Candidate–Wayne State University

Lynell F. Gordon.....*Counselor*
B.A.–Baker University
M.A.–George Washington University

Birchell S. Hilton.....*Counselor*
B.A.–College of William and Mary
M.S.–Rutgers University

Harry J. Stanley.....*Counselor*
B.A., M.Ed.–Pennsylvania State University

Susan Thomson.....*Counselor*
B.S.–University of Wisconsin
M.A.–Columbia University

Julian K. Whitmer.....*Chairman, Counseling Department*
B.S.E.–Arkansas State Teachers College
M.A.–Ohio State University

Library Staff

Marjorie C. Dennin.....*Librarian*
A.B.–Mount Union College
M.S.L.S.–Catholic University of America
Gemma R. Park.....*Library Assistant*
B.A.–Nazareth College
M.S.L.S.–Catherine Spaulding College

Faculty

(An overview of the qualifications and experience of the overall faculty may be obtained from the following relevant statistical averages: age, 43; degrees, 2; years of college education, 6; and years of teaching experience, 6. Additionally, the faculty of the various occupational programs averages 12 years in relevant work experience.)

R. Frank Alexander.....*Data Processing*
Eileen A. Allen.....*English*
B.A.–University of Maryland
M.A.–George Washington University
Donald Bimstein.....*Police Science*
B.S.S.–College of the City of New York
Edith Viola Blackstone.....*Business Administration*
A.A.–Bakersfield Junior College
B.A.–San Jose State College
M.S.–University of Southern California
Mary Ellen Bodnar.....*Biology*
A.A.–Worthington Junior College
B.S.–University of Minnesota
Louise Boucher.....*Business Administration*
B.S.–Abilene Christian College
LL.B.–Baylor University
Marilyn A. Boyd.....*Chairman, Nursing Department*
B.S.N.–Villa Maria College
M.S.N.–Catholic University of America
Leonard L. Brannan....*Director of Management Development Training*
B.S.C.E.–Washington State University
M.B.A.–Harvard University
Eugene A. Braun.....*Business Administration*
B.S.B.A.–Bridgewater College
Anne B. Cadman.....*English*
B.A.–Oberlin College
A. J. Chapdelaine.....*Electronics Technology*
A.A.S.–Capital Institute of Technology

Mary D. Cohen.....*English*
A.B.–Indiana University
M.A.–Southern Illinois University

Donna L. Cole.....*English*
B.A., M.A.–University of Washington

Wilbur L. Coleman.....*Chairman, Data Processing Department*
B.S.–State University of Georgia

Edward L. Corcoran.....*Acting Chairman, Engineering Technology Department*
B.S.–United States Military Academy
M.S.–Pennsylvania State University

Russell T. Cordaro.....*Physical Education*
A.E.E.–Pennsylvania State University
B.S.–University of Scranton

Joseph P. Costello.....*Mathematics*
B.S.–United States Naval Academy
M.Ed.–American University

Frances M. Darden.....*English*
B.A.–Mississippi State College for Women
M.A.–University of Mississippi

Patricia R. Daron.....*Biology*
B.S., M.S.–George Washington University

Berdyne B. Eddy.....*Chairman, English Department*
B.A.–Ripon College
M.A.–University of New Mexico

William A. Engdahl.....*Mathematics*
B.S.–United States Naval Academy
B.S.–United States Naval Postgraduate School
M.S.–Massachusetts Institute of Technology

Mary E. Flynn.....*Secretarial Science*
B.S.–Boston Teachers College
M.Ed.–State College at Boston

James W. Fowler.....*Drafting*
B.S.E.–Auburn University

Susan A. Gebhardt.....*Nursing*
B.S.N.–Alverno College
M.S.N.–Catholic University

Alice V. Geiger.....*Secreterial Science*
B.A.–Bridgewater College

Alan B. Gould.....*History*
B.A., M.A.–Marshall University
Doctoral Candidate–University of West Virginia

Jane A. Griffis.....*English*
A.A.—Graceland College
B.A.—Florida State University
M.A.—Auburn University

Isabel Griffith.....*Biology*
B.S.—Southern Methodist University

Mary M. Hamilton.....*Foreign Languages*
B.A., M.A.—University of Chicago

Esther Anna Harbert.....*Data Processing*
B.A.—University of Pennsylvania

William P. Haubner.....*Police Science*
B.S.—George Washington University

Lillian E. Haverland.....*Chairman, Mathematics*
B.A.—Hiram College
M.A.—Western Reserve University
Ph.D.—University of Illinois

William C. Hill.....*Chairman, Business Administration Department, and Coordinator, Business Science Division*
A.B.—Central Methodist College
M.B.A.—Harvard University

McHenry H. Holt.....*Chairman, Electronics Technology Department*
B.S.—United States Naval Academy
M.Engr.—Pennsylvania State University

James H. Howard.....*Data Processing*
B.S.—United States Naval Academy
M.A.—American University

Winifred Y. Jacobs.....*English*
B.S.—State University of New York
M.A.—Pennsylvania State University

John R. Kammire.....*English*
A.B.—Colgate University
M.Ed.—University of Virginia

William S. Kibler.....*English*
B.A.—University of Virginia
M.A.—Harvard University

Herman H. Klare, Jr.....*Chairman, Pre-Engineering Department*
B.S.—United States Naval Academy
M.S.E.E.—Massachusetts Institute of Technology

Robert W. Koberg.....*Business Administration*
B.S.—Creighton University
M.B.A.—Columbia University

Claudio Krieghoff.....*Chairman, Foreign Languages Department, and Acting Coordinator, Humanities Division*
B.A.—Andrews University
M.A.(Equiv.)—Buenos Aires University
Doctoral Candidate—George Washington University

Helene T. Lesansky.....*Economics*
B.A.—University of Miami
M.A.—American University

James E. Levins.....*Business Administration*
B.B.A.—Clarkson College of Technology
M.S. (Ed.)—Syracuse University

Henrietta Lieber.....*Chemistry*
B.A.—New Jersey State College

Beverly J. Loy.....*Nursing Science*
B.S., M.S.—University of North Carolina

Stephen J. Mancuso.....*Electronics Technology*
B.S.—United States Military Academy
M.S.—University of Pennsylvania

Luther L. Mays.....*Chairman, Psychology and Sociology Department*
A.B.—University of Tennessee
M.A.—University of Chicago
Ph.D.—University of Illinois

Herbert E. McCartney.....*Automotive Technology*

Leonard J. Mills .....*Government*
B.S.—University of Virginia
M.A.—Columbia University
LL.B.—St. Lawrence University

Perry J. Mitchell.....*Government*
B.A., M.A.—University of Connecticut

George D. Payne.....*Electronics Technology*
A.S. (Equiv.)—Rochester Institute of Technology

Elena V. Rispoli.....*Data Processing*
B.S.—Wilson Teachers College

Phoebe D. Sharkey.....*Data Processing*
B.A.—Duke University
M.S.—Georgetown University

Howard H. Simmons.....*Acting Coordinator, Social Sciences Division*
B.A.—George Washington University
M.B.A.—Leland Stanford University
Doctoral Studies—New York University and American University

John R. Skeen.....*Chemistry*
B.S.—Pennsylvania State University
M.A., Ph.D.—University of Pennsylvania

Beverly P. Smith.....*Secreterial Science*
B.S.–George Washington University
Shirley Stahl.....*Chairman, Secretarial Science Department*
C.P.S.–Institute for Certifying Secretaries
Anthony C. Stein.....*Electronics*
B.E.E.–Villanova University
Frederick J. Stemp.....*Engineering Technology*
A.A.S. (Mechanical Technology)–Westchester Community College
B.S., M.S.–Bradley University
Joseph L. Stern.....*Mathematics*
B.S., M.S.–City College of New York
Delores M. Swan.....*Nursing*
B.S.N.Ed., M.Ed.–University of Minnesota
George E. Taylor.....*Chairman, Biology Department*
B.S., M.S.–Marshall College
Doctoral Candidate–Ohio State University
Wanda E. Tuhill.....*Data Processing*
Elizabeth Ware.....*Chairman, Chemistry Department*
B.S.–University of Pittsburgh
M.S.–Arizona State University
Doris R. Young.....*Individual Development Laboratory*
B.Ed.–Longwood College
Nathaniel F. Young.....*Acting Chairman, Physics Department*
B.S.–Florida State University
Walter J. Young....*Coordinator, Individual Development Laboratory*
B.S.–University of Virginia
M.S.–University of Texas
Joseph F. Zawacki.....*Chairman, Occupational Mathematics*
B.S.–United States Naval Academy
M.S.–Carnegie Institute of Technology
M.Engr.–Pennsylvania State University

THE COLLEGE

The College is a two-year State institution of higher education established under a State-wide system of community colleges in the Commonwealth of Virginia and serving an area which consists of the counties of Arlington, Fairfax, Loudoun and Prince William, and the cities of Alexandria, Falls Church and Fairfax. These communities have a total population of approximately 800,000 with a projected growth of 2,500,000 in the next twenty-five years.

The College operates under policies established by the State Board for Community Colleges and with the support and advice of a local Community College Advisory Board; and is financed primarily by State funds, supplemented by contributions from the seven local jurisdictions.

During the 1966-67 term, the College will continue in its current quarters in the Melpar Building at the junction of Leesburg Pike (Route 7) and South Carlyn Spring Road. In September of 1967, the first building on the main campus near Annandale will provide additional facilities.

RECOGNITION

The College is approved by the State Department of Community Colleges of the Commonwealth of Virginia and has established contact with the Southern Association of Colleges and Schools and declared its intention to work closely with the Association in pursuit of accreditation and membership at the earliest possible date. The College has institutional membership in the American Association of Junior Colleges and will be listed in the 1966-1967 *Directory of Higher Education*, published by the U.S. Office of Education, and in the *Directory of the American Association of Junior Colleges*. The associate degree programs of the College have been approved by the State Council of Higher Education for Virginia.

HISTORY OF THE COLLEGE

Although covering a brief period of time, the history of the College is an account of rapid growth and development. The College was established under the name of Northern Virginia Technical College, as a result of enabling legislation by the 1964 Session of the State General Assembly, to become the first of an expanding system of technical colleges.

In early 1965 the College was approved by the State Board of Technical Education, the present Local Board of Trustees was formally

established, and the President of the College was appointed; less than four months later the College opened its doors at Baily's Crossroads with an initial enrollment of 761 students and a staff and faculty of 46. The College was officially dedicated by Governor Albertis S. Harrison on November 16, 1965.

In addition to the degree and certificate programs, the College provided two special courses in its Evening Division: Apartment Management and Management Development.

Approximately 1,600 individuals were registered as full-time or part-time students during the first three quarters of the 1965-1966 term.

The 1966 Session of the General Assembly enacted legislation which included what was then the Northern Virginia Technical College in a new, State-wide system of comprehensive community colleges. In accordance with this enlarged role and under its new name, the College has added a two-year University Parallel-College Transfer program to its curriculum of occupational and technical education.

PURPOSE

Northern Virginia Community College, a college devoted to serving its community, is aware of and responsive to the requirements of industry and business. The College devotes its efforts to providing curricula in the technical, occupational, and semi-professional fields and in a university parallel-college transfer program constructed to provide students with college work for acceptable entrance into the upper division of four-year colleges and universities.

The College is dedicated to the belief that each individual be given the opportunity for the development and extension of his skills and abilities, and an opportunity to increase in his awareness of his place and responsibility in society. The College seeks to fulfill these obligations by offering various educational programs at the college level. The College assumes responsibility for providing Northern Virginia with trained manpower through an intensive and cooperative effort with industry, business, and professions. To meet the challenge of an increasing technological society, the College provides a continuing education program for retraining and readjustment in employment, for increased productivity, and for training in new jobs for a changing society.

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. Programs include:

1. *Occupational-Technical Education.* The occupational and technical education programs are designed to meet the increasing demand for technicians, semiprofessional workers, and skilled craftsmen for employment in industry, business, the professions, and government. The curricula are planned primarily to meet the needs for workers in the region being served by the College.
2. *University Parallel-College Transfer Education.* The university parallel-college transfer program includes college freshman and sophomore courses in arts and sciences and preprofessional programs meeting standards acceptable for transfer to baccalaureate degree programs.
3. *General Education.* The programs in general education encompass the common knowledge, skills, and attitudes needed by each individual to be effective as a person, a member of a family, a worker, a consumer, and a citizen.
4. *Continuing Adult Education.* Adult education programs are offered to enable the adults in the region to continue their learning experiences. This work includes both degree credit and non-degree credit work offered during the day and evening hours.
5. *Special Training Programs.* Special training may be provided where specific job opportunities are available. This special training shall be coordinated with Virginia's economic expansion efforts and with the needs of employers.
6. *Preparatory Programs.* Pre-college and pre-technical programs are offered to help prepare individuals for admission to the university parallel-college transfer program and the occupational-technical program in the community college. These programs are designed to help the individual develop the basic skills and understandings necessary to succeed in other community college programs.
7. *Specialized Regional and Community Services.* The facilities and personnel of the College are available to provide specialized services to help meet the cultural and educational needs of the region served by the community college. This service includes the non-classroom and non-credit programs, cultural events, workshops, meetings, lectures, conferences, seminars, and special community projects which are designed to provide needed cultural and educational opportunities for the citizens of the region.

FACILITIES

The College is presently housed in the Melpar Building at the junction of South Carlyn Spring Road and Leesburg Pike (Route 7) at Bailey's Crossroads. The 80,000 square feet of space, which has been remodeled and supplied with the most modern equipment to meet the needs of the College, includes spacious classrooms, laboratories, administrative and faculty offices, a counseling suite, business office, bookstore, library, snack bar and an assembly hall. The entire building is air conditioned, and has ample parking facilities.

The rapidly growing library consists of more than five thousand new books and approximately two hundred and fifty periodicals which have been carefully selected in relation to the various curricula, and already is one of the best technical libraries in the nation. Also operated in conjunction with the library is a "learning laboratory" equipped and operated to support the Individual Development Laboratory program in meeting individual student needs in specific subject areas.

EXPENSES

Fees

An Application Fee of $5.00 must accompany each prospective student's application. This fee is not applicable to tuition, nor refundable unless the requested program is not offered.

Tuition

Full Time:	Virginia Resident	$ 15.00 per month, or 45.00 per quarter
	Out-of-State Resident	50.00 per month, or 150.00 per quarter
Part Time:	Virginia Resident	3.00 per credit hour (or equivalent) in Fall Quarter, 1966. *A $4.00 rate will be used beginning with Winter Quarter, 1966-67.*
	Out-of-State Resident	10.00 per credit hour

Books and Materials: Average approximately $35-$50 per quarter for full-time students.

Refunds

No refunds will be made after the first two weeks of a quarter for course changes or for an individual class which is dropped; nor will

refunds be made for resignation from the College after sixty calendar days of a quarter have elapsed. Authorized refunds will be as follows: (a) within first 30 calendar days of a quarter, refund will be 2/3 of tuition; (b) within first 31-60 calendar days of a quarter, refund will be 1/3 of tuition; (c) after 60 days of a quarter have elapsed, no refund will be made. If a course is cancelled, there will be an automatic refund of tuition for that course.

For part-time and evening students, refunds will be pro-rated on the above schedule. Official resignation for all students shall be as of the date on which written notification of intent to resign is given to the Registrar; and is *not* the date of the last class attended, unless the two dates coincide.

ADMINISTRATIVE INFORMATION

PART II—ADMINISTRATIVE INFORMATION

ADMISSION AND REGISTRATION

General Admission to the College

Any person who has a high school diploma or its equivalent, or is 18 years of age, and is able to benefit from a program at Northern Virginia Community College may be admitted to the College when the following items have been received by the Office of Admissions at Northern Virginia Community College.

1. A completed application form (NOTE: Social Security Number is *required* hereon.)
2. A residence affidavit (for all Virginia residents)
3. A $5.00 application fee (non-refundable unless the requested program is not offered)
4. A physical examination report
5. Transcripts from all high schools and any other colleges attended.

Other persons may apply to the Admissions Committee of the College for special consideration.

Admission to Specific Programs

Specific requirements are usually prescribed for each program or curriculum within the College. Persons who do not meet the requirements for a specific program or course will be required to take preparatory course work. Applicants also may be required to meet other reasonable standards to insure that they possess the potential to meet program requirements. Reference should be made to the curriculum of the individual program in the "Programs of Study" section of this bulletin for its specific requirements.

Special Admission Requirements for Foreign Students

A. Applicants currently residing in the United States must take the English section of the American College Testing Examination and a writing test administered by the Chairman of the English Department of the College.

B. Applicants residing in a country other than the United States should contact the Office of Admissions for instructions.

The College does not provide courses in English as a second language. Therefore, the applicant must meet minimum requirements in English *before* being accepted.

Admission to Associate Degree Programs

Persons applying to enter one of the associate degree (Associate in Science, Associate in Arts, or Associate in Applied Science) programs shall be a high school graduate or the equivalent or have completed an approved preparatory program and have submitted satisfactory scores on the American College Testing (ACT) examinations.

The ACT examination is given for purposes of research, placement, and guidance and NOT for screening applicants.

Students Transferring from Other Colleges

Each student who is transferring from another college should consult with the Registrar of the College for an assessment of credits in order to determine his standing before registering for classes.

Students Applying for Credit or Waiver of Requirements

Students who have reason to believe that previous training programs or work experience may entitle them to an adjustment in the course work required in a particular program should contact the Registrar of the College to determine procedures before registering for classes.

CLASSIFICATION OF STUDENTS

All students are classified according to the following categories:

(1) *Regular.* A student is designated as "regular" when his file in the Admissions Office contains all of the following:

a. A formal application
b. A letter of admission from the College
c. Official transcripts of all high schools attended
d. Official transcripts of all colleges attended
e. Results of matriculation tests, where required.

(2) *Special.* A "special student" is one who is permitted to register under special conditions, e.g., a high school senior concurrently enrolled in a college level course; or one who has not yet fulfilled all the requirements of a "regular student". Within the above broad categories, further classification are:

Full-time Student. A student is considered a "full-time student" if he is carrying twelve or more credits of course work.

Part-time Student. A student is considered a "part-time student" if he is carrying less than twelve credits of course work.

Freshman. A student is classified as a "freshman" until he has completed forty-five credits of work in his designated program.

Sophomore. A student is considered a "sophomore" after he has completed forty-five or more credits of course work in his designated program. Transferred credits are included providing they apply toward meeting the requirements of the degree.

GRADING SYSTEM

A	Excellent	—4 grade points per credit hour
B	Good	—3 grade points per credit hour
C	Average	—2 grade points per credit hour
D	Poor	—1 grade point per credit hour
F	Failure	—0 grade points

S Satisfactory (Applies only to specialized courses and seminars)

U Unsatisfactory (Applies only to specialized courses and seminars)

W Withdrawal (No credit indicated but implying that the student was making satisfactory progress in the course at the time of his withdrawal *or* that the withdrawal was officially made before the "deadline" date published in the College calendar.)

I Incomplete (This grade is assigned only in cases of student absence from a limited number of class sessions near the end of a term or grading period and when the absence was for a verifiable unavoidable reason; i.e., sickness verified by medical statement, accident verified by police records, etc., *or* absence from final examination for verifiable unavoidable reason.) Must be made up during the next term following its issuance unless special permission for an extension of time is given by the Admissions Committee.

X Audit No credit. Permission of the Instructor and the Dean of Instruction is required to audit a class.

GRADUATION REQUIREMENTS

Associate Degree Requirements

To be eligible for graduation with an Associate Degree from the College a student must certify the following requirements:

1. Have fulfilled all the course requirements of his particular program as outlined in the College catalog;
2. Be recommended by the major department;
3. Have completed at least 90 quarter hours of credit (exclusive of Physical Education and of Orientation), of which 45 quarter hours must be acquired at the College.
4. Have earned a grade point average of at least 2.0 on all work attempted and which is applicable toward graduation in his particular program.

5. Have filed an application for graduation in the Office of the Registrar;

6. Have resolved all financial obligations to the College and returned all materials including library books.

Certificate of Course Completion

The student who successfully completes a program of instruction which does not lead to an Associate Degree will be granted a Certificate of Completion. Graduation exercises will be held.

Students who pursue a degree program but fail to meet the degree requirements may, upon the recommendation of the appropriate department and the approval of the Dean, be issued a Certificate in the occupational specialty in which they are considered proficient.

SCHOLASTIC REGULATIONS

Attendance

Registration in a course presupposes that regularly scheduled classes and laboratory sessions will be attended. When absence from a class becomes necessary it is the responsibility of the student to inform the instructor prior to the absence whenever possible. Frequent unexplained absences may result in dismissal from a course.

The student is responsible for making up all work missed during an absence. If a student fails to appear for a test or final examination he should contact the instructor. The granting of requests for late examinations is left to the discretion of the instructor involved.

The classroom and laboratory are central to the education programs of the College, and require regular attendance to achieve the learning goals of those programs. Any instruction missed and not made up will necessarily, and regardless of the reason for the absence, affect the grade of the student concerned. As a minimum, it is College policy to penalize by reduction of one letter grade each class period missed which exceeds one week of instruction as normally scheduled for that subject. In this connection, a "Class Period" is determined by the following formula:

$$\text{Class Period} = \frac{\textit{Course Clock Hrs. Per Wk.}}{\text{Credit Hrs. of Course}}$$

Ex: (a) Class Period Eng. 103 $= 3/3 = 1$

(b) Class Period DP 103 $= 1\ 2/3$ or 2 rounded out to nearest hr.

Change of Registration

Students should in all cases follow established procedures for making

any change in their programs after registration. Failure to do so could place their college record in jeopardy.

1. Withdrawal from a class—

Withdrawal from a class without penalty may be made within the first four weeks after the beginning of a quarter. After that time the student must accept a failing grade if his work has been unsatisfactory up to the time of withdrawal. In all cases the word "Withdrawn" will be written on his permanent academic record.

2. Addition of a course—

In most cases a student may not enter a class after the first week of the quarter. Any request for entry after that period must be approved by the instructor concerned and the Dean.

3. Withdrawal from the College—

A student who wishes to withdraw from the College should contact a counselor to determine the appropriate procedure. Failure to follow established procedures could place the student's college record in doubt and prejudice his return to this or another college.

Student Conduct

Failure to meet standards of conduct acceptable to the College may result in Disciplinary Probation or Dismissal, depending upon the nature of the offense. A probationary period, unless otherwise specified, is for the duration of one quarter. A student who is dismissed must reapply to the College and will normally be required to appear before a selected committee before admission can be granted. The words "Disciplinary Dismissal" will appear on the student's permanent record unless recommendation for removal is made by the committee.

Cleanliness and appropriate dress are ways in which a student gives evidence of his self-esteem and concern for others. Any student who appears in bizarre attire or consistently violates accepted standards of appearance is subject to disciplinary action.

Academic Warning

Any student failing to make a cumulative grade point average of 2.0 or higher for any one quarter, or who fails any course, will receive an Academic Warning.

Academic Probation

Any student failing to make a cumulative grade point average of 1.5

will be placed on academic probation. The words, "Placed on Academic Probation", will be placed on the student's permanent record.

Students on Academic Probation shall be required to take less than the normal academic load in the quarter following this action.

Academic Suspension

The student on academic probation who fails to make a grade point average of 1.5 for the next quarter that he is in attendance will be subject to academic suspension. Academic suspension normally will be for two quarters unless the student applies, and is accepted for, readmission to another program of the College. The words, "Placed on Academic Suspension" will be placed on the student's permanent record. The student must apply for readmission.

STUDENT SERVICES

PART III—STUDENT SERVICES

COUNSELING

As a service to students and to the community, the College maintains a staff of professional counselors, in addition to a system of faculty advisors within the respective programs.

The counseling department functions to assist students in making intelligent decisions regarding their vocational, educational and personal-social plans. As a part of this assistance students have available to them, through the counseling department, appropriate tests, inventories, occupational and educational information, and information regarding financial assistance or employment.

The counseling service provides individual attention and supplementation to the instructional program of the College.

PLACEMENT SERVICE

The College maintains a placement service for students who wish to secure part-time, full-time, summer, and permanent positions. As the guidance and counseling services are intended to help bridge the gap between high school and college, so the work of the placement service is designed to make easier the transition between college and the world of work.

Students who seek part-time work are encouraged to do so with a view to their career plans. The experience gained will assist them in finding permanent and satisfying placement in business, industry, or the professions.

FINANCIAL AIDS

It is the desire of the College that no qualified student be denied the privilege of attendance because of financial need. The Student Financial Aids Committee—composed of representatives of the administrative, counseling, and instructional staffs—is appointed by the President of the College for the purpose of providing information concerning aid programs, administering funds granted by donors, determining need, assessing applications, and granting awards.

Students wishing to apply for financial aid may secure application blanks from the office of the Dean of Student Services.

Scholarships

Among the many evidences of community support during the first year of operation was the total of $1,545 in scholarship aid from funds

donated by the Routh Robbins Real Estate Corporation (Alexandria), The Altrusa Club of Northern Virginia, the Riverwood Woman's Club of Arlington, and one anonymous donor.

Such support continues to grow, and includes the following for the 1966-67 academic year:

The Routh Robbins Real Estate Corporation Scholarships

The amount of this annual fund is $1,000 and is available for residents of Alexandria. During 1965-66 six students were granted awards ranging from tuition ($45.00) to $125, according to estimated need. These scholarships are granted quarterly and may be renewed. Requirements for renewal are a grade-point average of "C" (2.0) and continuing need.

Zonta Club Scholarships

Donated by the Zonta Club of Alexandria, this fund provides two scholarships of $250.00 each to residents of Alexandria for the 1966-67 college year.

Herndon Lions Club

The amount of this fund is $360 for graduates of Herndon High School attending Northern Virginia Community College. (Already awarded for 1966-67)

Fairfax Women's Club Revolving Loan Fund

The Fairfax Women's Club has established a Revolving Loan Fund for Virginia residents. Anyone wishing to apply should contact the Financial Aid Officer for details.

D.C. Chapter, National Association of Secretaries

Two 1-year scholarships not to exceed $185.00 each. The award is to be given a resident of Northern Virginia who maintains a "B" average or better. The recipient will be selected by the staff of the College from qualified applicants according to procedures established by the College.

George Mason High School PTA

One scholarship in the amount of $150.00.

Yeonas Charitable Foundation

One scholarship in the amount of $100.00.

Value Engineering Scholarships

This fund is contributed by the Value Engineering Company of Alexandria and provides two annual scholarships to students enrolled in the College as described below:

(1) $135.00 (annual tuition) to a student enrolled in the Drafting curriculum. The award will be made on the basis of drafting ability and the probability of completing the one-year program as determined after one quarter of attendance in the College.
(2) $135.00 to a student enrolled in the Engineering Technology curriculum. Award will be made on the basis of drafting and design ability as determined after three quarters of attendance in the College.

Theta Rho Lambda Chapter of Alpha Phi Alpha Scholarships

Two scholarships of $250.00 each for the 1966-67 academic year. These scholarships are open to any student attending the College and are to be awarded on the basis of financial need.

Work-Study Program

Numerous jobs on campus are available each year under the Work-Study Program. Full-time students between the ages of fifteen and twenty-one years who are in financial need may qualify for participation in this program. Application forms are available in the office of the Dean of Student Services.

Part-Time Employment

A placement office operates throughout the year to assist students in securing part-time employment. An effort is made to place students in job fields which relate to their college programs. Students who work more than twenty hours per week are advised to adjust their course loads accordingly.

Student Loans

Students who are residents of Virginia are eligible to apply for loans under the State Education Assistance Authority Plan. Loans are made through commercial banks at favorable interest rates and are repayable in monthly installments beginning six months after the student graduates or after the student leaves college. For details about the program or a list of participating banks, contact the College or write to State Education Assistance Authority, 1010 State-Planters Bldg., Richmond, Virginia 23219.

Other scholarship funds or financial aid plans may be added throughout the year. Interested students may inquire through the Counseling Department.

SNACK BAR

Hot and cold food and beverages may be obtained from the snack bar throughout the day. The dispenser service is commercially operated, and a portion of the profits goes into the student activities fund.

PARKING

A large parking lot has been reserved for the convenience of students. A student who wishes to use the College parking facilities must apply for a permit from the office of the Registrar. Unauthorized vehicles may be removed at the owner's expense.

STUDENT ACTIVITIES

The activities program is designed to supplement the academic program in providing meaningful educational, cultural, and social experiences.

During the 1965-66 session, four College-wide dances and one student art exhibit were held; a very successful basketball team, the Golden Eagles, was supported by a squad of cheerleaders; and the following organizations and clubs were formed:

The Student Government Association
The Electronics Club
The Business Science Club

Student publications are:

The Galaxy, the College newspaper
The Comet, the College yearbook

The College anticipates a more comprehensive program of student activities for the coming year.

PROGRAMS OF STUDY

PART IV—PROGRAMS OF STUDY

Associate in Applied Science Degree Programs

(Technical and Semi-Professional)

Automotive Technology
Business Administration
Data Processing Technology
Electronics Technology
Engineering Technology
Nursing Technology
Police Science
Secretarial Science

AUTOMOTIVE TECHNOLOGY

The Automotive Technology Curriculum is designed to advance the individual from a mechanic to a diagnostician status. For one to advance successfully in this program of study, a thorough understanding of the repair techniques and skills are required before entering the program. The curriculum's purpose is to develop an intelligent, efficient analysis of automobile defects and adjustment needs along with the estimation of the customer cost for the repair and adjustment of the defects and needs. A minimum of a one-year comprehensive automotive shop program in high school or its equivalent and a good understanding of mathematics is required for entry into the program.

AUTOMOTIVE TECHNOLOGY

FIRST YEAR

First Quarter

Number		*Course*	*Credit Hours*
ENGL	104	Communication Skills I	3
MATH	111	Technical Mathematics I	3
CHEM	156	Introduction to Chemistry	4
AUTO	111	Automotive Engines I	4
AUTO	124	Automotive Fuel Systems I	4
GENL	100	Orientation	1
			19

Second Quarter

ENGL	105	Communication Skills II	3
MATH	112	Technical Mathematics II	3
PHYS	101	Introductory Physics I	3
AUTO	112	Automotive Engines II	4
AUTO	125	Automotive Fuel Systems II	4
			17

Third Quarter

ENGL	136	Speech Communications	3
MATH	113	Technical Mathematics III	3
PHYS	102	Introductory Physics II	3
AUTO	113	Automotive Engines III	4
AUTO	136	Automotive Lubrication & Cooling Systems	4
			17

SECOND YEAR

Fourth Quarter

Number		*Course*	*Credit Hours*
PSYC	110	Basic Principles of Applied Psych.	3
PHYS	103	Introductory Physics III	3
GOVT	180	American Constitutional Government	3
AUTO	241	Automotive Electrical Systems I	4
AUTO	254	Power Train I	4
			17

Fifth Quarter

PSYC	116	Psychology of Personal Adjustment	3
SOCI	100	Problems of Man in the Modern World	3
AUTO	242	Automotive Electrical Systems II	4
AUTO	255	Power Trains II	4
ECON	216	Industrial Economics	3
			17

Sixth Quarter

AUTO	243	Automotive Electrical Systems III	4
AUTO	266	Automotive Suspension & Braking Systems	4
AUTO	276	Shop Management & Customer Relations	3
		Electives	6
			17

BUSINESS ADMINISTRATION

The Business Administration Program is designed as a two-year program leading to the Associate in Applied Science degree. The first year is essentially standard for all students, except for individually arranged variations. Students entering the second year may elect to pursue either Accounting or Applied Business Management. Courses may be substituted across the two fields with Departmental approval, except that BUAD 214, 215, 216, 217, & 218 must be taken by those specializing in Accounting. A strong proficiency in High School English and Mathematics is recommended; and attention is specifically directed to the prerequisites for the English (ENGL 104, "Communication Skills I") and Mathematics (MATH 154, "Business Mathematics I") courses which are required in the first quarter of this program.

BUSINESS ADMINISTRATION

FIRST YEAR

No.		Course	Credit Hours
		First Quarter	
BUAD	100	Introduction to Business.	3
BUAD	111	Principles of Acctg. I...	3
BUAD	126	Office Machines	2
MATH	154	Business Mathematics I..	3
ENGL	104	Communication Skills I..	3
GENL	100	Orientation	1
			15
		Second Quarter	
BUAD	170	Business Org. & Mgmt..	3
BUAD	112	Principles of Acctg. II.	3
ECON	104	Economics I	3
MATH	155	Business Mathematics II.	3
ENGL	105	Communication Skills II	3
			15
		Third Quarter	
BUAD	106	Office Procedures	2
BUAD	113	Principles of Acctg. III.	3
ECON	105	Economics II	3
GOVT	180	American Constitutional Government	3
ENGL	136	Speech Communication.	3
SECR	111	Typewriting*	2
			16

SECOND YEAR

ACCOUNTING

No.		Course	Credit Hours
		Fourth Quarter	
BUAD	214	Intermediate Acctg. I..	3
BUAD	294	Introduction to Business Statistics	3
DAPR	100	Introduction to Data Processing	4
ENGL	207	English in Business.....	3
PSYC	110	Basic Principles of Applied Psychology	3
			16
		Fifth Quarter	
BUAD	215	Intermediate Acctg. II..	3
BUAD	244	Business Law I	3
BUAD	216	Cost Accounting	4
BUAD	246	Money and Banking	3
NASC	100	Survey of Science	3
			16
		Sixth Quarter	
BUAD	240	Business Finance	3
BUAD	245	Business Law II	3
BUAD	218	Business Taxes	3
BUAD	217	Auditing	3
BUAD	299	Business Research Project	2
			14

APPLIED BUSINESS MANAGEMENT

No.		Course	Credit Hours
		Fourth Quarter	
BUAD	294	Introduction to Business Statistics	3
PSYC	110	Basic Principles of Applied Psych.	3
DAPR	100	Introduction to Data Processing	4
ENGL	207	English in Business	3
SOCI	100	Problems of Man in the Modern World	3
			16
		Fifth Quarter	
BUAD	246	Money & Banking	3
BUAD	277	Purchasing and Materials Mgmt.	3
BUAD	278	Production	3
PSYC	226	Psychological Aspects of Management	3
NASC	100	Survey of Science.....	3
			15
		Sixth Quarter	
BUAD	236	Merchandising (Marketing)	3
BUAD	218	Business Taxes	3
BUAD	256	Real Estate & Plant Management	3
BUAD	240	Business Finance	3
BUAD	276	Personnel Management..	2
BUAD	299	Business Research Project	2
			15

*Waiver and Equivalent Credit may be granted for the student who has satisfactorily completed one year of typing in high school, or demonstrates equivalent competence.

DATA PROCESSING TECHNOLOGY

The Data Processing Curriculum is designed to provide the kind of education and training that both computer manufacturers and industry alike proclaim is needed. Students will be both educated and trained—educated so they will know what needs to be done without being told, and trained so that they will always maintain proper standards of performance. Their education will not be limited to the Data Processing Equipment, but will include instructions that will give them an understanding of the environment in which they will work. (Those who satisfactorily complete the two-year Computer Programming program will be awarded an Associate in Applied Science degree.)

Data Processing classes will include practical "hand-on" experience with the modern equipment found in industry and government installations today. In addition to the laboratory classes scheduled in conjunction with each lecture course, ample laboratory time will be provided on an informal, "homework" basis.

Admissions Requirements:

In addition to the admission requirements set forth by the college in the front of the catalog, entry into the computer programming curriculum requires a minimum of one unit high school algebra or the equivalent.

DATA PROCESSING TECHNOLOGY

COMPUTER PROGRAMMING

FIRST YEAR

Number		*Course*	*Credit Hours*
		First Quarter	
DAPR	100	Introduction to DP	4
DAPR	114	Unit Record I	3
ENGL	104	Communication Skills I	3
BUAD	111	Prin. of Accounting I	3
BUAD	126	Office Machines	2
GENL	100	Orientation	1
			16
		Second Quarter	
DAPR	115	Unit Record II	3
DAPR	124	Computer Programming I	3
MATH	156	DP Math I	3
ENGL	105	Communication Skills II	3
BUAD	112	Prin. of Accounting II	3
			15
		Third Quarter	
DAPR	125	Computer Programming II	3
DAPR	136	Unit Record Application	3
BUAD	113	Prin. of Accounting III	3
ENGL	136	Speech Communications	3
MATH	157	DP Math II	3
			15

SECOND YEAR

Number		*Course*	*Credit Hours*
		Fourth Quarter	
DAPR	221	Computer Programming III	3
DAPR	236	Computer Program Applications	3
BUAD	100	Introduction to Business	3
BUAD	294	Introduction to Business Statistics	3
DAPR	241	Systems Analysis I	3
ECON	216	Industrial Economics	3
			18
		Fifth Quarter	
DAPR	222	Computer Programming IV	3
DAPR	242	Systems Analysis II	3
BUAD	295	Business Statistics II	3
PSYC	110	Basic Principles of Applied Psychology	3
BUAD	170	Business Organization & Management	3
			15
		Sixth Quarter	
DAPR	223	Computer Programming V	3
DAPR	243	Systems Analysis III	3
DAPR	299	DP Field Problem	6
NASC	100	Survey of Science	3
GOVT	180	American Constitutional Government	3
			18

ELECTRONICS TECHNOLOGY

The Electronics curriculum is two years in length leading to an Associate in Applied Science Degree. Completion of the requirements for this degree prepares the student for entry into the electronics field as a technician.

The first year of study is designed to establish a general base in mathematics and electronics. The second year develops this base in a number of important areas of electronics; such as computer, control circuits and communication systems. With this type of training the graduate should have sufficient background, both in depth and diversity, to allow him employment in any area of the electronics field as a technician.

Set forth below is the curriculum for all electronics students. The curriculum while developing technical competence also emphasizes communication skills and offers citizenship training. The technical content of the curriculum may frequently be modified as the electronics field changes and the needs of the community are more clearly defined by the local Electronics Advisory Committee.

Admissions Requirements:

In addition to the admission requirements set forth by the college in the front of the catalog, entry into the Electronics Department requires a minimum of one unit of high school algebra and one unit of high school geometry or the equivalent.

ELECTRONICS TECHNOLOGY

FIRST YEAR

First Quarter

Number		Course	Credit Hours
MATH	161	Electronics Mathematics I	5
ELEC	114	Fundamentals of Electricity I	4
ELEC	130	Introduction of Tubes & Transistors	4
ENGL	104	Communication Skills I	3
GENL	100	Orientation	1
			17

Second Quarter

Number		Course	Credit Hours
MATH	162	Electronics Mathematics II	5
ELEC	115	Fundamentals of Electricity II	4
ELEC	120	Introduction to Electronics	4
ENGL	105	Communication Skills II	3
			16

Third Quarter

Number		Course	Credit Hours
MATH	163	Electronics Mathematics III	5
ELEC	146	Circuit Analysis	4
ELEC	126	Electronic Amplifiers	4
PHYS	101	Introductory Physics I	3
			16

SECOND YEAR

Fourth Quarter

Number		Course	Credit Hours
ELEC	256	Instruments and Measurements	4
ELEC	246	Pulse and Switching Circuits	4
ELEC	244	Communication Circuits I	4
PHYS	102	Introductory Physics II	3
			15

Fifth Quarter

Number		Course	Credit Hours
ELEC	247	Control Circuits	4
ELEC	270	Introduction to Computers	4
ELEC	245	Communication Circuits II	4
DRFT	226	Drafting (Electronics)	2
ECON	216	Industrial Economics	3
			17

Sixth Quarter

Number		Course	Credit Hours
ELEC	227	Introduction to New Electronics Devices	2
ELEC	289	Design and Fabrication	2
ELEC	266	Communication Systems	4
GOVT	180	American Constitutional Government	3
ENGL	136	Speech Communications	3
PSYC	110	Basic Principles of Applied Psychology	3
			17

ENGINEERING TECHNOLOGY

The courses outlined under Engineering Technology are designed to prepare young men and women for industrial employment as technicians. The technician usually serves as a liaison between the engineering and production department and he should be capable of doing such things as working on design and development of engineering plans; drafting; erecting and commissioning engineering equipment or structures; estimating, inspecting, and testing engineering equipment; using surveying instruments; maintaining engineering machinery or engineering services and locating faults; operating, maintaining, and repairing engineering plants; or performing activities connected with research and development, sales and representation, servicing and testing of materials and components, advising consumers, and training and education. The techniques employed demand acquired experience and knowledge of a particular branch of engineering combined with the ability to work out the details of a job in the light of well-established practice. Industry indicates that it needs annually five to eight technicians for every engineer it employs.

An engineering technician requires a background sufficient to enable him to understand the reason and purpose of the operation for which he is responsible; therefore, course content in each area has been carefully selected so that each student upon graduation will have an adequate background for successful employment in the field of his major.

This two-year program, which is designed to qualify students for immediate employment in industry, is in the process of revision. Beginning with the 1966 Fall Quarter, all Engineering Technology students will take the same program during their Freshman year; they then have the option of pursuing a major in Architectural, Civil or Mechanical Technology in their Sophomore year. Those successfully completing all course requirements will receive the degree of Associate in Applied Science.

Admission Requirements:

In addition to the admission requirements set forth for the college in the front of the catalog, entry into the Engineering Technology Department requires one unit of high school algebra and one unit of high school geometry or the equivalent.

ENGINEERING TECHNOLOGY

Standard Freshman Curriculum, Beginning September 1966

Number		*Title*	*Credit Hours*
		First Quarter	
ENGL	104	Communication Skills I	3
MATH	111	Technical Math I	3
CHEM	156	Introduction to Chemistry	4
ENGR	121	Engineering Drafting I	3
ENGR	140	Materials of Industry	3
GENL	100	Orientation	1
		Total Credit Hours	17
		Second Quarter	
ENGL	105	Communication Skills II	3
MATH	112	Technical Math II	3
PHYS	101	Introductory Physics I	3
ENGR	122	Engineering Drafting II	4
ENGR	146	Engineering Laboratory	4
		Total Credit Hours	17
		Third Quarter	
ENGL	136	Speech Communications	3
MATH	113	Technical Math III	3
PHYS	102	Introductory Physics II	3
ENGR	123	Engineering Drafting III	4
ENGR	156	Statics	3
GOVT	180	American Constitutional Government	3
		Total Credit Hours	19

ARCHITECTURAL TECHNOLOGY

Architectural Technology is concerned with the design, supervision and construction of homes, factories, schools, stores, and municipal projects. The work is both creative and practical; the students are taught to design, draw plans, and follow through with construction details and methods. Emphasis is placed on architectural practices which include such subjects as building specification and codes, building design costs and estimates, and materials and methods of construction, as well as the basic skills of drawing and sketching. Subjects such as physics, chemistry, mathematics, English, human relations, technical writing, and public speaking are included. Successful graduates in this course are presented with many varied job opportunities in architectural offices and with building contractors. A more complete description of each subject is given in the back of the catalog.

ARCHITECTURAL TECHNOLOGY

SOPHOMORE YEAR (1966)*

Number	*Title*	*Credit Hours*
	Fourth Quarter	
PHYS 102	Physics II	3
ENGR 246	Strength of Materials.	3
ARCH 221	Architectural Drawing III	3
ARCH 234	Building Equipment I	3
ARCH 270	Building Codes & Regulation	3
	Elective	3
	Total Credit Hours	18
	Fifth Quarter	
PHYS 103	Physics III	3
ARCH 264	Structures I	3
ARCH 222	Architectural Drawing IV	3
ARCH 235	Building Equipment II	3
ARCH 214	Freehand Drawing I..	1
	Elective	3
	Total Credit Hours	16
	Sixth Quarter	
ARCH 265	Structures II	3
ARCH 223	Architectural Drawing V	3
ARCH 215	Freehand Drawing II.	1
ARCH 269	History of Architecture	3
BUAD 126	Office Machines	2
	Elective	3
	Total Credit Hours	15

SOPHOMORE YEAR (1967)**

Number	*Title*	*Credit Hours*
	Fourth Quarter	
PHYS	Introductory Physics III..	3
ENGR	Strength of Materials.....	3
ARCH	Architectural Drafting I..	4
ARCH	Structures I	3
ARCH	Construction Materials I..	4
	Total Credit Hours	17
	Fifth Quarter	
ARCH	Architectural Drafting II.	4
ARCH	Construction Materials II.	4
ARCH	Building Equipment I	3
ARCH	Structures II	3
ARCH	Freehand Drawing I	1
PSYC	Basic Principles of Applied Psychology	3
	Total Credit Hours	18
	Sixth Quarter	
ARCH	Architectural Drafting III	4
ARCH	Building Equipment II ...	3
ARCH	Codes & Regulation	3
BUAD	Business Machines	2
ARCH	Freehand Drawing II	1
ENGR	Intro. To Data Processing in Engineering Applications	3
ECON	Industrial Economics	3
	Total Credit Hours	19

CIVIL TECHNOLOGY

Civil Engineering encompasses among its projects: streets and drainage, highways, airports, sewerage and water supply systems, dams, bridges, tunnels. In suport of these projects the technician must perform a wide variety of tasks.

*This curriculum is applicable only to those students who entered the Engineering Technology program of the College in the 1965-66 school year.

**Course titles are those proposed for the 1967-68 Sophomore curriculum. Relevant course numbers will be published in the 1967-68 catalog.

He may be a surveyor, a draftsman, a field inspector of construction and materials, an aide to the civil engineer, a laboratory technician, an estimator, a salesman for engineering equipment, while performing as a versatile member of the engineer-technician-craftsman team. It is intended that the graduate of this course should render valuable service in any one of these tasks with a minimum of supervision.

A brief description of each subject is given in the back of this catalog.

CIVIL TECHNOLOGY

SOPHOMORE YEAR (1966)*

Number	*Title*	*Credit Hours*
	Fourth Quarter	
PHYS 102	Physics II	3
ENGR 246	Strength of Materials	3
CIVL 266	Construction Methods & Equipment	3
CIVL 285	Advanced Surveying	4
	Elective	3
	Total Credit Hours	16
	Fifth Quarter	
CIVL 246	Water & Sewage Systems	4
PHYS 103	Physics III	3
CIVL 250	Hydraulics	3
CIVL 222	Utility Drafting	3
	Elective	3
	Total Credit Hours	16
	Sixth Quarter	
CIVL 267	Applied Building Construction	2
CIVL 223	Structural Drafting	4
CIVL 277	Contracts, Specifications Codes	3
CIVL 276	Estimating & Office Practices	3
	Elective	3
	Total Credit Hours	15

SOPHOMORE YEAR (1967)**

Number	*Title*	*Credit Hours*
	Fourth Quarter	
PHYS	Physics III	3
ENGR	Strength of Materials	3
CIVL	Civil Drafting I	4
CIVL	Construction Methods & Equipment I	3
CIVL	Materials Laboratory I	4
	Total Credit Hours	17
	Fifth Quarter	
CIVL	Elem. Surveying	3
CIVL	Civil Drafting II	4
CIVL	Construction Methods & Equipment II	3
CIVL	Materials Laboratory II	4
CIVL	Water, Drainage, Sewage Systems	3
	Total Credit Hours	17
	Sixth Quarter	
CIVL	Adv. Surveying	4
CIVL	Civil Drafting III	4
BUAD	Business Machines	2
CIVL	Estimating & Office Practices	4
ENGR	Intro. to Data Processing in Engineering Applic.	3
	Total Credit Hours	17

*This curriculum is applicable only to those students who entered the Civil Technology program of the College in the 1965-66 school year.

**Course titles are those proposed for the 1967-68 Sophomore curriculum. Relevant course numbers will be published in the 1967-68 catalog. Students will also be required to take a three credit hour course in economics and in applied psychology.

MECHANICAL TECHNOLOGY

The Mechanical Technology curriculum offers training in basic courses such as mathematics, English, physics and laboratory training. Classroom theory is correlated with laboratory work in which the student becomes familiar with basic methods and machines used in the mechanical field.

This field embraces the manufacture and production of mechanical products and the tools, machines, and processes by which they are made. In a broad sense mechanical technology is the creation and utilization of mechanical power, and such as enters into every business, industrial, and community activity.

A more complete description of each subject is given in the back of this catalog.

MECHANICAL TECHNOLOGY

SOPHOMORE YEAR (1966)*

Number	*Title*	*Credit Hours*
	First Quarter	
PHYS 102	Physics II	3
MECH 221	Tool Design	3
ENGR 246	Strength of Materials.	3
BUAD 126	Office Machines	2
ENGR 156	Statics	3
	Elective	3
	Total Credit Hours	17
	Second Quarter	
PHYS 103	Physics III	3
MECH 222	Machine Design I	3
ECON 216	Industrial Economics.	3
ENGR 276	Industrial Safety	2
MECH 246	Metallurgy	3
	Elective	3
	Total Credit Hours	17
	Third Quarter	
MECH 223	Machine Design II...	3
ENGR 277	Industrial Management	3

SOPHOMORE YEAR (1967)**

Number	*Title*	*Credit Hours*
	Fourth Quarter	
PHYS	Physics III	3
ENGR	Strength of Materials	3
MECH	Tool Design	3
BUAD	Office Machines	2
MECH	Machine Laboratory I...	3
	Elective	3
	Total Credit Hours	17
	Fifth Quarter	
MECH	Machine Design I	3
ECON	Industrial Economics	3
MECH	Industrial Safety	2
MECH	Machine Laboratory II...	3
MECH	Applied Industrial Electricity	3
MECH	Metallurgy	3
	Total Credit Hours	17
	Sixth Quarter	
MECH	Machine Design II	3
MECH	Industrial Management...	3

*This curriculum is applicable only to those students who entered the Mechanical Technology program of the College in the 1965-66 school year.

**Course titles are those proposed for the 1967-68 Sophomore curriculum. Relevant course numbers will be published in the 1967-68 catalog. Students will also be required to take a three credit hour course in economics and in applied psychology.

Number	*Title*	*Credit Hours*	*Number*	*Title*	*Credit Hours*
MECH 286	Quality Control	3	MECH	Quality Control	2
ENGR 286	Intro. to Data Processing in Engineering Applic.	3	MECH	Manufacturing Processes..	3
	Elective	3		Elective	3
			ENGR	Intro. to Data Processing in Engineering Applic..	3
	Total Credit Hours	15		Total Credit Hours	17

NURSING

The two-year Nursing program is designed as an integral part of the College and will combine nursing courses with those from general education. Students who successfully complete the program and graduate will be eligible to take the examination of the Virginia State Board of Nurse Examiners for licensure as a registered nurse, and will be granted the degree, Associate in Applied Science.

The program is fully approved by the State Council of Higher Education of the Commonwealth of Virginia and tentatively approved by the Virginia State Board of Nurse Examiners.

Upon admission, and during the course of the program, the nursing faculty will carefully observe and evaluate the student's suitability for nursing. If in the opinion of the nursing faculty, the student does not exhibit appropriate demeanor, she may be asked to withdraw from the nursing program.

Students who receive a final grade lower than "C" in any of the courses in the sequence HLTH 100 to NURS 217 must obtain permission from the Chairman of the Department 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.

Carefully selected clinical experiences will be arranged by the nursing faculty with the cooperation of a variety of community health service facilities.

Admission Requirements:

1. High school courses
    a. Science—2 units
        (1) Biology (laboratory course)
        (2) Chemistry (laboratory course)
    b. Mathematics—2 units
        (1) Algebra
        (2) Second unit of Algebra is preferred, but Geometry may be substituted if necessary.

2. High School record of achievement must reflect a "C" average in academic subjects excluding foreign languages.
3. Evidence of good health as shown by a complete physical examination including chest x-ray and immunizations.
4. The program is open to both male and female applicants between the ages of 17-45 at the time of entering the program. Older students will be considered upon special request in writing if they meet the academic and health standards for admission. Marital status is not a factor.
5. Two personal interviews are required; the first interview will be with the Director of Admissions for the College, and the second interview for qualified applicants will be with the Chairman of the Department of Nursing or her delegate.

Clinical Experience

Selected learning experiences will be provided in a number of health agencies located within the geographical area served by the College, such as general hospitals, nursing homes, clinics, nursery schools, and day care centers.

Transportation

Students will be totally responsible for transportation to and from the College and the health agencies utilized for clinical experiences.

Expenses

In addition to the normal expenses outlined elsewhere in the College catalog, there will be a financial expenditure by the student in relation to uniform and accessories, including bandage scissors, and a wristwatch with a sweep second hand. Students are responsible for personal maintenance, including uniforms. This additional expenditure would amount to approximately one hundred ($100.00) dollars over the two-year period.

NURSING

FIRST YEAR

Number		*Course*	*Credit Hours*
		First Quarter	
GENL	100	Orientation	1
PSYC	110	Basic Principles of Applied Psychology	3
CHEM	154	Health Sciences Chemistry I	4
BIOL	154	Anatomy and Physiology I	3
ENGL	104	Communication Skills I	3
HLTH	100	Concepts of Health and Illness	4
			18
		Second Quarter	
PSYC	116	Psychology of Personal Adjustment	3
CHEM	155	Health Sciences Chemistry II	4
BIOL	155	Anatomy and Physiology II	3
ENGL	105	Communication Skills II	3
NURS	116	Fundamentals of Nursing	5
			18
		Third Quarter	
PSYC	130	Child Psychology	3
ENGL	136	Speech Communications	3
BIOL	166	Microbiology	3
NURS	117	Nursing of Mothers, Infants and Children.	8
			17
		Summer Quarter	
HLTH	214	Nursing in Major Health Problems I	8

SECOND YEAR

Number		*Course*	*Credit Hours*
		Fourth Quarter	
SOCI	204	Sociology I	3
ECON	104	Economics I	3
DAPR	100	Introduction to Data Processing Principles	4
NURS	215	Nursing in Major Health Problems II	8
			18
		Fifth Quarter	
SOCI	205	Sociology II	3
GOVT	180	American Constitutional Government	3
NURS	216	Nursing in Mental Illness	8
		Elective	3
			17
		Sixth Quarter	
SOCI	100	Problems of Man in the Modern World	3
GOVT	296	Public Affairs	2
NURS	217	Advanced Clinical Nursing	9
		Elective	3
			17

POLICE SCIENCE

The curriculum in Police Science has been developed and is maintained in cooperation with the Northern Virginia police officials. The curriculum is not designed to train for any specialty, but rather to provide a broad foundation which will enable the student to enter any of the several fields of law enforcement.

Required of each applicant, in addition to the general requirements for admission to the College, are:

1. A written statement, from the city or county law enforcement agency having jurisdiction in the applicant's area of residence, as to the applicant's record of conduct.
2. A personal interview with a representative of the Police Science Department.

Students who wish to enroll in the Police Science program with the objective of obtaining employment with law enforcement agencies in Northern Virginia are advised that the following qualifications are generally prerequisite to such employment:

1. Excellent physical condition, free from any physical or mental condition which might adversely affect acceptance or performance as a law enforcement officer.

2. Possess normal hearing and normal color vision. Eye functions must be normal. Visual acuity must not be less than 20/40 in either eye without correction.

3. Weight should be in proportion to height. Very few law enforcement agencies will accept male applicants who are less than 5′8″ in height.

4. Must be of excellent moral character. Must not have been convicted of any crime involving moral turpitude or any felony. Must not have received an excessive number of traffic citations. Background investigation will be conducted by the employing agency to confirm the foregoing.

POLICE SCIENCE

FIRST YEAR

Number		Course	Credit Hours
		First Quarter	
ENGL	104	Communication Skills I	3
PLCE	100	Intro. to Law Enforcement	3
PLCE	110	Patrol Administration	3
GENL	100	Orientation	1
SOCI	100	Problems of Man in the Modern World	3
SECR	111	Typewriting I*	2
			15
		Second Quarter	
ENGL	105	Communication Skills II	3
PLCE	130	Criminal Law	3
PLCE	116	Prevention & Control of Juvenile Delinquency	2
PLCE	120	Special Enforcement Problems	3
GOVT	186	National, State & Local Government	5
			16
		Third Quarter	
ENGL	136	Speech Communication	3
PLCE	117	Traffic Flow & Control	3
PLCE	150	Introductory Police Photography	2
PLCE	136	Criminal Evidence	3
PSYC	119	Basic Principles of Psychology Applied to Personal Adjustment	5
			16

SECOND YEAR

Number		Course	Credit Hours
		Fourth Quarter	
ENGL	205	English and the Law	3
PLCE	236	Police, Crimes and Offenses of Virginia	3
PLCE	270	Industrial & Commercial Security	3
PLCE	244	Principles of Criminal Investigation	3
PSYC	227	Law Enforcement Psychology	3
			15
		Fifth Quarter	
ENGL	206	Incident Investigation Reporting	3
PLCE	245	Advanced Criminal Investigation	3
SOCI	226	Criminology	3
PLCE	286	Municipal Police Administration	3
		Elective	3
ECON	216	Industrial Economics	3
			15
		Sixth Quarter	
PLCE	237	Admin. of Justice	3
PLCE	260	Police Communications Systems	2
PLCE	299	Seminar in Law Enforcement	2
GOVT	296	Public Affairs	2
		Electives	6
			15

*Waiver and equivalent credit may be granted for the student who has satisfactorily completed one year of typing in high school, or demonstrates equivalent competence.

SECRETARIAL SCIENCE

The primary objective of the Secretarial Science Department is to offer courses for full-time students working toward the Associate in Applied Science degree. The complete program is composed of a balanced schedule of courses for skill development and for general education. The courses of study outlined here are designed for students with little or no secretarial training. Students with previous training may apply to enter with advanced standing. If granted, they may complete the course in less than two years.

All first-year students will follow the same curriculum, which is listed below:

First Quarter

SECR	111	Typewriting I	2
SECR	121	Shorthand I	4
BUAD	100	Introduction to Business	3
ENGL	104	Communication Skills I	3
MATH	154	Business Mathematics I	3
GENL	100	Orientation	1
			16

Second Quarter

SECR	112	Typewriting II	2
SECR	122	Shorthand II	4
BUAD	170	Business Organization & Management	3
ENGL	105	Communication Skills II	3
MATH	155	Business Mathematics II	3
			15

Third Quarter

SECR	113	Typewriting III	2
SECR	123	Shorthand III	4
SECR	136	Filing & Records Management	2
SECR	156	Personal Development	3
BUAD	126	Office Machines	2
ENGL	136	Speech Communication	3
			16

After successful completion of the first year, a student may continue in a general secretarial course or may choose to specialize in either the legal or the technical field. Second-year programs are outlined on the following pages.

General Secretary

This program is offered to second-year students who wish to prepare for positions as professional secretaries in any major field of business. The course of study is outlined below:

Fourth Quarter

SECR	216	Executive Typewriter	2
SECR	241	Secretarial Procedures I	3
SECR	221	Shorthand Transcription I	3
GOVT	180	American Constitutional Government	3
PSYC	110	Basic Principles of Applied Psychology	3
		Elective*	2
			16

Fifth Quarter

SECR	266	Machine Transcription	3
SECR	222	Shorthand Transcription II	3
SECR	242	Secretarial Procedures II	3
BUAD	244	Business Law I	3
ECON	216	Industrial Economics	3
			15

Sixth Quarter

SECR	217	Typewriting Skill Building	2
SECR	223	Shorthand Transcription (General)	3
SECR	243	Secretarial Procedures III	3
BUAD	245	Business Law II	3
		Elective*	4-5
			15-16

Secretary Specialist (Technical)

This program is open to qualified second-year students who wish to prepare for intermediate secretarial positions in technical fields. A typical graduate could expect to be employed in a research and development office in one of the physical sciences, including physics, astronomy, mathematics and chemistry. The course of study is outlined below:

Fourth Quarter

SECR	216	Executive Typewriter	2
SECR	221	Shorthand Transcription I	3
SECR	241	Secretarial Procedures I	3
MATH	206	Survey of Mathematical Concepts	1
PSYC	110	Basic Principles of Applied Psychology	3
GOVT	180	American Constitutional Government	3
			15

Fifth Quarter

SECR	266	Machine Transcription	3
SECR	222	Shorthand Transcription II	3
SECR	284	Technical Secretarial Procedures I	3
SECR	218	Technical Typing	1
NASC	100	Survey of Science	3
ECON	216	Industrial Economics	2

*To be selected from list of approved electives.

Sixth Quarter

SECR	217	Typewriting Skill Building	2
SECR	226	Shorthand Transcription (Tech.)	3
SECR	285	Technical Secretarial Procedures II	3
SECR	299	Work-Study (Secretarial)	5
		Elective*	3

Secretary Specialist (Legal)

This program is offered to second-year students wishing specialized training to qualify for secretarial positions in law offices. The course of study is outlined below:

Fourth Quarter

SECR	216	Executive Typewriter	2
SECR	221	Shorthand Transcription I	3
SECR	241	Secretarial Procedures I	3
GOVT	180	American Constitutional Government	3
PSYC	110	Basic Principles of Applied Psychology	3
		Elective	2
			16

Fifth Quarter

SECR	266	Machine Transcription	3
SECR	222	Shorthand Transcription II	3
SECR	274	Legal Secretarial Procedures I	3
BUAD	244	Business Law I	3
ECON	216	Industrial Economics	3
			15

Sixth Quarter

SECR	217	Typewriting Skill Building	2
SECR	227	Shorthand Transcription (Legal)	3
SECR	275	Legal Secretarial Procedures II	3
SECR	219	Magnetic Tape Selectric Typewriter	2
BUAD	245	Business Law II	3
		Elective*	3
			16

Additional objectives of the Secretarial Science Department include the following:

a. To provide instruction in typewriting for students who wish to learn the skill for personal use or to fulfill requirements of other occupational programs within the College.

b. To provide instruction within regularly scheduled classes for non-majors and residents of the community who do not wish to enroll in a full-time secretarial science degree program.

c. On a space available basis, to provide instruction tailored to the specific needs of an employer or organization within the community.

*To be selected from list of approved electives.

University Parallel–College Transfer Program

Associate in Arts Curriculum
Associate in Science Curriculum (pre-Science)
Associate in Science Curriculum (pre-Engineering)

The student in this program pursues one of three curricula:

1. That which leads to the Associate in Arts (A.A) degree via a broad, general preparation for those contemplating a major field of study in the liberal arts or social sciences, or those whose major field of study has not yet been determined; or
2. One of the two curricula which lead to the Associate in Science degree:

a. That designated "pre-Science", for those contemplating a major field of study in the natural sciences (e.g., pre-medical, pre-dental, biology, chemistry, mathematics, physics); or

b. That designated "pre-Engineering", for those intending transfer to a four-year Engineering school.

The student is urged to consult with the Counseling Department of the College in selecting the curriculum which he is to follow; and is advised that substitution of courses within a curriculum, or change from one curriculum to another, may be accomplished only with approval of the Dean of Instruction upon advice of the Counseling Department. Students are also urged to acquaint themselves with the requirements of the department of their intended major field in the school to which transfer is contemplated; and to be guided thereby in choosing electives.

ASSOCIATE IN ARTS (A.A.) SCHEDULE

FRESHMAN YEAR

First Quarter

Number		*Title*	*Credit Hours*
GENL	100	Orientation	1
MATH	101	Fundamentals of College Math I	3
ENGL	111	English Composition I	3
HIST	101	History of Western Civilization I	3
BIOL	101	Biology I	4
FREN	101	French I*	3
PHED	101	Physical Education I	1
		Total Credit Hours	18

Second Quarter

ENGL	112	English Composition II	3
MATH	102	Fundamentals College Math. II	3
HIST	102	History of Western Civilization II	3
BIOL	102	Biology II	4
FREN	102	French II*	3
PHED	102	Physical Education II	1
		Total Credit Hours	17

Third Quarter

ENGL	113	English Composition III	3
MATH	103	Fundamentals College Math. III	3
HIST	103	History of Western Civilization III	3
BIOL	103	Biology III	4
FREN	103	French III*	3
PHED	103	Physical Education III	1
		Total Credit Hours	17

SOPHOMORE YEAR

Fourth Quarter

Number		*Title*	*Credit Hours*
ENGL	261	Introduction to English Literature I	3
GOVT	180	American Constitutional Government	3
FREN	201	French IV*	3
Humanities Elective**			3
Other Elective**			3
		Total Credit Hours	15

Fifth Quarter

ENGL	262	Intro. to English Literature II	3
FREN	202	French V*	3
ECON	216	Industrial Economics	3
Humanities Elective			3
Other Elective			3
		Total Credit Hours	15

Sixth Quarter

ENGL	263	Intro. to English Literature III	3
FREN	203	French VI*	3
PSYC	110	Basic Principles of Applied Psychology	3
Humanities Elective			3
Other Elective			3
		Total Credit Hours	15

*Students who have completed two years of high school French may petition to substitute FREN 201-203 for FREN 101-103.

**All students are urged to acquaint themselves with the requirements of the department of their intended major fields of study in the colleges or universities to which transfer is contemplated, and further to consult with the Counseling Department of the College, in selecting their electives.

ASSOCIATE IN SCIENCE (A.S.) SCHEDULE
(Pre-Science)

FRESHMAN YEAR

Number		*Title*	*Credit Hours*
		First Quarter	
GENL	100	Orientation	1
PHED	101	Physical Education	1
ENGL	111	English Composition I	3
MATH	121	College Algebra & Trigonometry I	3
ECON	216	Industrial Economics	3
CHEM	111	Gen. Inorganic Chemistry I	4
FREN	101	French I*	3
		Total Credit Hours	18
		Second Quarter	
PHED	102	Physical Education II	1
ENGL	112	English Composition II	3
MATH	122	College Algebra & Trigonometry II	3
GOVT	180	American Constitutional Government	3
CHEM	112	Gen. Inorganic Chemistry II	4
FREN	102	French II*	3
		Total Credit Hours	17
		Third Quarter	
PHED	103	Physical Education III	1
ENGL	113	English Composition III	3
MATH	123	College Algebra & Trig. III	3
PSYC	110	Basic Principles of Applied Psychology	3
CHEM	113	Gen. Inorganic Chemistry III	4
FREN	103	French III*	3
		Total Credit Hours	17

SOPHOMORE YEAR

Number		*Title*	*Credit Hours*
		Fourth Quarter	
ENGL	261	Introduction to English Literature I	3
MATH	231	Calculus I	4
FREN	201	French IV*	3
CHEM	221	Quantitative Analysis I	4
PHYS	201	Physics I; or BIOL 101, Biology I**	4
		Total Credit Hours	18
		Fifth Quarter	
ENGL	262	Introduction to English Literature II	3
MATH	232	Calculus II	4
FREN	202	French V*	3
CHEM	222	Quantitative Analysis II	4
PHYS	202	Physics II; or BIOL 102, Biology II**	4
		Total Credit Hours	18
		Sixth Quarter	
ENGL	263	Introduction to English Literature III	3
MATH	233	Calculus III	4
FREN	203	French VI*	3
CHEM	223	Quantitative Analysis III	4
PHYS	203	Physics III; or BIOL 103, Biology III**	4
		Total Credit Hours	18

*Students who have completed two years of high school French may petition to substitute FREN 201-203 for FREN 101-103.
**All students are urged to acquaint themselves with the requirements of the department of their intended major fields of study in the colleges or

ASSOCIATE IN SCIENCE (A.S.) SCHEDULE

(Pre-Engineering)

FRESHMAN YEAR

Number		Title	Credit Hours
		First Quarter	
GENL	100	Orientation	1
PHED	101	Physical Education I	1
ENGL	111	English Composition I	3
MATH	121	College Algebra & Trigonometry I	3
HIST	101	History of Western Civilization I	3
CHEM	111	Gen. Inorganic Chemistry I	4
ENGR	111	Engineering Drafting & Descriptive Geometry I	3
		Total Credit Hours	18
		Second Quarter	
PHED	102	Physical Education II	1
ENGL	112	English Composition II	3
MATH	122	College Algebra & Trigonometry II	3
HIST	102	History of Western Civilization	3
CHEM	112	Gen. Inorganic Chemistry II	4
ENGR	112	Engineering Drafting & Descriptive Geometry II	3
		Total Credit Hours	17
		Third Quarter	
PHED	103	Physical Education III	1
ENGL	113	English Composition III	3
MATH	123	College Algebra & Trigonometry III	3
HIST	103	History of Western Civilization III	3
CHEM	113	Gen. Inorganic Chemistry III	4
ENGR	113	Engineering Drafting & Descriptive Geometry III	3
		Total Credit Hours	17

SOPHOMORE YEAR

Number		Title	Credit Hours
		Fourth Quarter	
ENGL	261	Introduction to English Literature I	3
ENGR	251	Mechanics I (Statics)	4
MATH	231	Calculus I	4
PHYS	201	Physics I	4
ECON	216	Industrial Economics	3
		Total Credit Hours	18
		Fifth Quarter	
ENGL	262	Introduction to English Literature II	3
ENGR	252	Mechanics II (Dynamics)	5
MATH	232	Calculus II	4
PHYS	202	Physics II	4
GOVT	180	American Constitutional Government	3
		Total Credit Hours	19
		Sixth Quarter	
ENGL	263	Introduction to English Literature III	3
ENGR	253	Mechanics III (Materials)	4
MATH	233	Calculus III	4
PHYS	203	Physics III	4
PSYC	110	Basic Principles of Applied Psychology	3
		Total Credit Hours	18

CERTIFICATE PROGRAMS

Drafting
Key Punch
Unit Record

DRAFTING

The curriculum in Drafting is intended to train students for employment after graduation as draftsmen with engineers, private industry or civil service agencies. Students who complete the suggested program are capable of skilled, neat, rapid lettering and line work, as well as making the complete and accurate detail and assembly drawings expected of a beginning draftsman.

This is a one-year non-degree program. Those students who satisfactorily meet the established required standards of proficiency are issued a Certificate of Completion.

DRAFTING

Number		*Course*	*Credit Hours*
		First Quarter	
DRFT	131	Drafting I	7
MATH	004	Elementary Mathematics I	3
ENGL	001	Verbal Studies Laboratory I	3
NASC	102	Science in Industry	3
GENL	100	Orientation	1
DRFT	186	Machine Tool Laboratory	1
		Total Credit Hours	17
		Second Quarter	
DRFT	132	Drafting II	7
MATH	005	Elementary Mathematics II	3
DRFT	144	Materials & Processes of Industry I	3
ENGL	002	Verbal Studies Laboratory II	3
PSYC	110	Basic Principles of Psychology	3
		Total Credit Hours	19
		Third Quarter	
DRFT	133	Drafting III	7
DRFT	199	Problems of Drafting & Design	2
DRFT	145	Materials & Processes of Industry II	3
MATH	126	Elementary Trigonometry	3
ENGL	003	Verbal Studies Laboratory III	3
		Total Credit Hours	18

DATA PROCESSING

Key Punch

One-Quarter Program

DAPR 186 Key Punch Operation .....15 Credit Hours

A comprehensive occupational course designed to train the student to an employable level as a key punch operator in twelve weeks. In addition to the development of keyboard competency, this course includes an introduction to data processing principles. This class will meet six hours per day on Monday, Wednesday and Friday for a period of twelve weeks in a combination of lecture and laboratory experience.

Prerequisite: Typing skill or 30 wpm or permission of Department Head.

DATA PROCESSING

Certificate in Unit Record

One-Year Program

Applicants planning to enter the one-year Unit Record Program must meet the admission requirements set forth by the College in the front section of the catalog. A student satisfactorily completing the program will be granted a Certificate of Competence.

Number		*Course*	*Credit Hours*
		First Quarter	
DAPR	180	Introduction to DP & Mach. Oper.	4
DAPR	184	U/R Processing Equipment I	4
BUAD	100	Introduction to Business	3
ENGL	104	Communication Skills I	3
GENL	100	Orientation	1
			15
		Second Quarter	
DAPR	185	U/R Processing Equipment II	6
BUAD	111	Principles of Accounting I	3
BUAD	170	Business Organization & Management	3
ENGL	105	Communication Skills II	3
			15
		Third Quarter	
DAPR	186	Unit Record Applications	6
BUAD	112	Principles of Accounting II	3
PSYC	226	Psychological Aspects of Management	3
ECON	216	Industrial Economics	3
			15

PRE-TECHNICAL PROGRAM

The Pre-Technical program is a course of study designed to enable those students who lack essential preparation or who desire an extensive review to become adequately prepared to enter one of the regular technical programs leading to an Associate Degree. Through this program an opportunity will be provided for students to raise their level of proficiency in mathematics, sciences, and communications skills, to receive extensive testing and counseling, and to have closely supervised study. Upon successful completion of this program and with the recommendation of the counselor and appropriate instructors, students will be admitted into an Associate Degree program. Should a student fail to satisfactorily complete the Pre-Technical program or receive recommendations, the student will be given an opportunity to enroll in a non-degree program of the College.

COURSE DESCRIPTIONS

PART V—COURSE DESCRIPTIONS

Courses numbered 000-099 are generally "pre-college" and "pre-technical" preparatory courses. Credits earned in these courses are not applicable toward an Associate degree.

Courses numbered 100-199 are Freshman-level courses.

Courses numbered 200-299 are Sophomore-level courses.

"Credit hours" are equivalent to "quarter hours", and credit for each course is indicated after the title in the course description, as are the lecture and laboratory hours required per week.

AUTOMOTIVE TECHNOLOGY

AUTO 111-112-113 AUTOMOTIVE ENGINES I-II-III (4) (4) (4)—The analysis of power, cylinder condition, valves, and bearings in the automotive engine to establish the present condition, repairs or adjustments to be made, and the estimated cost of these repairs or adjustments. Lecture 2 hours, Lab 4 hours, Total 6 hours.

AUTO 124-125 AUTOMOTIVE FUEL SYSTEMS I-II (4) (4)—The analysis of carburetors, fuel pumps, and fuel lines. Estimation of repairs and adjustments to be made and the cost of these repairs and adjustments. Basic adjustments. Lecture 2 hours, Lab 4 hours, Total 6 hours.

AUTO 136 AUTOMOTIVE LUBRICATION AND COOLING SYSTEMS I (4)—Testing and analysis of lubrication systems to include lubricants, pumps, lines, filters and vents. Analysis of cooling systems, coolants, pumps, fans, lines and connections. Estimation of repairs and adjustments needed and cost of these. Lecture 2 hours, Lab 4 hours, Total 6 hours.

AUTO 241-242-243 AUTOMOTIVE ELECTRICAL SYSTEMS I-II-III (4) (4) (4)—Testing and analysis of battery, coil, distributor, starter, alternator or generator, voltage regulator and spark plugs. Estimation of repairs and adjustments to be made and the cost of these. Lecture 2 hours, Lab 4 hours, Total 6 hours.

AUTO 254-255 POWER TRAIN I-II (4) (4)—Analysis of transmission, propellor shaft, joints, differential, and rear axles for identification of repairs and adjustments. Lecture 2 hours, Lab 4 hours, Total 6 hours.

AUTO 266 AUTOMOTIVE SUSPENSION & BRAKING SYSTEMS (4)—Analysis of front end suspension and adjustment. Rear springs, braking system, and tire inflation check. Estimation of repairs and adjustments needed and the cost of these. Lecture 2 hours, Lab 4 hours, Total 6 hours.

AUTO 276 AUTOMOTIVE SHOP MANAGEMENT & CUSTOMER RELATIONS (3)—A study of basic shop layout, personnel management, cost analysis, records keeping and quality control. The shop manager, service salesman & service writer's role in customer relations. Lecture 2 hours, Lab 3 hours, Total 5 hours.

BIOLOGY

BIOL 101-102-103 BIOLOGY I-II-III (4) (4) (4)—Fundamental characteristics of living matter from the molecular level to the ecological community, with emphasis on general biological principles. Diversity of plant and animal life; evolutionary processes; adaptation of organisms to their environments. Lecture 3 hours, Lab 3 hours, Total 6 hours.

BIOL 154-155 ANATOMY AND PHYSIOLOGY I-II (3) (3)—Structure and function of the body; organization of tissues, organs, and systems. Detailed study of structure and function of selected body systems. Lecture 2 hours, Lab 3 hours, Total 5 hours.

BIOL 166 MICROBIOLOGY (3)—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 relationship to individual and community health. Lecture 2 hours, Lab 3 hours, Total 5 hours.

BIOL 201-202-203 BIOLOGY IV-V-VI (4) (4) (4)—Physiological aspects of living systems with emphasis on relationship of form and function; principles of physiology and anatomy. Prerequisite: BIOL 103 or equivalent. Lecture 3 hours, Lab 3 hours, Total 6 hours.

BUSINESS ADMINISTRATION

BUAD 100 INTRODUCTION TO BUSINESS (3)—An orientation course designed to give the student a general acquaintance with all types of business. The various phases of business are studied from the operational point of view. Prerequisite: English 104 must have been taken previously or must be taken concurrently. Lecture 3 hours, Total 3 hours.

BUAD 106 OFFICE PROCEDURES (2)—This course is designed to enable the student to understand general office routines such as work flow, time scheduling, filing and communications. Lecture 2 hours, Total 2 hours.

BUAD 111-112-113 PRINCIPLES OF ACCOUNTING I, II, III (3) (3) (3)—A course designed to provide an understanding of the fundamentals of accounting. Content includes the accounting cycle, journals, ledgers, working papers and the preparation of financial statements under the various forms of business ownership. Prerequisite or concurrent with BUAD 111: BUAD 126, MATH 154. Lecture 3 hours, Total 3 hours.

BUAD 126 OFFICE MACHINES (2)—A course to develop proficiency in the use of office machines such as calculators and adding machines. Lecture 2 hours, Total 2 hours.

BUAD 170 BUSINESS ORGANIZATION AND MANAGEMENT (3)—This course deals with the basis of management and the management functions: planning, organizing, staffing, directing and controlling. Management is examined as both a science and an art, with emphasis on both the formal body of knowledge and the personal abilities required of the successful manager. Prerequisite: BUAD 100. Lecture 3 hours, Total 3 hours.

BUAD 214-215 INTERMEDIATE ACCOUNTING I, II (3) (3)—Extensive analysis of the principal elements of accounting systems and statements. Prerequisite: BUAD 111-112-113. Lecture 3 hours, Total 3 hours.

BUAD 216 COST ACCOUNTING (4)—Studies in accounting systems, methods and statements involved in process and job cost accounting, with attention to the use of standards and cost controls. Prerequisite: BUAD 111-112-113. Lecture 4 hours, Total 4 hours.

BUAD 217 AUDITING (3)—Purposes of audit, relationships of auditor and client, kinds of audits, working papers, internal controls and examination of accounting systems, audit reports. Prerequisite: BUAD 111-112-113. Lecture 3 hours, Total 3 hours.

BUAD 218 BUSINESS TAXES (3)—A study of applicable federal, state and local taxes and their implications in terms of business ownership, policy and operations. Lecture 3 hours, Total 3 hours.

BUAD 236 MERCHANDISING (MARKETING) (3)—A course in the principles, methods and problems involved in the distribution and marketing of goods and services. It includes a study of the various marketing agents: wholesaler, broker agent, cooperative and trade association. Discussions of present day problems and policies connected with the distribution and sale of commodities, pricing, advertising and promotion, and buyer motivation. Lecture 3 hours, Total 3 hours.

BUAD 240 BUSINESS FINANCE (3)—An introduction to the problems involved in the acquisition and use of funds necessary to the conduct of business. The course covers sources and instruments of capital and finance, financial organization, and financing of operations and adjustments. Lecture 3 hours, Total 3 hours.

BUAD 244-245 BUSINESS LAW I-II (3) (3)—The application of rules of law to the operation of a business. It covers the legal aspects of the principal instruments of business activity, rights and liabilities of business principals and agents, formation and dissolution of ownership forms, and the legal aspects of negotiable instruments and securities. Lecture 3 hours, Total 3 hours.

BUAD 246 MONEY AND BANKING (3)—Fundamental principles of money, credit and banking and their exemplification in modern currency and banking history, particularly that of the United States. Special attention is given to present day conditions and problems. Lecture 3 hours, Total 3 hours.

BUAD 256 REAL ESTATE AND PLANT MANAGEMENT (3)—Practical application of real estate management principles. Contracts, deeds, mortgages, bonds, leases, liens, search, real property leasing and appraisal. Control and management of industrial and commercial property. Lecture 3 hours, Total 3 hours.

BUAD 276 PERSONNEL MANAGEMENT (2)—A course in the problems and issues involved in the administration of personnel actions. Includes organization and tasks of a personnel department, significant personnel considerations and an appraisal of the position of labor in business today. Lecture 2 hours, Total 2 hours.

BUAD 277 PURCHASING AND MATERIALS MANAGEMENT (3)—A study of the principles of purchasing and management of industrial inventories, including determination of requirements, pricing, source selection, and inventory policy and control. Lecture 3 hours, Total 3 hours.

BUAD 278 PRODUCTION (3)—A study of the fundamentals of production planning and control. It covers plant layout, manpower, equipment and inventory planning, production forecasting, scheduling and control and statistical quality control. Lecture 3 hours, Total 3 hours.

BUAD 294 INTRODUCTION TO BUSINESS STATISTICS (3)—This course covers the collection, tabulation and graphic presentation of data concerning business activity, economic trends and cycles, and similar fields, and the application of these techniques in solving practical business problems. Lecture 3 hours, Total 3 hours.

BUAD 295 BUSINESS STATISTICS II (3)—A study of statistical and probability techniques and their use. Specific topics include the principal statistical concepts and techniques and their practical applications, including analysis, and the use of graphic presentation and solutions. Prerequisite: BUAD 294. Lecture 3 hours, Total 3 hours.

BUAD 299 BUSINESS RESEARCH PROJECT (2)—Essentially involves the selection and completion of an individual project related to the student's academic objective. Also includes discussion of professional topics in general and a study of

approaches to selection and pursuit of employment and career opportunities. Lecture or Seminar 2 hours, Total 2 hours.

CHEMISTRY

CHEM 111-112-113 GENERAL INORGANIC CHEMISTRY I-II-III (4) (4) (5)—Fundamental principles and laws underlying chemical action with special emphasis on the non-metals and their compounds, and theories and problems concerning them. The laboratory work for the first half of the course deals chiefly with the none metallic elements and their compounds. The second half deals with the theories of qualitative analysis. Lecture 3 hours, Lab 3 hours, Lab for CHEM 113 is 6 hours.

CHEM 154-155 HEALTH SCIENCE CHEMISTRY I-II (4) (4)—This is primarily an introductory course in Chemistry for students in the health sciences. It deals with the basic principles of inorganic, organic and Biological Chemistry. Lecture 3 hours, Lab 3 hours, Total 6 hours.

CHEM 156 INTRODUCTION TO CHEMISTRY (4)—An introductory survey of chemistry for students not intending to pursue this science further. Lectures will emphasize basic principles of inorganic chemistry; laboratory will be illustrative of the principles considered. Lecture 3 hours, Lab 3 hours, Total 6 hours.

CHEM 221-222-223 QUANTITATIVE ANALYSIS I-II-III. (4) (4) (4)—The theory and practice in standard methods of gravimetric, volumetric, colorimetric, and electrometric analysis. Special emphasis is placed on equilibrium in acid-base and oxidation-reduction equations, as well as the stoichiometry of chemical reactions. The third quarter is devoted to instrumental analysis. Prerequisite: CHEM 113 or equivalent. Lecture 2 hours, Lab 6 hours, Total 8 hours.

CHEM 241-242-243 ORGANIC CHEMISTRY I-II-III (4) (4) (4)—A year course in the fundamentals of organic chemistry. The structure, physical properties, synthesis, and typical reactions of the various series of aliphatic, alicyclic, and aromatic compounds are studied with attention to reaction mechanisms. In the laboratory representative carbon compounds are synthesized with emphasis on basic laboratory techniques. Prerequisite: CHEM 113 or its equivalent.

DATA PROCESSING TECHNOLOGY

DAPR 100 INTRODUCTION TO DATA PROCESSING PRINCIPLES (3)—An introduction to basic methods, techniques, and systems of manual, mechanical, and electronic data processing. Covers the history and development of punch card data processing, and electronic or automatic data processing. Monitors and controls digital computers to process predefined business or other data according to operating instructions. Prerequisite: One year High School Algebra. Lecture 3 hours, Lab 1 hour, Total 4 hours.

DAPR 114 UNIT RECORD I (3)—Basic operating, wiring and control of data processing machines other than electronic digital computers. The machines include the Card Punch, Verifier, Interpreter, Sorter, and Document Originating Machine. Experience is provided with the equipment in the N.V.C.C. Data Processing Center using business problems for "Hands-on" machine concept. Prerequisite: DAPR 100. Lecture 3 hours, Lab 2 hours, Total 5 hours.

DAPR 115 UNIT RECORD II (3)—A continuation of the Unit Record Processing Equipment Course number one. More comprehensive exercises are executed, involving the planning and wiring a range of unit record equipment. Particular emphasis is placed on the accounting machine. Actual experience is provided with the equipment in the N.V.C.C. Data Processing Center. Prerequisite: DAPR 114. Lecture 3 hours, Lab 2 hours, Total 5 hours.

DAPR 124 COMPUTER PROGRAMMING (3)—A basic course in programming electronic digital computer for those who plan to be programmers, computer operators, or those whose work may be closely related to computer applications in business and industry. Course covers problems of data processing or coding with emphasis on symbolic programming techniques. Prerequisites: DAPR 115 and MATH 126. Lecture 3 hours, Lab 2 hours, Total 5 hours.

DAPR 125 COMPUTER PROGRAMMING II (3)—A continuation of the basic computer programming course. The major emphasis is placed on the development of programming techniques. Symbolic programming will be continued. Students should become proficient in programming of card system problems. Prerequisite: DAPR 124. Lecture 3 hours, Lab 2 hours, Total 5 hours.

DAPR 136 UNIT RECORD APPLICATIONS (3)—Designed to introduce the student to the basic concepts, objectives and general approaches to typical data processing applications, including: accounts receivable, accounts payable, payroll and inventory control. Practical laboratory experience is provided on the punched card equipment of the N.V.C.C. Data Processing Center. Prerequisite: DAPR 115. Lecture 2 hours, Lab 3 hours, Total 5 hours.

DAPR 180 INTRODUCTION TO DATA PROCESSING AND MACHINE OPERATION (3)—An introduction to basic methods, techniques and systems of manual, mechanical electronic data processing. Covers the history and development of data processing, with major emphasis on the unit record concept. This course specifically designed for Unit Record Operation certificate. Lecture 3 hours, Lab 1 hour, Total 4 hours.

DAPR 184 UNIT RECORD PROCESSING EQUIPMENT I (4)—Basic operation and control of data processing machines, with major emphasis toward the tabulating equipment. The machines include card punch, verifier, sorter, interpreter, document originating machine, collator and accounting machine. This course specifically designed for Unit Record Operation certificate. Prerequisite: DAPR 180. Lecture 3 hours, Lab 4 hours, Total 7 hours.

DAPR 185 UNIT RECORD PROCESSING EQUIPMENT II (6)—A continuation of the Unit Record Operation I with particular emphasis placed on the accounting machine. Comprehensive exercises are given, involving the planning and wiring a range of unit record equipment. This course specifically designed for Unit Record Operator certificate. Prerequisite: DAPR 184. Lecture 3 hours, Lab 6 hours, Total 9 hours.

DAPR 186 UNIT RECORD APPLICATIONS (6)—Designed to introduce the Unit Record student to the basic concepts, objectives and approaches to typical Data Processing Application. The students will develop a solution to a problem through implementation developed by the instructional staff in accounts receivable, accounts payable, payroll and inventory control. This course specifically designed for Unit Record Operator certificate. Prerequisite: DAPR 185. Lecture 3 hours, Lab 6 hours, Total 9 hours.

DAPR 187 KEY PUNCH OPERATION (15)—A comprehensive occupational course designed to train the student to an employable level as a key punch operator in twelve weeks. In addition to the development of keyboard competency, this course includes an introduction to data processing principles. This class will meet six hours per week (two hours each Monday, Wednesday, Friday) for a period of twelve weeks in a combination of lecture and laboratory experience. Prerequisite: Typing skill of 30 wpm or permission of Department Head. Lecture 3 hours, Lab 15, hours, Total 18 hours.

DAPR 221 COMPUTER PROGRAMMING III (3)—This course will introduce the student to concepts of magnetic tape utilization and to the programming tech-

niques required for effective use of magnetic tape storage. In addition, principles of random access storage devices and drum programming will be introduced. The student will reinforce and augment theoretical material and extend the programming techniques available to him by additional "hands-on" practical work in the N.V.C.C. Data Processing Center. Prerequisite: DAPR 125. Lecture 3 hours, Lab 2 hours, Total 5 hours weekly.

DAPR 222 COMPUTER PROGRAMMING IV (3)—In this course the student will study and develop a programming capability in the business computer language COBOL. Upon completion of the course a student can expect to be able to program in this language. The course will cover the relative advantages and disadvantages of the use of this higher level language in installations using medium and large scale computer systems. In addition, the student will continue the study of magnetic tape and random access programming. Prerequisite: DAPR 221. Lecture 3 hours, Lab 2 hours, Total 5 hours weekly.

DAPR 223 COMPUTER PROGRAMMING V (3)—This course will be a continuation of Computer Programming IV. Also, advanced programming systems and other higher level languages will be covered. The student will gain some proficiency in the use of these systems, and he will understand the advantages and disadvantages of their use in medium and large scale computer systems. Prerequisite: DAPR 222. Lecture 3 hours, Lab 2 hours, Total 5 hours weekly.

DAPR 236 COMPUTER PROGRAM APPLICATIONS II (3)—Designed to introduce the student to computer solutions of data processing applications. Practice problems will include combined applications in a simulated business. Installation management principles will be taught. Prerequisite: DAPR 125. Lecture 2 hours, Lab 3 hours, Total 5 hours.

DAPR 241 SYSTEMS ANALYSIS I (3)—A study of computer types and the relationship of hardware configuration to applications. A study of the techniques and principles of file structuring for internal and external memory devices. Discussion of standard design techniques: systems flow vs. detailed program flow charting. Prerequisite: DAPR 125. Lecture 3 hours, Total 3 hours.

DAPR 242 SYSTEMS ANALYSIS II (3)—Designed to familiarize the student with the various types of programming systems. The study will cover assembly and compiler systems, macro generators, report generators, utility systems: I/O, sort/merge, print. Prerequisite: DAPR 241. Lecture 3 hours, Total 3 hours.

DAPR 243 SYSTEMS ANALYSIS III (3)—The student will be introduced to the problems of system evaluation. Discussions will include timing factors, testing techniques, error control, a survey of the various types of reports involved in systems implementation, an understanding of the role of management. Prerequisite: DAPR 242. Lecture 3 hours, Total 3 hours.

DAPR 299 DATA PROCESSING FIELD PROBLEM (6)—A field project in which the student will be directed through a real data processing problem in business or industry, or a special problem developed by an instructional staff. The student will develop the solution from problem definition through implementation. One hour control class. Prerequisite: DAPR 236. Lecture 2 hours, Lab 8 hours, Total 10 hours.

DRAFTING

DRFT 131 DRAFTING I (7)—An introduction to Engineering Drawing with heavy emphasis on industrial drafting practices. Course content includes: geometric construction, principles of orthographic projection, sections, theory and application of dimensioning and tolerancing. Lettering practice and technical sketching are also covered. Lab 15 hours, Total 15 hours.

DRFT 132 DRAFTING II (7)—This is a continuation of DRFT 131. Class activities include fasteners, preparation of assembly drawings and working drawings, shop practices and inspection procedures as they relate to the working drawing. Continued emphasis is placed on lettering skill and freehand sketching. Lab 15 hours, Total 15 hours.

DRFT 133 DRAFTING III (7)—This course is designed to focus the knowledge and skills acquired on practical industrial drawing problems. True position dimensioning, electrical drawings, piping and reproduction methods are discussed. Flat-pattern layout, gearing and design layout drawings are presented with emphasis on communication through the graphic language. Lab 15 hours, Total 15 hours.

DRFT 144-145 MATERIALS AND PROCESSES OF INDUSTRY I & II (3) (3)—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. Lecture 3 hours, Total 3 hours.

DRFT 186 MACHINE TOOL LAB (1)—This course is intended to provide an overview of the metal machining processes. The student upon completion is expected to be able to recognize and apply basic machining processes to drawing room problems. Lecture 1 hour, Lab 2 hours, Total 3 hours.

DRFT 199 PROBLEMS OF DRAFTING AND DESIGN (2)—The application of the principles of the graphic language to a project of the students' own choosing. Projects chosen by students are subject to approval by the instructor. Individual project 3 hours, Total 3 hours.

DRFT 226 ELECTRONICS DRAFTING (2)—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 symboloby, diagrammatic drawings, printed circuit drawings, and checking of electronic drawings. Lecture 1 hour, Lab 3 hours, Total 4 hours.

ECONOMICS

ECON 101-102-103 PRINCIPLES OF ECONOMICS I-II-III (3) (3) (3)—An introductory course covering the structure, organization, and operation of the United States economy. Analysis, problems and issues relating to organization of business, labor and government institutions, and to 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. Lecture 3 hours, Total 3 hours.

ECON 104 ECONOMICS I (3)—General survey of economic principles and the American economic system; some current domestic economic problems. Lecture 3 hours, Total 3 hours.

ECON 105 ECONOMICS II (3)—Continuation of ECON 104. American economic policies; international economics; alternative economic systems. Current economic problems. Prerequisite: ECON 104 or equivalent. Lecture 3 hours, Total 3 hours.

ECON 216 INDUSTRIAL ECONOMICS (3)—The growth and development of industry and technology; industrial relations; some current problems, to include those posed by automation and computers. Lecture 3 hours, Total 3 hours.

ELECTRONICS TECHNOLOGY

ELEC 114 FUNDAMENTALS OF ELECTRICITY I (4)—A study of current flow and direct currents circuits. The course presents work with magnetic circuits. This course utilizes mathematical tools as they are developed in the mathematics course. MATH 161 must have been taken previously or must be taken concurrently. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 115 FUNDAMENTALS OF ELECTRICITY II (4)—A continuation of ELEC 114, emphasizing the study of time varying currents. The student will use complex numbers and vector concepts in dealing with A.C. impedances. Prerequisites: ELEC 114, MATH 161; MATH 162 must have been taken previously or must be taken concurrently. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 120 INTRODUCTION TO ELECTRONICS (4)—A course dealing with special electronic devices and power supplies. Prerequisite: ELEC 114-130. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 126 ELECTRONIC AMPLIFIERS (4)—A continuation of electronic devices, in that many of the devices previously studied are used in forming amplifier circuits. Amplifiers, both transistor and tube types are covered, with emphasis on methods of analysis and design procedures. Prerequisite: ELEC 115, ELEC 120. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 130 INTRODUCTION TO TUBES AND TRANSISTORS (4)—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. MATH 161 and ELEC 114 must have been taken previously or must be taken concurrently. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 146 CIRCUIT ANALYSIS (4)—A course emphasizing A.C. circuit theory and both A.C. and D.C. network theorems. Course provides a continuation of study of background information needed to analyze networks with both active and passive elements present. Prerequisite: ELEC 115, MATH 162. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 227 INTRODUCTION TO NEW DEVICES (2)—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. Lecture 2 hours, Total 2 hours.

ELEC 244 COMMUNICATION CIRCUITS I (4)—An introduction to modulation and power in modulated waves. Topics included are sinusoidal oscillations and oscillators, RF amplifiers and detectors, and AM receivers. Prerequisite: ELEC 146, ELEC 126. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 245 COMMUNICATION CIRCUITS II (4)—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. Prerequisite: ELEC 244. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 246 PULSE AND SWITCHING CIRCUITS (4)—A course dealing with both linear and nonlinear wave shaping. This course supplies a base for further study in the areas of computers and automatic controls. Prerequisite: ELEC 146, ELEC 126, MATH 163. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 247 CONTROL CIRCUITS (4)—The principles and applications of electrical controllers are covered in this course, which serves as an introduction to auto-

mation. Devices for differentiation, integration and proportioning are studied in detail. Hardware and circuitry for A.C. and D.C. industrial control devices including contactors, starters, speed controllers, time delays, limit switches and pilot devices. Application in the control of industrial equipment-motors, servo units, and motor-driven actuators. Prerequisite: ELEC 246. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 256 INSTRUMENTS AND MEASUREMENTS (4)—A study of basic circuits used 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. Prerequisite: ELEC 146, ELEC 126. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 266 COMMUNICATIONS SYSTEMS (4)—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. Prerequisite: ELEC 245. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 270 INTRODUCTION TO COMPUTERS (4)—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. Prerequisite: ELEC 246. Lecture 3 hours, Lab 3 hours, Total 6 hours.

ELEC 299 DESIGN AND FABRICATION (2)—A project oriented course demanding that the student use his entire background in planning and executing his project. Students will work individually or in small groups on their projects. Prerequisite: ELEC 247, ELEC 270, ELEC 245. Lab 6 hours, Total 6 hours.

ENGINEERING TECHNOLOGY

ENGR 111-112-113 ENGINEERING DRAFTING AND DESCRIPTIVE GEOMETRY I-II-III (3) (3) (3)—Introduction to drafting practice; use and care of instruments, lettering, technical drawing and sketching including auxiliary views, sectioning, dimensioning, projections. Construction of charts, graphs, nomographs, and graphical computations. A study of the analysis and graphic presentation of the space relationship of elementary geometric figures; point, line, plane, single and double curved surfaces. Lecture 1 hour, Lab 4 hours, Total 5 hours.

ENGR 120 ENGINEERING DRAWING (3)—Introduction to drawing, use of instruments, lettering, sketching, geometric construction, orthographic projection, and drawing conventions. Lecture 1 hour, Lab 4 hours, Total 5 hours. (1965 only.)

ENGR 121 ENGINEERING DRAFTING I (3)—Introduction to drawing, use of instruments, lettering, sketching, geometric construction, orthographic projection, and drawing conventions. Initial introduction to civil, mechanical and architectural drawing. Lecture 1 hour, Lab 4 hours, Total 5 hours.

ENGR 122 ENGINEERING DRAFTING II (4)—A continuation of topics covered in ENGR 121, plus auxiliary views, working drawings, sectioning, intersections and developments. In the specialized areas of civil, mechanical and architectural drawings there is presented applied descriptive geometry and blueprint reading. Lecture 1 hour, Lab 6 hours, Total 7 hours. Prerequisite: ENGR 121.

ENGR 123 ENGINEERING DRAFTING III (4)—A continuation of topics covered in ENGR 121 and ENGR 122 progressing to advanced detailing, electrical and piping drawings, machine parts, structures and topographical features. Prerequisite: ENGR 122. Lecture 1 hour, Lab 6 hours, Total 7 hours.

ENGR 140 MATERIALS OF INDUSTRY (3)—Study of the five general classifications of materials and their application to industrial uses. Special emphasis on new materials developed through technological advances. Lecture 3 hours, Total 3 hours.

ENGR 146 ENGINEERING LABORATORY (4)—A materials and processes course for technicians. Precision measurements; engineering standards; materials testing (destructive and non-destructive); elementary metallurgy; introduction to machine tools; welding; heat treating. Prerequisite: ENGR 140. Lecture 1 hour, Lab 6 hours, Total 7 hours.

ENGR 156 STATICS (3)—Subject matter includes principles and applications of free body diagrams for force systems, shear and moment diagrams, deflection of beams by numerical integration, and determination of section properties. Prerequisite: PHYS 122 or concurrently. Lecture 3 hours, Total 3 hours.

ENGR 246 STRENGTH OF MATERIALS (3)—A discussion of strength of material concepts with laboratory demonstrations. Subject matter includes stress and strain analysis, both elastic and plastic, with emphasis on elastic analysis of: axially loaded members; connectors; beams, and columns. Prerequisite: ENGR 156. Lecture 2 hours, Lab 2 hours, Total 4 hours.

ENGR 251 MECHANICS I (STATICS) (4)—Statics—Vector treatment of concepts of force, mass, space and time, gravitational systems of measurements, forces, moments and vector quantities; the analysis of discrete and distributed force systems and their application to bodies in external equilibrium including cranes, trusses, etc.; principles of dry friction; centroids and fluid statics. Prerequisites: ENGR 113 and MATH 123; Corequisites: MATH 231 and PHYS 201. Lecture 4 hours, Total 4 hours.

ENGR 252 MECHANICS II (DYNAMICS) (5)—Vector treatment of coplanar and three dimensional kinematics and kinetics of particles and rigid bodies, including relative motion, mass moments of inertia, Newton's laws, work and energy, impulse and momentum, vibration, and balancing. Prerequisites: ENGR 113, ENGR 251, MATH 123; Corequisites: MATH 232, PHYS 202. Lecture 5 hours, Total 5 hours.

ENGR 253 MECHANICS III (STRENGTH OF MATERIALS) (4)—Introductory mechanics of continuous media; concepts of stress, strain, stress-strain relations; plane moments of inertia; stress and deformation due to longitudinal loads, torsion and bending; plane stress. Prerequisites: ENGR 113, ENGR 252, MATH 123; Corequisites: MATH 233, PHYS 203. Lecture 4 hours, Total 4 hours.

ENGR 276 INDUSTRIAL SAFETY (2)—A study of the various hazards encountered in industrial surroundings and the methods and means of preventing accidents. Prerequisite: ENGR 120. Lecture 2 hours, Total 2 hours.

ENGR 277 INDUSTRIAL MANAGEMENT (3)—The organization and functions of the major departments in an enterprise, the levels of responsibility in management, and the basic economic factors involved in a profit-making enterprise. Prerequisite: MECH 184. Lecture 3 hours, Total 3 hours.

ENGR 286 INTRODUCTION TO DATA PROCESSING IN ENGINEERING APPLICATION (3)—An exposure to the solution of engineering problems adapted to computer solution by the use of available computer programs. Application to production processes, graphics, design, cartography, structures, highways and the critical path method of planning. Prerequisite MATH 113. Lecture 2 hours, Lab 2 hours, Total 4 hours.

Architectural

ARCH 120 BLUEPRINT READING (3)—An introductory study of the reading of architectural plans. This subject also teaches architectural terms which aid in

speaking the language of all phases of construction. Prerequisite: ARCH 124 or concurrently. Lecture 3 hours, Total 3 hours.

ARCH 124 ARCHITECTURAL DRAWING I (3)—An introductory study in architectural drawing and in the principles of visual design. This subject equips the student with a basic knowledge of drawing sections, plans, rendering and detailing. Prerequisite: ENGR 120. Lecture 1 hour, Lab 4 hours, Total 5 hours.

ARCH 125 ARCHITECTURAL DRAWING II (3)—This subject presents the student with the basic principles of the intersection of lines and planes with particular application of these principles to architectural objectives. Use of the principles of Descriptive Geometry will be shown by drawing perspective views and by casting shadows on architectural elevations and perspectives. Prerequisite: ARCH 120. Lecture 1 hour, Lab 4 hours, Total 5 hours.

ARCH 144-145 MATERIALS AND METHODS OF CONSTRUCTION I-II (3) (3)—A subject designed to familiarize the student with the physical properties and the methods used in the erection of structures, with brief descriptions of their manufacture. Prerequisite: ENGR 140. Lecture 3 hours, Total 3 hours.

ARCH 214-215 FREEHAND DRAWING I-II (1) (1)—A practical course designed to acquaint the student with sketching of various forms and models by freehand. Prerequisite: ENGR 120. Lab 3 hours, Total 3 hours.

ARCH 221 ARCHITECTURAL DRAWING III (3)—Residential design. This subject requires presentation drawings, complete working drawings, specifications, and the building of a scale model. Prerequisite: ARCH 125. Lecture 1 hour, Lab 4 hours, Total 5 hours.

ARCH 222 ARCHITECTURAL DRAWING IV (3)—The design of a structural steel building with sketches, architectural drawings and details. Prerequisite: ARCH 221. Lecture 1 hour, Lab 4 hours, Total 5 hours.

ARCH 223 ARCHITECTURAL DRAWING V (3)—The design of a structural concrete building and the preparation of architectural drawings and details. A small scale model or rendered perspective is also required. Prerequisite: ARCH 222. Lecture 1 hour, Lab 4 hours, Total 5 hours.

ARCH 234-235 BUILDING EQUIPMENT I-II (3) (3)—This subject presents to the student the basic principles of design and use of equipment in buildings. Plumbing, electrical and mechanical systems, air conditioning, and other utility equipment are considered along with their applications in modern buildings. Prerequisite: ARCH 145. Lecture 3 hours, Total 3 hours.

ARCH 264 STRUCTURES I (3)—A study of the design of the major structural elements used in framing commercial buildings, with steel and timber. Design procedures for beams and girders and columns are presented, and methods of fastening the numbers with rivets or timber connections are shown. Laboratory work consists of computations that follow and expand the principles explained in the classroom. Prerequisite: ENGR 256 or concurrently. Lecture 2 hours, Lab 2 hours, Total 4 hours.

ARCH 265 STRUCTURES II (3)—A study of reinforced concrete structures with the determination of direct stresses and bending stresses in beams, slabs, girders, and columns. Also studied is the moment distribution method of structural analysis and reinforced concrete footings. Laboratory work consists of computations that parallel the work in the classroom. Prerequisite: ARCH 265. Lecture 2 hours, Lab 2 hours, Total 4 hours.

ARCH 269 HISTORY OF ARCHITECTURE (3)—A study of the development

of architecture with special emphasis on the designs and forms of the twentieth century. Prerequisite: ARCH 125. Lecture 3 hours, Total 3 hours.

ARCH 270 BUILDING CODES AND REGULATIONS (3)—This subject is designed to provide a student with a comprehensive view of the codes and regulations encountered in the general area of Northern Virginia. Prerequisite: ARCH 125. Lecture 3 hours, Total 3 hours.

Civil

CIVL 121 HIGHWAY DRAFTING (3)—Layout of curves and earthwork problems depicting contour, grade, drainage, sizing of drainage, earth movement, soil stabilization, road surfacing and maintenance. Prerequisite: ENGR 120. Lecture 1 hour, Lab 6 hours, Total 7 hours.

CIVL 146 MATERIALS OF HEAVY CONSTRUCTION (3)—Heavy construction operations; fundamentals, equipment, earth movement, drilling and blasting, piling, cofferdams, portland cement and bituminous concrete mixing and placing, curing and testing. The laboratory phase will include participation in demonstration tests, observation and recording of data with resulting technical report. Prerequisite: ENGR 140. Lecture 2 hours, Lab 3 hours, Total 5 hours.

CIVL 147 SOILS AND FOUNDATIONS (4)—Explores soils as a basic building material; from pipe bedding through earth fills to pavement foundations and foundations for buildings. It also includes some study of soil structure and texture, soil density, hydroscopic moisture, and stress distribution as they apply to the above. In the associated laboratory the student will observe, record and report on the common tests on soils such as field moisture equivalent, plastic limit, liquid limit, shrinking factors, hydrometer analysis, density, and other ASTM and AAHSO tests. Prerequisite: or concurrently: CIVL 146. Lecture 3 hours, Lab 3 hours, Total 6 hours.

CIVL 184 ELEMENTARY SURVEYING (3)—Introduction to use of engineers level transit and tape; leveling and traversing. Reduction of field notes and problem solving relative to data obtained with surveying instruments. Prerequisite: MATH 111. Lecture 3 hours, Total 3 hours.

CIVL 186 CURVES AND EARTHWORK (2)—A discussion of surveys for route locations including simple, compound, reverse curves both horizontal and vertical considering super elevations, sight distances and parabolic curves. In addition considerations of cut and fill in earthwork problems related to trenching, excavations and small earthen dam construction. Prerequisite: CIVL 146, MATH 112. Lecture 2 hours, Total 2 hours.

CIVL 222 UTILITY DRAFTING (3)—Current practice of depicting piping, ductwork, electrical wiring, heating equipment and machinery as related to transmission and to civil engineering structures. Prerequisite: ENGR 120. Lecture 1 hour, Lab 6 hours, Total 7 hours.

CIVL 223 STRUCTURAL DRAFTING (4)—Designed to teach the fundamentals of structural drafting which includes the basic design and fabrication of frame connections, column detailing, welding connections, shop details and general drafting room procedure. Laboratory work includes making working drawings of timber, steel and reinforced concrete structures. Prerequisite: ENGR 120. Lecture 2 hours, Lab 6 hours, Total 8 hours.

CIVL 246 WATER AND SEWAGE SYSTEMS (4)—The course examines the sources, collection methods, treatment and distribution of water and the collection, treatment and disposal of sewage. Field trips to local water and sewage treatment plants. Prerequisite: CIVL 147. Lecture 4 hours, Total 4 hours.

CIVL 250 HYDRAULICS (3)—Introduction to principles of fluid flow and development of practical hydraulics resulting from study of fluid statics, flow of real fluid in pipes, multiple pipe lines, liquid flow in open channels and fluid measurement techniques. Prerequisite: PHYS 122. Lecture 3 hours, Total 3 hours.

CIVL 266 CONSTRUCTION METHODS AND EQUIPMENT (3)—Planning and analysis of operating costs and efficiencies in excavation, materials production, building highways, and erecting structures. Prerequisites: CIVL 146, CIVL 186. Lecture 3 hours, Total 3 hours.

CIVL 267 APPLIED BUILDING CONSTRUCTION (2)—Course planned to acquaint students with terminology, methods, procedures, materials, sequences of operations, types of construction and the planning involved in construction of buildings. Prerequisite: CIVL 144, CIVL 276. Lecture 2 hours, Total 2 hours.

CIVL 276 ESTIMATING AND OFFICE PRACTICES (3)—A study of the basis and accuracy of estimation of heavy construction projects. Familiarization and use of slide rule, electric calculating machines, Polar planimeter, pantograph, mechanical lettering guides. A survey of electronic data processing capability in computations and computer controlled graphics. Prerequisite: MATH 113. Lecture 2 hours, Lab 2 hours, Total 4 hours.

CIVL 277 CONTRACTS, SPECIFICATIONS, CODES (3)—Explores purpose and preparation of contracts and specifications with examination of sources of necessary information. Discusses preliminary specifications, construction supervision, local and national code requirements, relationships to government and commercial agencies, schedule and performance. Prerequisite: (or concurrently): CIVL 276. Lecture 3 hours, Total 3 hours.

CIVL 285 ADVANCED SURVEYING (4)—Closure and area computations, United States system of land surveys, stadia, contours, building layouts, lines and grades. Field topographic surveys and city surveys. Prerequisite: CIVL 184. Lecture 3 hours, Lab 3 hours, Total 6 hours.

Mechanical

MECH 124 MECHANICAL ENGINEERING DRAWING I (3)—A continuation of topics introduced in ENGR 120, plus threads and fasteners, sectioning, conventional representation, working drawings and some specialized drafting areas. Provides additional understanding of drafting problems and skills and techniques that are essential to the work of draftsmen. The student is given work dealing with gears, cams, jigs, and fixtures in preparation for the second year courses. Prerequisite: ENGR 120. Lecture 1 hour, Lab 4 hours, Total 5 hours.

MECH 125 MECHANICAL ENGINEERING DRAWING II (3)—A continuation of topics covered in MECH 124. The student is given more advanced problems and is encouraged to analyze the problems, collect data, and make mathematical calculations, complete drawings, and check out work. Prerequisite: MECH 124. Lecture 1 hour, Lab 4 hours, Total 5 hours.

MECH 134 MACHINE LABORATORY I (3)—Fundamental machine operations of drilling, reaming, turning between centers, chuck work, thread cutting, shaper work, layout, and finishing. Special attention will be given to cutting speeds, tool and drill grinding and machine upkeep. Prerequisite: ENGR 124. Lecture 1 hour, Lab 4 hours, Total 5 hours.

MECH 135 MACHINE LABORATORY II (3)—A continuation of MECH 134. The use of gages, taper turning, gear cutting, square thread cutting and types of fits is added. The topics studied are applied practically in the shop as required projects are made. Prerequisite: MECH 134. Lecture 1 hour, Lab 4 hours, Total 5 hours.

MECH 184 METHODS OF MANUFACTURING I (3)—This subject gives the student an opportunity to become acquainted with the various processes used in the manufacture of metal parts and the machines used for this purpose. Basic design, cost, and material factors in selecting the manufacturing process. Prerequisite: ENGR 140. Lecture 3 hours, Total 3 hours.

MECH 185 METHODS OF MANUFACTURING II (3)—A continuation of MECH 184. The production machines are considered in this course and include: lathes; milling machines; drilling and allied operations; reciprocating machines; gear production machines; broaching machines; grinding machines and new methods in metal cutting. In addition quality control and inspection as well as new techniques in metal processing is covered. Prerequisite: MECH 135. Lecture 3 hours, Total 3 hours.

MECH 221 TOOL DESIGN (3)—This course consists of designing and laying out cutting tools, gages, simple jigs, fixtures and dies. Mass production methods are discussed so that the student may apply the information gained in the practical work of tool designing. Prerequisite: MECH 125, MECH 184. Lecture 1 hour, Lab 4 hours, Total 5 hours.

MECH 222 MACHINE DESIGN I (3)—In this course the design principles of machine elements are taken up and calculations are made in determining the size and shape of various machine parts. It includes factors that influence the selection of materials to be used in designing such elements as beams, bearings, clutches, brakes, shafts, bushings, screws, rivets, gears, belts, and flywheels. Attention is given to various types of loading conditions, stresses, deformations, fits, finishes, and other factors which must be considered in the design of machine elements. Prerequisite: MECH 125, MECH 184. Lecture 1 hour, Lab 4 hours, Total 5 hours.

MECH 223 MACHINE DESIGN II (3)—A continuation of MECH 222. Prerequisite: MECH 222. Lecture 1 hour, Lab 6 hours, Total 7 hours.

MECH 246 METALLURGY (3)—Fundamentals of metallurgy, grain size, effect of carbon content, and hardness testing devices. Different alloys will be tested to determine the effect of heat treatment. Prerequisite: MECH 184. Lecture 2 hours, Lab 2 hours, Total 4 hours.

MECH 286 QUALITY CONTROL (3)—Principles of inspection and quality control, with special emphasis on setting up, maintaining, and interpreting control charts. Prerequisite: MECH 184. Lecture 3 hours, Total 3 hours.

ENGLISH

ENGL 001 VERBAL STUDIES LABORATORY I (3)—An intensive course in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skills. Emphasis on words, phrases, and effective sentences. Individual and group instruction. Lecture 1 hour, Lab 2 hours, Total 3 hours.

ENGL 002 VERBAL STUDIES LABORATORY II (3)—An intensive course in English grammar and composition with major emphasis on exercises in the basic structure of the English language and in the writing of paragraphs and themes. Individual and group instruction. Lecture 1 hour, Lab 2 hours, Total 3 hours.

ENGL 003 VERBAL STUDIES LABORATORY III (3)—A more advanced course in the study of types of expository writing with weekly exercises based on students' needs. Lecture 1 hour, Lab 2 hours, Total 3 hours.

ENGL 104 COMMUNICATION SKILLS I (3)—An introductory course in using the English language appropriately and precisely. Designed to improve the student's ability to write effectively. Emphasis on vocabulary, spelling, and reading comprehen-

sion. Prerequisite: High School Diploma plus satisfactory score on English Expression portion of American College Test, or ENGL 001-002, and 003 or equivalent. Lecture 3 hours, Total 3 hours.

ENGL 105 COMMUNICATION SKILLS II (3)—Designed to help students increase their competence in thinking critically, expressing their thoughts clearly, writing effectively, and appreciating the creative activity of others, by considering selected examples of communication in all mediums. Literature serves as both model and subject for students in achieving these goals. Includes basic research methods, outlining, and technical report writing. Prerequisite: ENGL 104. Lecture 3 hours, Total 3 hours.

ENGL 111-112-113 ENGLISH COMPOSITION I-II-III (3) (3) (3)—English as a means of communication and expression. Analysis of style and structure of expository prose and argumentation to increase student ability to use the language clearly and effectively, with attention also given to fiction and poetry to provide foundation for critical examination of literary works. Frequent themes. Lecture 3 hours, Total 3 hours.

ENGL 121-122-123 JOURNALISM I-II-III (2) (2) (2)—Instruction and classroom practice in gathering, evaluating, and writing news. Techniques of page layout, newspaper make-up, re-writing, and editing. Lecture 1 hour, Lab 3 hours, Total 4 hours.

ENGL 136 SPEECH COMMUNICATIONS (3)—Proficiency in oral communication is developed through the learning of the basic forms, uses, and techniques of speech. Emphasis on the practical aspects of speech writing, listening, and oral presentation. Includes advanced basic research techniques and technical report writing. Prerequisite: ENGL 104 and 105. Lecture 3 hours, Total 3 hours.

ENGL 205 ENGLISH AND THE LAW (3)—A critical survey of literature based on law and order, justice and injustice, as clarified by great writers. Intensive consideration of famous trials, and other non-fictional and fictional literary works. Prerequisite: ENGL 136. Lecture 3 hours, Total 3 hours.

ENGL 206 INCIDENT INVESTIGATION REPORTING (3)—This course is designed for writing accurate and concise paragraphs and summaries of incidents, misdemeanors, and felonies. Emphasis on investigation, observation and reporting in detail. Special attention will be given to law enforcement report forms for analysis and practice. Prerequisite: ENGL 246. Lecture 3 hours, Total 3 hours.

ENGL 207 ENGLISH IN BUSINESS (3)—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. Prerequisite: ENGL 136. Lecture 3 hours, Total 3 hours.

ENGL 221-222-223 JOURNALISM IV-V-VI (2) (2) (2)—Continuation of ENGL 121-122-123. Lecture 1 hour, Lab 3 hours, Total 4 hours.

ENGL 261-262-263 INTRODUCTION TO ENGLISH LITERATURE I-II-III (3) (3) (3)—Historical survey of literature, to include the novel, tragedy, drama, comedy, and poetry. Emphasis upon development of critical judgment and taste in reading superior literature with appreciation, and in writing about it. Prerequisite: ENGL 113 or equivalent. Lecture 3 hours, Total 3 hours.

FRENCH

FREN 101-102-103 FRENCH I-II-III (3) (3) (3)—The audio-lingual fundamentals of French structure patterns of speech, pronunciation. Progressive exercises in de-

veloping understanding, speaking, reading and writing with emphasis on learning to comprehend and speak. Lecture 3 hours, Total 3 hours.

FREN 201-202-203 FRENCH IV-V-VI (3) (3) (3)—Continued study of the language to develop further facility in understanding and speaking idiomatic French and to promote intelligent and pleasurable reading of classical and modern French authors. Grammar review, laboratory exercises, dictation; free composition, continued aural and oral practice, and outside reading. Prerequisite: FREN 103. Lecture 3 hours, Total 3 hours.

GENERAL

GENL 100 ORIENTATION (1)—This course is required of all beginning freshmen enrolled full-time. The student will receive a clear understanding of the purpose and functions of the College as well as experience in improving study habits and skills. Lecture 1 hour, Total 1 hour.

GOVERNMENT

GOVT 180 AMERICAN CONSTITUTIONAL GOVERNMENT (3)—Introductory course in American government, including fundamental concepts and principles of national, state and local governments. Credit cannot be obtained for both this course and GOVT 186. Lecture 3 hours, Total 3 hours.

GOVT 181-182-183 UNITED STATES GOVERNMENT I-II-III (3) (3) (3)—Powers, organization and functions of national, state and local governments. Democracy, federalism, the Constitution, civil liberties, etc. Lecture 3 hours, Total 3 hours.

GOVT 186 NATIONAL, STATE AND LOCAL GOVERNMENT (5)—A study in greater depth of the material taught in GOVT 180. Credit cannot be obtained for this course and either GOVT 180 or GOVT 187. Lecture 5 hours, Total 5 hours.

GOVT 187 AMERICAN NATIONAL GOVERNMENT (5)—Covers, in depth, the organization, structure and functions of the national government in the United States. Credit cannot be obtained for this course and either GOVT 180 or GOVT 186. Lecture 5 hours, Total 5 hours.

GOVT 296 PUBLIC AFFAIRS (2)—Seminar in current public affairs issues concerning domestic and foreign policy of the United States. Purpose is to develop the ability to analyze and critically evaluate present problems as they relate to the functioning of the United States. Prerequisites: GOVT 180, 186, 187. Lecture 2 hours, Total 2 hours.

HEALTH SCIENCES

HLTH 100 CONCEPTS OF HEALTH AND ILLNESS (4)—Emphasizes the maintenance of health and prevention of illness at the personal and community level. It is designed to acquaint students with the causes of illness, the body's response to illness and some methods of diagnosis, treatment and prevention of illness. Some principles of care common to all patients will be introduced. Selected clinical experience in cooperating health agencies. Corequisites: PSYC 110, BIOL 104, CHEM 104. Lecture 3 hours, Lab 3 hours, Total 6 hours.

HISTORY

HIST 101-102-103 HISTORY OF WESTERN CIVILIZATION I-II-III (3) (3) (3)—Major trends and factors in the development of Western peoples and states from their origins in the Near East to the present, with emphasis on the period since 1500 A.D. Lecture 3 hours, Total 3 hours.

HIST 114 UNITED STATES HISTORY I (3)—The political, social and economic development of the United States from the settlement of the colonies to the Civil War. Emphasis will be given to the intellectual theories and forces of various periods and to their impact upon contemporary events and the American character. Lecture 3 hours, Total 3 hours.

HIST 115 UNITED STATES HISTORY II (3)—The political, social and economic development of the United States from the Civil War to the present. Emphasis will be given to the transition of the United States into a World power and to contemporary intellectual movements in the twentieth century. Lecture 3 hours, Total 3 hours.

MATHEMATICS

MATH 004-005 ELEMENTARY MATHEMATICS I-II (3) (3)—This practical course bridges the gap between a weak mathematical foundation and competence and knowledge necessary for the study of the regular mathematical courses in technical institutes, junior and community colleges. The course is also designed to prepare the non-technical terminal student or the transfer student for matriculation into an intermediate algebra or other standard freshman mathematics course. It presupposes little or poor background of secondary school mathematics. Arithmetic, algebra and geometry will be covered. Lecture 4 hours, Total 4 hours.

MATH 101-102-103 FUNDAMENTALS OF COLLEGE MATHEMATICS I-II-III (3) (3) (3)—Meanings, relations, applications, and types of thinking in elementary college mathematics. A study of the concepts of numbers; fundamental operations with numbers, formulas and equations; graphical analysis; elementary concepts of statistics. Credit cannot be obtained for both this course and MATH 121-122-123. (College Algebra) Lecture 3 hours, Total 3 hours.

MATH 111 TECHNICAL MATH I (3)—Designed for the technical student. Slide rule and review of geometry, basic algebra and analytic geometry of the straight line, advanced algebra and logarithms. Prerequisite: MATH 004-005 or one unit of High School Algebra or Geometry or equivalent. Lecture 3 hours, Total 3 hours.

MATH 112 TECHNICAL MATH II (3)—Continuation of MATH 111. Curve sketching, non-linear empirical equations, numerical trigonometry of the right triangle, and introduction to analytical trigonometry. Prerequisite: MATH 111. Lecture 3 hours, Total 3 hours.

MATH 113 TECHNICAL MATH III (3)—Continuation of MATH 112. Oblique triangles and applications of numerical trigonometry, analytical trigonometry, introduction to calculus. The intention of the calculus at this point is to introduce those techniques of calculus which will be useful to the engineering student in the pursuit of his major subjects. Prerequisite: MATH 112. Lecture 3 hours, Total 3 hours.

MATH 121-122-123 COLLEGE ALGEBRA AND TRIGONOMETRY I-II-III (3) (3) (3)—Sets and numbers; the logic of algebra; the order of axioms; functions, algebraic and transcendental; determinants; the binomial theorem; mathematical induction; trigonometry; application. Credit cannot be obtained for both this course and MATH 101-102-103. (Fundamentals of College Mathematics). Lecture 3 hours, Total 3 hours.

MATH 126 ELEMENTARY TRIGONOMETRY (3)—Trigonometric functions, graphic representations, logarithms, laws of sine and cosines, trigonometric equations, inverse functions, and complex numbers. Prerequisite: MATH 004-005. Lecture 4 hours, Total 4 hours.

MATH 136 TECHNICAL MATH IV (3)—Calculus. The derivative and its applications, derivatives of trigonometric functions, integration of basic forms, the definite

integral, application of the integral, integration techniques. Prerequisite: MATH 113. Lecture 3 hours, Total 3 hours.

MATH 144 DATA PROCESSING MATHEMATICS I (3)—This course is designed for students with a limited background in algebra. It reviews previous work thoroughly and integrates it completely with additional topics which are usually included in a second course in algebra. Prerequisites: MATH 004 and 005 or the equivalent. Lecture 3 hours, Total 3 hours.

MATH 145 DATA PROCESSING MATHEMATICS II (3)—Algebra with emphasis on problem solving, computation with logarithms and with numbers in bases other than 10, determinants and matrix theory, and right triangle trigonometry. Prerequisite: MATH 144. Lecture 3 hours, Total 3 hours.

MATH 154-155 BUSINESS MATHEMATICS I-II (3) (3)—Review of fundamental operations; instruction, review and drill in percentage, cash and trade discounts, markup, payroll, sales, property and other taxes, simple and compound interest, bank discounts, interest, investments and annuities. Prerequisite: A strong background in the basic arithmetic operation. (Students deficient in the basic operation will be required to take MATH 004) Lecture 3 hours, Total 3 hours.

MATH 161 ELECTRONICS MATHEMATICS I (5)—Introduction to algebra and right triangle trigonometry. The course deals with linear equations, fractions, exponents radicals, simultaneous equations, complex numbers, fractional equations, quadratic equations, and introduces trigonometry as related to the solution of right triangle problems. This course is designed to complement concurrent electronic courses. Prerequisite: MATH 004-005 or one unit of High School Algebra and Geometry or equivalent. Lecture 5 hours, Total 5 hours.

MATH 162 ELECTRONICS MATHEMATICS II (5)—A continuation of MATH 161. A course including extraneous roots, logarithms, trigonometry, and introduction to analytic geometry. This course is designed to complement concurrent electronics courses. Prerequisite: MATH 161. Lecture 5 hours, Total 5 hours.

MATH 163 ELECTRONICS MATHEMATICS III (5)—A continuation of MATH 162. This course is designed to introduce the student to differential and integral calculus. The course will close with a brief treatment of series. This course is designed to complement concurrent electronics courses and complete the mathematical base required for the second year of study in electronics. This course is equivalent to MATH 136, with greater emphasis on electronic applications. Prerequisite: MATH 162. Lecture 5 hours, Total 5 hours.

MATH 206 SURVEY OF MATHEMATICAL CONCEPTS (1)—This course is applicable to students enrolled in the secretarial sciences. Its purpose is to familiarize them with the meanings and importance of mathematical symbols, equations and formulas used in scientific research. Lecture 1 hour, Total 1 hour.

MATH 231-232-233 CALCULUS I-II-III (3) (3) (3)—Functions; analytic geometry of the plane; rate of change; limits; continuity; differentiation of algebraic functions; differentials; definite and indefinite integral. Prerequisite: MATH 123 or equivalent. Lecture 3 hours, Total 3 hours.

NATURAL SCIENCE SURVEYS

NASC 100 SURVEY OF SCIENCE (3)—A general course designed to familiarize the student with the basic sciences. Lecture 3 hours, Lab 2 hours, Total 5 hours.

NASC 106 SCIENCE IN INDUSTRY (3)—This course is designed to provide a background in the physical sciences for the draftsman. A study of the laws and principles of physics, chemistry and other fields of science with consideration to their relationship to industrial processes, products and methods will be undertaken.

NURSING

NURS 116 FUNDAMENTALS OF NURSING (5)—Emphasizes the development of nursing skills essential to meet the basic physical, psychological and social needs of patients. Selected clinical experiences in cooperating health and welfare agencies. Prerequisites and corequisites: BIOL 105, CHEM 105, HLTH 100, PSYC 116. Lecture 4 hours, Lab 9 hours, Total 13 hours.

NURS 117 NURSING OF MOTHERS, INFANTS AND CHILDREN (8)—Designed to develop an understanding of the complete care of the mother during the normal maternal cycle, emphasizing the family-centered approach and the prevention of complications. Includes care of newborn infant. Emphasis on the growth and developmental needs of children and adaptation of nursing care necessary to meet the needs when affected by illness. Selected clinical experiences in cooperating health and welfare agencies. Prerequisites or corequisites: BIOL 106, NURS 116, PSYC 130. Lecture 4 hours, Lab 12 hours, Total 16 hours.

NURS 214 NURSING IN MAJOR HEALTH PROBLEMS I (8)—Studies nursing problems presented by medical-surgical patients with emphasis on the development of abilities and skills necessary to plan and carry out nursing care for children and adults, using the problem-solving approach. Selected clinical experiences in cooperating health and welfare agencies. Prerequisite: NURS 117. Lecture 4 hours, Lab 12 hours, Total 16 hours.

NURS 215 NURSING IN MAJOR HEALTH PROBLEMS II (8)—Continuation of NURS 214. Prerequisite or corequisite: SOCI 204. Lecture 4 hours, Lab 12 hours, Total 16 hours.

NURS 216 NURSING IN MENTAL ILLNESS (8)—Studies the causes, dynamics, treatment and rehabilitation of the mentally ill person with emphasis on the nurse-patient-relationship and continued application of mental health concepts. Selected clinical experiences in cooperating health and welfare facilities. Prerequisites or corequisites: NURS 215, SOCI 205. Lecture 4 hours, Lab 12 hours, Total 16 hours.

NURS 217 ADVANCED CLINICAL NURSING (9)—Designed to further the ability of the student to plan, implement and evaluate comprehensive nursing care. Experiences are selected in terms of their complexity, student needs, and abilities. Clinical experiences in cooperating health facilities. Prerequisite or corequisite: NURS 216. Lecture 4 hours, Lab 15 hours, Total 19 hours.

PHYSICAL EDUCATION

PHED 101-102-103 PHYSICAL EDUCATION FOR THE INDIVIDUAL, DUAL & RECREATIONAL ACTIVITIES I-II-III (1)—The development of skills and methods in archery, badminton, bowling, golf, tennis and volleyball. Clinic 2 hours, Total 2 hours.

PHED 206 RULES AND OFFICIATING (2)—Study of rules and officiating techniques of selected sports. Supervised practice in officiating. Lecture 1 hour, Clinic 1 hour, Total 2 hours.

PHYSICS

PHYS 101-102-103 INTRODUCTORY PHYSICS I-II-III (3) (3) (3)—An elementary survey of physics, treating briefly the fundamentals of mechanics, properties of matter, heat, magnetism, electricity, sound, light and radiation. Prerequisite: MATH 111, or MATH 161. Lecture 2 hours, Lab 2 hours, Total 4 hours.

PHYS 201-202-203 COLLEGE PHYSICS I-II-III (4) (4) (4)—Fundamental principles of physics. Mechanics, heat, sound, electricity, light. Lecture 3 hours, Lab 3 hours, Total 6 hours.

POLICE SCIENCE

PLCE 100 INTRODUCTION TO LAW ENFORCEMENT (3)—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. Open to all students as exploratory course. Lecture 3 hours, Total 3 hours.

PLCE 110 PATROL ADMINISTRATION (3)—The theories, history, and development of police patrol. Examines the methods and techniques of the various types of patrol and their importance to the overall police function. Focuses on the responsibilities of patrol officers and supervisors in identifying police hazards, preventing crime, providing police services, and establishing sound public relations. Practical exercises are included. Lecture 3 hours, Total 3 hours.

PLCE 116 PREVENTION AND CONTROL OF JUVENILE DELINQUENCY (2)—Survey of youth crime, stressing the police role in community programs of prevention and control. Lecture 2 hours, Total 2 hours.

PLCE 117 TRAFFIC FLOW AND CONTROL (3)—Modern methods of traffic facilitation and control; Virginia traffic offenses; techniques of selective enforcement and of accident investigation; police responsibilities in special situations. Practical exercises are included. Lecture 3 hours, Total 3 hours.

PLCE 120 SPECIAL ENFORCEMENT PROBLEMS (3)—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. Lecture 3 hours, Total 3 hours.

PLCE 130 CRIMINAL LAW (3)—Major crimes; their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasis on the common law and Virginia adaptations. Lecture 3 hours, Total 3 hours.

PLCE 136 CRIMINAL EVIDENCE (3)—Kinds, degrees and admissibility of evidence; and methods and techniques of its acquisition, and use in criminal proceedings. Lecture 3 hours, terminating in moot court, Total 3 hours.

PLCE 150 INTRODUCTORY POLICE PHOTOGRAPHY (2)—Fundamental photographic skills; uses of photography in law enforcement and in courtroom presentations. Practical exercises are included: Lecture 2 hours, Total 2 hours.

PLCE 236 POLICE, CRIMES AND OFFENSES OF VIRGINIA (3)—Organization and jurisdiction of Virginia law enforcement agencies; selective review of the criminal code of Virginia, with emphasis on the most frequently occuring misdemeanors not covered in "Criminal Law". Limited to students who have completed all first-year Police Science courses, or who have received written permission of the instructor. Lecture 3 hours, Total 3 hours.

PLCE 237 ADMINISTRATION OF JUSTICE (3)—Review of court systems, with emphasis on Northern Virginia procedures from incident to final disposition of the accused, and on applicable principles of criminal and civil law. Includes field trips to, and guest lectures by representatives of local agencies and tribunals. Limited to students who have successfully completed five quarters of the A.S. program in Police Science, or who have secured written permission of the instructor. Lecture 3 hours, Total 3 hours.

PLCE 244 PRINCIPLES OF CRIMINAL INVESTIGATION (3)—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. Lecture 3 hours, Total 3 hours.

PLCE 245 ADVANCED CRIMINAL INVESTIGATION (3)—Continued study of the investigative process; introduction to scientific aids and examinations; application of investigative techniques to specific offenses. Limited to students who have successfully completed PLCE 244. Practical exercises are included. Lecture 3 hours, Total 3 hours.

PLCE 260 POLICE COMMUNICATIONS SYSTEMS (2)—Modern communications systems as they apply to daily operational requirements of a police organization. Includes basic methods and principles of communication with emphasis on procedures in an effective police communications system. Includes practical exercises. Lecture 2 hours, Total 2 hours.

PLCE 270 INDUSTRIAL AND COMMERCIAL SECURITY (3)—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. Lecture 3 hours, Total 3 hours.

PLCE 286 MUNICIPAL POLICE ADMINISTRATION (3)—Police organization and management principles and techniques, with emphasis on the urban department; the application of sound management guidelines and techniques to police administration including the growing use of data processing is stressed. Lecture 3 hours, Total 3 hours.

PLCE 299 SEMINAR IN LAW ENFORCEMENT (2)—An examination of selected, critical problems in law enforcement. Student selection with the approval of the instructor of a research topic for the preparation and discussion of a paper which is pertinent to a timely topic in law enforcement or to anticipated employment in a federal, state, or local law enforcement agency. Limited to students who have successfully completed five quarters of the A.S. program in Police Science, or who have secured written permission of the instructor. Seminar 2 hours, Total 2 hours.

PSYCHOLOGY

PSYC 010 THE PSYCHOLOGY OF SUCCESSFUL LIVING (1)—Studies of the attitudes and habits of successful people and of the psychological principles involved in their success. Emphasis on particular principles may vary with the interests of the individual class, but the principles of adjustment and of effective study usually will be included. Lecture 3 hours, Total 3 hours.

PSYC 110 BASIC PRINCIPLES OF APPLIED PSYCHOLOGY (3)—Those general principles of perception, learning, and conscious and unconscious motivation which are operative in all practical application of psychology to life and work. Credit cannot be received for both this course and PSYC 117. Lecture 3 hours, Total 3 hours.

PSYC 116 THE PSYCHOLOGY OF PERSONAL ADJUSTMENT (3)—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. Prerequisite: PSYC 110. Credit cannot be received for both this course and PSYC 117. Lecture 3 hours, Total 3 hours.

PSYC 117 BASIC PRINCIPLES OF PSYCHOLOGY APPLIED TO PERSONAL ADJUSTMENT (5)—The general principles of perceptions, learning, and conscious and unconscious motivation which are operative in all practical applications of psychology. Application of these principles to the development of a mature personality and problems of everyday life. Effective methods of study and work. Credit cannot be received for both this course and either or both of PSYC 110, PSYC 116. Lecture 5 hours, Total 5 hours.

PSYC 130 CHILD PSYCHOLOGY (3)—A longitudinal study of childhood development, explaining genetic sequences in life of the child, e.g., prenatal growth trends, motor development, sociability, language, intelligence, and imaginative life. Prerequisite: PSYC 110 or Instructor's permission. Lecture 3 hours, Total 3 hours.

PSYC 201-202-203 PSYCHOLOGY I-II-III (3) (3) (3)—Scope and methods of psychology; hereditary and environmental influences on human development; biological bases of behavior, motivation; nature and significance of emotions, conflict and adjustment; learning, thinking and problem-solving; sensory processes; intelligence and its measurement; development of personality. Lecture 3 hours, Total 3 hours.

PSYC 226 PSYCHOLOGICAL ASPECTS OF MANAGEMENT (3)—Psychological principles applied to business. Supervision, communication, employee relations, group dynamics, employee selection. Prerequisite: PSYC 110. Lecture 3 hours, Total 3 hours.

PSYC 227 LAW ENFORCEMENT PSYCHOLOGY (3)—Intergroup relations and police work. Some facts about racial, religious and national differences. Prejudice, suggestion, emotion, frustration and aggression in interpersonal and intergroup situations. Types of abnormal behavior likely to be encountered in police work. Prerequisite: PSYC 117; or PSYC 110 and 116. Lecture 3 hours, Total 3 hours.

PSYC 291 ABNORMAL PSYCHOLOGY I (3)—Development of modern views toward abnormal behavior; dynamics of abnormal behavior; the neuroses and transient situational disorders. Prerequisite: PSYC 110 or PSYC 117 or permission of Instructor. Lecture 3 hours, Total 3 hours.

PSYC 292 ABNORMAL PSYCHOLOGY II (3)—The functional psychoses; psychophysiologic disorders; character disorders. Prerequisite: PSYC 291 or equivalent. Lecture 3 hours, Total 3 hours.

PSYC 293 ABNORMAL PSYCHOLOGY III (3)—Alcoholism and Drug Addiction; Disorders Associated with Brain Pathology; Mental Retardation; Modern Methods of Diagnosis, Treatment, Prevention of Mental Disorders. Prerequisite: PSYC 292 or equivalent. Lecture 3 hours, Total 3 hours.

SECRETARIAL SCIENCE

SECR 111 TYPEWRITING (2)—Introduction to keyboard with emphasis on good technique and machine mastery; letter format and styles; tabulation and centering; manuscript typing. Electric typewriters used for training. Lecture and practice 5 hours, Total 5 hours.

SECR 112 TYPEWRITING (2)—Continuation of skill building with increased emphasis on standards required to meet job requirement in production typing. Prerequisite: SECR 111 or placement test. Lecture and practice 5 hours, Total 5 hours.

SECR 113 TYPEWRITING (2)—An advanced course in skill development with high standards required to meet job requirements in production typing. Prerequisite: SECR 112 or placement test. Lecture and practice 5 hours, Total 5 hours.

SECR 121 SHORTHAND (4)—Presentation of shorthand principles in Gregg Diamond Jubilee Series with emphasis on basic reading and writing skills, emphasizing associated vocabulary and grammar. ENGL 104 must have been taken previously or must be taken concurrently. Lecture and practice 5 hours, Total 5 hours.

SECR 122 SHORTHAND (4)—Reinforcement of shorthand principles, further development of general business vocabularies and English usage. General business dictation. Prerequisite: SECR 121 or placement test. Lecture and practice 5 hours, Total 5 hours.

SECR 123 SHORTHAND (4)—Increased speed in general business dictation. Introduction of specialized business dictation with emphasis on vocabularies. Prerequisite: SECR 122 or placement test. Lecture and practice 5 hours, Total 5 hours.

SECR 136 FILING AND RECORDS MANAGEMENT (2)—A comprehensive course covering indexing principles, filing procedures and techniques as applied to basic systems of filing; establishment of filing systems; selection of equipment and supplies; survey of systems using electronics and microfilm; solution of records management problems. Lecture and practice 4 hours, Total 4 hours.

SECR 156 PERSONAL DEVELOPMENT (3)—A course designed to develop the personality, appearance, and values necessary to make a favorable impression on the job. Lecture 3 hours, Total 3 hours.

SECR 216 EXECUTIVE TYPEWRITER (2)—Introduction to proportional-spacing tping with emphasis on quality work in letters, statistical materials, and justified copy. Prerequisite: Two years of high school typing or one year of college typing. Lecture and practice 3 hours, Total 3 hours.

SECR 217 TYPEWRITING SKILL BUILDING (2)—Further development of speed and accuracy on production typing with emphasis on employment standards. Preparation for employers' secretarial placement examinations. Prerequisite: SECR 113. Lecture and practice 3 hours, Total 3 hours.

SECR 218 TECHNICAL TYPING (1)—Instruction in typing reports containing special symbols. Emphasis is placed on the Greek alphabet and correct methods of typing equations, formulas, charts, and statistical tables. Use of templates and changeable type bars. Prerequisite: SECR 216, and SECR 284 (or concurrent enrollment in SECR 284) and MATH 206. Lecture and practice 2 hours, Total 2 hours.

SECR 219 MAGNETIC TAPE SELECTRIC TYPEWRITER (2)—Operation of automatic typewriter. Includes instruction on procedures for recording and playing back from tapes, revision and updating of tapes, and for merging information from two tapes. Prerequisite: Sophomore standing as a Secretarial Science major and permission of the Instructor. Lecture and practice 2 hours, plus lab 2 hours, Total 4 hours.

SECR 221 SHORTHAND TRANSCRIPTION (3)—Rapid review of fundamental principles of Gregg Shorthand, Diamond Jubilee Series, development of vocabulary and phrases. Speedbuilding on general business dictation and transcription. Prerequisite: SECR 123 or placement test. Lecture and practice 5 hours, Total 5 hours.

SECR 222 SHORTHAND TRANSCRIPTION (3)—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. Prerequisite: SECR 221 or placement test. Lecture and practice 5 hours, Total 5 hours.

SECR 223 SHORTHAND TRANSCRIPTION (GENERAL) (3)—Speedbuilding in typical business dictation with high degree of speed with accuracy in transcription from shorthand notes. Preparation for employers' secretarial placement examinations. Prerequisite: SECR 222 or placement test. Lecture and practice 5 hours, Total 5 hours.

SECR 226 SHORTHAND TRANSCRIPTION (TECHNICAL) (3)—Preparation for secretarial positions in highly technical fields. Development of skill in taking dictation and transcribing material using technical vocabularies, phrases, symbols, and forms associated with electronics, engineering and allied fields. Prerequisite: SECR 222 or placement test. Lecture and practice 5 hours, Total 5 hours.

SECR 227 SHORTHAND TRANSCRIPTION (LEGAL) (3)—Legal secretary preparation. Skill in taking dictation and transcribing material involving legal shorthand forms and phrases. Proficiency in use of legal vocabulary, forms, and procedures. Prerequisite: SECR 222 or placement test. Lecture and practice 5 hours, Total 5 hours.

SECR 241 SECRETARIAL PROCEDURES I (3)—Development of skills in operation of stencil and spirit duplicating machines. Preparation of copy for reproduction by offset, stencil, and spirit processes. Instruction in criteria for selecting a duplicating process. Operation of copy machines. Indepth study of type styles, paper, typewriter ribbons, and carbon paper. Prerequisite: SECR 216 (or concurrent enrollment). Lecture and practice 3 hours, Total 3 hours.

SECR 242 SECRETARIAL PROCEDURES II (3)—Emphasis on the secretary's routine office responsibilities, including mail handling, communications services, telephone techniques, and the use of reference materials. Emphasis is placed on application of skills gained in typewriting and shorthand. Prerequisite: SECR 113 or placement test. Lecture and practice 3 hours, Total 3 hours.

SECR 243 SECRETARIAL PROCEDURES III (3)—Continued emphasis on the secretary's office responsibilties, including handling of banking transactions, maintaining records on securities transactions, travel arrangements, planning of office layouts, and personnel policies. Textbook instruction is supplemented by actual on-the-job experience in solving practical problems. Prerequisite: SECR 242. Lecture and practice 3 hours, Total 3 hours.

SECR 266 MACHINE TRANSCRIPTION (3)—Introduction to machine transcription, incorporating good listening techniques, grammar, punctuation, and correct business English. Emphasis is placed on mailability of copy with good production rates. Prerequisite: SECR 216. Lecture and practice 3 hours, Total 3 hours.

SECR 274 LEGAL SECRETARIAL PROCEDURES I (3)—Instruction in law office procedures, law office filing and record keeping, extension of legal vocabulary, court rules, reference materials, preparation of forms and pleadings. Prerequisite: SECR 227 (or concurrent enrollment). Lecture and practice 3 hours, Total 3 hours.

SECR 275 LEGAL SECRETARIAL PROCEDURES II (3)—Continuation of SECR 274. Prerequisite: SECR 274. Lecture and practice 3 hours, Total 3 hours.

SECR 284 TECHNICAL SECRETARIAL PROCEDURES I (3)—Training is given in procedures unique to scientific and research organizations, including security procedures, special corespondence requirements, preparation of technical reports, proposals, and visual aids. Emphasis is placed on vocabulary development. Prerequisite: SECR 241 and permission of the Instructor. Lecture and practice 3 hours, Total 3 hours.

SECR 285 TECHNICAL SECRETARIAL PROCEDURES II (3)—Continuation of SECR 284. Prerequisite: SECR 284 and permission of the Instructor. Lecture and practice 3 hours, Total 3 hours.

SECR 299 WORK-STUDY (5)—Open to Secretary Specialist (Technical) majors only. Practical application of knowledge through on-the-job experience in an approved firm within the scientific community. Students may receive a maximum of five hours credit for work experience. Prerequisite: SECR 218 and acceptance by employer.

SOCIOLOGY

SOCI 100 PROBLEMS OF MAN IN THE MODERN WORLD (3)—Survey of contemporary social, political, and economic problems connected with industrializa-

tion, urbanization, the role of government, national and international tensions. Lecture 3 hours, Total 3 hours.

SOCI 204 SOCIOLOGY I (3)—The basic facts and concepts of sociology. Social institutions, with special attention to the family. Culture and personality. Social organization. Social interaction. Lecture 3 hours, Total 3 hours.

SOCI 205 SOCIOLOGY II (3)—Some problems resulting, in part, from complex social organization and disorganization, such as juvenile delinquency, divorce, alcoholism, drug addiction, minority group problems, problems of old age. Prerequisite: SOCI 204. Lecture 3 hours, Total 3 hours.

SOCI 216 CRIMINOLOGY (3)—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, Total 3 hours.