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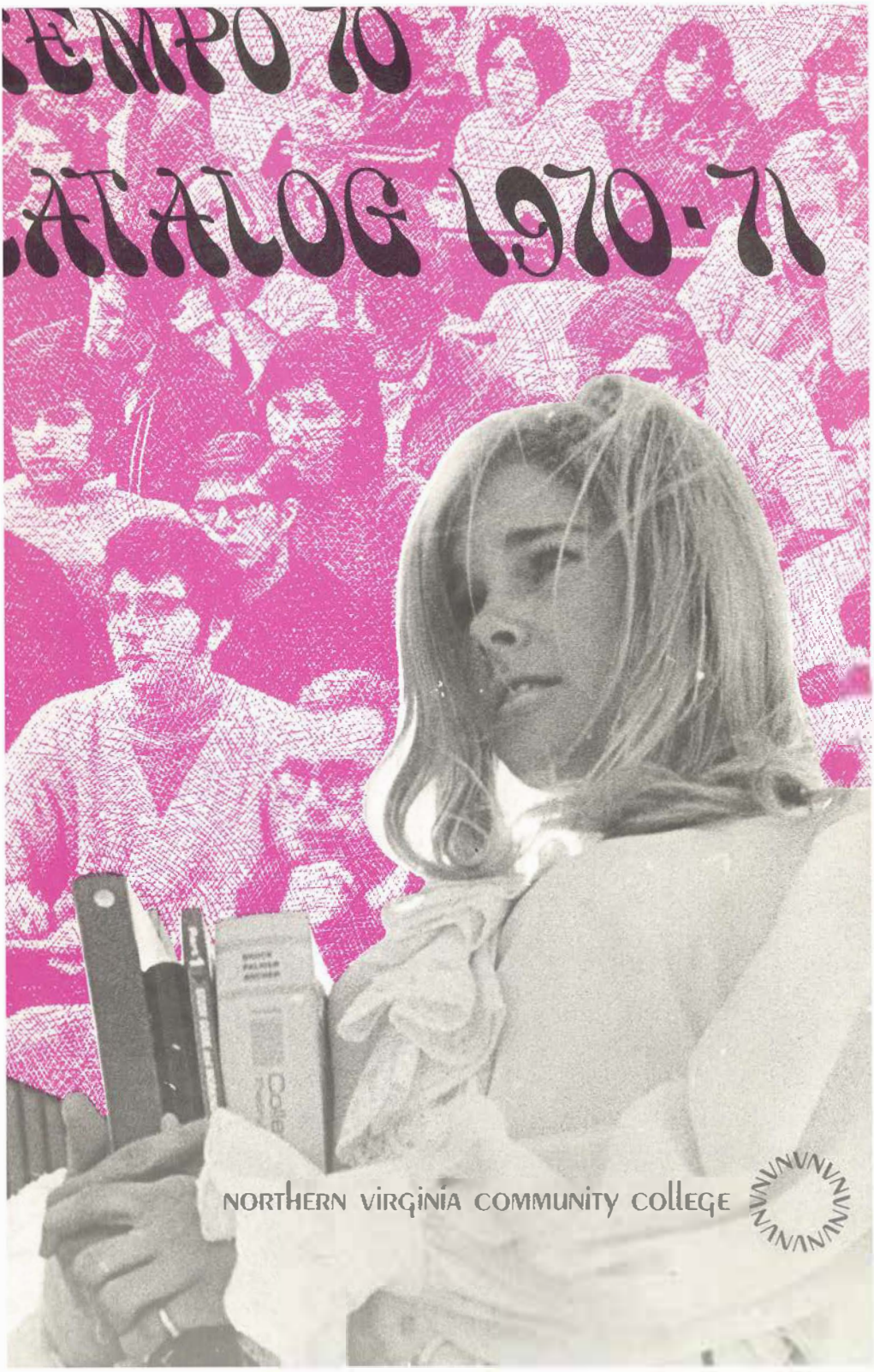

NORTHERN VIRGINIA COMMUNITY COLLEGE

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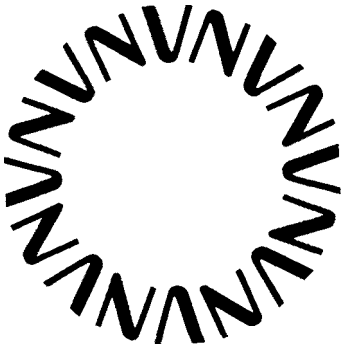
NORTHERN VIRGINIA COMMUNITY COLLEGE

CATALOG

1970-71



CENTRAL CAMPUS

8333 Little River Turnpike
Annandale, Virginia 22003
Area Code 703 • 280-4000

EASTERN CAMPUS

3443 South Carlyn Spring Road
Bailey's Crossroads, Virginia 22041
Area Code 703 • 280-4000

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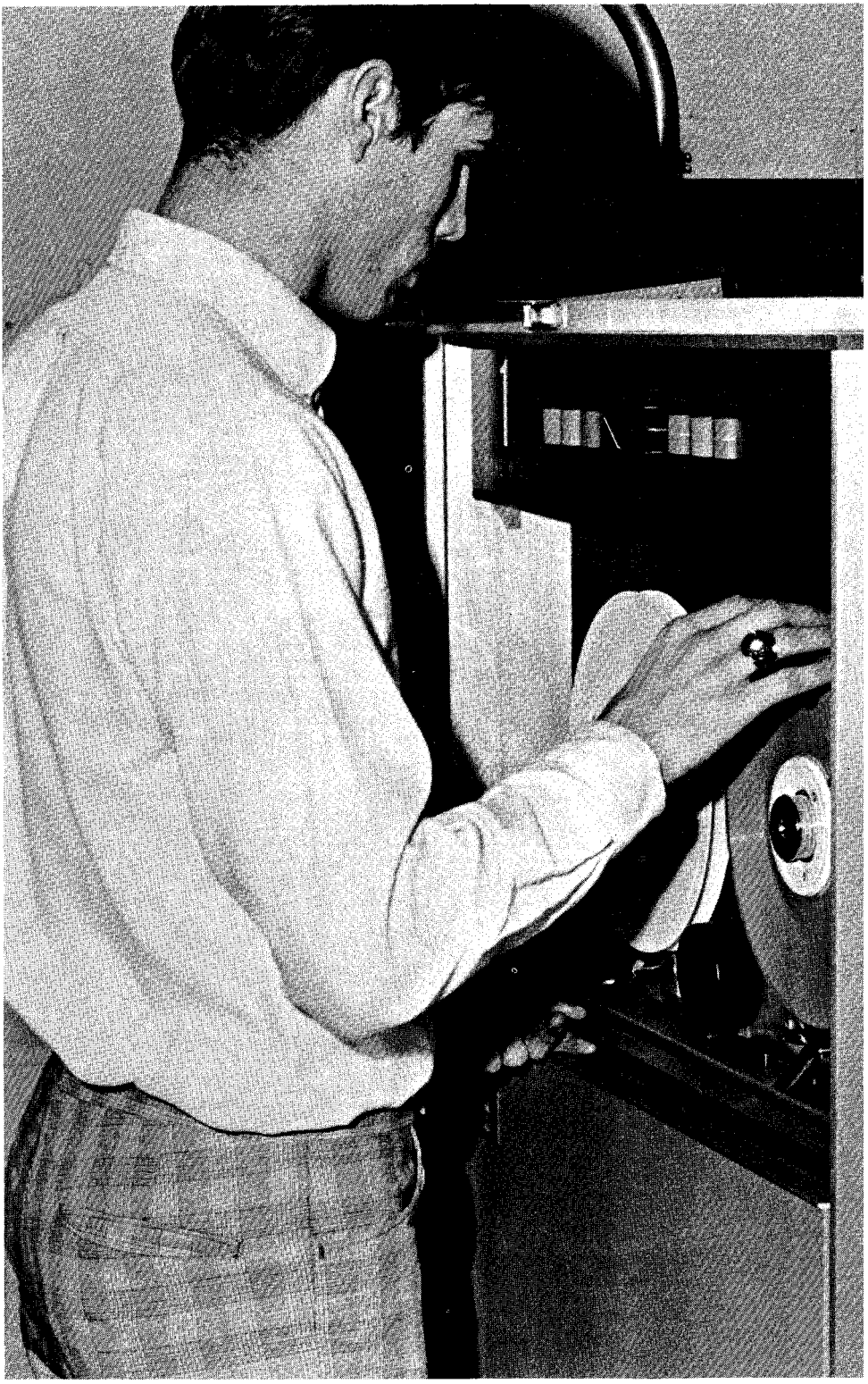


GENERAL INFORMATION

COLLEGE CALENDAR

Fall Quarter—1970

Registration	September 23-25
Classes Begin	September 28
Last Day to Add or Change Classes	October 2
Last Day for Withdrawal Without Penalty	October 16
Thanksgiving Recess	November 26-28
Classes End	December 7
Final Exams	December 9-12

Winter Quarter—1971

Registration	January 4-5
Classes Begin	January 6
Last Day to Add or Change Classes	January 12
Last Day for Withdrawal Without Penalty	January 26
Last Day to Apply for Graduation in June	January 30
Washington's Birthday Holiday	February 22
Classes End	March 16
Final Exams	March 17-20

Spring Quarter—1971

Registration	March 25-26
Classes Begin	March 29
Last Day to Add or Change Classes	April 2
Last Day for Withdrawal Without Penalty	April 16
Memorial Day Holiday	May 31
Classes End	June 5
Final Exams	June 8-10
Graduation	June 12

Summer Quarter—1971

(Full Ten-Week Session)

Registration ..... June 18
Classes Begin ..... June 21
Last Day to Add or Change Classes..... June 25
Independence Day Holiday..... July 5
Last Day to Withdraw Without Penalty..... July 9
Classes End ..... August 28
Final Exams ..... Aug. 31-Sept. 2

Summer Quarter—1971

(Two five-week terms with double class periods)

FIRST TERM

Registration ..... June 18
Classes Begin ..... June 21
Last Day to Add or Change Classes..... June 23
Last Day for Withdrawal Without Penalty..... June 30
Independence Day Holiday..... July 5
Classes End ..... July 24
Final Exams ..... July 26-27

SECOND TERM

Registration ..... July 28
Classes Begin ..... July 29
Last Day to Add or Change Classes..... August 2
Last Day for Withdrawal Without Penalty..... August 9
Classes End ..... September 1
Final Exams ..... September 2-3

Fall Quarter—1971

Registration	September 27-29
Classes Begin	September 30
Last Day to Add or Change Classes	October 6
Last Day for Withdrawal Without Penalty	October 20
Thanksgiving Recess	November 25-27
Classes End	December 11
Final Exams	December 14-16

NORTHERN VIRGINIA COMMUNITY COLLEGE

A FIVE CAMPUS COMPLEX-

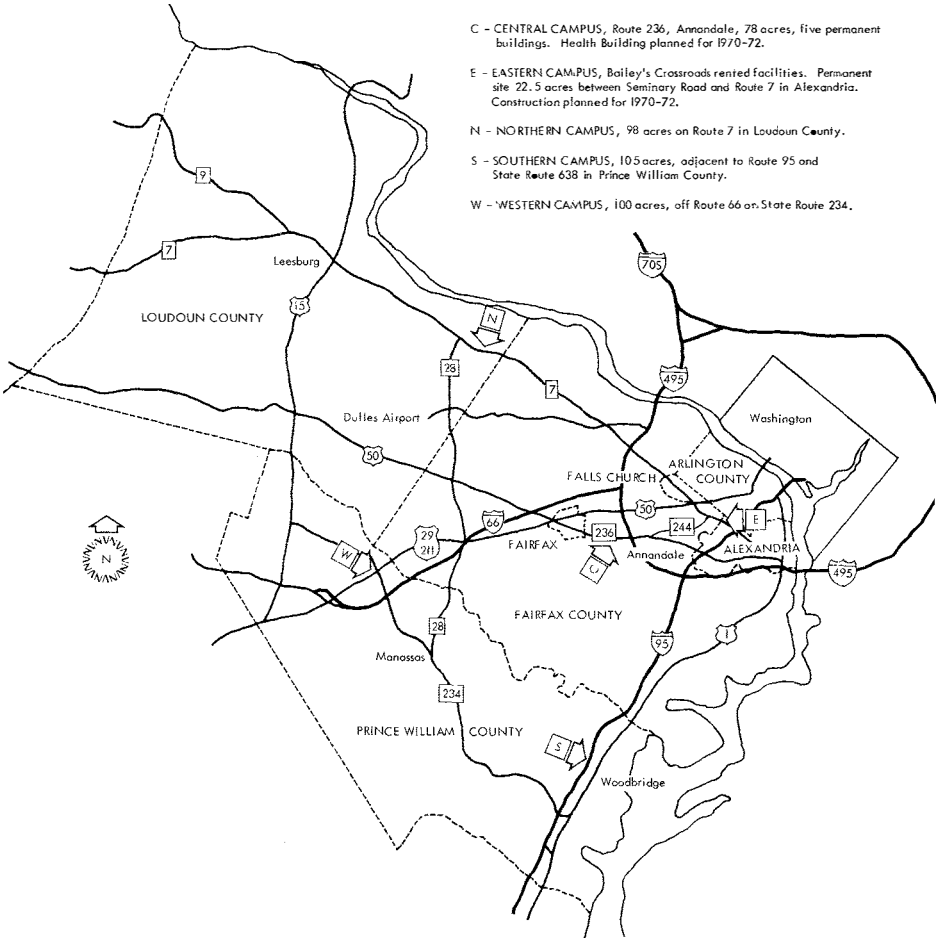
C - CENTRAL CAMPUS, Route 236, Annandale, 78 acres, five permanent buildings. Health Building planned for 1970-72.

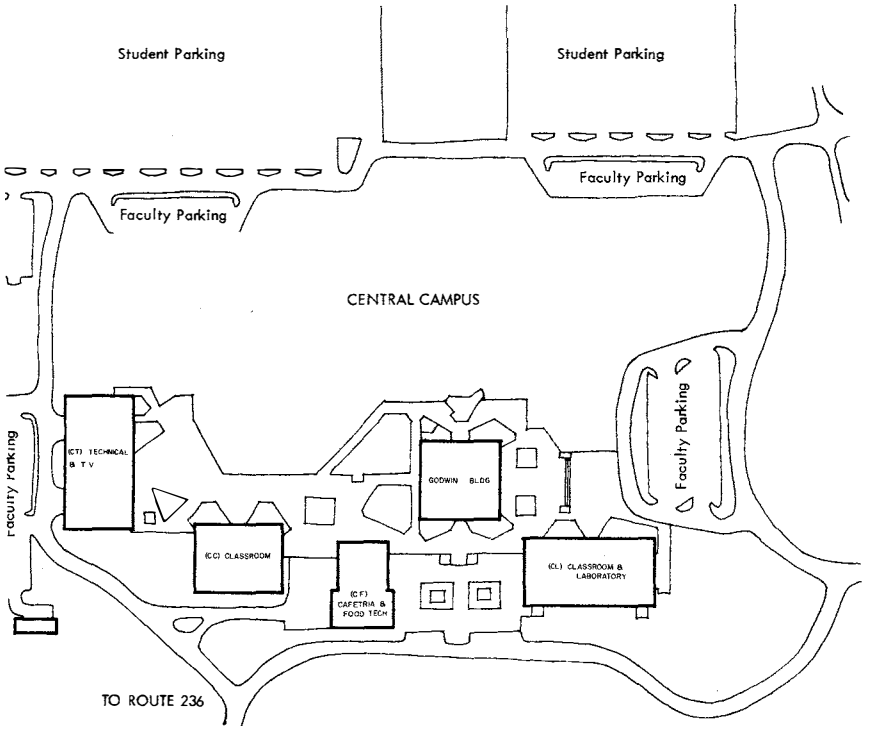
E - EASTERN CAMPUS, Bailey's Crossroads rented facilities. Permanent site 22.5 acres between Seminary Road and Route 7 in Alexandria. Construction planned for 1970-72.

N - NORTHERN CAMPUS, 98 acres on Route 7 in Loudoun County.

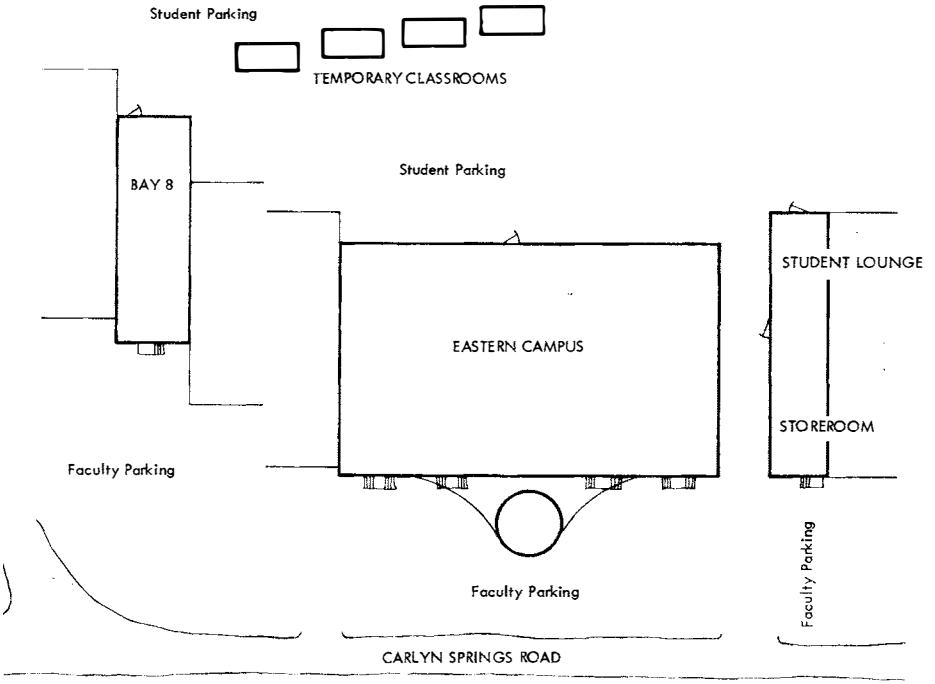
S - SOUTHERN CAMPUS, 105 acres, adjacent to Route 95 and State Route 638 in Prince William County.

W - WESTERN CAMPUS, 100 acres, off Route 66 on State Route 234.





CENTRAL CAMPUS
Annandale



EASTERN CAMPUS

PRESIDENT OF THE COLLEGE

RICHARD J. ERNST

NORTHERN VIRGINIA COMMUNITY COLLEGE BOARD

T. MARCUS GILLESPIE.....*Chairman, City of Alexandria*
CHARLES S. MONROE.....*Vice Chairman, Loudoun County*
IRVING BERMAN .....*City of Falls Church*
EARL C. FUNDERBURK.....*City of Fairfax*
HOWARD E. FUTCH.....*Fairfax County*
REUBEN B. HICKS.....*Prince William County*
OREN R. LEWIS, JR.....*Arlington County*
DEXTER S. ODIN.....*Fairfax County*
WILLIAM C. PARRISH.....*Fairfax County*

DEPARTMENT OF COMMUNITY COLLEGES

DANA B. HAMEL, *Chancellor*

STATE BOARD FOR COMMUNITY COLLEGES

EUGENE B. SYDNOR, JR., *Chairman*

DANIEL C. LEWIS, *Vice Chairman*
MICHAEL MCHALE COLLINS
MRS. MARY ANNE FRANKLIN
MRS. JOHN GALLEHER
WILLIAM P. KANTO
S. E. LILES, JR.
JOHN D. MEADE
BENJAMIN W. MEARS, JR.
W. WIRT SHAPARD
D. BOYD THOMAS
HENRY W. TULLOCH
CARRINGTON WILLIAMS
Y. B. WILLIAMS, JR.
GORDON C. WILLIS

THE COLLEGE

The College is a two-year institution of higher education established under a state-wide system of Community Colleges in Virginia and serving the counties of Arlington, Fairfax, Loudoun, Prince William, and the cities of Alexandria, Falls Church and Fairfax. These communities have a population of approximately 800,000 with a projected growth of 2,500,000 in the next 25 years.

The College operates on 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.

LOCATION AND FACILITIES

The College is presently operating two campuses, Central and Eastern. Each campus has complete facilities to coordinate the student's needs, including: administrative offices, business office, admissions and records office, classrooms, laboratories, a counseling suite, faculty offices, bookstore, library, student lounge and snack bar. Central campus has a student and a faculty cafeteria.

The Central Campus is located at 8333 Little River Turnpike (Route 236) two miles west of Annandale, Virginia, has a general classroom building, a laboratory building and Administration-Library Building, a Food Services Technology Building and a TV-Technical Building.

The Eastern Campus, temporarily located at 3443 South Carlyn Spring Road, Bailey's Crossroads, adjacent to the Melpar Building at the junction of South Carlyn Spring Road and Leesburg Pike (Route 7), has 60,000 square feet of space.

A Learning Resources Center is located on each campus. The Center includes the library, audio-visual services center and learning laboratory. The libraries have more than 40,000 new volumes and 450 periodicals. The audio-visual services centers provide and maintain a variety of equipment and materials to supplement instruction. The learning laboratories provide individualized instructional facilities such as teaching machines, programmed learning materials, and tutorial assistance.

HISTORY OF COLLEGE

Although covering a brief period of time, the history of the College is one of rapid growth and development. The College was established under the name of Northern Virginia Technical College, as a result of legislation by the 1964 State General Assembly. It became 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 at Bailey'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. The college has grown rapidly with over 7,600 students enrolled in fall, 1969.

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 the 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 is dedicated to the belief that each individual should be given a continuing opportunity for the development and extension of his skills and knowledge along with an opportunity to increase in awareness of his role and responsibility in society. The College is devoted to serving the educational needs of its community and assumes a responsibility for helping meet the requirements for trained manpower in its region through a cooperative effort with local industry, business, professions, and government.

Educational opportunities are provided for post-high school age youth and adults. These include high quality instructional programs at the associate degree level and at the foundation (preparatory) level. A strong guidance and counseling program, along with a number of other student services, is also provided to help each student make sound decisions regarding his occupational, educational, and personal goals and objectives.

PROGRAMS

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

1. *Occupational-Technical Education.* The occupational and technical education programs are designed to meet the increasing demand for technicians, semi-professional workers and skilled craftsmen for employment in industry, business, the professions, and government. The curriculums 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 pre-professional programs meeting standards acceptable for transfer to baccalaureate degree programs in four-year colleges and universities.
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 worker, a consumer and a citizen.
4. *Continuing Adult Education.* These programs are offered to enable the adults in the region to continue their learning. 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 for new and expanding industries. This special training shall be considered with Virginia's economic expansion efforts and with the needs of employers.
6. *Foundation (Preparatory) Programs.* Foundation or developmental programs are offered to help prepare individuals for admission to the occupational-technical program and to the university parallel-college transfer program in the Community College. These programs are designed to help develop the basic skills and understandings necessary to succeed in other programs of the Community College.
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.

ACCREDITATION AND RECOGNITION

The College, a division of the Virginia Community College System, is approved by the State Board for Community Colleges and by the State Department of Community Colleges in Virginia. The associate degree programs of the College have also been approved by the State Council of Higher Education for Virginia. The College is accredited by the Southern Association of Colleges and Schools.

The College has institutional membership in the following organizations:

Adult Education Association
American Association of Collegiate Registrars and Admissions Officers
American Association of Health, Physical Education, and Recreation
American Association of Junior Colleges
American College Public Relations Association
American Library Association
American Personnel and Guidance Association
Association Educational Data Systems
Association of Virginia Colleges
National Association of Student Personnel Administrators
National League of Nursing
Southern Association of College and University Business Managers
Southern Association of Junior Colleges
Virginia Association of Collegiate Registrars and Admissions Officers
Virginia Humanities Conference

ADMINISTRATIVE INFORMATION

ADMISSION REQUIREMENTS

General Admission to the College

Any person who has a high school diploma or the equivalent, or is 18 years of age, and in any case is able to benefit from a program of instruction at Northern Virginia Community College may be admitted to the College as a regular student or as a special student when the following items have been received by the Office of Admissions on his home campus.

The College reserves the right to evaluate special cases and to refuse admission to applicants when considered advisable in the best interest of the College.

For all regular students, the following items are required:

1. A completed "Application for Admission as a Regular Student." (NOTE: Social Security Number is required.)
2. A $5 application fee (non-refundable unless the requested program or course is not offered.)
3. Official transcripts from all high schools, colleges, and universities attended.

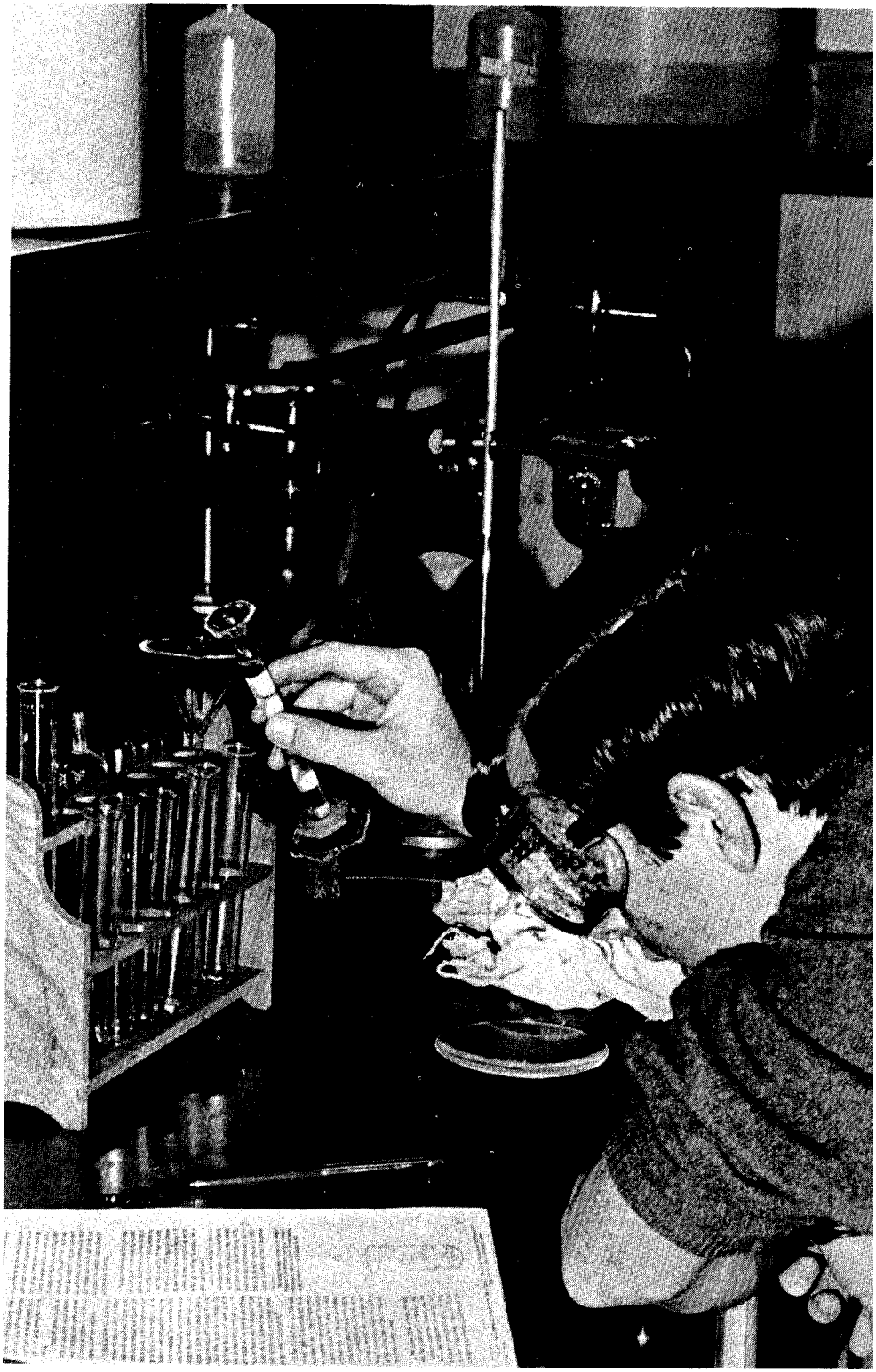
For all special students, the following items are required:

1. A completed official application for admission. (NOTE: Social Security number is required.)
2. A $5 application fee (non-refundable unless the requested program or course is not offered).

Persons wishing to apply for the non-credit community service programs should contact the Office of Continuing Education either campus for additional information.

Applicants will be accepted on a first-come, first-served basis subject to the quotas established for each curriculum. It is important that applications be made early if entrance to the desired program is to be achieved.

To insure consideration for admission or readmission to a desired degree program, an applicant must submit an application with all necessary supporting documents to the Office of Admissions and Records at least 30 days prior to registration for the quarter in which admission is being sought. All students not admitted to a degree program shall be considered special students.



A person who has been admitted to the College will be required to meet with one of the College Counselors before becoming a "Regular" student (a) to discuss the applicant's educational interests, (b) to determine what additional tests he may need, and (c) to plan his application for admission to a specific curriculum or program at the College. He will also be required to submit a health certificate, emergency consent form (forms to be furnished by the College) and any additional information required by the College for admission to a specified program or curriculum.

This College does not discriminate on the grounds of race, color, or national origin and is in compliance with the Civil Rights Act of 1964.

The act of enrolling as a student is an acceptance of the rules and regulations of the College. Any violation may be subject to appropriate institutional action.

Admission to Specific Curriculums

In addition to the general admission requirements listed above, specific requirements are usually prescribed for each curriculum of the College. Among the items generally considered in determining the eligibility of a student for admission to a curriculum in the College are his educational and occupational experiences and other reasonable standards to insure that the student possesses the potential to meet program requirements.

The specific requirements for each curriculum in the College are listed in the Curriculum Offerings section of the College catalog. Persons who do not meet the requirements for a specific curriculum or course may be eligible to enter the curriculum or course after they have completed preparatory course work.

All regular students entering the College will be required to take the Comparative Guidance and Placement Test (CGP). The test battery is administered at the College normally prior to registration. An appointment may be made through the Counseling Department at the home campus indicated.

Persons applying to enter one of the associate degree programs (Associate in Science, Associate in Arts, or Associate in Applied Science) shall be high school graduates or the equivalent or have completed an approved preparatory program.

In addition, all students who plan to transfer to a four-year college or university which requires the Scholastic Aptitude Test (SAT) of the College Entrance Examination Board may be requested to submit these test scores to that institution.

Applicants whose native language is other than English are required to take the "Test of English as a Foreign Language" (TOEFL). The

applicant is responsible for making early arrangements for taking the test and should address inquiries to: TOEFL, Educational Testing Service, Princeton, New Jersey 08540, U.S.A. The Bulletin of Information, obtainable without charge, contains a description of the test as well as rules regarding application, fees, reports, and the conduct of the test; lists of examination centers; examination dates; and an application blank. On the application for the test, the student should specify that the scores be sent to the Admissions and Records Office at his selected campus at Northern Virginia Community College. The results of the TOEFL must be received at NVCC well in advance of the term for which the applicant seeks admission.

Special Admission Requirements for Foreign Students

Foreign Students will not be admitted on a temporary basis. They must complete all general and special requirements for admission. Foreign students who are present in the United States on a temporary visa are considered non-residents for purposes of tuition payments. Length of the stay, payment of taxes, ownership of property, etc., do *not* qualify them for the status of *legal resident.*

Residence Requirements

Applicants will be required to submit a residence affidavit to determine state residency eligibility for tuition purposes. See section on tuition. The Application Form contains an affidavit which must be completed by those students or their parents or guardians who are legal residents of the Commonwealth of Virginia. If there is any question as to the status of an individual, the applicant should contact the Coordinator of Admissions and Records for clarification. Also, see the section on tuition.

When enrollments must be limited for any curriculum or course, first priority must be given to all qualified students who are residents of the political subdivisions supporting the College as listed under General Information, provided such students apply for admission to the program a reasonable length of time prior to registration. The priority list is as follows: (1) residents of the political subdivisions supporting the College, (2) other Virginia residents, (3) out-of-state and foreign students.

Students Transferring from Other Colleges

Usually, a student transferring from another college who is eligible for re-entrance at the last college shall also be eligible for admission to the Community College.

It is the role of the Community College to help each student succeed in a program from which he can benefit. If a transfer student is in-

eligible to return to a particular curriculum in a previous college, generally he will not be allowed to enroll in the same or an equivalent curriculum in the College until two quarters elapse or until he completes an approved preparatory program at the College. The Admissions Committee of the College shall decide on each case, and usually shall impose special conditions for the admittance of such students, including placement on probation.

Each student transferring from another college should consult the Admissions and Records Office at the Community College for an assessment of credits. Generally, no credit will be given for subjects with a grade lower than "C." A transfer student may be advised to repeat courses if it is clearly to his advantage to do so in order to make satisfactory progress in his curriculum.

Such an evaluation (of credits that a student has earned at other institutions) will be made during the Admission Process after all of the official documents have been received. When the course contains similar or like content and credit, the course will transfer as the equivalent of this institution's course. When the content is unlike any course offered at Northern Virginia Community College, elective credit may be granted. The division in which the student is enrolled will then determine if and how the evaluated transfer credit may be used.

Credit may be allowed for military service schools if this credit is recommended in *A Guide to the Evaluation of Educational Experiences in the Armed Services.*

Students Applying for Credit or Waiver of Requirements

Students who have reason to believe that previous educational studies, training programs, or work experience may entitle them to an adjustment in the course work required in a particular curriculum should contact the Admissions Office at the College to determine procedures before registering for classes. Proficiency examinations will be used to determine course credit granted. Veterans may receive a waiver for Physical Education upon submission of a discharge certificate. No credit is granted. Other credits should be substituted to meet the total requirements of the specific curriculum.

Mature Students Who Have Interrupted Their Education

Students who are 21 years of age or older and who have interrupted their education for some reason, after having successfully completed twelve (12) quarter hours of "C" or better work, exclusive of Developmental courses, may be exempted from taking the C.G.P. (Comparative Guidance and Placement Program) examination. This category of students should see a counselor for guidance.

Auditing a Course

Students desiring to attend a course without taking the examination or receiving credit for the course, may do so by registering to audit that course. Students desiring to audit a course will register in the regular manner and pay the regular tuition. Audited courses carry no credit and do not count as a part of the student's course load. Students desiring to change status in a course from audit to credit must complete the change during the first week of class or by the second class meeting for those classes which meet only once each week. Permission of the instructional Division is required to audit a course.

CLASSIFICATION OF STUDENTS

CLASSIFICATION OF STUDENTS BY HOME CAMPUS

All students are required to select a home campus (Central or Eastern) at the time of application. A change in a student's home campus classification will be permitted no later than 30 days before the beginning of each new session.

All student records will be maintained at the Home Campus of the student. All actions, such as Registration, dropping of courses, shifting from credit to audit, withdrawal, transcript request, etc., must be accomplished at the Home Campus.

All students are classified according to the following categories:

Regular Student: A student is designated as a regular student when his file in the Admissions Office contains all of the information required for general admission to the College as a regular student and when he has been admitted to one of the curriculums of the College. A regular student is one of the following:

1. A full-time or part-time student working toward completion of an associate degree, diploma, certificate, or foundation program;
2. A full-time or part-time student taking credit courses for transfer to another college or university.

Thus, the Regular Student's admission will normally follow a counseling interview and will be substantiated by a written letter specifying the curriculum to which he is admitted and any remedial work that he must accomplish.

Special Student: A special student is one who is permitted to register under special conditions including the following:

1. A part-time student taking a credit course(s) as an audit for no credit;

2. A high school senior who with the permission of his high school principal is concurrently enrolled in a college course;
3. A part-time student not enrolled in an associate degree, diploma, or certificate program who may be taking a course for credit (such students may later apply to the College for admission to a program as a regular student);
4. A person who has not yet fulfilled all of the requirements as a regular student but who is admitted under special consideration by the Admissions Committee of the College. It is expected that such persons would fulfill all requirements prior to the mid term of the quarter or face dismissal from the College.

Full-time Student: A student is considered a full-time student if he is carrying 12 or more credits of course work. (Note: The Veterans Administration considers 14 credit hours as full-time.)

Part-time Student: A student is considered a part-time student if he is carrying less than 12 credits of course work.

Freshman: A student is classified as a freshman until he has completed 45 credits of work.

Sophomore: A student is considered a sophomore after he has completed 45 or more credits of course work. Transferred credits are included providing they apply toward meeting the requirements of the student's curriculum.

EXPENSES

Application Fee

An application fee of $5 must accompany the application for admission to the College for each regular and special student. This fee is not applicable to tuition, nor refundable unless the requested program or course is not offered.

Tuition

Full-time Student (12 or more credits):

Virginia Resident	$ 60.00 per quarter
Out-of-State Resident	200.00 per quarter

Part-time Student (less than 12 hours):

Virginia Resident	$ 5.00 per credit (or equivalent)
Out-of-State Resident	$17.00 per credit (or equivalent)

TUITION IS DUE AND PAYABLE AT TIME OF REGISTRATION EACH QUARTER

A Virginia resident is one who has been domiciled in, and is and has been an actual bona fide legal resident of Virginia, for a period of at lease one year prior to the commencement of the term or quarter for which he is enrolling.

All foreign students holding temporary visas are considered out-of-state residents.

Payment of tuition also enables the student to use the library, bookstore, parking lot, student lounge, and other facilities of the College. There are no special laboratory or library fees, but students are expected to pay charges for any school property (such as laboratory or shop equipment, supplies, library books and materials) that they damage or lose.

Graduation Fee

A non-refundable graduation fee of $10.00 shall be charged each graduating student to cover the cost of the rental of caps and gowns and the cost of the degree, diploma, or certificate, payable at the beginning of the last quarter of instruction.

Books and Materials

Students are expected to obtain their own books, supplies, and consumable materials needed in their studies. It has been estimated that the cost of these items will average approximately $35-$50 per quarter for a full-time student.

Refunds

Authorized refunds will be as follows for students withdrawing from the College: (a) within the first 15 class days of a quarter, refund will be ⅔ of tuition; (b) within first 16-35 class days of a quarter, refund will be ⅓ of tuition; (c) after 35 class days of a quarter have elapsed, no refund will be made. If a course is cancelled, there will be refund of tuition for that course.

No refunds for tuition will be made after the first week of classes for individual course changes or for an individual class which is dropped. For part-time students who withdraw from the College, refunds will be pro-rated on the above schedule. Since tuition is deposited to the account of the Treasurer of Virginia, all refunds must come from that account in Richmond.

Official resignation for a student shall become effective on the date that written notification of intent to resign is received by the Office of Admission and Records and not the date of the last class attended, unless the two dates coincide.

All services will be withheld from a student who owes money to the college for any reason, or who has books outstanding from the Library. This means that no transcripts will be issued, the student will not be permitted to register, no recommendations will be written nor other services provided.

CREDITS

A credit is equivalent to one collegiate quarter hour credit or two-thirds of a collegiate semester hour credit. Usually, one credit for a course is given for approximately three hours of work *weekly* by each student as follows:

a. One hours of lecture plus an average of two hours of out-of-class study, or
b. Two hours of laboratory or shop work plus an average of one hour of out-of-class study, or
c. Three hours of laboratory or shop work with no regular out-of-class assignments.
d. Fixed credit and variable hours with behaviorial objectives are assigned to each Foundation Course (courses numbered 01-09).
e. Variable Credit (1-5 credits) are assigned to all Supervised study, Seminar and Project, and Coordinated Internship courses.

GRADING SYSTEM

A = Excellent = Four grade points per credit

B = Good = Three grade points per credit

C = Average = Two grade points per credit

D = Poor = One grade point per credit

F = Failure = 0 grade points

S = Satisfactory = No grade point credit (Applies only to specialized courses and seminars)

U = Unsatisfactory = No grade point credit (Applies only to specialized courses and seminars)

W = Withdrawal = No credit (A grade of withdrawal implies 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 = No credit (A grade of incomplete 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 a verifiable and unavoidable reason. An "incomplete" must be made up during the next term following its issuance unless special permission for an extension of time is given by the Provost or his designate).

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

The grade point average (GPA) is determined by dividing the total number of grade points earned in courses by the total number of credits attempted. When a course is repeated only the last grade will be used in the GPA computation for graduation. The following example illustrates a GPA of 2.0 obtained by dividing 36 by 18.

Course	Credit Hours Attempted	Grade	Grade Points	Credit Hours Completed	Total Grade Points
FREN 101	4	A	4	4	16
ENGL 101	3	B	3	3	9
PSYC 110	3	C	2	3	6
MATH 036	5	D	1	5	5
ECON 160	3	F	0	0	0
ELEC 114	0	W	0	0	0
	18			15	36

Any grade errors or other errors on Grade Reports should be reported to the Office of Admissions and Records at the student's Home Campus within 30 days after the close of the Quarter in which grades were received or these may be assumed to be correct.

GRADING—FOUNDATION COURSES

A grade of "S" (Satisfactory) shall be assigned for satisfactory completion of the objective for each Foundation Course.

Students making satisfactory progress but not completing all of the objectives for a Foundation Course shall be graded with an "R" (Re-enroll) and re-enrolled to complete the course objectives.

Students not making satisfactory progress in a Foundation Course (courses numbered 01-09) shall be graded "U" (Unsatisfactory), and counselors will recommend consultation with the instructor to determine the subsequent sequence of courses for the student who receives a grade of "U".

Credits earned for foundation courses cannot be counted toward graduation in point computation nor in determining sophomore status.

DEGREES, DIPLOMAS, AND CERTIFICATES

Northern Virginia Community College offers the following degrees, diplomas, or certificates for students who successfully complete approved programs at the College.

1. *Associate in Arts degree (A.A.)* is awarded to students majoring in the liberal arts and who may plan to transfer to four-year colleges or universities after completing their community college programs.
2. *Associate in Science degree (A.S.)* is awarded to students majoring in specialized curriculums such as business administration, teacher education, pre-engineering, and other pre-professional programs and who may plan to transfer to four-year colleges or universities after completing their community college programs.
3. *Associate in Applied Science degree (A.A.S.)* is awarded to students majoring in one of the occupational-technical curriculums and who may plan to obtain a full-time job immediately upon graduation from the College.
4. *Diploma* is awarded to students who complete one of the two-year diploma occupational curriculums.
5. *Certificate* is awarded to students who complete one of the approved curriculums that are usually less than two years in length.

GRADUATION REQUIREMENTS

Associate Degree Requirements

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

1. Have made application and been admitted to the program in which he seeks a degree;

2. Have fulfilled all of the course requirements of his particular curriculum as outlined in the College catalog;

3. Have been recommended for graduation by the appropriate instructional authority in his curriculum.

4. Have completed at least 97 credits applicable to an associate degree, of which 45 credits must be acquired at the College;

5. Have completed the general education requirements (course work

in Economics, English, Psychology, Government, and Orientation) for an associate degree;

6. Have earned a grade point average of at least 2.0 on all courses attempted which are applicable toward graduation in his particular curriculum;

7. Have filed an application for graduation in the Office of Admissions and Records;

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

Diploma Requirements

To be awarded a diploma from the College, a student must:

1. Have made application and been admitted to the program in which he seeks a diploma;

2. Have fulfilled all of the course requirements of his particular curriculum as outlined in the College catalog;

3. Have been recommended for graduation by the appropriate instructional authority in his curriculum;

4. Have completed at least 97 credits applicable to a diploma of which 45 credits must be acquired at the College;

5. Have completed the general education requirements (course work in Economics, English, Government, Orientation, and Psychology) for a diploma;

6. Have filed an application for graduation in the Office of Admissions and Records;

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

Certificate Requirements

To be eligible for graduation with a Certificate from the College a student must:

1. Have made application and been admitted to the program in which he seeks a certificate;
2. Have fulfilled all of the course requirements of his particular Certificate curriculum as outlined in the College *Catalog* (this includes achieving at least a passing grade in each course in the curriculum);
3. Have been recommended for graduation by the major department in the student's curriculum;
4. Have completed the prescribed total quarter hours of credit for the Certificate, at least one-half of which must have been taken at the College;

5. Have filed an application for graduation in the office of the Coordinator of Admissions and Records;
6. Have resolved all financial obligations to the College and returned all materials including library books.

Certificate of Completion

If a student successfully completes a program of instruction which does not lead to an associate degree or diploma, he may be awarded a certificate. Also, if he pursues a degree or diploma program but fails to meet the degree or diplomas requirements, he may, upon recommendation of the appropriate instructional department and the Provost, be issued a certificate, provided the portion of study successfully completed is equivalent to an approved certificate program offered at the College.

ACADEMIC REGULATIONS

Attendance

Regular attendance at classes is required. It is a student's responsibility to attend regularly only the section for which he is registered. 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 a dismissal from a course. The student is responsible for making up all work missed during an absence. Any instruction missed and not made up will necessarily affect the grade of the student, regardless of the reason for the absence.

Change of Registration

In all cases students should follow established procedures for making any change in their programs after registration. Failure to do so could place their college records in jeopardy.

1. *Withdrawal from a class—*

Withdrawal from a class without academic penalty may be made within the first three weeks after the beginning of a quarter. If a student's work has been passing up to that time, he will receive a grade of "W" for withdrawal. After that time the student may receive a grade of "W" if his work has been satisfactory or will receive a failing grade of "F" if his work has been unsatisfactory up to the time of official withdrawal. In all cases the word "Withdrawn" will be written on his permanent academic record. No student may withdraw from a class during the last three weeks of a quarter.

2. *Addition of a course–*

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

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.

4. *Cancellation of a section or course by the College–*

A student must follow the withdrawal procedures in order to get a refund or add another course or section to replace the cancelled section.

5. *Transfer of Students Between Curriculums–*

A student who wishes to transfer from one curriculum to another must initially consult a counselor before effecting the transfer.

Academic Warning

Any student who fails to make a 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 who fails to maintain a cumulative grade point average of 1.5 will be placed on academic probation. The statement, "Placed on Academic Probation," will be placed on the student's permanent record.

A student on academic probation shall be required to consult with his counselor and may be required to take less than the normal academic load in his next 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 reapplies, and is accepted, for readmission to another curriculum of the College. The statement, "Placed on Academic Suspension" will be placed on the student's permanent

record. The student must apply for readmission under all circumstances of academic suspension.

Academic Dismissal

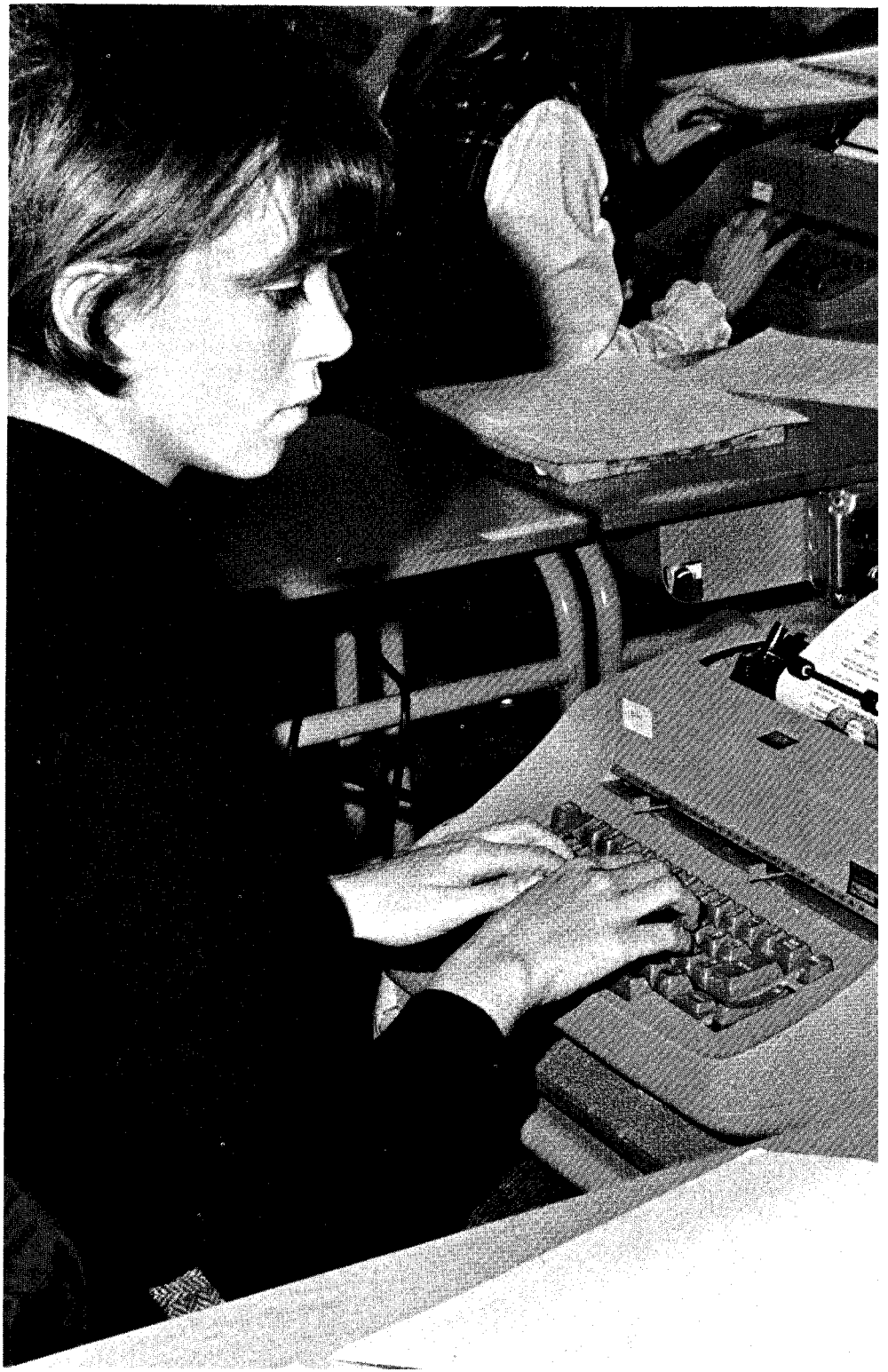
A student who does not maintain at least a 2.0 average for the quarter following reinstatement to the College after having been on academic suspension will be academically dismissed from that curriculum. Students who have been placed on academic suspension and achieved a 2.0 for the quarter following his reinstatement must maintain at least a 1.5 in each subsequent quarter of attendance. The student remains on probation until his overall grade point average rises to 1.5 or higher. Failure to make a 1.5 in each subsequent quarter will result in academic dismissal. Academic dismissal normally is permanent unless, with good cause, the student reapplies and is accepted under special consideration, for readmission by the Admissions Committee of the College. The statement "Placed on Academic Dismissal" will be placed on the student's permanent record.

Examinations

All students are expected to take their examinations at the regularly scheduled times. No exceptions will be made without the permission of the Provost and of the instructor of the class.

Normal Academic Load

The normal academic load for students is 15-17 credits. The minimum full-time load is 12 credits and the normal maximum full-time load is 18 credits. A student wishing to carry an academic load of more than 18 credits must ordinarily have a 3.0 average or higher and must have the approval of the Provost and usually the student's faculty advisor or counselor.



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 in each instructional program.

The counseling department functions to assist students in making intelligent decisions regarding their vocational, educational, and personal-social plans. As part of this assistance, students have available 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.

TESTING

A well-planned testing program for all students is coordinated by the Counseling Department. The Comparative Guidance and Placement Test (CGP) is required for all new students planning to enter one of the associate degree, diploma, or certificate programs. This test battery is administered at the College, normally prior to registration. An appointment may be made through the Counseling Department at the home campus indicated. In addition, all students who plan to transfer to a four-year college or university which requires the Scholastic Aptitude Test (SAT) of the College Entrance Examination Board may be requested to submit these test scores to that institution.

Tests for students interested in one of the occupational-technical programs are available to provide special information for helping students determine their future occupational and educational plans. In addition, other special tests and interest inventories are available at the Counseling Center.

ORIENTATION

An orientation program has been established to acquaint new students with the purposes and programs of the College. The orientation program begins weeks before registration when the student is asked to meet with a counselor at the College for an interview to discuss the student's educational interests, to determine what additional tests he may need, and to plan the student's application for admission to a specific curriculum at the College. The student will also meet with a faculty advisor in his major curriculum and/or a counselor to plan his program and course of studies.

An orientation day may be scheduled for all new students for group orientation to the College and a discussion of student services and activities.

In addition, an orientation class is provided for the first quarter to aid all students in their personal and academic adjustment.

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 administration, 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 Financial Aids Officer.

SCHOLARSHIPS

The generosity of private citizens, business agencies, and associations has made the following scholarships available to students of this College:

Zonta Club Scholarship

Donated by the Zonta Club of Alexandria, this fund provides one scholarship of $250.

D. C. Chapter, The National Secretaries Association (International)

Two one-year scholarships not to exceed $250 each. The award is to be given to students in the secretarial program who are residents of Northern Virginia and maintain 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.

Capitol Chapter, The National Secretaries Association

One two-year scholarship not to exceed $250 each year. The award is given to a Secretarial Science student from Northern Virginia. The recipient is selected by the Capitol Chapter of the National Secretaries Association.

Annandale Women's Club

Three scholarships, $150 each, for the academic year. These scholarships are open to any Fairfax County student in a degree or certificate

program. The scholarships are to be awarded on the basis of financial need and potential as an individual and citizen.

Pan-Hellenic Association of Northern Virginia

One scholarship in the amount of $250. This award is to be made on the basis of scholarship and need to a female liberal arts student residing in Northern Virginia.

Professional Engineers of Northern Virginia Chapter of Virginia Society of Professional Engineers

This fund provides one scholarship of $180 for the College year. The scholarship is open to any pre-engineering or engineering technology student attending the College and is to be awarded on the basis of financial need, scholastic aptitude and achievement.

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 (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 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.

The Junior Women's Club of Fairfax County

One scholarship in the amount of $135. This award is made on the basis of need and potential as a student.

Mount Vernon National Bank and Trust Company

One scholarship in the amount of $250 to be awarded on the basis of need and potential as a student.

Theta Rho Lambda Chapter, Alpha Phi Alpha

The amount of this annual fund is $500. Scholarships from this fund are awarded by the Alpha Phi Alpha fraternity.

Restaurant Association of Metropolitan Washington

One scholarship in the amount of $500.00 (five hundred dollars). This award is to be made on the basis of scholastic aptitude in the field

of Food Service courses and residence in the Washington Metropolitan area. Selection of recipient will be made by the donor.

Women's Auxiliary to Fairfax County Medical Society

One scholarship in the amount of $250.00 (two hundred and fifty dollars) to be awarded by the donor to a student of Nursing on the basis of need and residence in Fairfax County.

Gerator Corporation

One scholarship in the amount of $250.00 (two hundred and fifty dollars) to a student of Nursing who will pledge to work a minimum of one year in Prince William County.

Marriott Foundation

Two one-year scholarships of $250.00 (two hundred and fifty dollars) each. The awards are to be given to students of Food Service.

Northern Virginia Dental Society

One scholarship in the amount of $250 to be awarded to a student of Dental Assistance.

Ladies Auxiliary of Northern Virginia Dental Society

One scholarship in the amount of $200. This award is made to a student in Dental Assistance courses on the basis of need and potential as a student and citizen.

Club Managers Association of America

The amount of this annual fund is $750. Scholarships are awarded from this fund on the basis of need and potential as a student in Food Service.

Food Services Executives Association

Two scholarships of $250 each to be awarded to students in Food Service courses.

Community Womans Club of Annandale

Two scholarships of $300 each. One scholarship to be awarded by the club to a student of Nursing and the other to be awarded to a student of general studies.

Burke Lions Club

This club contributes a scholarship in the name of Roy H. Carson

in the amount of $250 to be awarded to a student who has financial need and who has good potential as an individual and citizen.

Northern Virginia Community College Veterans Clubs Scholarship

One scholarship per quarter per campus in the amount of $60.00 (in-state quarterly tuition) to be awarded to a club member selected by the Veterans Scholarship Committee.

Fairfax County Council of PTA's

Two scholarships of $350 each. These awards are made by the Fairfax County Council of Parent Teachers Associations.

Womans Club of Mantua

Two scholarships of $250. The awards are made by the Womans Club of Mantua.

Northern Virginia Board of Realtors

One scholarship in the amount of $250. The award is made by the Northern Virginia Board of Realtors on the basis of scholarship, business aptitude and leadership.

PART-TIME EMPLOYMENT

The placement office operates throughout the year to assist students in securing part-time employment. An effort is made to place students in fields which relate to their college programs. Students who work more than 20 hours per week are advised to adjust their course loads accordingly.

WORK-STUDY PROGRAM

Numerous jobs on campus are available each year under the Work-Study Program. Full-time students who are in financial need may qualify for participation in this program. Application forms are available in the office of the Counseling Department.

STUDENT LOANS

Eligible students at Northern Virginia Community College may take advantage of National Defense Student Loans, Student Nursing Loans, Law Enforcement Education Loans and State Assistance Authority Educational Loans. Studens who need loans should contact the financial aids officer for information.

VOCATIONAL REHABILITATION

The College cooperates with the State Department of Vocational Rehabilitation in providing education and training for persons with handicaps.

VETERAN'S AFFAIRS

The curricula of the College have been approved by the Veterans' Administration for the training of eligible veterans and war orphans under the appropriate Congressional action.

All veterans, the children of veterans, and the children of deceased veterans who may be eligible for educational benefits should contact the Veterans' Administration Regional Office. Initial enrollment applications for educational benefits are available from the Office of Admissions & Records but must be processed by the local V. A. office. All persons seeking V. A. educational benefits for any given semester must register and complete the appropriate forms at a specified station during registration for classes. Receipt of benefits in full and on time is dependent on the individual student's attention to this request.

SELECTIVE SERVICE

Male students subject to the laws administered by the Selective Service System must make a written request for deferment by completing SSS Form 104 which is available at their local board.

An SSS Form 109(a) certifying the student's status will be sent to the student's local board only if he requests and completes the necessary forms at the designated station during registration. If a student becomes eligible for the draft after registration he should report to the Office of Admissions and Records. The student need notify his local board of his status only once each year so long as he maintains his status as a full-time student and earns a minimum of one-fourth of the credits necessary for a Bachelor's degree (one-half of the credits for an Associate degree) in the calendar year, September through August.

HEALTH SERVICES

An out-patient Student Health Service is provided to assist students and staff maintain optimum health. Individual health counseling and informal teaching, as well as emergency care, is offered by the nurse on duty.

PLACEMENT SERVICE

The College maintains a placement service in the Counseling Department for students who wish to secure part-time or full-time employment while attending college, during vacations, or after graduation.

Occupational information on job requirements and opportunities is provided in the Counseling Department. The College maintains continuous contact with the state employment service, business, industry, the professions, and government for the latest information about jobs.

Students who seek part-time work are encouraged to do so with a view to their future career plans. The experience gained will assist them in finding permanent and satisfying positions.

SNACK BAR AND CAFETERIA

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.

Cafeteria service is provided in the Student Services Building on Central Campus.

PARKING

A large parking lot has been reserved behind the College at each campus for the convenience of students. Students are not permitted to park in the faculty and visitor reserved parking areas.

Parking and traffic regulations are printed in the student handbook and every student is requested to abide by them. Traffic summons will be issued on the standard Virginia Uniform traffic summons and once issued, will be handled by the Fairfax County Court System.

STUDENT ACTIVITIES

The student activities program is designed to supplement the instructional program by providing a variety of meaningful, educational, cultural, and social experiences.

The following organizations, activities and clubs are open to participation by all students:

Organizations:

- Outing Club
- The Student Government Association
- Drama Club
- Veterans' Club
- Circle K Club
- Engineering-Technical Association
- International Fellowship Organization

Activities:

- Coffee Houses
- Art Exhibits
- Festival of the Arts
- Dances and Proms
- "Hootenannies"
- Film Series
- Distinguished Speaker Lectures
- Intramural Sports
- Picnics

Lambda Theta Chi, Service Sorority
Theta Rho Chi, Distributive Education
Phi Theta Kappa, Honor Society
Alpha Phi Omega Service Fraternity
Epsilon Kappa Psi Service Fraternity

Student publications are:

The College newspapers

The College yearbook

The student literary magazine

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

STUDENT HANDBOOK

A student handbook is available to provide additional information of interest. The handbook describes student activities and organizations and also lists the rules and regulations.

STUDENT CONDUCT

Each individual is considered a responsible adult, and it is assumed that men and women of college age will maintain standards of conduct appropriate to membership in the college community. Emphasis is placed on standards of student conduct rather than on limits or restrictions of students. The College refrains from imposing a rigid code of discipline but reserves the right to take disciplinary action compatible with its own best interest when it is clearly necessary.

Failure to meet standards of conduct acceptable to the College may result in disciplinary probation, suspension, or dismissal, depending upon the nature of the offense. A disciplinary probation 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 the admissions committee before readmission can be granted.

The Virginia Community College System guarantees to each student the privilege of exercising his rights of citizenship under the Constitution of the United States without fear of prejudice. Special care is taken to assure due process and to spell out clearly defined routes of appeal when a student feels his rights have been violated.

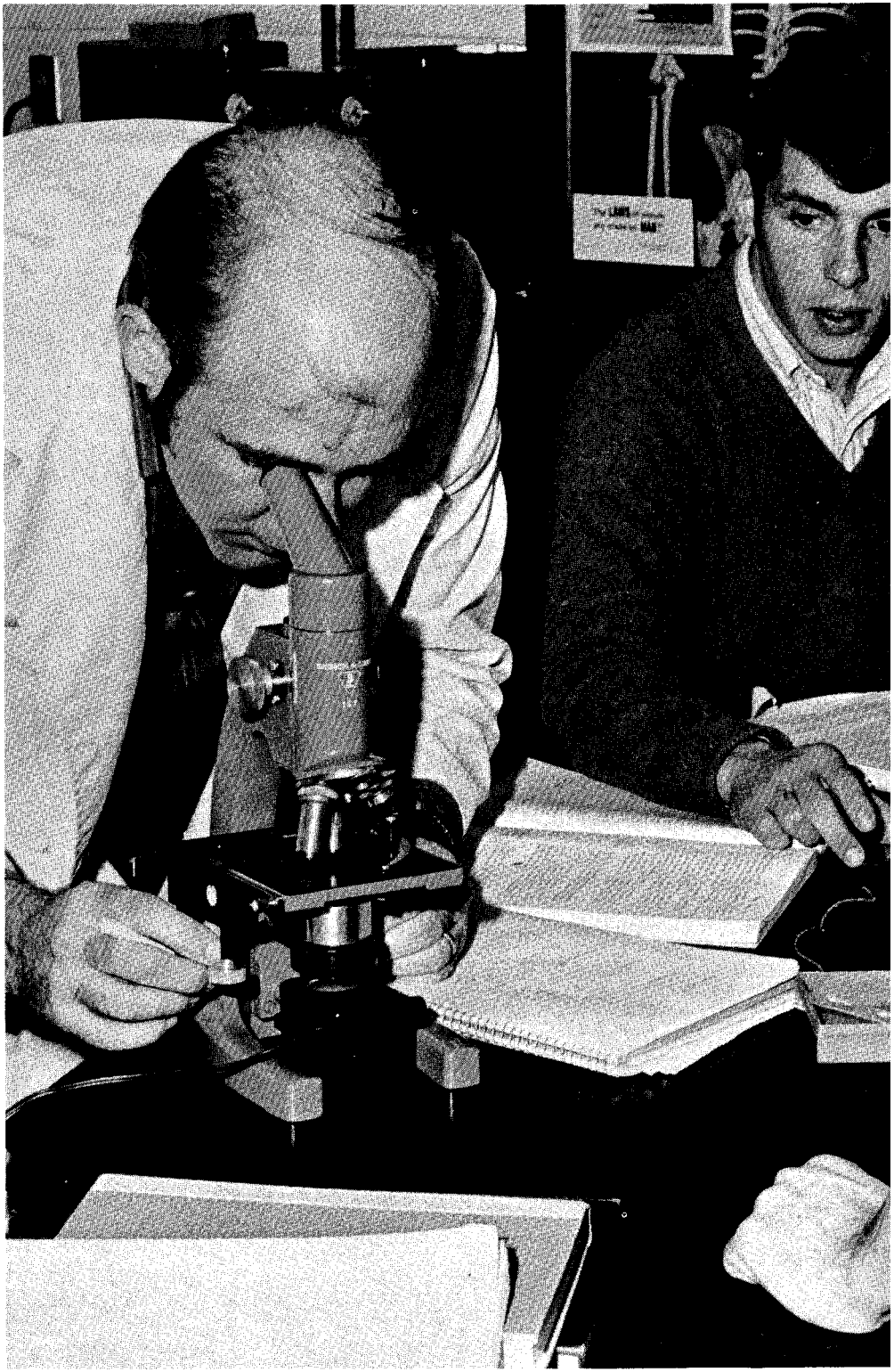
Basically, students of the Community Colleges are expected to conduct themselves as ladies and gentlemen, both within the Colleges and

elsewhere. For student conduct which tends to discredit or injure the College, the State Chancellor is authorized by the State Board for Community Colleges to impose such penalty as he may deem appropriate, including expulsion from the College. This authority has been delegated by the Chancellor to the Administration of each Community College, subject to review by the Chancellor or his delegated representative. When the penalty for misconduct is suspension or dismissal the student may appeal the decision to the Northern Virginia Community College Board. Final appeal may be made to the State Board for Community Colleges.

Any student found guilty of participating in or inciting a riot or an unauthorized or disorderly assembly is subject to suspension or dismissal.

To prevent misunderstanding, the Chancellor has issued the following clarification:

1. When an assembly on campus of students not authorized by the College has been requested to disband by the President or other designated officer, those refusing to comply will be subject to immediate suspension and/or dismissal and legal action.
2. In the event that an assembly appears to be a demonstration related to grievances, those present should be advised that orderly procedure for the hearing of grievances are available and must be adhered to. College officials will not negotiate with such groups under condition of duress, such as unauthorized occupation of College property.
3. Any unauthorized occupation of buildings and/or College property constitutes reason for immediate suspension and/or dismissal from the institution of students who may be involved. Furthermore, legal action will be brought against any student involved in acts on Community College property that are prohibited by law.
4. Any person currently not a student is not allowed to participate in demonstrations on the campus.



CURRICULUMS OF STUDY

• UNIVERSITY PARALLEL-COLLEGE TRANSFER CURRICULUMS

Associate in Arts Degree

Liberal Arts

Associate in Science Degree

Business Administration
Pre-Engineering
Pre-Teacher Education
Science

• OCCUPATIONAL AND TECHNICAL CURRICULUMS

Associate in Applied Science Degree

Accounting
Architectural Technology
Automotive Technology (Diagnostician)
Broadcast Engineering Technology
Business Management
Civil Technology
Commercial Art
Data Processing Technology (Computer Programming)
Electronics Technology
Fire Science
Hotel, Restaurant, and Institutional Management
Mechanical Technology
Merchandising Management
Nursing
Police Science
Real Estate Management
Secretarial Science

Diploma

Automotive Technology (Automotive Mechanics)
Dental Laboratory Technology
Medical Records Technology

Certificate

Automotive Diagnosis and Tune-up
Corrections

Data Processing Technology (Computer Operations)
Dental Assisting
Engineering Drafting
Fire Science
Hotel, Restaurant, and Institutional Management
Police Science

- **FOUNDATION (PREPARATORY) PROGRAMS**
- **PRE-TECHNICAL CURRICULUM**
- **COMMUNITY SERVICES**
- **SPECIAL TRAINING PROGRAMS**

UNIVERSITY PARALLEL-COLLEGE TRANSFER CURRICULUMS

General: The student in this program pursues one of five curriculums:

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 science, or those whose major field of study has not yet been determined; or
2. One of four curriculums which lead to the Associate in Science degree:
   a. Business Administration
   b. That designated "Science," for those contemplating a major field of study in the natural or physical science or mathematics (e.g., pre-medical, pre-dental, biology, chemistry, mathematics, physics); or
   c. That designated "Pre-Engineering," for those intending to transfer to a four-year engineering school.
   d. That designated "Pre-Teacher Education" for those intending to transfer to a four-year college or university for a degree in Teacher Education

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 the approval 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.

MINIMUM REQUIREMENTS FOR ASSOCIATE DEGREES

Associate in Arts (A.A.)

Associate in Science (A.S.)

Associate in Applied Science (A.A.S.)

	Number of Credits (Quarter Hours)		
Humanities	*A.A.*[a]	*A.S.*[a]	*A.A.S.*
English Composition	9	6-9	6
Literature (English, American, or World)	6-9	3-6	—
Speech	0-3 } 9	0-3 } 12	3
Art, Drama, Music, and/or Philosophy	3-6	0-3	—
Foreign Language	12-24[b]	—	—
Social Sciences			
History (American or Western Civilization)	9	3-9	—
Economics	0-9	0-9	3
Government	0-9 } 9[c]	0-9 } 9[c]	3
Psychology or Human Relations	0-9	0-9	3
Natural Sciences and Mathematics			
Natural Science (Laboratory) (Biology, Chemistry, Geology, Physics)	12-24	12-15	—
Mathematics	9[e]	9[e]	—
Health, Physical Education, or Recreation	3-6	3-6	3-6
Orientation	1	1	1
Electives and other Major Field Requirements	3-21[a]	57[a]	75[d]
Minimum Total Number of Credits for Degree	97	97	97

[a] Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and further to consult with the Counseling Department of the Community College in planning his program and selecting his electives.

[b] Students who have successfully completed two years of a foreign language in high school may petition for advanced placement of the sophomore level course of this foreign language.

[c] In addition to the history requirements, the student shall complete a total of nine quarter-hours credit in the social sciences which may include economics, government, psychology and/or sociology.

[d] The Associate in Applied Science degree programs generally should be organized approximately as follows:

Specialized courses in major field	50%
Supporting technical and theory courses in related fields	25-30%
General education courses	20-25%

[e] Mathematics courses should be selected from the following sequences: Math 181-182-183, Math 161-162-163-271-272-273, or Math 141-142-143-241-242-243.

ARTS AND SCIENCES RELATED CURRICULUMS

- **Associate in Arts Degree**
  Liberal Arts

- **Associate in Science Degree**
  Pre-Teacher Education
  Science

- **Associate in Applied Science Degree**
  Commercial Art

COMMERCIAL ART

(Eastern Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: The Associate in Applied Science Degree program in Commercial Art is designed primarily for persons who seek full-time employment in the commercial art fields (such as advertising, illustrating, printing, and packaging) immediately upon completion of the community college program. Several adjustments in the curriculum are possible for students who wish to transfer to the baccalaureate degree program in commercial art at a four-year college or university.

Occupational Objectives:

Commercial Artist
Designer
Illustrator
Photographer

Admission Requirements: In addition to the admission requirements established for the college (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Applied Science Degree program in Commercial Art requires proficiency in high school English and a satisfactory aptitude for drawing. Applicants may be required to submit for approval several sample drawings before final admission is granted. Students who are not proficient in English will be required to correct their deficiencies in the Foundation Program before entering the Commercial Art curriculum.

Program Requirements: Approximately one-half of the curriculum will include courses in commercial art with the remaining courses in related areas, general concepts and practical applications needed for future success in commercial art work. Each student is urged to consult with the Counseling Department and his faculty advisor in planning his program and selecting his electives. Upon satisfactory completion of the six-quarter program listed on the next page, the graduate will be awarded the Associate in Applied Science Degree in Commercial Art.

COMMERCIAL ART

Associate in Applied Science Degree

Course Number		Course Title	Course Credits
		FIRST QUARTER	
ARTS	104	Introduction to the Arts I	3
ARTS	111	History and Appreciation of Art I	3
ARTS	121	Theory and Practice of Drawing I	3
ENGL	101	Communication Skills I	3
GOVT		Government	3
GENL	100	Orientation	1
		Total	16
		SECOND QUARTER	
ARTS	105	Introduction to the Arts II (or Elective)	3
ARTS	112	History and Appreciation of Art II	3
ARTS	122	Theory and Practice of Drawing II	3
ARTS	166	Fundamentals of Lettering I	3
ENGL	102	Communication Skills II	3
PHED	100	Fundamentals of Physical Activity	1
		Total	16
		THIRD QUARTER	
ARTS	113	History and Appreciation of Arts III	3
ARTS	123	Theory and Practice of Drawing III	3
ARTS	186	Fundamentals of Photography	5
PSYC		Psychology	3
		English or Speech	3
		Total	17
		FOURTH QUARTER	
ARTS	221	Advanced Drawing I (or Elective)	2
ARTS	231	Theory and Practice of Painting I	3
ARTS	261	Advertising Design I	3
ARTS	271	Graphic Techniques I (or Elective)	3
ARTS	281	Photography Workshop I (or Elective)	1
ECON		Economics	3
		Health, Phys. Ed., or Recreation	1
		Total	16

Course Number		Course Title	Course Credits
		FIFTH QUARTER	
ARTS	222	Advanced Drawing II (or Elective)	2
ARTS	232	Theory and Practice of Painting II	3
ARTS	262	Advertising Design II	3
ARTS	272	Graphic Techniques II (or Elective)	3
ARTS	282	Photography Workshop II (or Elective)	1
		Health, Phys. Ed., or Recreation	1
		Elective	3
		Total	16
		SIXTH QUARTER	
ARTS	223	Advanced Drawing III (or Elective)	2
ARTS	233	Theory and Practice of Painting III	3
ARTS	263	Advertising Design III	3
ARTS	273	Graphic Techniques III (or Elective)	3
ARTS	283	Photography Workshop III (or Elective)	1
ARTS	298	Seminar and Project	1-5
		Elective	2
		Total	15-19
		Total Minimum Credits for the Commercial Art Degree	97

LIBERAL ARTS

(Central and Eastern Campus)

Degree: Associate in Arts

Length: Six-quarter (two-year) program

Purpose: The Associate in Arts degree program in Liberal Arts is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program, usually the Bachelor of Arts degree, in the liberal arts or social science. Students in this program may wish to major in the following fields:

Economics
Education
English
Foreign Language
Government (Political Science)
History
Humanities
Journalism
Library Science
Literature
Philosophy
Pre-Law
Psychology
Sociology
Teacher Education

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Arts degree

program in Liberal Arts requires the satisfactory completion of the following high school units or equivalent as a minimum:

4 units of English
2 units* of mathematics (algebra and geometry)
1 unit of laboratory science
1 unit of history

The remaining units are elective subjects, but at least two units of a foreign language are recommended. Students who do not meet these requirements may be permitted to correct their deficiencies in the Preparatory (Foundation) Program before entering the Liberal Arts curriculum.

Program Requirements: This curriculum consists of courses in the humanities, including a foreign language, natural sciences, and social sciences usually required in the first two years of a baccalaureate liberal arts curriculum. A minimum of 97 credits is required for the Liberal Arts major in the Associate in Arts degree program. *Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the Counseling Department of the Community College in planning his program and selecting his electives.* In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and courses to the first two years of the program at the four-year college or university. Upon satisfactory completion of the six-quarter program described the student will be awarded the Associate in Arts degree with a major in Liberal Arts.

**Students are urged to check the mathematics requirements of the four-year college or university to which they plan to transfer to determine the proper mathematics courses to be taken in the community college.*

LIBERAL ARTS

Associate in Arts Degree Program

Course Number	Course Title	Course Credits
	FIRST QUARTER	
ENGL 111	English Composition I	3
GENL 100	Orientation	1
HIST	Amer. History (or Hist. of West. Civ.)	3
MATH	Mathematics I (MATH 161 or 181)	3
	Foreign Language*	4
	Natural Science**	4
	Total	18
	SECOND QUARTER	
ENGL 112	English Composition II	3
HIST	Amer. History (or Hist. of West. Civ.)	3
MATH	Mathematics II (MATH 162 or 182)	3
	Foreign Language*	4
	Natural Science**	4
	Total	17
	THIRD QUARTER	
ENGL 113	English Composition III	3
HIST	Amer. History (or Hist. of West. Civ.)	3
MATH	Mathematics III (MATH 163 or 183)	3
	Foreign Language*	4
	Natural Science**	4
PHED 100	Fundamentals of Physical Activity	1
	Total	18

*Students who have satisfactorily completed two years of a foreign language in high school may petition for advanced placement into the second year of the foreign language at the College.

** Natural Science may either be BIOL 101-102-103 or CHEM 101-102-103 or PHYS 101-102-103.

Course Number	Course Title	Course Credits
	FOURTH QUARTER	
ENGL	English, American or World Literature I	3
GOVT	Government***	3
	Foreign Language*	4
	Humanities Elective****	3
	Elective	3
	Total	16
	FIFTH QUARTER	
ENGL	English, American or World Literature II	3
PSYC	Psychology***	3
	Foreign Language*	4
PHED	Phys. Ed. Elective	1
	Humanities****, Social Science*** or Speech	3
	Elective	3
	Total	17
	SIXTH QUARTER	
ECON	Economics***	3
ENGL	English, American or World Literature III	3
	Foreign Language*	4
	Humanities****, Social Science*** or Speech	3
PHED	Phys. Ed. Elective	1
	Elective	3
	Total	17
	Total Minimum Credits for the Liberal Arts Degree	97

* Students who have satisfactorily completed two years of a foreign language in high school may petition for advanced placement into the second year of the foreign language at the College.

*** Students are required to take 9 credits in a Social Science, which may be selected from the following:

ECON 211-212-213 or 214-215; 241-242-243.
GOVT 187-188 or 281-282-283 or 284-285.
HIST 101-102-103; 111-112-113; 221-222-223 or 224-225; 251-252-253; 281-282-283.
PSYC 201-202-203 or 204-205; 230; 246.
SOCI 101-102-103 or 104-105; 237: 244; 247.
SOSC 101-102-103; 121-122-123.

The Social Science course selected should be one required by the four-year college or uni-university to which the student plans to transfer.

**** A humanities elective may be chosen from the offerings in art, speech and drama, philosophy, music, English or humanities.

PRE-TEACHER EDUCATION

(Central and Eastern Campus)

Degree: Associate in Science

Length: Six-quarter (two-year) program

Purpose: With the rapid development and emphasis on education in Virginia there is a great demand for qualified teachers and other educational specialists to help provide leadership for the schools.

The Associate in Science degree program in Pre-Teacher Education is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Teacher Education.

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Science degree program in Pre-Teacher Education requires the satisfactory completion of the following high school units or equivalent as a minimum:

4 units of English

2 units of mathematics (algebra and geometry)*

1 unit of laboratory science

1 unit of social studies

Students who do not meet these requirements may be permitted to correct their deficiencies in the Preparatory (Foundation) Program before entering the Pre-Teacher Education curriculum.

Program Requirements: The world of modern education demands that its teachers and staff be knowledgeable both in the subjects they plan to teach and in general education. Thus, this curriculum requires courses in the humanities, natural sciences, mathematics, social sciences, and health and physical education in addition to general psychology usually required in the first two years of a baccalaureate teacher education curriculum. The Pre-Teacher Education curriculum is designed to lead the student toward meeting the state teacher certification requirements for a Collegiate Professional Certificate. Eligible students

**Students are urged to check the mathematics requirements of the four-year college or university to which they plan to transfer to determine the proper mathematics course to be taken in the community college.*

may also qualify for the State Teachers' Scholarships. *Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and also, to consult with the Counseling Department of the Community College in planning his program and selecting his electives.* In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and courses to the first two years of the program at the four-year college or university. Upon satisfactory completion of the six-quarter program listed below, the student will be awarded the Associate in Science degree with a major in Pre-Teacher Education.

PRE-TEACHER EDUCATION

Associate in Science Degree

Course Number	Course Title	Course Credits
	FIRST QUARTER	
ENGL 111	English Composition I	3
GENL 100	Orientation	1
HIST 111	American History I (or HIST 101)	3
MATH	Mathematics (MATH 161 or 181)	3
	Natural Science (lab)**	4
	Elective	3
	Total	17
	SECOND QUARTER	
ENGL 112	English Composition II	3
HIST 112	American History II (or HIST 102)	3
MATH	Mathematics (MATH 162 or 182)	3
	Natural Science (lab)**	4
	Elective	3
	Total	16
	THIRD QUARTER	
ENGL 113	English Composition III	3
HIST 113	American History III (or HIST 103)	3
MATH	Mathematics (MATH 163 or 183)	3
	Natural Science (lab)**	4
PHED 100	Fundamentals of Physical Activity	1
	Elective	3
	Total	17

** Natural Science may either be BIOL 101-102-103; CHEM 101-102-103; or PHYS 101-102-103.

Course Number		Course Title	Course Credits
		FOURTH QUARTER	
ENGL		American, English, or World Literature I	3
GOVT		Government*	3-5
PSYC	201	General Psychology I (or PSYC 231)	3
		Humanities Elective	3
		Elective	3
		Total	15-17
		FIFTH QUARTER	
ENGL		American, English, or World Literature II	3
ECON		Economics*	3
PSYC	202	General Psychology II (or PSYC 232)	3
		Phys. Ed. Elective	1
		Electives	3-6
		Total	13-16
		SIXTH QUARTER	
ENGL		Literature (or Elective)	3
PSYC	203	Gen. Psych. III (or PSYC 233)	3
SOCI		Sociology (or Elective)*	3
SPDR	130	Principles of Public Speaking (or Elective)	5
PHED		Phys. Ed. Elective	1
		Elective	3
		Total	18
		Total Minium Credits for a Pre-Teacher Education Degree	97

SCIENCE

(Central and Eastern Campus)

Degree: Associate in Science

Length: Six-quarter (two-year) program

Purpose: With the tremendous emphasis on scientific discoveries and technological developments in today's society, there is a great demand for scientists and scientifically oriented persons in business, government, industry, and the professions.

The Associate in Science degree program with a major in Science is designed for persons who are interested in a pre-professional or scien-

* Students are required to take 9 credits in a social science, which may be selected from the following:

ECON 211-212-213 or 214-215; 241-242-243.
GOVT 187-188 or 281-282-283 or 284-285.
HIST 101-102-103; 111-112-113; 221-222-223 or 224-225; 251-252-253; 281-282-283.
PSYC 201-202-203 or 204-205; 230; 246.
SOCI 101-102-103 or 104-105; 237; 244; 247.
SOSC 101-102-103; 121-122-123.

The Social Science course selected should be one required by the four-year college or university to which the student plans to transfer.

tific program and who plan to transfer to a four-year college or university to complete a baccalaureate degree program with a major in one of the following fields:

Agriculture	Geology	Physics
Biology	Home Economics	Physical Therapy
Chemistry	Mathematics	Pharmacy
Dentistry	Pre-Medicine	Science Education
Forestry	Nursing	

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Science degree program with a major in science requires the satisfactory completion of the following high school units or equivalent as a minimum:

4 units of English
2 units of algebra
1 unit of geometry
1 unit of laboratory science
1 unit of social studies

Students who do not meet these requirements may be permitted to correct their deficiencies in the Preparatory (Foundation) Program before entering this science curriculum.

Program Requirements: Although the major emphasis in this curriculum is on mathematics, the biological sciences, and the physical sciences, the curriculum also includes courses in the humanities and social sciences. Numerous electives are provided so that the student can select the appropriate courses for his pre-professional or scientific program as required in the first two years of the four-year college or university. *Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the Counseling Department of the Community College in planning his program and selecting his electives.* In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and courses to the first two years of the program at the four-year college or university. Upon satisfactory completion of the six-quarter program listed on the next page, the student will be awarded the Associate in Science degree with a major in science.

SCIENCE

Associate in Science Degree Program

Course Number	Course Title	Course Credits
	FIRST QUARTER	
ENGL 111	English Composition I	3
GENL 100	Orientation	1
HIST 101	Hist. of West Civ. (or HIST 111)	3
MATH 161	College Mathematics (or MATH 141)	3-5
CHEM 111	Gen. Inorganic Chemistry I.	4
	Total	14-16
	SECOND QUARTER	
ENGL 112	English Composition II	3
HIST 102	Hist. of West. Civ. (or HIST 112)	3
MATH 162	College Mathematics (or MATH 142)	3-5
CHEM 112	Gen. Inorganic Chemistry II.	4
PHED 100	Fundamentals of Physical Activity	1
	Total	14-16
	THIRD QUARTER	
ENGL 113	English Composition III	3
HIST 103	Hist. of West. Civ. (or HIST 113)	3
CHEM 113	Gen. Inorganic Chemistry III	4
	Elective	2
MATH 163	College Mathematics (or MATH 143)	3-5
	Total	15-17
	FOURTH QUARTER	
ENGL	American, English, or World Literature I.	3
ECON	Economics*	3
GOVT	Government*	3
MATH 271	Calculus I (or MATH 241)	4
	Science with Laboratory**	4
	Phys. Ed. Elective.	1
	Total	18

* Students are required to take 9 credits in a social science, which may be selected from the following:

ECON 211-212-213 or 214-215; 241-242-243.
GOVT 187-188 or 281-282-283 or 284-285.
HIST 101-102-103; 111-112-113; 221-222-223 or 224-225; 251-252-253; 281-282-283.
PSYC 201-202-203 or 204-205; 230; 246.
SOCI 101-102-103 or 104-105; 237; 244; 247.
SOSC 101-102-103; 121-122-123.

The Social Science course selected should be the one required by the four-year college or university to which the students plan to transfer.

** Laboratory Science may be either CHEM 241-242-243; or PHYS 221-222-223.

Course Number	Course Title	Course Credits
	FIFTH QUARTER	
ENGL	American, English, or World Literature II	3
MATH 272	Calculus II (or MATH 242)	4
PSYC	Psychology*	3
	Science with Laboratory**	4
	Elective	3-4
	Total	17-18
	SIXTH QUARTER	
ENGL	Literature	3
MATH 273	Calculus III (or MATH 243)	3
	Science with Laboratory**	4
	Psychology or Economics Elective	3
	Elective	3-4
	Physical Education Elective	1
	Total	17-18
	Total Minimum Credits for the Associate in Science Degree.	97

* Students are required to take 9 credits in a social science, which may be selected from the following:

ECON 211-212-213 or 214-215; 241-242-243.
GOVT 187-188 or 281-282-283 or 284-285.
HIST 101-102-103; 111-112-113; 221-222-223 or 224-225; 251-252-253; 281-282-283.
PSYC 201-202-203 or 204-205; 230; 246.
SOCI 101-102-103 or 104-105; 237; 244; 247.
SOSC 101-102-103; 121-122-123.

The Social Science course selected should be the one required by the four-year college or university to which the students plan to transfer.

** Laboratory Science may be either CHEM 241-242-243; or PHYS 221-222-223.

BUSINESS RELATED CURRICULUMS

- **Associate in Science**

  Business Administration

- **Associate in Applied Science**

  Accounting
  Business Management
  Data Processing Technology (Computer Programming)
  Merchandising Management
  Real Estate Management
  Secretarial Science (Executive and Legal Secretary)

- **Certificate**

  Data Processing (Computer Operations)

ACCOUNTING

(Central and Eastern Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: With the rapid development of business and industry in Virginia, there is a great demand for qualified personnel to assist business management in this economic growth. The Associate in Applied Science Degree curriculum in Accounting is designed primarily for persons who seek full-time employment in the accounting field immediately upon completion of the community college curriculum. Both persons who are seeking their first employment in an accounting position and those presently in accounting who are seeking a promotion may benefit from this curriculum.

Occupational Objectives:

Accounting Trainee
Accounting Technician
Junior Accountant
Accountant

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Applied Science degree program in Accounting requires proficiency in high school English and mathematics. Students who are not proficient in English and mathematics will be required to correct their deficiencies in the Foundation Program.

Program Requirements: The first three quarters (first year) of the Associate in Applied Science Degree curriculum in Accounting are similar to other curriculums in business. In the second year each student will pursue his specialty in Accounting. The curriculum will include technical courses in accounting, courses in related areas, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in accounting. Each student is urged to consult with the Counseling Department and his faculty advisor in planning his program and selecting his electives. Courses within this curriculum may be applied to a four-year program at the discretion of the admitting institution. Upon satisfactory completion of the six-quarter curriculum listed on the next page, the graduate will be awarded the Associate in Applied Science Degree in Accounting.

ACCOUNTING

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
BUAD	100	Introduction to Business	3
ACCT	111	Accounting I	4
MATH	151	or BUAD 101 Business Mathematics I	3
ENGL	101	Communication Skills I	3
ECON	160	American Economics	3
GENL	100	Orientation	1
		Total	17
		SECOND QUARTER	
BUAD	164	Principles of Business Management I	3
ACCT	112	Accounting II	4
MATH	152	or BUAD 102 Business Mathematics	3
ENGL	102	Communciation Skills II	3
SECR	111	Typewriting I*	3
PHED	100	Fundamentals of Physical Activity	1
		Total	17
		THIRD QUARTER	
BUAD	165	Principles of Business Management II	3
ACCT	113	Accounting III	4
MATH	153	or BUAD 103 Business Mathematics III	3
SPDR	136	Speech Communications or ENGL 180 Business English	3
GOVT	180	American Constitutional Government	3
		Total	16
		FOURTH QUARTER	
ACCT	221	Intermediate Accounting I	4
BUAD	241	Business Law I	3
BUAD	254	Applied Business Statistics I	3
DAPR	106	Principles of Data Processing	3
PSYC	110	Principles of Applied Psychology	3
PHED		Phys. Ed. Elective	1
		Total	17

*Waiver may be granted for the student who has satisfactorily completed one year of typing in high school. Students who have had training in typing may also petition for credit by examination.

Course Number		Course Title	Course Credits
		FIFTH QUARTER	
ACCT	222	Intermediate Accounting II	4
ACCT	234	Cost Accounting I	3
ACCT	244	Business Taxes I	3
BUAD	242	Business Law II	3
BUAD	246	Business Finance	3
		Total	16
		SIXTH QUARTER	
ACCT	223	Intermediate Accounting III	4
ACCT	229	Auditing (or Business elective)	3
ACCT	245	Business Taxes II	3
ACCT	298	Seminar and Project	3
PHED		Phys. Ed. Elective	1
		Total	14
		Total Minimum Credits for the Accounting Degree	97

BUSINESS ADMINISTRATION

(Central and Eastern Campus)

Degree: Associate in Science

Length: Six-quarter (two-year) program

Purpose: With the rapid development in business and industry in Virginia, there is a great demand for qualified personnel in business administration to help provide leadership for this economic growth.

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

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Science degree program in Business Administration requires the satisfactory completion of the following high school units or equivalent as a minimum:

4 units of English
2 units of mathematics (algebra and geometry)
1 unit of laboratory science
1 unit of social studies

Students who do not meet these requirements may be permitted to correct their deficiencies in the Preparatory (Foundation) Program before entering the Business Administration curriculum.

Program Requirements: The modern business world demands that its staff be knowledgeable in fields over and beyond the every-day business technology. Thus, this curriculum requires courses in the humanities, natural sciences, and social sciences in addition to the principles of economics and principles of accounting usually required in the first two years of a baccalaureate business administration curriculum. *Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the Counseling Department of the Community College in planning his program and selecting his electives.* In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college which is comparable in length and courses to the first two years of the program at the four-year college or university. Upon completion of the six-quarter program described, the graduate will be awarded the Associate in Science degree with a major in Business Administration.

BUSINESS ADMINISTRATION

Associate in Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
ENGL	111	English Composition I	3
BIOL	101	General Biology I	4
MATH	181	General College Mathematics I (or MATH 161)	3
HIST	101	History of Western Civilization I	3
GENL	100	Orientation	1
		Elective	3
		Total	17
		SECOND QUARTER	
ENGL	112	English Composition II	3
BIOL	102	General Biology II	4
MATH	182	General College Mathematics II (or MATH 162)	3
HIST	102	History of Western Civilization II	3
		Elective	3
PHED	100	Fundamentals of Physical Activity	1
		Total	17

Course Number		Course Title	Course Credits
		THIRD QUARTER	
ENGL	113	English Composition III	3
BIOL	103	General Biology III	4
MATH	183	General College Mathematics III (or MATH 163)	3
HIST	103	History of Western Civilization III	3
		Elective	3
		Total	16
		FOURTH QUARTER	
ENGL		American, English, or World Literature I	3
ECON	211	Principles of Economics I	3
ACCT	211	Principles of Accounting I	3
		Elective	3
		Elective	3
		Total	15
		FIFTH QUARTER	
ENGL		American, English, or World Literature II	3
ECON	212	Principles of Economics II	3
ACCT	212	Principles of Accounting II	3
		Elective	3
		Elective	3
		Phys. Ed. Elective	1
		Total	16
		SIXTH QUARTER	
ENGL		American, English, or World Literature III	3
ECON	213	Principles of Economics III	3
ACCT	213	Principles of Accounting III	3
		Elective	3
		Elective	3
PHED		Phys. Ed. Elective	1
		Total	16
		Total Minimum Credits for the Business Administration Degree	97

BUSINESS MANAGEMENT

(Central and Eastern Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: With the rapid development of business and industry in Virginia, there is a great demand for qualified personnel to assist business management in this economic growth. The Associate in Applied Science degree program in Business Management is designed primarily for persons who seek full-time employment in business management immediately upon completion of the community college program. Both persons who are seeking their first employment in a managerial position or those presently in management who are seeking a promotion may benefit from this program.

Occupational Objectives:

Administrative Assistant	Management Trainee
Manager of Small Business	Department Head
Office Manager	Branch Manager
Supervisor	

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Applied Science degree program in Business Management requires proficiency in high school English and mathematics. Students who are not proficient will be required to correct their deficiencies in the Preparatory (Foundation) Program before entering the Business Management curriculum.

Program Requirements: The first three quarters (first year) of the Associate in Applied Science Degree curriculum in Business Management are similar to other curriculums in business. However, in the second year each student will pursue his specialty in business management. The curriculum will include technical courses in business management, courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in business management. Each student is urged to consult with the Counseling Office and his faculty advisor in planning his program and selecting his electives. Courses within this curriculum may be applied to a four-year program at the discretion of the admitting institution. Upon completion of the six-quarter program listed on the next page, the graduate will be awarded the Associate in Applied Science Degree in Business Management.

BUSINESS MANAGEMENT

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
BUAD	100	Introduction to Business	3
ACCT	111	Accounting I	4
MATH	151	or BUAD 101 Business Mathematics I	3
ENGL	101	Communication Skills I	3
ECON	160	American Economics	3
GENL	100	Orientation	1
		Total	17
		SECOND QUARTER	
BUAD	164	Principles of Business Management I	3
ACCT	112	Accounting II	4
MATH	152	or BUAD 102 Business Mathematics II	3
ENGL	102	Communication Skills II	3
SECR	111	Typewriting I*	3
PHED	100	Fundamentals of Physical Activity	1
		Total	17
		THIRD QUARTER	
BUAD	165	Principles of Business Management II	3
ACCT	113	Accounting III	4
MATH	153	or BUAD 103 Business Mathematics III	3
SPDR	136	Speech Communications or ENGL 180 Business English	3
GOVT	180	American Constitutional Government	3
		Total	16
		FOURTH QUARTER	
BUAD	241	Business Law I	3
BUAD	254	Applied Business Statistics I	3
DAPR	106	Principles of Data Processing	3
PSYC	110	Principles of Applied Psychology	3
		Elective–BUAD, DAPR, ACCT, ECON or MKTG	3
PHED		Phys. Ed. Elective	1
		Total	16

*Waiver may be granted for the student who has satisfactorily completed one year of typing in high school. Students who have had training in typing may also petition for credit by examination.

Course Number		Course Title	Course Credits
		FIFTH QUARTER	
BUAD	242	Business Law II	3
BUAD	246	Business Finance	3
BUAD	269	Purchasing and Materials Management	3
BUAD	276	Personnel Management	3
ACCT	244	Business Taxes I	3
		Total	15
		SIXTH QUARTER	
BUAD	110	Human Relations and Leadership Training	3
BUAD	243	Business Law III (or elective)	3
BUAD	298	Seminar and Project	3
ACCT	245	Business Taxes II	3
PHED		Phys. Ed. Elective	1
		Elective–BUAD, DAPR, ACCT, ECON or MKTG	3
		Total	16
		Total Minimum Credits for the Business Management Degree	97

DATA PROCESSING TECHNOLOGY (COMPUTER PROGRAMMING)

(Central and Eastern Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: The Data Processing Technology Curriculum with specialization in computer programming is designed to provide the kinds of education and training that both industry and the computer manufacturers agree are needed. Each student will be at the same time educated and trained—educated to know what must be done without having to be told, and trained always to maintain the highest standards of performance. Education of the student will not be limited to the use of data processing devices and equipment, but it will include that formal instruction which will give him an understanding of the environment in which he will be working. The Associate in Applied Science degree curriculum in Data Processing Technology in Computer Programming is designed to prepare persons for full-time employment immediately upon completion of the community college program.

Occupational Objectives:

Computer Operator
Computer Programmer
Data Processing Supervisor
Junior Systems Analyst

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Applied Science degree program in Data Processing Technology requires a minimum of one unit of high school algebra or the equivalent and proficiency in high school English. Students who are not proficient in these subject areas will be required to correct their deficiencies in the Preparatory (Foundation) Program before entering the Data Processing Curriculum.

Program Requirements: The curriculum will include technical courses in data processing, courses in related subjects, general education, and electives. Instruction will include both theoretical concepts and practical applications needed for future success in Data Processing Technology. Each student is urged to consult with the Counseling Department and his faculty advisor in planning his program and selecting his electives. Upon satisfactory completion of the six-quarter curriculum, with an overall 2.0 grade point average for all DAPR courses attempted, the student will be awarded the Associate in Applied Science degree with a major in Data Processing Technology and specialization in Computer Programming.

DATA PROCESSING TECHNOLOGY (COMPUTER PROGRAMMING)

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
BUAD	100	Introduction to Business	3
ACCT	111	Accounting I	4
DAPR	106	Principles of Data Processing	3
ENGL	101	Communication Skills I	3
MATH	101	DAPR Math I (or MATH elective)	3
GENL	100	Orientation	1
PHED	100	Fundamentals of Physical Activity	1
		Total	18
		SECOND QUARTER	
ACCT	112	Accounting II (or Elective)	4
DAPR	130	Introduction to Computer Operations	3
DAPR	144	Computer Programming (Computer Concepts I)	3
ENGL	102	Communications Skills II	3
MATH	102	DAPR Math II (or MATH elective)	3
		Total	16
		THIRD QUARTER	
ACCT	113	Accounting III (or elective)	4
BUAD	164	Principles of Business Management I	3
DAPR	147	Computer Programming (COBOL)	3
PSYC	110	Applied Psychology or Human Relations	3
SPDR	136	Speech Communications	3
		Total	16
		FOURTH QUARTER	
BUAD	254	Applied Business Statistics I	3
DAPR	256	Computer Programming (Advanced COBOL)	3
DAPR	281	Systems Analysis I	3
ECON	160	American Economics	3
ENGL	180	Business English (or elective)	3
PHED		Phys. Ed. Elective	1
		Total	16
		FIFTH QUARTER	
BUAD	255	Applied Business Statistics II	3
DAPR	282	Systems Analysis II	3
DAPR		Computer Programming Elective	4
DAPR	286	Computer Programming Applications	4
		Elective	1-3
		Total	15-17

Course Number	Course Title	Course Credits
	SIXTH QUARTER	
DAPR	Computer Programming Elective	4
GOVT 180	American Constitutional Government	3
DAPR 298	Seminar & Project in Data Processing	3-5
	Elective	3-6
PHED	Phys. Ed. Elective	1
	Total	14-19
	Total Minimum Credits for a Data Processing Technology Degree	97

DATA PROCESSING TECHNOLOGY (COMPUTER OPERATIONS)

(Eastern Campus)

Degree: Certificate in Computer Operations.

Length: Three-quarter (one-year) program.

Purpose: With the increasing use of digital computers by business and industry in Virginia, there is an increasing demand for qualified personnel to operate digital computer data processing systems and peripheral equipment. The certificate curriculum in Computer Operation is designed primarily for persons who seek full-time employment in the computer operations field immediately after completion of the community college curriculum.

Occupational Objectives:

Computer Operator
Computer Operator, Trainee
Peripheral Equipment Operator

Admission Requirements: In addition to the admission requirements established for the college (as listed in the section on admission requirements in Part II of this catalog), entry into the Certificate in Computer Operations Program requires a minimum of one unit of high school algebra or the equivalent and proficiency in high school English. Students who are not proficient in these areas will be required to correct their deficiency in the Foundation Program before entering the Computer Operations curriculum.

Program Requirements: The curriculum is designed to graduate an individual who has been trained not only in the technical operations of a computer system but who also has received training in business

sciences, digital computer programming, and general education. This expanded curriculum will provide the graduate with knowledge in related areas which will be beneficial as he advances in the computer operations career area. Courses within this curriculum may be applied to the two year Associate in Applied Science Degree Program in Computer Programming and to a four-year program at the discretion of the admitting institution. Upon successful completion of the three-quarters curriculum the student will be awarded a Certificate in Computer Operations.

DATA PROCESSING TECHNOLOGY

(Computer Operations)

Certificate in Computer Operations

Course Number	Course Title	Course Credits
	FIRST QUARTER	
DAPR 106	Introduction to Data Processing	3
MATH 101	Data Processing Math	3
BUAD 100	Introduction to Business	3
ENGL 101	Communications Skills I	3
GENL 100	Orientation	1
ACCT 111	Accounting I	4
	Total	17
	SECOND QUARTER	
DAPR 130	Introduction to Computer Operations	3
ECON 160	American Economics or Equivalent	3
ENGL 102	Communications Skills II	3
DAPR 144	Computer Programming (Concepts I)	3
{ PSYC 110 { BUAD 110	Principles of Applied Psychology, Human Relations	3
	Total	15
	THIRD QUARTER	
DAPR 136	Computer Operations	3
DAPR 110	Peripheral Equipment Survey	3
DAPR 137	Computer Operations Management	3
GOVT 180	American Constitutional Government or Equivalent	3
DAPR 147	Computer Programming (COBOL)	3
	Total	15
	Total Minimum Credits for a Certificate in Computer Operations	47

MERCHANDISING MANAGEMENT

(Central and Eastern Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: With the rapid development of business and industry in Virginia, there is a great demand for qualified personnel to assist business management in this economic growth. The Associate in Applied Science Degree curriculum in Merchandising Management is designed primarily for persons who seek full-time employment in merchandising and related occupations immediately upon completion of the community college curriculum. Both persons who are seeking their first employment in merchandising and those who are seeking a promotion may benefit from this curriculum.

Occupational Objectives:

Manager or Manager Trainee	Sales Representative
Assistant Manager	Buyer & Assistant Buyer
Floor Manager	Other Related Merchandising
Department Manager	Occupations

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Applied Science Degree curriculum in Merchandising Management requires proficiency in high school English and mathematics. Students who are not proficient in English and mathematics will be required to correct their deficiencies in the Foundation Program.

Program Requirements: The first three quarters (first year) of the Associate in Applied Science Degree curriculum in Merchandising Management are similar to other curriculums in business. In the second year students will pursue their specialty in the merchandising field. The curriculum will include technical courses in merchandising, courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in merchandising occupations. Each student is urged to consult with the Counseling Department and his faculty advisor in planning his program and selecting his electives. Courses within this curriculum may be applied to a four-year program at the discretion of the admitting institution. Upon satisfactory completion of the six-quarter program listed on the next page, the graduate will be awarded the Associate in Applied Science Degree in Merchandising Management.

MERCHANDISING MANAGEMENT

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
BUAD	100	Introduction to Business	3
ACCT	111	Accounting I	4
MATH	151	or BUAD 101 Business Mathematics I	3
ENGL	101	Communication Skills I	3
ECON	160	American Economics	3
GENL	100	Orientation	1
PHED	100	Fundamentals of Physical Activity	1
		Total	18
		SECOND QUARTER	
BUAD	164	Principles of Business Management I	3
ACCT	112	Accounting II	4
MATH	152	or BUAD 102 Business Mathematics II	3
ENGL	102	Communication Skills II	3
SECR	111	Typewriting I*	3
		Total	16
		THIRD QUARTER	
BUAD	165	Principles of Business Management II	3
ACCT	113	Accounting III	4
MATH	153	or BUAD 103 Business Mathematics III	3
SPDR	136	Speech Communications or ENGL 180 Business English	3
MKTG	100	Principles of Marketing	3
		Total	16
		FOURTH QUARTER	
MKTG	109	Principles of Salesmanship	3
MKTG	136	Retail Organization and Management	3
MKTG	290	Coordinated Internship**	3-5
BUAD	241	Business Law I	3
BUAD	254	Applied Business Statistics I	3
PHED		Phys. Ed. Elective	1
		Total	16-18

*Waiver may be granted for the student who has satisfactorily completed one year of typing in high school. Students who have had training in typing may also petition for credit by examination.

** Students who have completed sufficient and appropriate occupational experience or who may be unable to participate in the cooperative phase of this curriculum may substitute appropriate courses in the fourth, fifth and sixth quarters.

Course Number	Course Title	Course Credits
	FIFTH QUARTER	
MKTG 226	Merchandise Buying and Control	3
MKTG 227	Advertising and Display	4
MKTG 290	Coordinated Internship**	3-5
BUAD 242	Business Law II	3
PSYC 110	Principles of Applied Psychology	3
	Total	16-18
	SIXTH QUARTER	
MKTG 228	Sales Promotion and Customer Relations	3
MKTG 290	Coordinated Internship**	3-5
MKTG 298	Seminar and Project	3
ACCT 244	Business Taxes I	3
GOVT 180	American Constitutional Government	3
PHED	Phys. Ed. Elective	1
	Total	16-18
	Total Minimum Credits for the Merchandising Management Degree	98

REAL ESTATE MANAGEMENT

(Central Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: With the rapid development of business and industry in Virginia, there is a great demand for qualified personnel to assist business management in this economic growth. The Associate in Applied Science Degree in Real Estate Management is designed primarily for persons who seek full-time employment in the special field of real estate immediately upon completion of the community college curriculum. Both persons who are seeking their first employment in a real estate position or those presently in real estate may benefit from this curriculum.

Occupational Objectives:

Real Estate Salesman
Real Estate Broker
Apartment House Manager
Real Estate Office Manager
County/Urban Planning
Land Utilization Activity
Real Estate Loan Officer
Real Estate Sales Manager

** Students who have completed sufficient and appropriate occupational experience or who may be unable to participate in the cooperative phase of this curriculum may substitute appropriate courses in the fourth, fifth and sixth quarters.

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Applied Science Degree program in Real Estate Management requires proficiency in high school English and mathematics, as well as satisfactory results on any additional test which may be required by the Counseling Department. Students not proficient in English and mathematics will be required to correct their deficiencies in the Foundation Program.

Program Requirements: The first three quarters (first year) of the Associate in Applied Science Degree curriculum in Real Estate Management are similar to other curriculums in business. In the second year each student will pursue his specialty in Real Estate. The curriculum will include technical courses in real estate, courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in real estate. Each student is urged to consult with the Counseling Department and his faculty advisor in planning his program and selecting his electives. Courses within this curriculum may be applied to a four-year program at the discretion of the admitting institution. Upon completion of the six-quarter program described, the graduate will be awarded the Associate in Applied Science Degree in Real Estate Management.

REAL ESTATE MANAGEMENT

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
BUAD	100	Introduction to Business	3
ACCT	111	Accounting I	4
MATH	151	Business Mathematics I	3
ENGL	101	Communication Skills I	3
ECON	160	American Economics	3
GENL	100	Orientation	1
		Total	17

Course Number		Course Title	Course Credits
		SECOND QUARTER	
BUAD	164	Principles of Business Management I	3
ACCT	112	Accounting II	4
MATH	152	Business Mathematics II	3
ENGL	102	Communication Skills II	3
SECR	111	Typewriting*	3
PHED	100	Fundamentals of Physical Activity	1
		Total	17
		THIRD QUARTER	
BUAD	165	Principles of Business Management II	3
ACCT	113	Accounting III	4
MATH	153	Business Mathematics III	3
SPDR	136	Speech Communications or ENGL 180 Business English	3
MKTG	164	Principles of Real Estate I	3
		Total	16
		FOURTH QUARTER	
MKTG	165	Principles of Real Estate II	3
MKTG	267	Real Estate Appraisal	3
BUAD	241	Business Law I	3
PSYC	110	Principles of Applied Psychology	3
GOVT	180	American Constitutional Government	3
PHED		Phys. Ed. Elective	1
		Total	16
		FIFTH QUARTER	
MKTG	266	Real Estate Sales	3
MKTG	268	Property Management	3
MKTG	269	Real Estate Finance	3
BUAD	242	Business Law II	3
ECON	229	Real Estate Economics	3
		Total	15
		SIXTH QUARTER	
MKTG	150	Principles of Insurance	3
MKTG	276	Land Planning and Use	3
MKTG	277	Legal Aspects of Real Estate	3
MKTG	298	Seminar and Project	3
ACCT	244	Business Taxes I	3
PHED		Phys. Ed. Elective	1
		Total	16
		Total Minimum Credits for Real Estate Management Degree	97

*Waiver may be granted for the student who has satisfactorily completed one year of typing in high school. Students who have had training in typing may also petition for credit by examination.

SECRETARIAL SCIENCE

(Central and Eastern Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: There is a steady demand for qualified secretaries and stenographers in Virginia. The Associate in Applied Science degree curriculum in Secretarial Science is designed to prepare persons for full-time employment immediately upon completion of the community college curriculum offerings:

Occupational Objectives:

Administrative Assistant	Office Manager
Executive Secretary	Related Office Occupations
Legal Secretary	Stenographer

Admission Requirements: In addition to the admission requirements established for the college (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Applied Science Degree curriculum in Secretarial Science requires proficiency in high school English and mathematics. Students who are not proficient in these areas will be required to correct their deficiencies in the Foundation Program before entering the curriculum. In addition, students who have completed training in shorthand and advanced typewriting, may petition for advance placement. The credit by examination will be the basis upon which advance placement with credit may be granted.

Program Requirements: The two-year curriculum in Secretarial Science combines instruction in the many areas required for competence as a secretary in business, government, industry, law offices, and other organizations. The curriculum will include courses in secretarial science, related areas, general education and electives. In shorthand and typewriting courses students must meet speed requirements for each course and receive a grade "C" or higher to be accepted into the next sequential course. Assignments will be given requiring use of the secretarial laboratories. The first year (three quarters) of the Secretarial Science curriculum is similar for all students. In the second year, students may select a specialty in either the General or Legal Secretary curriculums. Students are advised to consult with their faculty advisors and the Counseling Department in planning their programs and selecting their electives. Upon satisfactory completion of the six-quarter curriculum the graduate will be awarded the Associate in Applied Science Degree in Secretarial Science with specialization as either an Executive or Legal Secretary.

SECRETARIAL SCIENCE (Executive Secretary)

Associate in Applied Science Degree Program

Course Number	Course Title	Course Credits
	FIRST QUARTER	
SECR 111*	Typewriting I	3
SECR 121*	Shorthand I	4
BUAD 100	Introduction to Business	3
ENGL 101	Communication Skills I	3
MATH 151	or BUAD 101 Business Mathematics I	3
GENL 100	Orientation	1
PHED 100	Fundamentals of Physical Activity	1
	Total	18
	SECOND QUARTER	
SECR 112	Typewriting II	3
SECR 122	Shorthand II	4
BUAD 164	Principles of Business Management I	3
ENGL 102	Communication Skills II	3
MATH 152	or BUAD 102 Business Mathematics II	3
	Total	16
	THIRD QUARTER	
SECR 113	Typewriting III	3
SECR 123	Shorthand III	4
SECR 136	Filing & Records Management	3
ENGL 180	Business English	3
MATH 153	Business Mathematics III or BUAD 103 (or DAPR 106)	16
	Total	16
	FOURTH QUARTER	
ACCT 111	Accounting I	4
SECR 216	Executive Typing	3
SECR 241	Secretarial Procedures I	3
SECR 221	Transcription I	3
ECON 160	Survey of American Economics	3
PHED	Phys. Ed. Elective	1
	Total	17

*Students who have completed training in shorthand or advanced typing may petition for advance placement with credit by examination.

Course Number		Course Title	Course Credits
		FIFTH QUARTER	
SECR	256	Machine Transcription	3
SECR	222	Transcription II	3
SECR	242	Secretarial Procedures II	3
BUAD	241	Business Law I	3
SECR	114	Typewriting IV	3
PSYC	110	Principles of Applied Psychology	3
		Total	18
		SIXTH QUARTER	
SECR	156	Personal Development	3
SECR	217	Typewriting Skill Building	3
SECR	223	(General) Transcription III	3
SECR	243	Secretarial Procedures III	3
GOVT	180	American Constitutional Government	3
SECR	298	Seminar & Project	2
PHED		Phys. Ed. Elective	18
		Total	18
		Total Minimum Credits for a Secretarial Science (Executive Secretary) Degree	102

SECRETARIAL SCIENCE (Legal Secretary)

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
SECR	111*	Typewriting I	3
SECR	121*	Shorthand I	4
BUAD	100	Introduction to Business	3
ENGL	101	Communication Skills I	3
MATH	151	or BUAD 101 Business Mathematics I	3
GENL	100	Orientation	1
PHED	100	Fundamentals of Physical Activity	1
		Total	18
		SECOND QUARTER	
SECR	112	Typewriting II	3
SECR	122	Shorthand II	4
PSYC	110	Principles of Applied Psychology	3
ENGL	102	Communication Skills II	3
MATH	152	or BUAD 102 Business Mathematics II	3
		Total	16

*Students who have completed training in shorthand or advanced typing may petition for advance placement with credit by examination.

Course Number		Course Title	Course Credits
		THIRD QUARTER	
SECR	113	Typewriting III	3
SECR	123	Shorthand III	4
SECR	136	Filing & Records Management	3
ENGL	180	Business English	3
ECON	160	Survey of American Economics	3
		Total	16
		FOURTH QUARTER	
ACCT	111	Accounting I	4
SECR	216	Executive Typing	3
SECR	241	Secretarial Procedures I	3
SECR	221	Transcription I	3
BUAD	241	Business Law I	3
SECR	219	Magnetic Tape Selectric Typewriter	3
		Total	19
		FIFTH QUARTER	
SECR	256	Machine Transcription	3
SECR	224	Legal Transcription I	3
SECR	264	Legal Secretarial Procedures I	3
SECR	114	Typewriting IV	3
BUAD	242	Business Law II	3
PHED		Phys. Ed. Elective	1
		Total	16
		SIXTH QUARTER	
SECR	156	Personal Development	3
SECR	225	Legal Transcription II	3
SECR	265	Legal Secretarial Procedures II	3
GOVT	180	American Constitutional Government	3
SECR	298	Seminar and Project	2
SECR	217	Typewriting Skill Building	3
PHED		Phys. Ed. Elective	1
		Total	18
		Total Minimum Credits for a Secretarial Science (Legal Secretary) Degree	103

ENGINEERING RELATED CURRICULUMS

- **Associate in Science**

  Pre-Engineering

- **Associate in Applied Science**

  Automotive Technology (Diagnostician)
  Architecture Technology
  Broadcast Engineering Technology
  Civil Technology (Building Construction and Land Surveying)
  Electronics Technology
  Mechanical Technology

- **Diploma**

  Automotive Mechanics

- **Certificate**

  Automotive Diagnosis and Tune-Up
  Engineering Drafting

AUTOMOTIVE TECHNOLOGY (DIAGNOSTICIAN OR MECHANIC)

(Eastern Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: Complexity in automotive vehicles increases each year because of scientific discovery and new engineering. There is a great demand for qualified automotive technicians and diagnosticians to help service the growing number of automobiles in our society.

The Automotive Technology curriculum is designed to advance the individual's mechanical knowledge of the principles of operation and theory of modern automobiles to develop his mechanical skills to a point where he has attained diagnostician status, to develop his interest in an automotive industry career, and to develop his awareness in the advantages of such a career. The curriculum is designed primarily for persons who seek full-time employment in the automotive field immediately upon completion of the community college program. For one to advance successfully in this program of study, a thorough understanding of automobile basic operating principles, minor repair techniques, and repair skills is required. The curriculum is designed to provide a two-phase approach to automotive career development. The first develops his knowledge of the operating principles of automobile components, repair techniques, and operation of an automotive repair business. The second phase develops his ability to intelligently and efficiently analyze automobile defects, repair and adjustment needs, along with the estimation of customer cost for the repairs and adjustments.

Occupational Objectives:

Automotive Diagnostician
Automotive Technician
Auto Parts Sales and Service
Customer Service Representative
Quality Control Technician
Repair Service Estimator
Repair Service Salesman
Repair Service Writer
Repair Technician
Service Manager
Tune-up Specialist

Admission Requirements: In addition to the admission requirements

established for the College (as listed in the section on admission requirements in Part II of this catalog), a minimum of a one-year comprehensive automotive shop program in high school or its equivalent and a good understanding of mathematics are usually required for entry into the program. For one to advance successfully in this program of study, a thorough understanding of the repair techniques and skills is required before entering the program. Students who do not meet these requirements will be required to correct their deficiencies in the Preparatory (Foundation) Program before entering the Automotive Technology Program.

Program Requirements: Approximately one-half of the curriculum will include courses in automotive technology with the remaining courses in related subjects, general and practical applications needed for future success in Automotive Technology. Each student is advised to consult with his faculty advisor and the Counseling Department of the college in planning his program and selecting his electives. Students satisfactorily completing the six-quarter planned program described will be awarded the Associate in Applied Science degree with a major in Automotive technology.

AUTOMOTIVE TECHNOLOGY (Diagnostician)

Associate in Applied Science Degree Program

Course Number	Course Title	Course Credits
	FIRST QUARTER	
AUTO 101	Automotive Systems Technology I	4
AUTO 181	Automotive Diagnostic Technology I	3
ENGL 101	Communication Skills I	3
GENL 100	Orientation	1
MATH 111	Technical Mathematics I	3
PHYS 101	Introductory Physics I	4
	Total	17
	SECOND QUARTER	
AUTO 102	Automotive Systems Technology II	4
AUTO 182	Automotive Diagnostic Technology II	3
ENGL 102	Communication Skills II	3
MATH 112	Technical Mathematics II	3
PHYS 102	Introductory Physics II	4
PHED 100	Fundamentals of Physical Activity	1
	Total	18

Course Number		Course Title	Course Credits
		THIRD QUARTER	
AUTO	103	Automotive Systems Technology III	4
AUTO	183	Automotive Diagnostic Technology III	3
MATH	113	Technical Mathematics III	3
PHYS	103	Introductory Physics III (or Elective)	4
ENGL	127	Technical Writing	3
PHED		Phys. Ed. Elective	1
		Total	18
		FOURTH QUARTER	
AUTO	201	Automotive Systems Technology IV	4
AUTO	281	Automotive Diagnostic Technology IV	3
PSYC	110	Principles of Applied Psychology	3
PHED		Phys. Ed. Elective	1
		Technical Elective	3
		Total	14
		FIFTH QUARTER	
AUTO	202	Automotive Systems Technology V	4
AUTO	205	Shop Management & Customer Relations I	3
AUTO	282	Automotive Diagnostic Technology V	3
ECON	160	American Economics	3
		Technical Elective	2
		Total	15
		SIXTH QUARTER	
AUTO	203	Automotive Systems Technology VI	4
AUTO	296	Shop Management & Customer Relations II	3
AUTO	283	Automotive Diagnostic Technology VI	3
AUTO	293	Seminar and Project	2
GOVT	180	American Constitutional Government	3
		Total	15
		Total Minimum Credits for the Automotive Technology (Diagnostician) Degree	97

AUTOMOTIVE MECHANICS

(Eastern Campus)

Degree: Diploma

Length: Six-quarter (two-year) program

Purpose: To satisfy a part of the continuing demand for qualified automobile mechanics in the local area. Accelerated growth in the numbers of automobiles in the area and the rapid and complex changes in automobile engineering and design account for a continued critical shortage of mechanics and service technicians.

The Automotive Mechanics program is designed to provide a thorough knowledge of the mechanics of the modern automobile and all its supporting systems, to develop an individual's mechanical skills to the point where he attains journeyman level and to develop his interest in an automotive repair and service career. The curriculum is designed primarily for persons who seek full-time employment in the automotive maintenance and general repair field immediately upon completion of the two-year program. The course will develop the student's skills in the use of the most modern automotive repair tools and equipment. For one to advance successfully in this program of study, a thorough understanding of the automobile, its basic operating principles and a mechanical aptitude and manual dexterity is required.

Occupational Objectives:

Automotive Repair Technician
New Car Make-Ready Technician
Customer Service Representative
Quality Control Technician
Repair Service Estimator
Repair Service Writer
Repair Service Salesman
Tune-up Specialist
Shop Foreman

Admission Requirements: In addition to the admission requirements established for the College (as indicated in the College catalog), a minimum of a one-year comprehensive automotive shop program in high school or its equivalent and a good understanding of mathematics are usually required for entry into the program. Students who do not meet these requirements may correct their deficiencies in the Preparatory (Foundation) Program.

Program Requirements: The Automotive Mechanics curriculum will

include approximately sixty-five per cent automotive courses, with the remaining courses in related subjects, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in automotive mechanics. In addition to the highly technical courses the curriculum includes courses necessary to prepare the student to meet the obligations of the citizen in our democratic society.

AUTOMOTIVE MECHANICS

Diploma Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
AUTO	111	Automotive Engines I	4
AUTO	121	Automotive Fuel Systems I	4
DRFT	071	Basic Blueprint Reading	2
ENGL	101	Communications Skills I	3
GENL	100	Orientation	1
MATH	011	Elements of Mathematics I	3
		Total	17
		SECOND QUARTER	
AUTO	112	Automotive Engines II	4
AUTO	122	Automotive Fuel Systems II	4
ENGL	102	Communications Skills II	3
MATH	012	Elements of Mathematics II	3
PSYC	110	Principles of Applied Psychology	3
PHED	100	Fundamentals of Physical Activity	1
		Total	18
		THIRD QUARTER	
AUTO	113	Automotive Engines III	4
AUTO	136	Automotive Lubrication and Cooling Systems	3
SPDR	136	Speech Communications	3
MATH	013	Elements of Mathematics III	3
NASC	100	Survey of Science	4
		Total	17
		FOURTH QUARTER	
AUTO	241	Automotive Electrical Systems I	4
AUTO	151	Power Trains I	4
AUTO	284	Automotive Service Procedures and Tune-Up	3
AUTO	216	Automotive Machine Laboratory	3
GOVT	180	American Constitutional Government	3
PHED		Phys. Ed. Elective	1
		Total	18

Course Number	Course Title	Course Credits
	FIFTH QUARTER	
AUTO 242	Automotive Electrical Systems II	4
AUTO 152	Power Trains II	4
AUTO 238	Automotive Air Conditioning	3
BUAD 174	Small Business Management I	3
ECON 160	American Economics	3
PHED	Phys. Ed. Elective	1
	Total	18
	SIXTH QUARTER	
AUTO 243	Automotive Electrical Systems III	4
AUTO 266	Automotive Suspension and Braking Systems	4
AUTO 198	Seminar and Project in Automotive Technology	2
AUTO 176	Small Gasoline Engines	3
BUAD 175	Small Business Management II	3
	Total	16
	Total Minimum Credits for a Diploma in Automotive Mechanics	104

AUTOMOTIVE DIAGNOSIS AND TUNE-UP

(Eastern Campus)

Certificate: Automotive Diagnosis and Tune-Up

Length: Three-quarter (one-year) program

Purpose: To satisfy a part of the great demand for qualified automotive, diagnostic, and tune-up specialists in the local area. Rapid growth in the number of automobiles in the area and ever increasing complex development in automotive vehicles account for a continued critical shortage of service and repair technicians.

The Automotive Diagnosis and Tune-Up Certificate Program is designed to provide a thorough knowledge of the mechanics of the internal combustion engine and supporting systems used in modern automobiles, to develop an individual's mechanical skills to a point where he has attained tune-up technician status and to develop his interest in an automotive industry career. The curriculum is designed primarily for persons who seek full-time employment in the automotive tune-up and trouble shooting field immediately upon completion of the one-year program. The course will develop the students' skills in the use of the most modern trouble shooting, diagnosing and tune-up test instruments and repair tools. For one to advance successfully in this program of study a thorough understanding of the automobile, its basic operating principles, minor repair techniques and repair skills is required.

Admission Requirements: In addition to the admission requirements established for the College (as established in the College catalog), a minimum of a one-year automotive shop program in high school or the equivalent and a good understanding of general mathematics are usually required for entry into the program.

Program Requirements: The Automotive Diagnostic and Tune-Up Certificate Program will concentrate on practical applications needed to succeed in immediate employment as automobile engine trouble shooters and tune-up technicians. In addition to the highly technical oriented courses, the curriculum includes basic courses in social studies which will prepare the student to meet the obligations of the citizen in our Democratic Society.

AUTOMOTIVE DIAGNOSIS AND TUNE-UP

Certificate in Automotive Diagnosis and Tune-Up

Course Number		Course Title	Course Credits
		FIRST QUARTER	
AUTO	181	Automotive Diagnostic Technology I	4
ECON	100	American Economics	3
ENGL	011	Verbal Expression I	3
MATH	011	Elements of Math I	3
GENL	100	Orientation	1
DRFT	071	Basic Blueprint Reading	2
		Total	16
		SECOND QUARTER	
AUTO	182	Automotive Diagnostic Technology II	4
ENGL	012	Verbal Expression II	3
MATH	012	Elements of Math II	3
PSYC	110	Principles of Applied Psychology	3
AUTO	121	Automotive Fuel Systems I	4
		Total	17
		THIRD QUARTER	
AUTO	183	Automotive Diagnostic Technology III	4
ENGL	013	Verbal Expression III	3
MATH	013	Elements of Math III	3
AUTO	198	Seminar and Project in Automotive Tech	2
AUTO	122	Automotive Fuel Systems II	4
		Total	16
		Total minimum credits for a Certificate in Automotive Diagnosis and Tune-Up	49

ENGINEERING TECHNOLOGY PROGRAMS

(Central and Eastern Campus)

Degree: Associate in Applied Science.

Length: Six Quarter (two-year) program.

Purpose: The basic purpose of the Engineering Technology programs is to develop qualified technicians proficient in the various fields. To accomplish this purpose, the programs are designed to give the student a sound foundation of English, Mathematics, Science, and General Education, and a high degree of proficiency in the specialized technical subjects applicable to the field. Upon successful completion of the program, the student is enabled to take full-employment immediately or to transfer to universities which offer a baccalaureate degree in the Engineering Technologies. In this case, the student is urged to acquaint himself with the requirements of the university to which he expects to transfer.

Admission Requirements: Admission to the programs, in addition to the general requirements for admission to the College, requires a high school diploma or its equivalent with a minimum of a grade C average in each of the following areas:

4 units of English
2 units of Math—(3 units recommended—2 units of Algebra plus 1 unit of Geometry or Trigonometry)
1 unit of Laboratory science
1 unit of Social Studies or equivalent

Students who do not meet these requirements may be permitted to correct their deficiencies in the Foundation (Preparatory) Program or in the Engineering Drafting Certificate Program before entering the Engineering Technology curricula.

Program Requirements: Approximately one-half of the curricula will include courses in Engineering Technology with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in Engineering Technology. Each student is advised to consult with his faculty advisor and the Counseling Department in planning his program and selecting his electives. Upon satisfactory completion of the six-quarter program listed on the next pages, the graduate will be awarded the Associate in Applied Science Degree in the Engineering Technology in which he specializes.

Programs and Occupational Objectives:

1) *Architecture:* Building designer and Draftsman; Construction Assistant and Inspector; Construction materials Sales Representative, etc.

2) *Broadcast Engineering Technology:* Radio Station Technician; Commercial and Educational TV Station Technician; Video Tape Technician; Sound Reproduction and Recording Technician, etc.
3) *Civil Technology:* Structural designer; Surveying and Planning Assistant; Highways and Building Departments Inspector; Construction Supervisor and Foreman, etc.
4) *Electronics Technology:* Electronics and Industrial Electronics Technician; Instrument and Laboratory Technician; Radio and Television Technician; Electronics Products Sales Representatives, etc.
5) *Mechanical Technology:* Jig and Fixture Designer; Machine and Tool Designer; Machine Shop Foreman; Tool and Methods Technician; Industrial Products Sales Representative, etc.

ARCHITECTURAL TECHNOLOGY

Associate in Applied Science Degree Program

NOTE: See general information about all engineering technology programs on page 87.

Course Number		Course Title	Course Credits
		FIRST QUARTER	
GENL	100	Orientation	1
ENGL	101	Communications Skills I	3
MATH	111	Technical Mathematics I	3
PHYS	101	Intro. Physics I	4
ARCH	100	Introduction to Architecture	2
ARCH	111	Architectural Drafting I	3
		Total	16
		SECOND QUARTER	
PHED	100	Fundamentals of Phys. Activity	1
ENGL	102	Communication Skills II	3
MATH	112	Technical Mathematics II	3
PHYS	102	Intro. Physics II	4
ARCH	141	Mat. & Methods of Construction	3
ARCH	112	Architectural Drafting II	3
		Total	17

Course Number		Course Title	Course Credits
		THIRD QUARTER	
PHED		Phys. Ed. Elective	1
ENGL	127	Technical Writing	3
MATH	113	Technical Mathematics III	3
ARCH	142	Mat. & Methods of Construction II	3
ENGR	151	Mechanics I (Statics)	3
ARCH	113	Architectural Drafting III	3
		Total	16
		FOURTH QUARTER	
PHED		Phys. Ed. Elective	1
ENGR	152	Mechanics II (Strength of Materials)	4
ARCH	237	Building Mech. Equipment	3
ARCH	211	Architectural Drafting IV	3
CIVL	180	Principles of Surveying	4
		Non-technical elective	3
		Total	18
		FIFTH QUARTER	
ARCH	277	Building Codes and Contract Documents	3
ARCH	236	Building Electric Equipment	3
ARCH	212	Architectural Drafting V	3
		Technical Elective	3-4
		Non-technical Elective	3
		Total	15-16
		SIXTH QUARTER	
ARCH	213	Architectural Drafting VI	3
ARCH	276	Construction Estimating	3
ARCH	298	Seminar & Project in Arch Technology	3
		Technical Elective	3-4
		Non-technical Elective	3
		Total	15-16
		Total Minimum Credits for Architectural Technology Degree	97

NOTE: Non-technical electives must be chosen in the field of SOCI, PSYC, GOVT, ECON or HIST.

BROADCAST ENGINEERING TECHNOLOGY

Associate in Applied Science Degree

NOTE: See general information about all engineering technology programs on page 87.

Course Number		Course Title	Course Credits
		FIRST QUARTER	
BCST	100	Introduction to Broadcast Systems	1
ELEC	114	Fundamentals of Direct Current	4
ELEC	120	Introduction to Tube and Transistors	4
ENGL	101	Communication Skills I	3
MATH	121	Engineering Technical Mathematics I	5
		Total	17
		SECOND QUARTER	
ELEC	115	Fundamentals of Alternating Current	4
ELEC	124	Electronics	5
ENGL	102	Communication Skills II	3
MATH	122	Engineering Technical Mathematics II	5
PHED	100	Fundamentals of Physical Activity	1
		Total	18
		THIRD QUARTER	
BCST	116	Broadcast Equipment Operation	5
ELEC	116	Introduction to Circuit Analysis	4
ELEC	126	Amplifiers	4
PHYS	101	Introductory Physics I	4
PHED		Phys. Ed. Elective	1
		Total	18
		FOURTH QUARTER	
BCST	126	Broadcast Instruments and Measurement	4
ELEC	227	Pulse and Switching Circuits	3
ELEC	241	Communications I	4
		Non-technical Elective	3
PHYS	102	Introductory Physics II	4
		Total	18

NOTE: Non-technical electives must be chosen in the field of SOCI, PSYC, GOVT, ECON or HIST.

Course Number		Course Title	Course Credits
		FIFTH QUARTER	
BCST	146	Federal Broadcast Regulations	1
BCST	211	Theory of Broadcast Equipment I	4
BCST	221	Broadcast Equipment Maintenance I	3
		Non-technical Elective	3
ELEC	242	Communications II	4
		Total	15
		SIXTH QUARTER	
BCST	212	Theory of Broadcast Equipment II	4
BCST	222	Broadcast Equipment Maintenance II	3
BCST	298	Seminar and Project	1-5
ELEC	243	Communication Systems (or Elective)	4
ELEC	287	Advanced Circuits and New Devices	2
		Non-technical Elective	3
PHED		Phys. Ed. Elective	1
		Total	18-22
		Total Minimum Credits for the Broadcasting Engineering Technology Degree	97

CIVIL TECHNOLOGY

(Building Construction Option)

Associate in Applied Science Degree Program

NOTE: See general information about all engineering technology programs on page 87.

Course Number		Course Title	Course Credits
		FIRST QUARTER	
GENL	100	Orientation	1
ENGL	101	Comm. Skills I	3
MATH	111	Tech Math I	3
PHYS	101	Introductory Physics I	4
ENGR	100	Introductory to Engineering	2
ARCH	111	Arch. Drafting I	3
		Total	16

Course Number		Course Title	Course Credits
		SECOND QUARTER	
PHED	100	Foundations of Physical Activity	1
ENGL	102	Comm. Skills II	3
MATH	112	Tech. Math II	3
PHYS	102	Introductory Physics II	4
ARCH	141	Mat. & Methods of Construction I	3
ARCH	112	Arch. Drafting II	3
		Total	17
		THIRD QUARTER	
PHED		Phys. Ed. Elective	1
ENGL	127	Technical Writing	3
MATH	113	Tech. Math III	3
PHYS	103	Introductory Physics III	4
ENGR	151	Mechanics I (Statistics)	3
CIVL	181	Surveying I	4
		Total	18
		FOURTH QUARTER	
PHED		Phys. Ed. Elective	1
ENGR	152	Mechanics II (Strength)	4
CIVL	256	Soil Mechanics	4
CIVL	227	Structural Drafting I	2
		Technical Elective	3
		Non-Technical Elective	3
		Total	17
		FIFTH QUARTER	
CIVL	218	Structural Steel Design	4
CIVL	228	Structural Drafting II	2
		Technical Elective	3-4
		Technical Elective	3-4
		Non-technical Elective	3
		Total	15-17
		SIXTH QUARTER	
CIVL	217	Reinforced Concrete Design	4
CIVL	299	Seminar and Project in Civil Tech	2
		Technical Elective	3-4
		Technical Elective	3
		Non-technical Elective	3
		Total	15-16
		Total Minimum Credits for Civil Technology Degree	97

NOTE: Non-technical electives must be chosen in the field of SOCI, PSYC, GOVT, ECON or HIST.

CIVIL TECHNOLOGY

(Land Surveying Option)

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
GENL	100	Orientation	1
ENGR	100	Communication Skills I	3
MATH	111	Technical Math I	3
PHYS	101	Introductory Physics I	4
ENGR	101	Introductory to Engineering I	2
ARCH	111	Arch. Drafting I or Drafting Elective	3
		Total	16
		SECOND QUARTER	
PHED	100	Fundamentals of Physical Activity	1
ENGL	102	Communication Skills II	3
MATH	112	Technical Math II	3
PHYS	102	Intro. Physics II	4
ARCH	141	Mat. & Meth. of Construction I	3
CIVL	181	Surveying I	18
		Total	18
		THIRD QUARTER	
PHED		Physical Ed. Elective	1
ENGL	127	Technical Writing	3
MATH	113	Technical Math III	3
PHYS	103	Intro. Physics III	4
ENGR	151	Mechanics I (Statics)	3
CIVL	182	Surveying II	4
		Total	18
		FOURTH QUARTER	
PHED		Physical Ed. Elective	1
ENGR	152	Mechanics II (Strength)	4
CIVL	256	Soil Mechanics	4
CIVL	281	Advanced Surveying I	4
CIVL	201	Suburban Development I	2
		Non-Techical Elective	3
		Total	18

NOTE: Non-technical electives must be chosen in the field of SOCI, PSYC, GOVT, ECON or HIST.

Course Number		Course Title	Course Credits
		FIFTH QUARTER	
CIVL	282	Advanced Surveying II	4
CIVL	202	Suburban Development II	2
		Tech Elective	3-4
		Tech Elective	3
		Non-Technical Elective	3
		Total	15-16
		SIXTH QUARTER	
CIVL	203	Suburban Development III	2
CIVL	298	Seminar & Project in Civil Technology	2
		Technical Elective	3-4
		Technical Elective	3
		Non-Technical Elective	3
		Total	13-14
		Total Minimum Credits for Civil Technology Degree (Land Surveying Option)	97

ELECTRONICS TECHNOLOGY

Associate in Applied Science Degree Program

NOTE: See general information about all engineering technology programs on page 87.

Course Number		Course Title	Course Credits
		FIRST QUARTER	
ELEC	114	Fundamentals of Direct Current	4
ELEC	120	Introduction to Tubes and Transistors	4
ENGL	101	Communication Skills I	3
MATH	121	Engineering Technical Mathematics I	5
GENL	100	Orientation	1
		Total	17
		SECOND QUARTER	
ELEC	115	Fundamentals of Alternating Current	4
ELEC	124	Electronics I	5
ENGL	102	Communication Skills II	3
MATH	122	Engineering Technical Mathematics II	5
PHED	100	Fundamentals of Physical Activity	1
		Total	18

Course Number		Course Title	Course Credits
		THIRD QUARTER	
ELEC	116	Circuit Analysis	4
ELEC	126	Amplifiers	4
MATH	123	Engineering Technical Mathematics III	5
PHYS	101	Introductory Physics I	4
		Total	17
		FOURTH QUARTER	
ELEC	227	Pulse and Switching Circuits	3
ELEC	241	Communications I	4
ELEC	276	Instruments and Measurements	4
PHYS	102	Introductory Physics II	4
		Non-Technical Elective	3
		Total	18
		FIFTH QUARTER	
ELEC	242	Communications II	4
ELEC	250	Introduction to Computers	4
ELEC	260	Control Circuits	4
DRFT	256	Electronics Drafting	2
		Non-Technical Elective	3
PHED		Phys. Ed. Elective	1
		Total	18
		SIXTH QUARTER	
ELEC	243	Communications Systems	4
ELEC	249	Principles of Television Electronics	3
ELEC	287	Advanced Circuits and New Devices	2
ELEC	298	Seminary and Project	2
ENGL	127	Technical Writing	3
		Non-Technical Elective	3
PHED		Phys. Ed. Elective	1
		Total	18
		Total Minimum Credits for an Electronics Technology Degree	97

NOTE: Non-technical electives must be chosen in the field of SOCI, PSYC, ECON or HIST.

MECHANICAL TECHNOLOGY

Associate in Applied Science Degree Program

NOTE: See general information about all engineering technology programs on page 87.

Course Number		Course Title	Course Credits
		FIRST QUARTER	
GENL	100	Orientation	1
ENGL	101	Communication Skills I	3
MATH	111	Technical Mathematics I	3
PHYS	101	Introductory Physics I	4
ENGR	100	Introductory to Engineering	2
DRFT	111	Technical Drafting I	2
		Total	15
		SECOND QUARTER	
PHED	100	Fundamentals of Physical Activity	1
ENGL	102	Communications Skills II	3
MATH	112	Technical Mathematics II	3
PHYS	102	Introductory Physics II	4
DRFT	112	Technical Drafting II	2
INDT	111	Materials and Processes of Industry I	3
		Total	16
		THIRD QUARTER	
ENGL	127	Technical Writing	3
MATH	113	Technical Math III	3
PHYS	103	Introductory Physics III	4
INDT	112	Materials and Processes of Industry II	3
DRFT	113	Technical Drafting III	2
ENGR	151	Mechanics I (Statistics)	3
		Total	18
		FOURTH QUARTER	
PHED		Phys. Ed. Elective	1
ENGR	152	Mechanics II (Strength of Mats)	4
MECH	246	Metallurgy	4
MECH	131	Machine Labs I	2
		Tech Elective	3
		Non-Technical Elective	3
		Total	17

NOTE: Non-technical electives must be chosen in the field of SOCI, PSYC, ECON or HIST.

Course Number		Course Title	Course Credits
		FIFTH QUARTER	
ENGR	153	Mechanics III (Dynamics)	3
MECH	237	Mech Design I	4
MECH	264	Thermodynamics	3
		Tech Elective	3
		Non-Technical Elective	2-3
		Total	15-16
		SIXTH QUARTER	
MECH	238	Mech Design II	4
MECH	298	Seminar and Project in Mech Technology	2
		Tech Elective	3
		Tech Elective	3
		Non-Tech Elective	3
PHED		Phys. Ed. Elective	1
		Total	16
		Total Minimum Credits for Mechanical Technology Degree.	97

ENGINEERING DRAFTING

(Central and Eastern Campus)

Certificate: Certificate in Engineering Technology (Drafting) with options in Specific Areas of Drafting:

Architectural Drafting
Structural Engineering Drafting
Mechanical Engineering Drafting
Surveying

Length: Three Quarter (one-year) program

Purpose: The especially designed certificate programs are intended:

1) To meet the ever-increasing demand for people trained in the areas of Architectural and Engineering Technology and Drafting;
2) To provide the minimum specialized training necessary to enter the Engineering field;
3) To improve the general education level to meet the demands of our society.

Upon successful completion of the program, the student is enabled to take full-employment immediately or transfer in one of the A.A.S.

programs. In this case, he will receive advanced credit for parallel courses.

Admission Requirements: High school diploma or its equivalent with minimum of:

a) three units of English
b) one unit of mathematics
c) one unit of lab science

Occupational Objectives: Draftsman or Engineering aide

Program Requirements: Approximately one-half of the curriculum will include courses in Architectural or Engineering Drafting and Technology with the remaining courses in related subjects and General Education. An advisor specialized in the field is assigned to each student to help him to plan his program and select his electives.

ENGINEERING DRAFTING

Certificate Program

Course Number	Course Title	Course Credits
	FIRST QUARTER	
GENL 100	Orientation	1
ENGL 101	Communication Skills I	3
MATH 011	Elements of Math I	3
ENGR	Introduction to Technical Engineering	2
DRFT 111	Technical Drafting I	2
DRFT 112	Technical Drafting II	2
	Non-Technical Elective	3
	Total	16
	SECOND QUARTER	
ENGL 102	Communication Skills II	3
MATH 012	Elements of Math II	3
DRFT 113	Technical Drafting III	2
ENGR	Elements of Statics & Strength of Material	3
	Technical Elective	3-4
	Technical or Drafting Elective	2-3
	Total	16-18
	THIRD QUARTER	
ENGL 127	Technical Writing	3
MATH 013	Elements of Math III	3
	Technical or Drafting Elective	2-3
	Technical or Drafting Elective	2-3
	Technical Elective	3-4
	Project and Seminar	2
	Total	15-18
	Total Minimum Credits for an Engineering Technology (Drafting) Major	47

Notes:

1) Students can substitute the series MATH 111, 112, 113, for MATH 011, 012, 013 if he meets the appropriate requirements for these courses.
2) Technical and Drafting electives are chosen accordingly to the specific field of specialization.
3) Non-technical electives are to be chosen among: GOVT, ECON, PSYC, or SOCI.

PRE-ENGINEERING

(Eastern Campus)

Degree: Associate in Science

Length: Six-quarter (two-year) program

Purpose: The demand for technically trained people is increasing rapidly in Virginia as well as throughout the world. The engineer is a most important member of the technical team, which includes the scientist, engineer, technician, and skilled craftsman. Opportunities are unlimited for men and women in the field of engineering. Science is so diversified now that one may enter almost any specialization and find employment. The preparation for the engineering profession is based on a vigorous program, especially in mathematics and science.

The Associate in Science degree program in Pre-Engineering is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in one of the following engineering fields:

Aerospace Engineering
Agricultural Engineering
Architectural Engineering
Ceramic Engineering
Chemical Engineering
Civil Engineering
Electrical Engineering
Engineering Mechanics
Industrial Engineering
Mechanical Engineering
Metallurgical Engineering
Mining Engineering
Nuclear Engineering

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Science degree curriculum in Pre-Engineering requires the satisfactory completion of the following high school units or equivalent as a minimum:

4 units of English
4 units of mathematics (2 units of algebra, 1 unit of plane geometry, 1 unit of advanced math or trigonometry and solid geometry)
1 unit of a laboratory science
1 unit of social studies

Students who do not meet the requirements listed above may be permitted to correct their deficiencies in the Preparatory (Foundation) Program before entering the Pre-Engineering curriculum.

Program Requirements: This program includes the English and Humanities, mathematics, science, social science, and introductory en-

gineering curriculum. *Each student is urged to acquaint himself with the requirements of the major department in the college or university to which he expects to transfer and also to consult with the Counseling Department of the community college in planning his program and selecting his electives.* In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and course to the first two years of the program at the four-year college or university. Upon satisfactory completion of the six-quarter curriculum listed below, the student will be awarded the Associate in Science degree with a major in Pre-Engineering.

PRE-ENGINEERING**

Associate in Science Degree Program

Course Number	Course Title	Course Credits
	FIRST QUARTER	
CHEM 111	General Inorganic Chemistry I	4
ENGL 111	English Composition I	3
GENL 100	Orientation	1
ENGR 101	Introduction to Engineering	2
ENGR 121	Engineering Graphics I	2
MATH 141	Introductory Mathematical Analysis I	5
	Total	17
	SECOND QUARTER	
CHEM 112	General Inorganic Chemistry II	4
ENGL 112	English Composition II	3
ENGR 102	Introduction to Engineering Methods	2
ENGR 122	Engineering Graphics II	2
MATH 142	Introductory Mathematical Analysis II	5
PHED 100	Fundamentals of Physical Activity	1
	Total	17
	THIRD QUARTER	
CHEM 113	General Inorganic Chemistry III	4
ENGL 113	English Composition III	3
ENGR 103	Conceptual Design and Analysis	2
ENGR 123	Engineering Graphics III	2
MATH 143	Introductory Mathematical Analysis III	5
PHED	Phys. Ed. Elective	1
	Total	17

** The Pre-Engineering student is encouraged to take approximately 18 hours each quarter so he may obtain full Junior standing upon transfer.

Course Number	Course Title	Course Credits
	FOURTH QUARTER	
ECON	Economics*	3
ENGR 201	Mechanics of Particles	5
HIST	History (or Elective)	3
MATH 241	Advanced Mathematical Analysis I	4
	Humanities Elective	3
	Total	18
	FIFTH QUARTER	
ENGR 202	Mechanics of Deformable Solids	5
GOVT	Government*	3
MATH 242	Advanced Mathematical Analysis II	4
PHYS 222	General University Physics II	4
	Elective	2
	Total	18
	SIXTH QUARTER	
ENGR 203	Dynamics of Rigid Bodies	3
ENGR 206	Engineering Economy (or Elective)	3
MATH 243	Advanced Mathematical Analysis III	4
PHYS 223	General University Physics III	4
PSYC	Psychology*	3
PHED	Phys. Ed. Elective	1
	Total	18
	Total Credits for the Pre-Engineering Degree	105

*** Students are required to take 9 credits of Social Science which may be selected from the following:**

ECON 211-212-213 or 214-215; 241-242-243.

GOVT 187-188 or 281-282-283 or 284-285.

HIST 101-102-103; 111-112-113; 221-222-223 or 224-225; 251-252-253; 281-282-283.

PSYC 201-202-203 or 204-205; 230; 246.

SOCI 101-102-103 or 104-105; 237; 244; 247.

SOSC 101-102-103; 121-122-123.

The Social Science course selected should be the one required by the four-year college or university to which student plans to transfer.

HEALTH RELATED CURRICULUMS

- **Associate in Applied Science**
  - **Nursing**
- **Diploma**
  - **Dental Laboratory Technology**
  - **Medical Records Technology**
- **Certificate**
  - **Dental Assisting**

DENTAL ASSISTING

(Central Campus)

Degree: Certificate

Length: Four-quarter (one-year) program

Purpose:

1. To prepare students to perform the following services under supervision of a dentist:
   a. chairside assistance
   b. exposing and handling of intra and extra-oral dental radiographs
   c. basic laboratory procedures
   d. basic office management procedures
   e. dental health education
   f. oral and systemic emergencies
2. To qualify the student for the American Dental Assistants Association Certification Examination.

Scope and Objectives: There is a continuous and ever-growing need for trained dental assistants in Northern Virginia. This basic course covers the essential scientific and practical knowledge required for a dental assistant to perform efficiently in a dental office. On the job training experience, both general and specialty, is provided at the College, selected offices of participating dentists, and at nearby large dental facilities.

Admission Requirements:

1. High School Diploma or its equivalent
   a. Four units English
   b. One unit mathematics
   c. Two units social studies
   d. Biology and either chemistry, physics, or other science
   e. Typing recommended
2. Comparative Guidance placement test
3. Personal interview by Counseling Department and Program Head
4. Letter of recommendation from Guidance Counselor in high school; or by employer
5. Any other criteria required for admission by Northern Virginia Community College

DENTAL ASSISTING

Certificate Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
DENT	130	Introduction for Dental Auxiliaries	2
DENT	101	Dental Science I	4
DENT	136	Introduction to Dental Materials	4
DENT	260	First Aid for Dental Auxiliaries	2
GENL	100	Orientation	1
ENGL	101	Communication Skills I	3
MATH	151	Business Mathematics I	3
		Total	19
		SECOND QUARTER	
DENT	102	Dental Science II	4
DENT	111	Clinical Procedures I	4
DENT	121	Chairside Assisting I	4
ENGL	102	Communication Skills II	3
GOVT	180	American Constitutional Government	3
		Total	18
		THIRD QUARTER	
DENT	103	Dental Science III	4
DENT	112	Clinical Procedures II	4
DENT	122	Chairside Assisting II	4
SPDR	136	Speech Communications	3
SECR	136	Filing and Records Management	2
		Total	17
		FOURTH QUARTER	
DENT	190	Coordinated Practice	5
DENT	198	Seminar Project	2
ECON	160	American Economics	3
PSYC	110	Principles of Applied Psychology or Human Relations	(3)
*SECR	110	Personal Typing	2
		Total	15
		Total Minimum Credits for Certificate in Dental Assisting Program	72

* With typing proficiency demonstrated, elective may be substituted.

DENTAL LABORATORY TECHNOLOGY

(Central Campus)

(Winter, 1971)

Degree: Diploma

Length: Six-quarter (two-year) program

Purpose: The course in Dental Laboratory Technology is designed to train the qualified individual for employment as a dental laboratory technician either in a commercial or public dental laboratory or a dental office to provide an essential support service for the dental profession according to the dentist's prescription or work request. The dental laboratory technician constructs and repairs all types of dental prosthetic appliances.

Specifically, the course will cover: dental materials and metallurgy, physics and chemistry, dental anatomy and physiology, functional occlusion as related to laboratory technology, complete and partial denture techniques, and basic crown and bridge and ceramic techniques. Related courses include: business and mathematics, communication skills, economics, government, and psychology.

Background: The rapid increase in both population and the number of practicing dentists in Northern Virginia together with a statewide lack of facilities for dental technology training have indicated a critical need for this skill. Immediate employment opportunities await the graduate who receives a diploma in Dental Laboratory Technology.

Admission Requirements:

In addition to requirements for general admission to the College:

A. Manual dexterity test
B. Personal interview by Counseling Department and Program Head

DENTAL LABORATORY TECHNOLOGY

Diploma Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
DENT	130	Orientation for Dental Auxilaries	2
DENT	136	Introduction to Dental Materials	4
DENT	137	Dental Anatomy and Physiology for Dental Laboratory	4
MATH	011	Elements of Mathematics I	3
CHEM	006	Basic Chemistry	4
GENL	100	General Orientation	1
DENT	260	First Aid for Dental Auxiliaries	2
		Total	20
		SECOND QUARTER	
DENT	138	Dental Metallurgy	4
DENT	141	Dental Laboratory Technology I	4
ENGL	101	Communication Skills I	3
PHYS	006	Basic Physics	4
MATH	012	Elements of Mathematics II	3
		Total	18
		THIRD QUARTER	
DENT	142	Dental Laboratory Technology II	4
DENT	146	Functional Articulation and Occlusion	4
BUAD	100	Introduction to Business	3
ENGL	102	Communication Skills II	3
PHED	108	Foundations of Physical Activity	1
		Total	15
		FOURTH QUARTER	
DENT	243	Dental Laboratory Technology III	4
DENT	236	Dental Ceramics	4
SPDR	136	Speech Communications	3
PHED		Physical Education Elective	1
		Elective	3
GOVT	180	American Constitutional Government	3
		Total	18

Course Number		Course Title	Course Credits
		FIFTH QUARTER	
ECON	160	American Economics	3
DENT	244	Dental Laboratory Technology IV	3
DENT	250	Special Dental Prosthetic Technology	4
PSYC	110	Principles of Applied Psychology	3
PHED		Physical Education Elective	1
		Elective	3
		Total	17
		SIXTH QUARTER	
DENT	245	Dental Laboratory Technology V	4
DENT	290	Coordinated Practice	6
DENT	298	Seminar and Project	2
		Elective	3
		Total	15

MEDICAL RECORDS TECHNOLOGY

(Central Campus)

Degree: Diploma

Length: Six-quarter (two-year) program

Purpose: To prepare selected students to work as medical record technicians in the medical record department of a hospital, clinic or nursing home who will be responsible for many aspects of preparing, analyzing, and preserving health information needed by the patients, by the hospital and by the public. The medical record technician's duties chiefly include: reviewing, filing and typing medical reports and records; compiling medical statistics; assisting the medical staff in the preparation of special studies; and supervising the daily operation of a medical record department.

At the successful completion of the program, graduates will be eligible to take the national accreditation examination given by the American Association of Medical Record Librarians.

Admission Requirements:

1. High school graduation.
2. In addition to the admission requirements established for the College, entry into the program for Medical Record Technicians *requires* the ability to type a minimum of forty (40) words per minute accurately.

3. Proficiency in the following high school courses is also recommended.
   (a) English
   Mathematics
   Biology

Applicants who do not meet these requirements initially may correct their deficiencies in the Preparatory (Foundations) program at the College.

MEDICAL RECORDS TECHNOLOGY

Diploma Program

Course Number		Course Title	Course Credits
		FIRST YEAR	
		FIRST QUARTER	
NASC	111	Medical Science I	4
DAPR	100	Introduction to Data Processing	4
ENGL	101	Communication Skills I	3
HLTH	120	Medical Terminology	5
HLTH	100	Orientation to Allied Health Careers	1
GENL	100	Orientation	1
		Total	18
		SECOND QUARTER	
NASC	112	Medical Science II	4
SECR	136	Filing and Records Management	3
SECR	137	Office Procedures	3
ENGL	102	Communication Skills II	3
MEDT	107	Medical Report Transcription	4
		Total	17
		THIRD QUARTER	
NASC	113	Medical Science III	4
SPDR	136	Speech Communications	3
BUAD	110	Human Relations and Leadership Training	3
MEDT	110	Introduction to Medical Record Science	3
MEDT	199	Supervised Study	4
PHED	100	Fundamentals of Physical Activity	1
		Total	18

Course Number	Course Title	Course Credits
	SECOND YEAR	
	FOURTH QUARTER	
GOVT 180	American Constitutional Government	3
MEDT 211	Medical Record Science I	3
MEDT 299	Supervised Study	5
PHED	Physical Education Elective	1
	Elective	3
	Total	15
	FIFTH QUARTER	
ECON 160	American Economics	3
MEDT 212	Medical Record Science II	3
MEDT 299	Supervised Study	5
PHED	Elective	1
	Elective	3
	Total	15
	SIXTH QUARTER	
BUAD 276	Personnel Management	3
MEDT 213	Medical Record Science III	3
MEDT 299	Supervised Study	5
MEDT 298	Seminar	2
	Elective	3
	Total	16
	Total Minimum Credits for a Medical Records Major	99

NURSING

(Central Campus)

Degree: Associate in Applied Science

Length: Seven-quarter (two-year) program

Purpose: The two-year Associate Degree Nursing Program is designed:

To prepare selected students to qualify as contributing members of the health team, rendering direct patient care as beginning practitioners of nursing in a variety of health service facilities. At the successful completion of the program, students will be eligible to take the Virginia State Board of Nursing examinations leading to licensure as a registered nurse (R.N.).

To provide a base of general education from which the individual

student will grow and develop—as a person, a worker, and a citizen of the community. Students who successfully complete the program are awarded the Associate in Applied Science degree.

Occupational Objectives: Employment opportunities for the Registered Nurse include staff positions in hospitals, nursing homes, health departments, physicians' offices, clinics, day care centers, and civil service.

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

Students who do not meet these requirements may be permitted to correct their deficiencies in the Foundation (Preparatory) Program before entering the Nursing curriculum.

2. High school record of achievement must reflect a "C" average in academic subjects excluding foreign language.
3. Evidence of good physical and mental health. Applicants must be free from any physical or mental condition which might adversely affect acceptance or performance as a nurse practitioner.
4. The program is open to both male and female applicants. Marital status is not a factor.
5. Students majoring in nursing are admitted annually in September: therefore, early application is desirable.

Program Requirements: The College (Nursing Program) reserves the right to recommend to the Coordinator of Instructional Programs the withdrawal of any student whose adjustment and progress in the area of nursing and/or personal demeanor do not meet the prescribed level as recommended by the Nursing Program faculty.

Any student who receives a final grade less than "C" in a nursing course will be recommended to the Coordinator of Instructional Programs for suspension from the program. Reinstatement must be by petition to and recommendation from the Nursing Program Review Committee and approval of the Coordinator of Instructional Programs.

Students are totally responsible for transportation to and from the College and the various hospitals and other health agencies which are

utilized for clinical laboratory experiences. The purchase of items such as student uniform and accessories, and Nursing Student Liability Insurance are the financial responsibility of the individual student.

Upon satisfactory completion of the program described, the student will be awarded the Associate in Applied Science degree with a major in nursing.

Special Accreditation Status: The program is fully approved by the Virginia State Board of Nurse Examiners and has been granted reasonable assurance of accreditation by the National League for Nursing, Department of Associate Degree Programs.

NURSING

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST YEAR	
		FIRST QUARTER	
NASC	111	Medical Science I	4
ENGL	101	Communication Skills I	3
PSYC	110	Principles of Applied Psychology	3
NURS	111	Fundamentals of Nursing I	5
HLTH	100	Orientation to Allied Health Careers	1
GENL	100	Orientation	1
		Total	17
		SECOND QUARTER	
NASC	112	Medical Science II	4
ENGL	102	Communication Skills II	3
PSYC	130	Child Growth and Development	3
NURS	112	Fundamentals of Nursing II	6
NURS	199	Supervised Study	1
		Total	17
		THIRD QUARTER	
NASC	113	Medical Science III	4
SPDR	136	Speech Communications	3
PSYC	116	Psychology of Personal Adjustment	3
NURS	113	Fundamentals of Nursing III	8
NURS	199	Supervised Study	1
		Total	19
		FOURTH QUARTER	
NURS	221	Nursing in Major Health Problems I	8
NURS	299	Supervised Study	1
		Total	9

Course Number		Course Title	Course Credits
		SECOND YEAR	
		FIFTH QUARTER	
ECON	160	American Economics	3
SOCI	101	Introductory Sociology I	3
NURS	222	Nursing in Major Health Problems II	8
NURS	299	Supervised Study	1
		Elective	3
		Total	18
		SIXTH QUARTER	
GOVT	180	American Constitutional Government	3
SOCI	102	Introductory Sociology II	3
NURS	223	Nursing in Major Health Problems III	8
NURS	299	Supervised Study	1
		Elective	3
		Total	18
		SEVENTH QUARTER	
SOCI	103	Introductory Sociology III	3
NURS	224	Nursing in Major Health Problems IV	8
NURS	299	Supervised Study	1
NURS	298	Seminar	2
		Elective	3
		Total	17
		Total Minimum Credits for a Nursing Major	115

PUBLIC SERVICE RELATED CURRICULUMS

- **Associate in Applied Science**

  Fire Science
  Hotel, Restaurant, and Institutional Management (Hotel/Motel, Food Service, and Institutional Management)
  Police Science

- **Certificate**

  Corrections Science
  Fire Science
  Hotel, Restaurant, and Institutional Management (Hotel/Motel, Food Service, and Institutional Management)
  Police Science

FIRE SCIENCE

(Central and Eastern Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: Losses which occur due to fire each year have caused much concern among the general public and they are demanding that the best protection possible be provided. The control and extinguishing of fire has in truth become a science and the techniques and methods of control are constantly becoming more scientific. The Associate in Applied Science Degree curriculum in Fire Science is designed to prepare persons for full-time employment upon completion of the community college program.

Occupational Objectives: A variety of career fields either in the public or private sector exist for the educated, well-trained fire specialist. The following list suggests some of the choices:

1. College Instructor or Administrator
2. Fire Suppression (Local, State, Federal)
3. Equipment Manufacturing (Research & Development, Sales, Service)
4. Fire Prevention (Local, State, Federal)
5. Aero-space Technology (Technicians, Consultants, Specialists)
6. Underwriting Organizations
7. Industrial Fire Brigades
8. Fire Communications (Local and State)
9. Fire Protection (Industry, Local and State)
10. Fire Suppression (Forestry, State and Federal)

Admission Requirements: In addition to the general admission requirements for the college (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Applied Science Degree program in Fire Science requires a personal interview with a representative of the fire science program; satisfactory performance on general aptitude test as required; and verification of excellent physical condition, free from physical or mental conditions which might adversely affect acceptance or performance in the fire service.

Program Requirements: Approximately one-half of the curriculum will include courses in fire science with the remaining courses in related areas, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in fire science. Each student is urged to consult with his faculty advisor and the Counseling Department of the community college in plannning his program and selecting his electives. Upon satisfactory completion of the six-quarter program listed on the next page, the graduate will be awarded the Associate in Applied Science Degree in Fire Science.

FIRE SCIENCE

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
FIRE	106	Fire Protection Organization	3
FIRE	108	Fundamentals of Fire Suppression	3
PHYS	101	Introductory Physics I	4
ENGL	101	Communication Skills I	3
MATH	111	Technical Mathematics I	3
GENL	100	Orientation	1
PHED	100	Fundamentals of Physical Activity	1
		Total	18
		SECOND QUARTER	
FIRE	137	Fire Fighting Tactics & Strategy	3
FIRE	120	Fire Protection Equipment and Systems	3
CHEM	101	General Chemistry I	4
ENGL	102	Communication Skills II	3
MATH	112	Technical Math II	3
		Total	16
		THIRD QUARTER	
FIRE	109	Fire Suppression Operations	3
FIRE	100	Fire Service Administration	3
ELEC	( )	Elective	3
FIRE	111	Hazardous Materials	3
CHEM	102	General Chemistry II	4
		Total	16
		FOURTH QUARTER	
FIRE	216	Fire Hydraulics & Equipment	4
FIRE	227	Building Construction & Codes	4
FIRE	237	Arson Detection & Investigation	3
PSYC	110	Principles of Applied Psychology	3
ELEC	( )	Elective	3
PHED	( )	Phys. Ed. Elective	1
		Total	18
		FIFTH QUARTER	
FIRE	207	Radiation Control	3
FIRE	116	Fundamental of Fire Prevention	3
SOCI	101	Introductory Sociology	3
ECON	160	American Economics	3
ENGL	127	Technical Writing	3
		Total	15

Course Number		Course Title	Course Credits
		SIXTH QUARTER	
FIRE	206	Rescue Practices	3
FIRE	208	Water Distribution System	3
GOVT	180	American Constitution Government	3
SPDR	136	Speech Communications	3
ELEC	( )	Elective	3
PHED		Phys. Ed. Elective	1
		Total	16
		Total Minimum Credits for a Fire Science Degree	99

FIRE SCIENCE

(Central and Eastern Campus)

Certificate: Certificate in Fire Science

Length: Three-quarter (one-year) program

Purpose: The Certificate Program is designed for practitioners in fire science occupations who wish to upgrade and broaden their professional abilities and for others who are preparing themselves to enter the fire science field.

Occupational Objectives: Training and positions in fire prevention and suppression, fire protection engineering, safety engineering, insurance inspection and investigation, industrial safety, building inspection.

Admission Requirements: In addition to requirements for general admission to the College, a personal interview with a member of the Fire Science faculty is required.

Program Requirements: The program combines training in advanced fire protection and fire fighting techniques and management with selected arts and sciences courses which have direct application to fire sciences and others which contribute to the advancement of social understanding and communication.

FIRE SCIENCE

Certificate Program

Course Number	Course Title	Course Credits
	FIRST QUARTER	
FIRE 106	Fire Protection Organization	3
FIRE 108	Fundamentals of Fire Suppression	3
CHEM 101	General Chemistry I	4
ENGL 101	Communication Skills I	3
MATH 011	Elements of Mathematics I	3
GENL 100	Orientation	1
	Total	17
	SECOND QUARTER	
FIRE 109	Fire Suppression Operations	3
FIRE 120	Fire Protection Equipment and Systems	3
CHEM 102	General Chemistry II	4
ENGL 102	Communication Skills II	3
MATH 012	Elements of Mathematics II	3
	Total	16
	THIRD QUARTER	
FIRE 116	Fundamentals of Fire Prevention	3
FIRE 100	Fundamentals of Fire Service Administration	3
FIRE 111	Hazardous Materials	3
GOVT 180	American Constitutional Government	3
PSYC 110	Principles of Applied Psychology	3
ECON 160	American Economics	3
	Total	18
	Total Minimum Credits for Certificate in Fire Science	51

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT

(Central Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: With the rapid development of the public hospitality industry in Virginia, there is great demand for qualified personnel to assist in its management and growth. The Association in Applied Science Degree curriculum in Hotel, Restaurant, and Institutional Man-

agement is designed primarily for persons who seek full-time employment in the public hospitality industry immediately upon completion of the community college curriculum. This curriculum is designed to enable young men and women to enter executive training and management positions in:

Hotels, Motels and Motor Hotels
Food Establishments
Recreation Centers
College Feeding Complexes
Hospitals
Resorts
Private Clubs
Travel and Tourist Operations
Airlines

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog) entry into the Associate in Applied Science degree curriculum in Hotel, Restaurant, and Institutional Management requires one year of science and a proficiency in mathematics and English. Students who are not proficient in these subject areas will be required to correct their deficiencies in the Preparatory (Foundations) Program before entering the curriculum.

Program Requirements: This curriculum aims at providing a general education, yet a realistic and practical concentration in the area of public hospitality administration. The student develops a working grasp of the principles of hotel, restaurant, and institutional management and becomes familiar with the technical methods to successfully meet the challenges of one of the largest and most important of America's business enterprises. The Hotel, Restaurant, and Institutional Management curriculum provides three areas of specialization within the framework of the curriculum:

Hotel-Motel Management
Institutional Management
Food Service Management

Upon completion of the six-quarter curriculum listed on the following page, the student will be awarded the Associate in Applied Science degree in Hotel, Restaurant, and Institutional Management with a major in either Food Service Management, Hotel-Motel Management, or Institutional Management.

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT

Associate in Applied Science

Hotel/Motel Option

Course Number		Course Title	Course Credits
		FIRST QUARTER	
ENGL	101	Communications Skills I	3
MATH	151	Business Mathematics I	3
ACCT	111	Accounting I	4
HRIM	124	Food Preparation I	4
HRIM	111	Food Science I	3
GENL	100	Orientation	1
		Total	18
		SECOND QUARTER	
ENGL	102	Communication Skills II	3
MATH	152	Business Mathematics II	3
ACCT	112	Accounting II	4
HRIM	125	Food Preparation II	4
HRIM	112	Food Science II	3
PHED	100	Fundamentals of Phys. Activity	1
		Total	18
		THIRD QUARTER	
SPDR	136	Speech Communications	3
HRIM	140	Principles of Baking	4
HRIM	113	Food Science III	3
HRIM	186	Equipment, Layout-Design	3
ACCT	126	Hotel/Restaurant Accounting	3
		Total	16
		FOURTH QUARTER	
HRIM	284	Hotel/Restaurant Organization Mgmt I	3
HRIM	287	Hotel/Motel Front Office Procedure	3
MKTG	268	Property Management	3
BIOL	266	Sanitation	3
ECON	160	American Economics	3
PHED		Physical Education Elective	1
		Total	16

Course Number	Course Title	Course Credits
	FIFTH QUARTER	
PSYC	Principles of Applied Psychology or Human Relations	3
MKTG 288	Sales Promotion & Customer Relations	3
HRIM 276	Food & Beverage Cost Control I	3
HRIM 285	Hotel/Restaurant Organization Mgmt II or	
HRIM 256	Club Management Option	3
HRIM 266	Food Purchasing	3
	Total	15
	SIXTH QUARTER	
GOVT 180	American Constitutional Government	3
HRIM 289	Hotel/Motel Law	3
HRIM 265	Food & Beverage Cost Control II	3
BUAD 276	Personnel Management	3
HRIM 286	Catering	3
PHED	Physical Education Elective	1
	Total	16
	Total Minimum Credits for the Hotel, Restaurant and Institutional Management (Hotel/Motel Option) Degree	97

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Associate in Applied Science

Food Service Option

Course Number	Course Title	Course Credits
	FIRST QUARTER	
ENGL 101	Communication Skills I	3
MATH 151	Business Mathematics I	3
ACCT 111	Accounting I	4
HRIM 124	Principles of Food Preparation I	4
HRIM 111	Food Science I	3
GENL 100	Orientation	1
	Total	18
	SECOND QUARTER	
ENGL 102	Communication Skills II	3
MATH 152	Business Mathematics II	3
ACCT 112	Accounting II	4
HRIM 125	Principles of Food Preparation II	4
HRIM 112	Food Science II	3
PHED 100	Fundamentals of Physical Activity	1
	Total	18

Course Number		Course Title	Course Credits
		THIRD QUARTER	
SPDR	136	Speech Communications	3
HRIM	140	Principles of Baking	4
HRIM	113	Food Science III	3
HRIM	186	Equipment Layout-Design	3
ACCT	126	Hotel/Restaurant Accounting	3
		Total	16
		FOURTH QUARTER	
HRIM	284	Hotel/Restaurant Organization Mgmt I	3
HRIM	221	Quantity Food Preparation I	4
PSYC		Principles of Applied Psychology or Human Relations	3
BIOL	266	Sanitation	3
ECON	160	American Economics	3
PHED		Phys. Ed. Elective	1
		Total	17
		FIFTH QUARTER	
BUAD	277	Personnel Training for RHI	2
HRIM	222	Quantity Food Preparation II	4
HRIM	264	Food & Beverage Cost Control I	3
HRIM	285	Restaurant Organization Mgmt II or Club Managment Option	3
HRIM	266	Food Purchasing	3
PHED		Physical Education Elective	1
		Total	16
		SIXTH QUARTER	
GOVT	180	American Constitutional Government	3
HRIM	233	Quantity Fool Preparation III	4
HRIM	265	Food & Beverage Cost Control II	3
BUAD	276	Personnel Management	3
HRIM	286	Catering	3
		Total	16
		Total Minimum Credits for Hotel, Restaurant and Institutional Management (Food Service Management) Degree	97

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Associate in Applied Science

Institutional Management Option

Course Number		Course Title	Course Credits
		FIRST QUARTER	
ENGL	101	Communication Skills I	3
MATH	151	Business Mathematics I	3
ACCT	111	Accounting I	4
HRIM	124	Food Preparation	4
HRIM	111	Food Science I	3
GENL	100	Orientation	1
		Total	18
		SECOND QUARTER	
ENGL	102	Communication Skills II	3
MATH	152	Business Mathematics II	3
HRIM	134	Nutrition I	3
HRIM	125	Food Preparation II	4
HRIM	112	Food Science II	3
PHED	100	Foundations of Physical Activity	1
		Total	17
		THIRD QUARTER	
SPDR	136	Speech Communications	3
HRIM	140	Principles of Baking	4
HRIM	113	Food Science III	3
HRIM	186	Equipment Layout-Design	3
HRIM	135	Nutrition II	3
		Total	16
		FOURTH QUARTER	
HRIM	284	Hotel/Restaurant Organization Mgmt I	3
HRIM	221	Quantity Food Preparation I	4
PSYC		Principles of Applied Psych. or Human Relations	3
BIOL	266	Sanitation	3
HRIM	234	Therapeutic Nutrition	3
PHED		Phys. Ed. Elective	1
		Total	17

Course Number		Course Title	Course Credits
		FIFTH QUARTER	
HRIM	222	Quantity Food Preparation II	4
HRIM	264	Food & Beverage Cost Control I	3
HRIM	285	Hotel/Restaurant Organization Mgmt II	3
HRIM	235	Therapeutic Nutrition II	3
HRIM	266	Food Purchasing	3
		Total	16
		SIXTH QUARTER	
GOVT	180	American Constitutional Government	3
HRIM	223	Quantity Food Preparation III	4
HRIM	265	Food & Beverage Cost Control II	3
BUAD	276	Personnel Management	3
ECON	160	American Economics	3
PHED		Phys. Ed. Elective	1
		Total	17
		Total Minimum Credits for the Hotel, Restaurant and Institutional Management (Institutional Management Option) Degree	97

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Certificate Program

(Central Campus)

Certificate Program: Options of—Hotel/Motel Management, Food Service Management, Institutional Management.

Length: Three-quarter (one-year) program.

Purpose: There is a community requirement to update employees in the Hospitality Industry as well as to introduce formal classroom teaching to augment the present on the job training of the many thousands of Hotels, Motels, Restaurants, and Institutions in the Northern Virginia area. The HRIM Certificate program is designed to accomplish this need.

Admission Requirements: The general admission requirements of the College.

Program Requirements: The Certificate program must and does provide a realistic and practical concentration of technical courses so needed by the Hospitality Industry but also provides subjects to yield an all around general education. Students may carry either the full curriculum to receive the certificate in one year or may take the number of courses to suit their allowed time and receive their certificate upon completion of the required number of courses.

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Certificate Program

Elective in Hotel/Motel Management

Course Number		Course Title	Course Credits
		FIRST QUARTER	
GENL	100	Orientation	1
ENGL	101	Communication Skills	3
ECON	160	Survey of American Economics	3
HRIM	284	Hotel-Restaurant Organization & Mgmt I	3
HRIM	287	Hotel-Motel Front Office Procedure	3
MKTG	268	Property Management	3
		Total	16
		SECOND QUARTER	
ACCT	111	Accounting I	4
HRIM	264	Food & Beverage Cost Controls I	3
HRIM	266	Food Purchasing	3
HRIM	285	Hotel-Restaurant Organization Mgmt	3
MKTG	228	Sales Promotion & Customer Relations	3
		Total	16
		THIRD QUARTER	
GOVT	180	American Constitutional Government	3
PSYC	110	Principles of Applied Psychology	3
ACCT	126	Restaurant Accounting	3
HRIM	265	Food & Beverage Cost Controls II	3
HRIM	289	Hotel and Motel Law	3
		Total	15
		Total Credits	47

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Certificate Program

Elective in Food Service Management

Course Number		Course Title	Course Credits
		FIRST QUARTER	
GENL	100	Orientation	1
HRIM	124	Principles of Food Preparation I	4
ENGL	101	Communication Skills I	3
HRIM	284	Hotel-Restaurant Organization & Mgmt I	3
BIOL	266	Sanitation	3
ECON	160	Survey of American Economics	3
		Total	17

Course Number		Course Title	Course Credits
		SECOND QUARTER	
ENGL	102	Communication Skills II	3
HRIM	125	Principles of Food Preparation II	4
HRIM	255	Hotel-Restaurant Organization & Mgmt II	3
HRIM	264	Food & Beverage Cost Controls I	3
HRIM	266	Food Service Purchasing	3
		Total	16
		THIRD QUARTER	
GOVT	180	Amer Constitutional Government	3
PSYC	110	Principles of Applied Psychology	3
HRIM	186	Equipment Layout/Design	3
HRIM	140	Principles of Baking	4
HRIM	265	Food & Beverage Cost Controls II	3
		Total	16
		Total Credits	49

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Certificate Program

Elective in Institutional Management

Course Number		Course Title	Course Credits
		FIRST QUARTER	
GENL	100	Orientation	1
HRIM	124	Principles of Food Preparation I	4
ENGL	101	Communication Skills I	3
HRIM	284	Hotel-Restaurant Organization & Mgmt I	3
BIOL	266	Sanitation	3
ECON	160	Survey of American Economics	3
		Total	17
		SECOND QUARTER	
HRIM	134	Nutrition I	3
HRIM	125	Principles of Food Preparation II	4
HRIM	255	Hotel-Restaurant Organization & Mgmt II	3
HRIM	264	Food & Beverage Cost Controls I	3
HRIM	266	Food Service Purchasing	3
		Total	16

Course Number		Course Title	Course Credits
		THIRD QUARTER	
GOVT	180	Amer Constitutional Government	3
PSYC	110	Principles of Applied Psychology	3
HRIM	135	Nutrition II	3
HRIM	140	Principles of Baking	4
HRIM	265	Food & Beverage Cost Controls II	3
		Total	16
		Total Credits	49

POLICE SCIENCE

(Central and Eastern Campus)

Degree: Associate in Applied Science

Length: Six-quarter (two-year) program

Purpose: The curriculum in Police Science has been developed and is maintained in cooperation with state and local police officials. The curriculum is not designed to train for any speciality, but rather to provide a broad foundation which will prepare the student to enter any of the many fields of law enforcement. Adjustments will be made to enable a qualified student to prepare for transfer to a baccalaureate degree in Police Science.

Occupational Objectives:

Commercial and Industrial Security Officer

Local, State, and Federal Enforcement Officer

Police Officer

Private, or Government Investigator

Advancement within the Profession

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the Associate in Applied Science degree program in Police Science requires the following:

1. A written statement from the law enforcement agency having jurisdiction in the applicant's area of residence as to his record of conduct. (This requirement is waived for employees of law enforcement agencies.)
2. A personal interview with a representative of the Police Science Department.

3. Satisfactory results on any additional tests that may be required by the counseling department.

Special Requirements:

A. 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 usual requirements for such positions include excellent health, minimum of 20/40 vision, 5'8" height, and excellent moral character. The physical requirements for entry into other agencies in the law enforcement field may be less rigorous.

B. Qualified students who expect to continue on to a senior institution to complete their requirements for a four-year degree in Law Enforcement may have their programs adjusted to do so under the following conditions:

1. Obtain written permission from the Chairman of the Police Science Department.

2. Maintain a minimum grade point average of 2.6 or better in their Police Science subjects.

Program Requirements: Approximately one-half of the curriculum will include courses in Police Science with the remaining courses in related subjects, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in Police Science. Each student is urged to consult with his faculty advisor and the Counseling Department of the Community College in planning his program and selecting his electives. Students who qualify and who plan to transfer to a senior college or university to complete a baccalaureate degree program in Police Science (Law Enforcement) will be advised to substitute several other courses than those described, to conform with the curriculum of the four-year institution to which transfer is contemplated. Upon completion of the six-quarter program described, the student will be awarded the Associate in Applied Science degree with major in Police Science.

Students who possess an adequate background in law enforcement may substitute appropriate alternate courses offered by this institution in lieu of courses prescribed in the curriculum for the degree requirement upon obtaining permission of the Department Chairman.

SPECIAL NOTE TO LAW ENFORCEMENT OFFICERS

Law Enforcement Officers are reminded that courses in Police Science offered at this College qualify under the Virginia State Education Law, Chapter 177, Acts of the Assembly, 1966, which states in part:

"Any law enforcement officer of the state, or of any county, city or town, thereof, who attends any college which offers a degree or associate degree in Law Enforcement, may, upon application and acceptance in such college in an accredited course toward such degree, apply to the Department of Education for Virginia for reimbursement of the tuition paid for such course."

Under provisions of the Federal Safe Streets Act of 1968, loans of amounts up to $1,800 per academic year are available to students pursuing a college education in police science or law enforcement.

After completion of the course, for each year spent in law enforcement the government will forgive 25% of the loan. Thus, after 4 years of such employment, the loan is considered to be paid in full without any need for the student to make any financial repayment. Provisions are made for military service, disability, etc.

Under the same program grants of amounts up to $600 per academic year to defray tuition costs are available to law enforcement and corrections officers.

Such grants are forgiven by two years continued service in law enforcement.

Full details are available at either the College Counseling Office, or the Police Science Program.

POLICE SCIENCE

Associate in Applied Science Degree Program

Course Number		Course Title	Course Credits
		FIRST QUARTER	
PLCE	100	Introduction to Law Enforcement	3
PLCE	110	Patrol Administration	3
ENGL	101	Communication Skills I	3
SOCI	101	Introductory Sociology I	3
NASC	100	Survey of Science	4
GENL	100	Orientation	1
PHED	100	Fundamentals of Physical Activity	1
		Total	18
		SECOND QUARTER	
PLCE	120	Special Enforcement Problems (or elective)	3
PLCE	187	Traffic Administration and Control (or elective)	3
ENGL	102	Communication Skills II	3
SOCI	102	Introductory Sociology II	3
PSYC	110	Principles of Applied Psychology	3
		Total	15

Course Number		Course Title	Course Credits
		THIRD QUARTER	
PLCE	126	Prevention & Control of Juvenile Delinquency (or elec.)	3
PLCE	150	Introductory Police Photography (or elective)	2
SPDR	136	Speech Communications	3
GOVT	187	American National Government	5
PSYC	116	Psychology of Personal Adjustment	3
		Total	16
		FOURTH QUARTER	
PLCE	244	Principles of Criminal Investigation	3
PLCE	270	Industrial & Commercial Security (or elective)	3
PLCE	130	Criminal Law	3
PLCE	111	Police Organization & Administration I	3
		Elective	3
PHED		Phys. Ed. Elective	1
		Total	16
		FIFTH QUARTER	
PLCE	245	Advanced Criminal Investigation	3
PLCE	136	Legal Evidence	3
PLCE	112	Police Organization & Administration II	3
SOCI	276	Criminology (or elective)	3
		Elective	3
		Total	15
		SIXTH QUARTER	
PLCE	236	Criminal Procedures	3
PLCE	160	Police Communication & Records (or elective)	3
PLCE	298	Seminar and Project in Law Enforcement (or elective)	2
GOVT	296	Seminar in Public Affairs	2
ECON	160	American Economics	3
PLCE	228	Law Enforcement and the Community	3
PHED		Phys. Ed. Elective	1
		Total	17
		Total Minimum Credits for a Police Science Major	97

POLICE SCIENCE

(Central and Eastern Campus)

Certificate: Certificate in Police Science

Length: Three-quarter (one-year) program

Purpose: The Certificate Program is designed for practitioners in law enforcement and associated fields who desire to take only those courses which relate directly to their employment needs. However,

students who fail to demonstrate an ability to meet academic standards may be advised to enroll in appropriate support classes which are designed to provide the background necessary for academic proficiency.

Admission Requirements: In addition to requirements for general admission to the College, a personal interview with a member of the faculty of the Police Science Department is required.

Program Requirements: The Police Science Certificate Program is designed to improve the job related skills of the person engaged in law enforcement. Students will be advised as to which courses are most applicable to their field of interest and will upon successful completion of 49 credits in the Police Science curriculum, be awarded a certificate in Police Science.

Moreover, upon completion of the certificate program, students may continue on toward the Associate in Applied Science Degree in Police Science and will be awarded this degree upon successful completion of the prescribed support courses.

POLICE SCIENCE

Certificate in Police Science

Course Number		Course Title	Course Credits
GENL	100	Orientation	1
PLCE	100	Introduction to Law Enforcement	3
PLCE	110	Patrol Administration	3
PLCE	120	Special Enforcement Problems	3
PLCE	187	Traffic Administration and Control	3
PLCE	126	Prevention and Control of Juvenile Delinquency	3
ENGL	101	Communication Skills I	3
PLCE	244	Principles of Criminal Investigation	3
PLCE	270	Industrial and Commercial Security	3
PLCE	130	Criminal Law	3
PLCE	111	Police Organization and Administration	3
GOVT		Government Elective	3
PLCE	136	Legal Evidence	3
PSYC	110	Principles of Applied Psychology	3
PLCE	236	Criminal Procedures	3
PLCE	160	Police Communication and Records	3
ECON	160	American Economics	3
		Total	49
		Total Minimum Credits for a Certificate in Police Science	49

CORRECTIONS (Police Science)

(Central and Eastern Campus)

Certificate: Certificate in Corrections Science

Length: Three-quarter (one-year) program

Purpose: There is a growing community interest in developing adequate corrections facilities staffed with properly trained personnel. The Certificate Program is designed for people who are preparing themselves to enter the field of corrections and to upgrade the professional ability of practitioners in corrections.

Admission Requirements: In addition to requirements for general admission to the College, a personal interview with a member of the faculty of the Police Science Department is required.

Program Requirements: For those persons wishing to improve their skills in the Corrections field, the Corrections Science program provides the needed concentration of courses. Students will be advised as to which courses are most applicable to their field of interest and will upon successful completion of 49 credits in the Corrections curriculum, be awarded a certificate in Corrections.

If, due to their employment commitments, practitioners are not able to carry a full academic program, they will be advised as to the sequence of courses to be taken best suited to their individual needs.

Federal Grants and Loans: Students are advised that corrections officers are included under the definition of Law Enforcement Officer for purposes of obtaining Grants and Loans under the Safe Streets Act of 1968. See page 128 for further details.

CORRECTIONS
(Police Science)
Certificate

Course Number	Course Title	Course Credits
	FIRST QUARTER	
GENL 100	Orientation	1
ENGL 101	Communication Skills I	3
PSYC 110	Principles of Applied Psychology	3
SOCI 101	Introductory Sociology I (or elective)	3
GOVT 180	Amer. Constitutional Gov. (or elective)	3
SOCI 276	Criminology	3
	Total	16

Course Number		Course Title	Course Credits
		SECOND QUARTER	
ENGL	102	Communication Skills II	3
SOCI	102	Introductory Sociology II (or elective)	3
ECON	160	American Economics	3
PLCE	126	Prevention & Control of Juv. Delinquency	3
CRIM	141	Criminal Behavior	3
CRIM	121	Criminal Offenses	3
		Total	18
		THIRD QUARTER	
SPDR	136	Speech Communications	3
SOCI	103	Introductory Sociology III (or elective)	3
PSYC	257	Law Enforcement Psychology	3
CRIM	201	Corrections and the Community	3
CRIM	211	Assessment in Criminology	3
		Total	15
		Total Credits	49

PREPARATORY FOUNDATION PROGRAM

(Central and Eastern Campus)

Foundation and developmental programs are offered to help prepare individuals for admission to the occupational-technical program and to the university parallel-college transfer program in the College. These programs are designed to help develop the basic skills and understandings necessary to succeed in other programs of the College.

The foundation program provides an opportunity to obtain needed knowledges and skills for an individual who is not fully prepared for entry into an associate degree program because he has previously not had an opportunity to complete an appropriate educational course or program or because he has low achievement in his previous educational programs. A student is placed in the foundation program after a close analysis of his high school transcript, test scores, and other data available on his achievement level.

Through the use of specialized teaching method and modern equipment with an extensive concentration upon laboratory experiences, the student may, through concentrated effort in the areas of his weakness, progress at his own rate. The student will be tested frequently for the purpose of finding the progress he is making.

The student may use either of two approaches to improve his knowledges and skills in the foundation program. In one approach, he may

enroll in the regular foundation courses scheduled each quarter at the College. In the other approach the student may utilize the materials and equipment in the Learning Laboratory for individual study of appropriate units or course materials in the areas of his deficiencies. Personnel in the Learning Laboratory or other faculty members of the College would be available to provide individualized assistance for the student. Progressing at his own rate, the student may complete the unit of study at any time that he demonstrates sufficient mastery of the subject to meet the minimum requirements for the unit or course.

A student in the foundation programs may be taking all of his work at the foundation level or he may be taking some associate degree level courses for which he is qualified in addition to one or more foundation courses. Many of the foundation courses will provide credit applicable to the requirements of a diploma or certificate program. In addition, if the student takes any associate degree courses, the credit earned in these courses may be transferred to an associate degree curriculum when the student is admitted to the associate degree curriculum and if the courses are applicable to the curriculum.

The student is urged to consult with the Counseling Department of the College in planning his program and selecting his courses.

TYPICAL FOUNDATION (PREPARATORY) PROGRAM

Course Number		Course Title	Course Credits
		FIRST QUARTER	
ENGL	01	Verbal Studies Lab.	5
MATH	01	Developmental Mathematics	5
ENGL	08	Reading Improvement	5
GENL	100	Orientation	1
		Total	16
		SECOND QUARTER	
ENGL	01	Verbal Studies Lab.	5
MATH	01	Developmental Math.	5
PSYC	28	Survey of Human Relations	3
		Total	13
		THIRD QUARTER	
ENGL	01	Verbal Studies Lab.	5
MATH	01	Developmental Math.	5
NASC	100	Survey of Science	4
		Total	14

PRE-TECHNICAL PROGRAM

For those students who are restricted from entering an Associate Degree program because of a deficiency of one or more courses in their high school experience, the Pre-Technical Program is an opportunity for gaining the experiences required for the selected specialization. The course content in the Pre-Technical Program supplements the high school courses in which the student is deficient.

The student enrolling in the Pre-Technical curriculum will select only those courses in which he is deficient. His remaining program will be selected from the non-technical courses in his Associate degree major.

MATH	01	Developmental Mathematics	5
MATH	06	Basic Arithmetic	5
MATH	31-32-33	Algebra I-II-III (5 cr.) (5 cr.) (5 cr.)	5
MATH	36	Plane Geometry	5
MATH	38	Trigonometry	5
CHEM	06	Chemistry	5
PHYS	06	Physics	5
BIOL	06	Biology	5

CONTINUING ADULT EDUCATION AND COMMUNITY SERVICE PROGRAMS

In order to fulfill the ever-increasing educational needs of the community, the Northern Virginia Community College offers a well-planned diversified program which includes the following: (1) An opportunity to pursue degree programs, diploma programs, certificate programs and college credit courses six days a week during the hours of 07:30 A.M. until 23:50 P.M.; (2) Classes, forums, lectures, exhibits, short courses, art festivals and music festivals to promote cultural affairs of the community; (3) Various community development programs and seminars which focus attention on social issues; (4) An offering of non-catalogued special courses or programs to the community's several industries, businesses, or professions, directed and taught at the College or at the client's site by the faculty and staff of the College; (5) Special services such as a speaker's/programs bureau, use of College facilities, tours and visits, and others as they are needed.

SPECIAL TRAINING PROGRAMS

Northern Virginia Community College works closely with the Special Training Division of the Virginia Department of Community Colleges in setting up training programs for industries and businesses that are expanding their facilities or are locating in Virginia for the first time.

Under these programs Virginians are trained in the basic skills required by a wide variety of job opportunities.

A few of the skills that have been taught by the Special Training Division include sewing operations, welding, electronics, motor winding, furniture construction, electronic assembly, shoe manufacturing, telephone assembly, paper manufacturing, candy making, printing, metal forming, tire manufacturing, supervisory development and machine operation.

Space, where needed, and qualified instructors are provided at State expense.

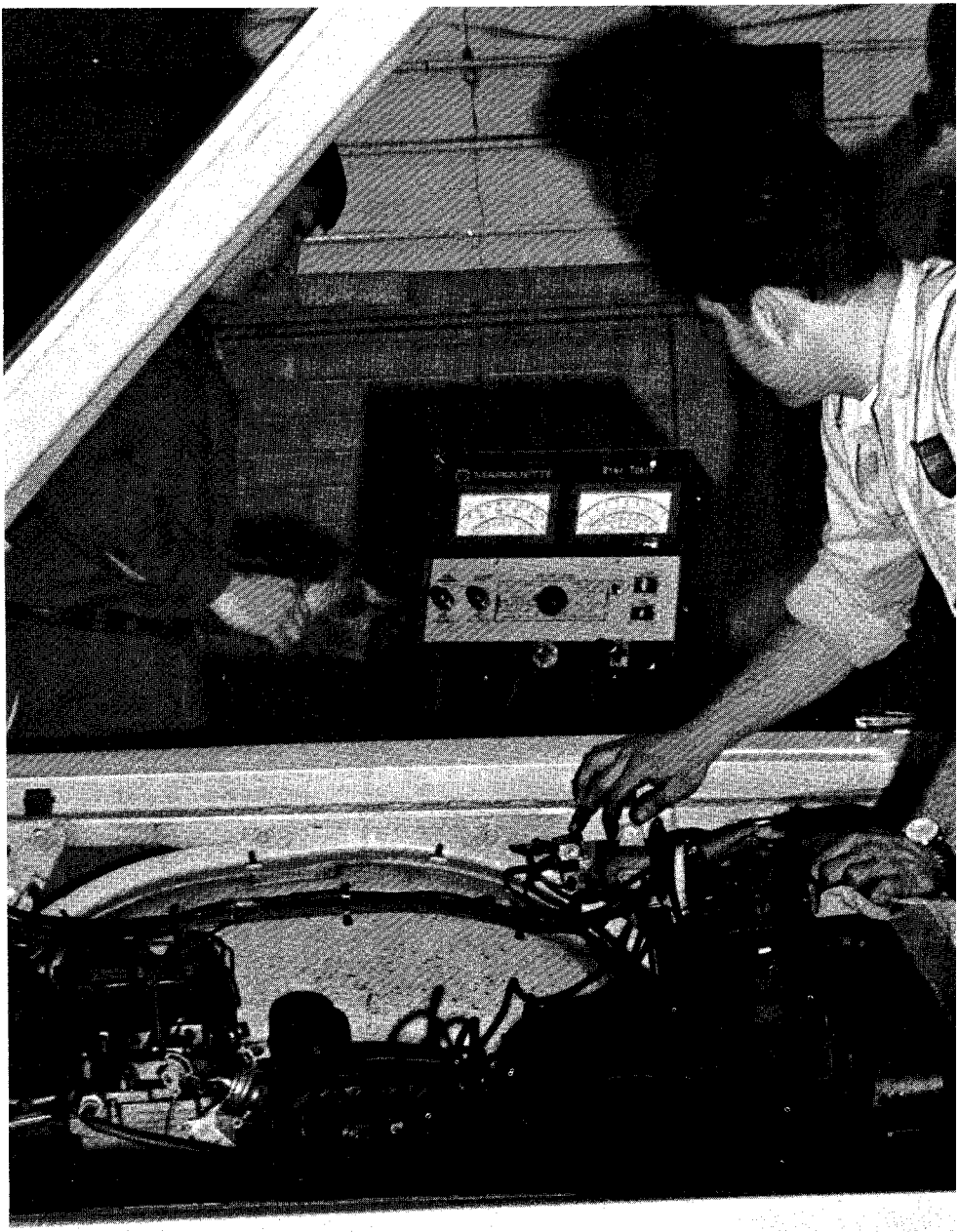
Further information may be obtained from the Director of Continuing Education and Community Service Programs or the Special Training Division, Virginia Department of Community Colleges, Richmond, Virginia 23219.

STATEWIDE ASSOCIATE DEGREE CURRICULUMS

Special statewide degree curriculums are available to all students but at only specified community colleges throughout the State. These curriculums are those assigned only to one or two colleges which by reason of their location are best suited to offer the curriculum, or because these curriculums are not required at all community colleges to meet State educational needs. Such statewide degree curriculums currently offered in the Virginia Community College System are as follows:

1. Agricultural Business Technology	Blue Ridge Community College
2. Broadcast Engineering Technology	Northern Virginia Community College
3. Civil Engineering Technology	Northern Virginia Community College Southwest Virginia Community College
4. Electromechanical Technology	Danville Community College
5. Environmental Technology	Wytheville Community College
6. Horticultural Technology	Virginia Western Community College
7. Hotel, Restaurant and Institutional Management	Northern Virginia Community College
8. Forest Technology	Dabney Lancaster Community College
9. Marine Technology	Thomas Nelson Community College
10. Mortuary Science	John Tyler Community College

11. Radiologic Technology	Central Virginia Community College
12. Real Estate Management	Northern Virginia Community College
13. Television Production Technology	Virginia Western Community College
14. Textile Management	Danville Community College



DESCRIPTION OF COURSES

Course Numbers

Courses numbered 000-099 are freshmen level courses for the foundation (preparatory) program and for the occupational programs. The credits earned in these courses are applicable toward diploma and certificate programs but are not applicable toward an associate degree.

Courses numbered 100-199 are freshmen level courses applicable toward an associate degree. They may also be used in certificate and diploma courses.

Courses numbered 200-299 are sophomore courses applicable toward an associate degree. They may also be used in certificate and diploma or programs.

Course Credits

The credit for each course is indicated after the title in the course description. One credit is equivalent to one collegiate quarter-hour credit or two-thirds of a collegiate semester hour credit.

Course Hours

The number of lecture hours in class each week (including lecture, seminar and discussion hours) and/or the number of laboratory hours in each week (including laboratory shop, supervised practice, and cooperative work experiences) are indicated for each course in the course description. The number of lecture and laboratory hours in class each week are also called "contact" hours because it is time spent under the direct supervision of a faculty member. In addition to the lecture and laboratory hours in class each week each student must spend some time on out-of-class assignments under his own direction. Usually each credit per course requires an average of three hours of in-class and out-of-class work each week.

Prerequisites

If any prerequisites are required before enrolling in a course, they will be identified in the course description. Courses in special sequences (usually identified by the numerals I-II-III) require that prior courses or their equivalent be completed before enrolling in the advanced courses, usually the corequisites must be taken at the same time. The prerequisites or their equivalent must be completed satisfactorily before enrolling in a course unless special permission is obtained from the Provost, and the instructor of the course.

ACCOUNTING

ACCT 111-112-113 ACCOUNTING I-II-III (4 cr.) (4 cr.) (4 cr.)—Fundamentals of accounting. The accounting cycle, journals, ledgers, working papers, and the preparation of financial statements under the various forms of business ownership. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

ACCT 126 RESTAURANT ACCOUNTING (3 cr.)—The application of accounting principles and practices to the hospitality industry. Analysis of financial statements as the basis for managerial decisions. Lecture 3 hours per week.

ACCT 211-212-213 PRINCIPLES OF ACCOUNTING I-II-III (3 cr.) (3 cr.) (3 cr.)—Accounting principles and their application to various forms of business inventory valuation, internal control systems, manufacturing processes, budgeting, and analysis of financial statements. Lecture 3 hours per week.

ACCT 221-222-223 INTERMEDIATE ACCOUNTING I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite ACCT 111-112-113 or ACCT 211-212-213. Extensive analysis of the principle elements of accounting systems and statements. Lecture 4 hours per week.

ACCT 229 AUDITING (3 cr.)—Prerequisite ACCT 111-112-113 or ACCT 211-212-213. Purposes of audit, relationships of auditor and client, kinds of audits, working papers, internal controls and examination of accounting systems, audit reports. Lecture 3 hours per week.

ACCT 234-235 COST ACCOUNTING I-II (3 cr.) (3 cr.)—Prerequisite ACCT 111-112-113 or ACCT 211-212-213. Studies in accounting systems, methods and statements involved in process and job cost accounting; use of standards and cost controls. Lecture 3 hours per week.

ACCT 244 BUSINESS TAXES I (3 cr.)—Principles of federal taxation relating to individual income taxes with emphasis on minimization of personal tax burden and preparation of personal tax returns; single preparation form and tax problems. Lecture 3 hours per week.

ACCT 245 BUSINESS TAXES II (3 cr.)—Prerequisite ACCT 244. Federal taxation principles and theories concerning partnership and corporation income tax concepts and problems. Emphasis on evaluation of business transactions from a tax point of view, partnership and corporate tax minimization and tax return preparation. Lecture 3 hours per week.

ACCT 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

ACCT 298 SEMINAR AND PROJECT (3 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ACCT 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

ARCHITECTURE

ARCH 100 INTRODUCTION TO ARCHITECTURAL TECHNOLOGY (2 cr.)—An intensive course outlining the history and impact of architecture. Emphasis on the dynamics and social aspects of architecture and society. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ARCH 111 ARCHITECTURAL DRAFTING I (3 cr.)—Designed to provide the fundamental knowledge of the principles of drafting. Skills and techniques of drafting including use of drafting equipment, lettering, freehand orthographic and pictorial sketching, geometric construction, and orthographic instrument drawing of principle views. Projection problems dealing with principles of descriptive geometry involving points, lines, planes and connectors. The principles of isometric, oblique and perspective drawings. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 112 ARCHITECTURAL DRAFTING II (3 cr.)—Prerequisite ARCH 111 or equivalent. Development of techniques in architectural lettering, symbols, and interpretation; dimensioning, freehand and instrument drafting. Drawing of construction details, using appropriate material symbols and connections. Sections, scale details and full-size details prepared from preliminary sketches. Applications of descriptive geometry in visualization and analytic solutions of drafting problems involving auxiliary views, intersections and developments. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 113 ARCHITECTURAL DRAFTING III (3 cr.)—Prerequisite ARCH 112. An approach in depth to the study of architectural drafting. Development of techniques in architectural lettering, dimensioning, freehand sketching and instrument drawing. Drawings of construction details, using appropriate material symbols and conventions. Working drawings, including plans, elevations, sections, scale details and full-size details will be prepared from preliminary sketches. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 141 MATERIALS AND METHODS OF CONSTRUCTION I (3 cr.)—Prerequisite ARCH 100 or ENGR 100. Designed to introduce the materials used in erection of structures, the physical properties and the architecture and characteristics of steel, concrete, timber, glass, related materials and the methods used in testing materials. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ARCH 142 MATERIALS AND METHODS OF CONSTRUCTION II (3 cr.) —Prerequisite ARCH 141. Designed to introduce the practical use of materials and methods of structures. The architectural and structional relationship of concrete, steel, and timber structures are analyzed with an introduction to cost analysis and the economic aspect involved in construction. Lecture 3 hours per week.

ARCH 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

ARCH 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ARCH 204-205 HISTORY OF ARCHITECTURE I-II (3 cr.) (3 cr.)—The history of architecture from ancient times to the present but with emphasis on the designs and forms of twentieth century developments. Lecture 3 hours per week.

ARCH 211 ARCHITECTURAL DRAFTING IV (3 cr.)—Prerequisite ARCH 113. Drawing of structural plans and details as prepared for building construction including steel, concrete, and timber structural components. Appropriate details and drawings necessary for construction and fabrication of structural members. Reference materials provide skills and knowledge in locating data and in using handbooks. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 212 ARCHITECTURAL DRAFTING V (3 cr.)—Prerequisite ARCH 211. Drawing of plans and details as prepared for mechanical equipment such as air conditioning, plumbing and electrical systems using appropriate symbols and conventions. Coordination of mechanical and electrical features with structural and architectural components. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 213 ARCHITECTURAL DRAFTING VI (3 cr.)—Prerequisite ARCH 212. Preparation of a complete set of working drawings for the architectural structure. Preparation of mill work drawings, cabinets and built-in-equipment detail. Final assembly of the complete document for construction purposes. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 236 BUILDING ELECTRIC EQUIPMENT (3 cr.)—Study of equipment, materials, and symbols. Building code requirements pertaining to residential and commercial construction; reading and interpretation of working drawings by electrical engineers; coordination of electrical structures with architectural and structural design. Lecture 3 hours per week.

ARCH 237 BUILDING MECHANICAL EQUIPMENT (3 cr.)—General study of heating, air conditioning, plumbing and electrical equipment, materials and symbols. Building code requirements pertaining to residential and commercial structures; reading and interpretation of working drawings by mechanical engineers; coordination of mechanical and electrical features with structural and architectural designs. Lecture 3 hours per week.

ARCH 240 FIELD INSPECTIONS (3 cr.)—Provide working knowledge of methods and procedures of building construction inspection and technical reporting on the project site. Lecture 3 hours per week.

ARCH 256 ARCHITECTURAL OFFICE PRACTICES (2 cr.)—A study of the professional relationship of the architectural firm in relation to clients, contractors, suppliers, consultants and other architects. Ethics of the profession as applicable to the draftsman's role in the architectural firm will be stressed. Lecture 2 hours per week.

ARCH 276 CONSTRUCTION ESTIMATING (3 cr.)—Interpretation of working drawings for a project; preparation of material and labor quantity surveys from plans and specifications; approximate and detailed estimates of cost. The student will study materials take-off, subcontractors' estimates of cost, and bid and contract procedures. Detailed inspection of the construction by comparing the finished work to the specifications. Lectures 3 hours per week.

ARCH 277 BUILDING CODES AND CONTRACT DOCUMENTS (3 cr.)—A study of building codes and their effect in relation to specifications and drawings. The purpose and writing of specifications will be studied along with their legal and practical application to working drawings. Contract documents will be analyzed and studied for the purpose of client-architect-contractor responsibilities, duties and mutual protection. Lectures 3 hours per week.

ARCH 279 CRITICAL PATH METHOD PROGRAM (3 cr.)—Working knowledge of C.P.M. programming and its implication for the building industry as a vehicle for control of project construction. Lecture 3 hours per week.

ARCH 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

ARCH 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection of career opportunities in the field. Variable hours.

ARTS

ARTS 90 ART WORKSHOP (1 cr.)—A workshop for individual special projects in basic art. Laboratory 3 hours per week.

ARTS 91 WORKSHOP IN WATERCOLOR (2 cr.)—A workshop for individual special projects in watercolor. Laboratory 6 hours per week.

ARTS 104-105-106 INTRODUCTION TO THE ARTS I-II-III (3 cr.) (3 cr.) (3 cr.)—A general survey of the arts which parallels the student's studio classes. Special emphasis on the arts of painting, sculpture, and architecture. Form and content are studied from the historical, sociological, and philosophical points of view. Lecture 3 hours per week.

ARTS 111-112-113 HISTORY AND APPRECIATION OF ART I-II-III (3 cr.) (3 cr.) (3 cr.)—The history and interpretation of architecture, sculpture and painting. The course begins with prehistoric art and follows the mainstream of western civilization to the present. Lectures 3 hours per week.

ARTS 121-122-123 THEORY AND PRACTICE OF DRAWING I-II-III (3 cr.) (3 cr.) (3 cr.)—Representational and non-representational drawings in charcoal, wash, pencil, and varied combinations of media. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 126 FREE-HAND SKETCHING (2 cr.)—Basic principles and practice in free-hand sketching. Laboratory 6 hours per week.

ARTS 151-152 DESIGN I-II (3 cr.) (3 cr.)—Experimentation and practice on design problems relating to visual communications with emphasis on techniques and solution. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 166-167 FUNDAMENTALS OF LETTERING I-II (3 cr.) (3 cr.)—Calligraphy as an introduction to script and the constructed letter; creative, free-hand, and mechanical lettering; other forms of letters used in today's graphic layout and design. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 180 INTRODUCTION TO PHOTOGRAPHY (2 cr.)—An introduction to the basic principles of photography with laboratory work related to the student's major field of interest. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ARTS 186 FUNDAMENTALS OF PHOTOGRAPHY (5 cr.)—A study of the fundamental techniques of the camera and its expressive possibilities in relation to the field of design and visual communication. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

ARTS 196 ART WORKSHOP (2 cr.)—A workshop for individual special projects in arts and crafts. Laboratory 6 hours per week.

ARTS 221-222-223 ADVANCED DRAWING I-II-III (2 cr.) (2 cr.) (2 cr.)—The structure and forms of the environment (nature and human) memorized as a language to free the student's interpretation for creative graphic illustration. Laboratory 6 hours per week.

ARTS 231-232-233 THEORY AND PRACTICE OF PAINTING I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite ARTS 103 or 123. Abstract and representational painting in watercolor, oil, and tempera with emphasis on design, color composition and value. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 241-242-243 THEORY AND PRACTICE OF SCULPTURE I-II-III (3 cr.) (3 cr.) (3 cr.)—The fundamental processes in the creation of form by work with various materials such as clay, plaster, wood, stone, and metal. Lectures 2 hours, Laboratory 3 hours, Total 5 hours per week.

ARTS 261-262-263 ADVERTISING DESIGN I-II-III (3 cr.) (3 cr.) (3 cr.)—A study of the principles of optical communications as applied to advertising design in newspaper, magazines, direct mail advertising, house organs, etc. Analysis is made of the influence on layout by contemporary art. Lectures 2 hours, Laboratory 3 hours, Total 5 hours per week.

ARTS 271-272-273 GRAPHIC TECHNIQUES I-II-III (3 cr.) (3 cr.) (3 cr.)—The use of drawing instruments and materials; introduction to engraving processes; and the mechanics of reproduction for printing. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 281-282-283 PHOTOGRAPHY WORKSHOP I-II-III (1 cr.) (1 cr.) (1 cr.)—Prerequisite ARTS 186. Advanced practical study in the photography laboratory covering all phases of photography pertinent to graphic arts. Laboratory 3 hours per week.

ARTS 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ARTS 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

AUTOMOTIVE

AUTO 17 AUTO MECHANICS (4 cr.)—The automobile, its systems, operating principles, problems and repair techniques. Introduction to shop layout and safety, tools and equipment, application and diagnosis, disassembly, inspection, repair, reassembly and adjustments of automobile components. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

AUTO 98 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

AUTO 99 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

AUTO 101-102-103 AUTOMOTIVE SYSTEMS TECHNOLOGY I-II-III (4 cr.) (4 cr.) (4 cr.)—Fundamental systems of the automobile; the engine, fuel, exhaust, electric, lubrication, cooling, transmission, steering, brake, and suspension systems; theory and function of each system is explained and operation demonstrated. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 111-112-113 AUTOMOTIVE ENGINES I-II-III (4 cr.) (4 cr.) (4 cr.)—Analysis of power, cylinder condition, valves, and bearings in the automotive engine to establish the present condition, repairs or adjustments. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 121-122-123 AUTOMOTIVE FUEL SYSTEMS I-II-III (4 cr.) (4 cr.) (4 cr.)—Analysis of automotive fuel systems to include carburetors, fuel injection, superchargers, fuel pumps, filters, instruments, tanks and connecting lines. Complete overhaul, repairs and adjustment of fuel system components. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 126 ANTI-POLLUTION SYSTEMS (4 cr.)—Prerequisite AUTO 122. A study of various anti-pollution systems used on modern automobiles, installation, inspection, repair, and service. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 136 AUTOMOTIVE LUBRICATION AND COOLING SYSTEMS (3 cr.)—Testing and analysis of lubrication systems to include lubricants, pumps, lines, filter, and vents. Analysis of cooling systems, coolants, pumps, fans, lines and connections. Estimating repairs, adjustments needed and their costs. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 151-152-153 AUTO POWER TRAINS I-II-III (4 cr.) (4 cr.) (4 cr.)—The operation, design, construction and repair of power train components, standard and automatic transmissions; clutches, propeller shaft, universal joints, rear axle assemblies, fluid couplings, torque converters; 2, 3 and 4 speed standard, overdrive and automatic transmissions. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

AUTO 176 SMALL GASOLINE ENGINES (3 cr.)—A study of small gasoline engine operating principles, construction, design, variety and their many purposes. Instruction on the two-cycle and four-cycle small gas engines, their construction, design, fuel system, ignition system, and lubricating systems. The disassembly, reconditioning, overhaul and reassembly is demonstrated in the lab. Thorough study and practice in trouble-shooting and tune-up. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 181-182-183 AUTOMOTIVE DIAGNOSTIC TECHNOLOGY I-II-III (3 cr.) (3 cr.) (3 cr.)—Introduction to the principles of automotive maintenance using modern diagnostic methods. Theory and laboratory experiments designed to explain and illustrate the scientific basis of modern electronic and mechanical diagnostic procedures. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 190 COORDINATED INTERNSHIP (1 5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

AUTO 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

AUTO 201-202-203 AUTOMOTIVE SYSTEMS TECHNOLOGY IV-V-VI (4 cr.) (4 cr.) (4 cr.)—Prerequisites AUTO 103 and MATH 113 or equivalent. Advanced theory and detailed study of automobile systems. Laboratory periods provide the student with actual field practice in trouble-shooting. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 216 AUTOMOTIVE MACHINE LABORATORY (3 cr.)—The practice and use of automobile machining equipment in reconditioning engine, brake, and drive line components. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 238 AUTOMOTIVE AIR CONDITIONING (3 cr.)—Principles of refrigeration, air conditioning controls, and the adjustment and general servicing of automotive air conditioning systems. Lecture 3 hours per week.

AUTO 239 AUTOMOTIVE ACCESSORIES (3 cr.)—The principles, design, construction, adjustment, and maintenance of all automotive equipment classed as an accessory which is not studied in other automotive courses. Lecture 3 hours per week.

AUTO 241-242-243 AUTOMOTIVE ELECTRICITY I-II-III (4 cr.) (4 cr.) (4 cr.)—Electricity and magnetism, symbols and circuitry as applies to the automotive electrical system. Includes the storage battery, generators, alternators, regulators, starters, lighting systems, instruments and gauges. Trouble-shooting through use of modern test equipment. Lecture 3 hours, Laboratory 3 hours. Total 6 hours per week.

AUTO 266 AUTOMOTIVE SUSPENSION & BRAKING SYSTEMS (4 cr.) —Analysis of front end suspensions and adjustment. Rear springs, braking system, and tire inflation check. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 268 AUTOMOTIVE ALIGNMENT (2 cr.)—Use of alignment equipment in diagnosing, adjusting, and repairing suspension problems. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

AUTO 281-282-283 AUTOMOTIVE DIAGNOSTIC TECHNOLOGY IV-V-VI (3 cr.) (3 cr.) (3 cr.)—Prerequisite AUTO 183 and MATH 113 or equivalent (AUTO 272 is a prerequisite for AUTO 283). Application of modern electronic and mechanical diagnostic procedures in the evaluation of the operational condition of automobiles. Safety and economy of operation are stressed. The student acquires actual diagnostic experience in the laboratory. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 284-285 AUTOMOTIVE SERVICE PROCEDURES & TUNE-UP I-II (3 cr.) (3 cr.)—Diagnostic and service procedures for automatic electrical and mechanical systems; use of tools and test equipment, evaluation of test results, estimation of repair cost, and performance of required service. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 287-288 SHOP MANAGEMENT AND CUSTOMER RELATIONS I-II (3 cr.) (3 cr.)—A study of shop layout, personnel management, cost analysis, record keeping and quality control. The shop manager, service salesman, and service writer's role in customer relations. Lecture 3 hours per week.

AUTO 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

AUTO 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

BIOLOGY

BIOL 06 BIOLOGY (5 cr.)—A foundation course in general biology designed to develop a basic understanding of plant and animal life. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

BIOL 101-102-103 GENERAL BIOLOGY I-II-III (4 cr.) (4 cr.) (4 cr.)—Fundamental characteristics of living matter from the molecular level to the ecological community with emphasis on general biological principles. Diversity of living organisms; their structure, physiology and evolution. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 106 BIOLOGICAL PROBLEMS IN CONTEMPORARY SOCIETY (3 cr.)—Prerequisites: BIOL 103 or permission of instructor. A course designed for understanding some of the major problems of today's living. Contemporary readings will include topics on population problems, pollution, drug abuse, famine, ecology, conservation, disease, genetics, and evolution. Lecture 3 hours per week.

BIOL 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

BIOL 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

BIOL 224-225 INTRODUCTORY VERTEBRATE ZOOLOGY I-II (3 cr. (3 cr.)—Prerequisite BIOL 103 or 105. Fundamentals of vertebrate anatomy, physiology, embryology, classification and evolution. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BIOL 227 COMPARATIVE VERTEBRATE EMBRYOLOGY (6 cr.)—Prerequisite BIOL 103. Development of morphology of selected vertebrates. Lecture 4 hours, Laboratory 4 hours, Total 8 hours per week.

BIOL 256-257 INTRODUCTORY GENETICS I-II (4 cr.) (4 cr.)—Prerequisite BIOL 103 or equivalent. Principles and concepts of classical and theoretical genetics with experimental work in Mendelian Genetics and Genetical statistics. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 266 SANITATION-BACTERIOLOGY (3 cr.)—Prerequisite: High school General Science or Biology or Chemistry. The moral and legal responsibilities involved in assuring sanitary conditions in the Food Service Establishment. Emphasis is on the causes and prevention of food poisoning. Lectures 3 hours per week.

BIOL 267 GENERAL ECOLOGY (3 cr.)—Prerequisite General Biology or departmental permission. A study of the interrelationships between organisms and the natural and cultural environments with emphasis on human influence on ecological structure; survey of populations, communities and ecosystems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

BIOL 268 MICROBIOLOGY (6 cr.)—Prerequisite BIOL 103 and one year of college chemistry. Introduction to microbiology, morphology and activities of micro-organisms; control of micro-organisms; infection, immunity and other antibody reaction; study of infections and infectious diseases. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

BIOL 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

BIOL 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

BROADCAST ENGINEERING

BCST 100 INTRODUCTION TO BROADCAST SYSTEMS (1 cr.)—Functional block diagram of broadcast systems, laboratory operation of equipment, master control operations, full system operation, and visit to local television station. Laboratory 3 hours per week.

BCST 116 BROADCAST EQUIPMENT OPERATION (5 cr.)—Operation of cameras, studio lighting, audio control, video production switcher and transmitter, video control, operation of videotape recorders, routing switcher and telecine, full system operation. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

BCST 126 BROADCAST INSTRUMENTS AND MEASUREMENTS (4 cr.)—Operation of meters, scopes, signal generators, digital counters and picture monitors. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BCST 146 FEDERAL BROADCAST REGULATIONS (1 cr.)—Students will read systematically through the applicable portions of the FCC Rules and Regulations and will be tested on each reading assignment, taking a final examination similar to the actual FCC Examination. Passing of the examination administered by the Federal Communications Commission for a First Class Radiotelephone License is required for a passing grade in this course. Lecture 1 hour per week.

BCST 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

BCST 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

BCST 211 THEORY OF BROADCAST EQUIPMENT I (4 cr.)—Theory of cameras, projection equipment, videotape recorders and NTSC encoders and decoders. Lecture 4 hours per week.

BCST 212 THEORY OF BROADCAST EQUIPMENT II (4 cr.)—Continuation of BCST 211. Theory of production switchers, audio equipment, master control equipment and transmitters. Lecture 4 hours per week.

BCST 221 BROADCAST EQUIPMENT MAINTENANCE I (3 cr.)—Basic maintenance procedures, maintenance of cameras, projection equipment, videotape recorders and NTSC encoders and decoders. Laboratory 9 hours per week.

BCST 222 BROADCAST EQUIPMENT MAINTENANCE II (3 cr.)—Continuation of BCST 221. Maintenance of production switchers, audio equipment, master control equipment and transmitters. Laboratory 9 hours per week.

BCST 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

BCST 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

BUSINESS MANAGEMENT AND ADMINISTRATION

BUAD 100 INTRODUCTION TO BUSINESS (3 cr.)—The role and function of business enterprise within our economic framework. Includes organization, finance, marketing, personnel administration, production and economics. Designed primarily to help students select their field of business specialization. Lecture 3 hours per week.

BUAD 101-102-103 BUSINESS MACHINES AND MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)—A sequence of three courses covering office machines and business mathematics. Office machines include a variety of adding machines and calculators designed for use in determining solutions to problems arising from normal business activities. The theories of mathematics are applied to business activities emphasizing the use of concepts and procedures concerning payroll computations, ratios, discounts, interest, sales and property tax, pricing mark-up and mark-down, etc.

BUAD 108 BUSINESS MACHINES (2 cr.)—A course to develop proficiency in the use of office machines such as calculators and adding machines. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

BUAD 110 HUMAN RELATIONS & LEADERSHIP TRAINING (3 cr.)—The task of management involved in getting things done through people; understanding of human motivation and behavior patterns, performance, and analysis of manpower growth in an organization. Lecture 3 hours per week.

BUAD 117 PRINCIPLES OF SECURITIES INVESTMENT (3 cr.)—Designed to aid the student in developing a broad perspective in the area of stocks and bonds. Mechanics of stock exchanges, types of securities, types of orders, and specific investment objectives. Lecture 3 hours per week.

BUAD 164 PRINCIPLES OF BUSINESS MANAGEMENT I (3 cr.)—Prerequisite BUAD 100.—Management and management functions; planning, organizing, staffing, directing, and controlling. Management examined as both a science and art with emphasis on both the body of knowledge and the personal abilities required to be successful as a manager. Lecture 3 hours per week.

BUAD 165 PRINCIPLES OF BUSINESS MANAGEMENT II (3 cr.)—Prerequisite BUAD 164. The application of management principles to realistic management situations. The case method of study in analyzing management problems with emphasis on application to various types of business enterprises. Lecture 3 hours per week.

BUAD 174-175 SMALL BUSINESS MANAGEMENT I-II (3 cr.) (3 cr.)—A study of management problems that relate to the small-scale entrepreneur. Includes problems in initiating the business, financial and administrative control, marketing programs and policies, management of business operations, legal and governmental relationships. Also includes case studies involving actual business situations. Lectures 3 hours per week.

BUAD 241 BUSINESS LAW I (3 cr.)—An introduction to the field of law, how it developed and how it operates as a method of control; study of the purpose of law in our present-day complex society, the law of contracts, and the agency. Lecture 3 hours per week.

BUAD 242 BUSINESS LAW II (3 cr.)—Prerequisite BUAD 241. A continuation of BUSINESS LAW I (BUAD 241). The main topic to be studied is the Uniform Commercial Code as adopted in the various states. Lecture 3 hours per week.

BUAD 243 BUSINESS LAW III (3 cr.)—Prerequisite BUAD 241-242. Continuation of BUSINESS LAW I & II (BUAD 241-242). Employment, bailment, partnerships, corporations, property. Lecture 3 hours per week.

BUAD 246 BUSINESS FINANCE (3 cr.)—Problems involved in the acquisition and use of funds necessary to the conduct of business. Sources and instruments of capital and finance, financial organization, and financing of operations and adjustments. Lecture 3 hours per week.

BUAD 251 BUSINESS STATISTICS I (3 cr.)—Prerequisite MATH 181-182-183 or MATH 161-162-163. Aspects of statistical methodology such as the collection, organization, presentation and analysis of data; specific concentration with measures of central tendency, dispersion, probability concepts, the normal distribution, sampling distribution, and basic hypothesis testing such as T-test, Z-test, and Chi-Square. Lecture 3 hours per week.

BUAD 252 BUSINESS STATISTICS II (3 cr.)—Prerequisite BUAD 251. Estimation of barametric values, advanced methods and techniques of hypothesis testing and experiment design. Statistical quality control, analysis of variance, linear regression and correlation analysis both simple and multiple measurement of business and economics activity through index numbers, seasonal and secular variation; computer application where practical. Lecture 3 hours per week.

BUAD 253 BUSINESS STATISTICS III (3 cr.)—Prerequisite BUAD 252. The applications of statistical techniques and methodology in business. Includes expedited payoff, game theory, linear programming, transportation models, queuing theory, and demand estimations. Lecture 3 hours per week.

BUAD 254 APPLIED BUSINESS STATISTICS I (3 cr.)—An introductory course in statistics. Collection, presentation, and analysis of data through ratios, percentages, and averages. Emphasis on the practical application of statisical measures to business situations. Lecture 3 hours per week.

BUAD 255 APPLIED BUSINESS STATISTICS II (3 cr.)—Prerequisite BUAD 254. A continuation of the application of principles taught in BUAD 254 with emphasis on the graphic presentation of data concerning business activity and some advanced statistical concepts such as probability and sampling. Lecture 3 hours per week.

BUAD 269 PURCHASING AND MATERIALS MANAGEMENT (3 cr.)—Principles of purchasing and management of inventories including determination of requirements, pricing, source selection, and inventory policy and control. Lecture 3 hours per week.

BUAD 276 PERSONNEL MANAGEMENT (3 cr.)—The problems and issues in the administration of personnel actions. Includes organization and tasks of personnel development, significant personnel considerations and an appraisal of the position of labor in business today. Lecture 3 hours per week.

BUAD 277 PERSONNEL TRAINING FOR HRI. (2 cr.)—Principles of human relations at the managerial and supervisory level with emphasis on its application to training in the hospitality industry. Lecture 2 hours per week.

BUAD 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

BUAD 298 SEMINAR AND PROJECT (3 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

BUAD 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

CHEMISTRY

CHEM 06 CHEMISTRY (5 cr.)—A foundation course in general chemistry designed to develop a basic understanding of inorganic and organic chemistry. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

CHEM 101-102-103 GENERAL CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.)—Introduction to the fundamental laws and the theories of chemistry; most important elements and their compounds; properties and uses of the more important metallic and non-metallic elements and their general importance. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 111-112-113 GENERAL INORGANIC CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.)—Fundamental principles and laws underlying chemical action with special emphasis on the non-metals, their compounds, theories and problems. Laboratory for the first two quarters deals with the non-metallic elements and their compounds. The last quarter deals with the theories of qualitative and quantitative analysis. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 161-162 CHEMICAL CALCULATIONS I-II (2 cr.) (2 cr.)—Introduction to chemical operations of mathematical nature; calculations included are material balance, heat balance equilibrium and reaction rate calculations; fluid mechanics, correlating data and economic considerations. Lecture 2 hours per week.

CHEM 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

CHEM 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

CHEM 241-242-243 ORGANIC CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite CHEM 103 or CHEM 113 or equivalent. 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. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

CHEM 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

CIVIL ENGINEERING

CIVL 140 CONSTRUCTION PLANNING (3 cr.)—Introduction to the equipment used in civil engineering construction and the principles of construction planning. Lecture 3 hours per week.

CIVL 180 PRINCIPLES OF SURVEYING (4 cr.)—Prerequisite Basic Trigonometry. Introduction to the elements of surveying. Use and care of modern survey equipment and the application of surveying in engineering construction. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 181-182 SURVEYING I-II (4 cr.) (4 cr.)—Prerequisites Algebra, Plane Geometry, Basic Trigonometry, or MATH 111. Introduction to surveying, chaining and pacing, direct and profile leveling, measurements of angles, transittape traversing, traverse analysis, calculation of areas, adjustment of instruments. Basic complex circular curves, stadia surveying, topographic surveying analysis and preparation of topographic maps. Field work parallels classroom instruction. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

CIVL 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

CIVL 201 SUBURBAN DEVELOPMENT I (2 cr.)—Corequisite CIVL 182. Preparation of preliminary plans and records plate for residential areas. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

CIVL 202 SUBURBAN DEVELOPMENT II (2 cr.)—Corequisite CIVL 281. Calculating flow quantities, design of sanitary sewer laterals, street grades and storm sewers as are pertinent to Virginia "3-B" Land Surveyor Registration laws. Preparation of plans and profiles. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

CIVL 203 SUBURBAN DEVELOPMENT III (2 cr.)—Prerequisite CIVL 202. Preparation of residential development plans and commercial site plans. Flood plain studies. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

CIVL 217 REINFORCED CONCRETE DESIGN (4 cr.)—Design, investigation and detailing of basic reinforced concrete structural members. Lectures 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 218 STRUCTURAL STEEL DESIGN (4 cr.)—Design, investigation, and detailing of basic structural steel members. Lectures 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 227-228 STRUCTURAL DRAFTING I-II (2 cr.) (2 cr.)—Fundamentals of structural drafting including the design and fabrication of frame connections, column detailing, welding connections, shop details, and general drafting room procedure. Laboratory includes drawings of timber, steel, and reinforced concrete structures. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

CIVL 256 SOIL MECHANICS (4 cr.)—Soil in its relationship to engineering construction. Includes soil density, sampling soil frost action, stabilization, stress, consolidation, settlement, shearing strength, stability, embankments, dams, retaining walls, piles and underground conduits. Laboratory includes ASTM and AASHO specifications used in classifying and predicting the behavior of soils. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 258 CONCRETE TECHNOLOGY (4 cr.)—Prerequisite or corequisite CIVL 256. Introduction to the basic properties of portland cement concrete. Various methods of designing concrete mixtures and the mixing, testing and quality control during construction are considered. Lectures 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 259 BITUMINOUS TECHNOLOGY (4 cr.)—Prerequisite or corequisite CIVL 256. Introduction to the basic properties of bituminous materials (primarily asphalt cement as used in highway construction). The testing of asphalt materials and the quality control of asphalt concrete mixtures are considered. Lectures 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 276-277 TRAFFIC AND TRANSPORTATION TECHNOLOGY I-II (4 cr.) (4 cr.)—Introduction to the techniques of traffic and transportation surveys. The application of survey data to the planning, design and operation of modern transportation systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 281 ADVANCED SURVEYING I (4 cr.)—Layout of curves under complex field conditions, route surveying, vertical curves, slope skates, land surveying, establishment and re-establishment of land boundaries, legal aspects of surveying, original surveys and re-surveys, public land surveys. Field work parallels classroom instruction, drills in use of theodolites and transversing equipment, begins project in boundary and topographic survey. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 282 ADVANCED SURVEYING II (4 cr.)—This course includes topics in surveying astronomy and celestial observations, precise leveling and triangulation, photogrammetry, electronic surveying, and use of surveying equipment. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

CIVL 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the students occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

CRIMINOLOGY

CRIM 121 (3-0-3) CRIMINAL OFFENSES The study of particular types of crime with emphasis on the pathology of criminals. Lecture 3 hours per week.

CRIM 141 CRIMINAL BEHAVIOR (3-0-3) Analysis of relationship of society, socialization, and deviancy. Social responses to deviancy and criminal offenders. Lecture 3 hours per week.

CRIM 201 CORRECTIONS AND THE COMMUNITY (5 cr.)—The relationship of social norms to both conforming and deviant behavior. Emphasis on the rehabilitation aspects of criminals and their return to the community. Lecture 3 hours.

CRIM 211 ASSSESSMENT IN CRIMINOLOGY (3 cr.)—Lectures and discussion on the nature and theories of criminal assessment including basic studies and review of the techniques and tests used in assessing behavioral and rehabilitative aspects of the criminal.

DATA PROCESSING TECHNOLOGY

DAPR 10 BASIC DATA PROCESSING PRINCIPLES (3 cr.)—An introduction to the principles of manual, mechanical, and electronic data processing. Basic terminology and concepts of data processing with emphasis on understanding the rôle and functions of computers in modern society. Lecture 3 hours per week.

DAPR 18 AUXILIARY EQUIPMENT OPERATION (4 cr.)—Prerequisite typing skill of 30 wpm or departmental permission. Designed to develop competence in the operation and control of data processing machines. Emphasis upon machine operating techniques for the key punch, verifier, sorter, collator, reproducer, and interpreter. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DAPR 36 KEY PUNCH/KEY TAPE OPERATIONS (8 cr.)—Prerequisite typing skill of 30 wpm or departmental permission. A comprehensive occupational course designed to prepare students to function as key punch/key tape operators in the current data processing employment market; an introduction to data processing principles. Lecture 3 hours, Laboratory 15 hours, Total 18 hours per week.

DAPR 100 INTRODUCTION TO DATA PROCESSING (4 cr.)—Prerequisite one year of high school algebra. An introduction to methods, techniques, and systems of manual, mechanical, electronic and automatic data processing. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 106 PRINCIPLES OF DATA PROCESSING (3 cr.)—Prerequisite one year of high school algebra. An introduction to methods, techniques, and systems of manual, mechanical, and electronic data processing. History and development of punch card data processing, and electronic or automatic data processing. Lecture 3 hours per week.

DAPR 110 PERIPHERAL EQUIPMENT (3 cr.)—Prerequisite DAPR 106 or equivalent. Operating, wiring, and control of data processing machines other than electronic digital computers. Experience is provided with the equipment in the data processing center using business problems for "hands-on" machine concepts. Lecture 3 hours per week.

DAPR 114 UNIT RECORD I (3 cr.)—Prerequisite DAPR 100 or DAPR 106 or equivalent. Operating, wiring and control of data processing machines, other than electronic digital computer, including the card punch, verifier, interpreter, sorter, and document originating machine. Experience is provided with the equipment in the data processing center using business problems for "hands-on" machine concepts. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 115 UNIT RECORD II (3 cr.)—Prerequisite DAPR 114. Comprehensive exercises involving the planning and wiring of a range of unit record equipment. Emphasis on the accounting machine. Experience is provided with the equipment in the data processing center. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 116 UNIT RECORD APPLICATIONS (3 cr.)—Prerequisite DAPR 115. The concepts, objectives, and general approaches to typical data processing, application including accounts receivable and payable, payroll and inventory control. Practical laboratory experience is provided on the punch card equipment in the data processing center. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 130 INTRODUCTION TO COMPUTER OPERATIONS (3 cr.)—Prerequisite DAPR 106 or equivalent. Various types of hardware and related software systems including compilers, macro generators, utility routines, I/O, sort/merge, print. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 136 COMPUTER OPERATIONS (3 cr.)—Prerequisite DAPR 130. An introduction to operating procedure using a computer. A study of the console used to control the machine manually, correct errors, determine the status of machine circuits, registers, and determine the content of storage. The procedure for using input and output devices, punched paper tape, magnetic tape, random access devices, and printer. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 137 COMPUTER OPERATIONS MANAGEMENT (3 cr.)—Prerequisite DAPR 136 or equivalent. Computer systems operations management. Emphasis on flow of data, control points, system flow charts, procedure write-ups, and scheduling personnel workloads. Lecture 3 hours per week.

DAPR 144 COMPUTER PROGRAMMING (COMPUTER CONCEPTS I) (3 cr.)—Prerequisite DAPR 106 or equivalent. Programming techniques and the various characteristics of computers. Practical experience in programming a series of problems in machine, assembler, or manufacturer's higher level language. Course objective is to provide a proper foundation for materials in subsequent courses rather than providing specific skills in any computer language. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 145 COMPUTER PROGRAMMING (COMPUTER CONCEPTS II) (3 cr.)—Prerequisite DAPR 144. A continuation of the basic programming course DAPR 144. Provides continued foundation for subsequent data processing courses, and includes symbolic programming techniques, card systems, sequential access storage devices, random access storage devices, time-sharing, remote job entry, and data communications. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 147 COMPUTER PROGRAMMING (COBOL) (3 cr.)—Prerequisite DAPR 144. Experience in using programming techniques with a high level language. Students will be required to program, debug, and test specified business oriented problems using Cobol. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 236 DATA PROCESSING MANAGEMENT (3 cr.)—Prerequisite DAPR 106 or equivalent. Survey of ADP management, covering staff and operating functions; ADPE planning, analysis of requirements, system selection, contractual consideration, lease/purchase studies, costing of tangible and intangible benefits. Lecture 3 hours per week.

DAPR 256 COMPUTER PROGRAMMING (ADVANCED COBOL) (3 cr.)—Prerequisite DAPR 147. Experience in programming in a Disc-Operating System environment. In addition to learning the characteristics of DOS, the student will use Job Control language, add and delete files, use utility programs and analyze error messages making necessary corrections. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 257 INTRODUCTION TO SYSTEMS 360 PROGRAMMING LANGUAGE (3 cr.)—Prerequisite DAPR 106 or equivalent. A course in programming languages designed to provide full access to the computer and the operating system. The language applies to both business and scientific problems and is relatively independent of the machine. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 266 COMPUTER PROGRAMMING (FORTRAN) (4 cr.)—Prerequisite DAPR 144. The business applications of Fortran including input/output, floating point arithmetic, loop control, and functions. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 267 COMPUTER PROGRAMMING (RPG)—(4 cr.)—Prerequisite DAPR 144. The study and development of programming capabilities in the business computer language Report Program Generator (RPG). Includes program logic, block diagramming, coding techniques, documentation, advantages and disadvantages of RPG as a high-level language in small and medium scale installations. Students will gain "hands-on" experience in the computing center. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 268 COMPUTER PROGRAMMING (P/L 1) (4 cr.)—Prerequisite DAPR 144. The study and development of programming capability in the IBM System 360 computer language P/L 1. Provides student capability to program in this language. Includes relative advantages and disadvantages of this higher level language in installations using medium scale and large scale computer systems and continuation of the study of magnetic tape and random access programming. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 269 COMPUTER PROGRAMMING (ASSEMBLER) (4 cr.)—Prerequisite DAPR 144. The study and development of a manufacturer's assembly language. The student will write and debug programs in an assembler language, and also be capable of employing this language in a total programming system. The principles of de-bugging and core-dump reading will be given major emphasis. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 270 INTRODUCTION TO FORTRAN (4 cr.)—Prerequisite MATH 16 or equivalent. A course designed for non-data processing major. Acquaints students with current version of a scientific programming system. Covers input/output, floating point arithmetic, loop control, functions. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 274-275 SCIENTIFIC PROGRAMMING I-II (3 cr.) (3 cr.)—Prerequisite two years of computer programming experience and suitable course background. The study and development of programming capability in the scientific computer language FORTRAN. Provides student capability to program in this language. Includes the relative advantages and disadvantages of the large-scale computer system and continuation of the study of magnetic tape and random access programming. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 281 SYSTEMS ANALYSIS I (3 cr.)—Prerequisite DAPR 106. A study of the overall computer based systems analysis and design process; information problems of business organization and the inter-relationships of functions; nature of business problem isolation and definition; initial phase of systems analysis and evaluation. Lecture 3 hours per week.

DAPR 282 SYSTEMS ANALYSIS II (3 cr.)—Prerequisite DAPR 281. The systems design and implementation phases relating to initial automation; up-grading or revision of business data processing systems; system documentation including summaries for management schedules and cost analysis; equipment selection, acquisition and detailed review of pre- and post-installation considerations. Lecture 3 hours per week.

DAPR 283 SYSTEMS ANALYSIS III (3 cr.)—Prerequisite DAPR 282. A comparison of presently available hardware and software systems from major vendors; comparative study of features and capabilities; data processing modes and selection of criteria; study of techniques such as PERT, Decision and Logic Tables, Simulation and their importance. Lecture 3 hours per week.

DAPR 286 COMPUTER PROGRAM APPLICATIONS (4 cr.)—Prerequisite DAPR 256. The characteristics and requirements of basic business applications. Design of a computer solution to an application as a case study. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 287 COMPUTER SOFTWARE SYSTEMS (3 cr.)—Prerequisite DAPR 144. The utilization of the computer manufacturer's software; practice problems and use of the software in the computer laboratory environment; continued study of high level languages. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

DAPR 298 SEMINAR AND PROJECT (5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

DAPR 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

DECORATING

DECO 11 INTERIOR DECORATING I (3 cr.)—The fundamental principles involved in good interior decorating. Lecture 3 hours per week.

DECO 12 INTERIOR DECORATING II (3 cr.)—Application of fundamental decorating principles to house furnishings and interior design. Lecture 3 hours per week.

DENTAL

DENT 101 DENTAL SCIENCE I (4 cr.)—Bacteriology, anatomy and physiology, microbiology, and oral and dental anatomy as related to dental science and the practice of dental assisting. Lectures 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 102 DENTAL SCIENCE II (4 cr.)—Prerequisite DENT 101. Oral pathology, pharmacology, nutrition, and common dental emergencies as related to the role of the dental assistant. Lectures 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 103 DENTAL SCIENCE III (4 cr.)—Prerequisite DENT 102. General systemic and oral emergencies as related to the role of the dental assistant, oral pathology; dental caries and periodontal disease causes, prevention and treatment, dental health education. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 111-112 CLINICAL PROCEDURES I-II (4 cr.) (4 cr.)—Prerequisites DENT 101-102 or corequisite. Principles and procedures related to radiology, dental instruments and equipment; role of the dental assistant in various dental specialties such as endodontics, periodontics, orthodontics, prosthetics, and oral surgery. Lectures 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 121-122 CHAIRSIDE ASSISTING I-II (4 cr.) (4 cr.)—Prerequisites DENT 101-102 or corequisite. The proper procedures of reception and preparation of the patient; care of all dental equipment and instruments, charting of teeth, seating of patient, adjustment of dental chair, preparation of trays and instrument stands, layout and exchange of instruments and materials. Lectures 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 130 INTRODUCTION TO DENTAL AUXILIARIES (2 cr.)—Introduction to dentistry and dental auxiliaries; history and development of dentistry and its related fields; the roles of the dental auxiliaries in practice and in relation to other members of the dental health team; dental ethics and jurisprudence; professional and educational opportunities. Lecture 2 hours per week.

DENT 136 INTRODUCTION TO DENTAL MATERIALS (4 cr.)—Introduction to the physical and chemical characteristics, uses and manipulation of materials used in dental procedures, clinical and laboratory. Emphasis on the general principles of physical properties and the specifications program of the American Dental Association. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 137 DENTAL ANATOMY AND PHYSIOLOGY (4 cr.)—Introduction to human anatomy and physiology. Emphasis on regions of the head and neck and the primary and permanent teeth. Laboratory exercises include: accurate scale drawings of all teeth execpt the permanent third molars; tooth carvings, coronal and root portions; and the four permanent teeth: maxillary central incisor, maxillary cuspid, maxillary first bicuspid, and maxillary first molar. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 138 DENTAL METALLURGY (4 cr.)—Prerequisite DENT 136. Review of ferrous and non-ferrous metals and their application to dental procedures. Manufacture and physical and chemical properties of metals and alloys, structure and theory of alloys; casting, heat treatment, soldering, fatigue, principle of metal finishing and polishing. Laboratory exercises to illustrate these principles and phenomena. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

DENT 141 DENTAL LABORATORY TECHNOLOGY I (4 cr.)—Prerequisite DENT 137. Theory and practice of full upper and lower acrylic dentures including construction of custom trays and bite blocks from poured casts; articulator mounting of master casts, tooth set-ups; flasking, packing, curing and deflasking of dentures; remounting and spot grinding; finishing and polishing; repair and duplication; awareness of health hazards. Satisfactory completion of minimum number of upper and lower acrylic dentures required. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 142 DENTAL LABORATORY TECHNOLOGY II (4 cr.)—Prerequisite DENT 141. Theory and practice of partial denture construction including duplication of investment casts from master casts, survey and design of partial upper and lower dentures, and fabrication of: wrought wire and cast gold clasps; wrought wire partial framework including soldering; and cast partial frameworks. Satisfactory completion of minimum number of upper and lower partial frameworks, both wrought and cast, will be required. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 146 FUNCTIONAL ARTICULATION AND OCCLUSION (4 cr.)—Prerequisite DENT 141. A study of the history of prosthetic tooth forms, mechanical principles as related to artificial teeth, and normal occlusion for full and partial removable dentures. Satisfactory completion of a minimum number of dentures will be required. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

DENT 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

DENT 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

DENT 260 FIRST AID FOR DENTAL AUXILIARIES (2 cr.)—The principles of emergency treatment of general medical problems and acceptable treatment methods applicable both in limited and mass disaster situations. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRAFTING

DRFT 111 TECHNICAL DRAFTING I (2 cr.)—Introduction to the techniques and instruments required for success as a draftsman in industry. Use of instruments, lettering, simple descriptive and analytic geometry principles as applied to drafting and freehand sketching, basic principles of orthographic projection in the preparation of simple drawings. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 112 TECHNICAL DRAFTING II (2 cr.)—Prerequisite DRFT 111 or equivalent. Sections and conventions, threads and fasteners, pictorial drawings, auxiliaries and revolutions. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 113 TECHNICAL DRAFTING III (2 cr.)—Prerequisite DRFT 112 or equivalent. Assembly and detail drawings, working from the simple to the complex. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 114 TECHNICAL DRAFTING IV (2 cr.)—Continuation of DRFT 113 with emphasis on production standards. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 120 INTRODUCTION TO GRAPHIC REPRESENTATION (3 cr.)—The use of instruments, lettering, sketching, and drawing conventions; neat, legible drawings and the value of visual presentations in technology. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DRFT 171 BLUEPRINT READING I (2 cr.)—The purpose of blueprints, designing of the product and its production; review and application of basic principles, visualization, orthographic projection, detail of drafting shop process and terminology, assembly drawings and exploded views. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 172 BLUEPRINT READING II (2 cr.)—Prerequisite DRFT 171. Dimensioning, review and application techniques, changes and corrections, classes of fits, tolerances and allowances, sections and convention in blueprint reading, auxiliary views, pictorial drawings, simplified drafting procedures. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 173 BLUEPRINT READING III (2 cr.)—Prerequisite DRFT 172. Industrial prints, production drawings, operation sheets, tool drawing, assembly drawings, and detail prints. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

DRFT 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

DRFT 211 ADVANCED TECHNICAL DRAFTING V (3 cr.)—Prerequisite DRFT 113. Use of drafting machines with emphasis on the knowledge and skill required for typical industrial drawing. Electrical and electronic symbols and drawings, piping, complicated gearing drawings, sections, and layout; skill in lettering of all types. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

DRFT 212 ADVANCED TECHNICAL DRAFTING VI (3 cr.)—Prerequisite DRFT 211. Electronic and electromechanical drawings, sheet metal fabrication, radii, fillets, and tolerances; use of ink in lettering and ruling. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

DRFT 213 ADVANCED TECHNICAL DRAFTING VII (3 cr.)—Prerequisite DRFT 212. Design drafting in all aspects as a means of communication. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

DRFT 256 ELECTRONICS DRAFTING (2 cr.)—Fundamental principles, practices and methods of presenting electromechanical information through the graphic language. Principles of projection, fastening, materials and finishes, chassis design and fabrication, electronic symbology, diagrammatic drawings, printed circuit drawings and checking of electronic drawings. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

DRFT 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ECONOMICS

ECON 60 AMERICAN ECONOMICS (3 cr.)—A survey of the American economic system designed to familiarize the student entering an occupation with the history, general principles, and basic policies of the American economic system. Lecture 3 hours per week.

ECON 160 AMERICAN ECONOMICS (3 cr.)—A survey of the history, principles, and policies of the American economic system. Some comparison with alternative economic systems. Lectures 3 hours per week.

ECONOMIC 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ECON 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

ECON 211-212-213 PRINCIPLES OF ECONOMICS I-II-III (3 cr.) (3 cr.) (3 cr.)—The principles of economics and the bearing of these principles on present American conditions, structural and functional aspects of the economy. Analysis, problems and issues relating to organization of business, labor and government institutions and economic stability and growth. Measurements of economic activity. Private enterprise, economic growth and stabilization policies, monetary and fiscal policy. International economic relationships, alternative economic systems. Lecture 3 hours per week.

ECON 214-215 PRINCIPLES OF ECONOMICS I-II (5 cr.) (4 cr.)—An introductory course covering the structure, organization, and operation of the United States economy. Analysis, problems, and issues relating to the organization of business, labor, and government institutions and their economic stability and growth. Measurements of economic activity. Private enterprise, economic growth and stabilization policies, monetary and fiscal policy. International economic relationships, alternative economic systems. Lecture 5 hours per week in ECON 214 and Lecture 4 hours per week in ECON 215.

ECON 229 REAL ESTATE ECONOMICS (3 cr.)—Nature and classification of land economics, the development of property, construction and subdivision, economic values and real estate evaluation, real estate cycles and business fluctuations, residential market trends, rural property and special purpose property trends. Lecture 3 hours per week.

ECON 241-242-243 MONEY AND BANKING I-II-III (3 cr.) (3 cr.) (3 cr.)—Monetary standards; the role of money in the performance of an economic system; operation and evolution of the commercial and central banking systems; developments in the theory of money and income; application of theory to analysis of policy questions including government finance and debt management. Lecture 3 hours per week.

ECON 247 CONSUMER ECONOMICS (3 cr.)—This course is designed to foster an understanding of the concepts of the free enterprise system in relation to the individual's role as a consumer in that system. Lecture 3 hours per week.

ECON 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project of research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ECON 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

EDUCATION

EDUC 191-192-193 SEMINAR IN TECHNIQUES FOR HEAD START PERSONNEL I-II-III (3 cr.) (3 cr.) (3 cr.)—Discussion topics: production of instructional materials, audio-visual instruction, appropriate educational objectives. Lectures: music, art, science, mathematics, first aid, health, physical education. Lecture 3 hours per week.

EDUC 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ELECTRONIC TECHNOLOGY

ELEC 114 FUNDAMENTALS OF DIRECT CURRENT (4 cr.)—MATH 111 or MATH 121 must have been taken previously or must be taken concurrently. A study of current flow and direct current circuits. The course presents work with magnetic circuits. This course utilizes mathematical tools as they are developed in the mathematics course. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 115 FUNDAMENTALS OF ALTERNATING CURRENT (4 cr.)—Prerequisite ELEC 114, MATH 112 or MATH 122 must have been taken previously or must be taken concurrently. The study of time varying currents. The student will use complex numbers and vector concepts in dealing with A.C. impedances. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 116 INTRODUCTION TO CIRCUIT ANALYSIS (4 cr.)—Prerequisite ELEC 115, MATH 113 or MATH 122. A course emphasizing A.C. circuit theory and both A. and D.C. network theorem and provides a continuation of the background information needed to analyze networks with both active and passive elements present. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 120 INTRODUCTION TO TUBES AND TRANSISTORS (4 cr.)—Prerequisites ELEC 114 and MATH 111 or MATH 121 must have been taken previously or must be taken concurrently. 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. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 124 ELECTRONICS (5 cr.)—Prerequisite ELEC 115. Special electronic devices and power supplies. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

ELEC 126 AMPLIFIERS (4 cr.)—Prerequisite ELEC 124. Amplifiers both transistor and tube types with emphasis on methods of analysis and design procedures. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 227 PULSE AND SWITCHING CIRCUITS (3 cr.)—Prerequisite ELEC 116. Linear and non-linear wave shaping providing base for further study in the areas of computers and automatic controls. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ELEC 241 COMMUNICATIONS I (4 cr.)—Prerequisite ELEC 125. A study of modulation and power in modulated waves; sinusoidal oscillations and oscillators, RF amplifiers and detectors, and AM receivers. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 242 COMMUNICATIONS II (4 cr.)—Prerequisite ELEC 241. A study of transmitters and receivers. Topics included are FM receivers, RF power amplification, AM SSB and FM transmitters, and an introduction to transmission lines and antennas. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 243 COMMUNICATIONS SYSTEMS (4 cr.)—Prerequisite ELEC 242. A study of microwave systems. Topics included are microwave tubes, waveguides, antennas and measurements at microwave frequencies. Also, an introduction to radar and television systems is presented. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 249 PRINCIPLES OF TELEVISION ELECTRONICS (3 cr.)—A lecture-demonstration course dealing with the special devices and techniques associated with monochrome and color, broadcast and industrial television transmission and reception. Specifically included are the standards of American television electronics as set down by the National Association of Broadcasters (NAB). Cameras and television receivers are given special emphasis. Lecture 3 hours per week.

ELEC 250 INTRODUCTION TO COMPUTERS (4 cr.)—Prerequisite ELEC 227. A general introduction to concepts and basic features of electronic computers. Topics include: fundamentals of internal operations, number systems, digital circuits, Boolean algebra, basic logical design techniques, analysis of input-output devices, control and arithmetic units, memory units and limited programming. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 260 CONTROL CIRCUITS (4 cr.)—Prerequisite ELEC 227. The principles and applications of electrical controllers are covered in this course, which serves as an introduction to automation. Devices for differentiation, integration and proportioning are studied in detail. Hardware and circuitry for AC and DC industrial control devices, including 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. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 276 INSTRUMENTS AND MEASUREMENTS (4 cr.)—Prerequisite ELEC 116 and ELEC 126. A study of basic circuits in electronic measurements and application of these circuits in test instruments such as oscilloscopes, vacuum tube voltmeters and bridges. Further study concerned with the accuracy of measurements, how instruments work, proper use of instruments and calibration technique. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 287 ADVANCED CIRCUITS AND NEW DEVICES (2 cr.)—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 per week.

ELEC 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

ELEC 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ENGINEERING

ENGR 10 INTRODUCTION TO TECHNICAL ENGINEERING (2 cr.)—An introductory course to the work of the Engineering Technician. Simple engineering problems; slide rule instruction and applications. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ENGR 53 ELEMENTS OF STATICS AND STRENGTH OF MATERIALS (3 cr.)—An introductory course for technicians of the basic principles of Statics (forces, equilibrium, moments, etc.) and Strength of materials (centroids, moments of inertia, stress and deformation, shear and moment diagrams, etc.)—Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ENGR 100 INTRODUCTION TO ENGINEERING (1 cr.)—Professional fields of engineering; the work of the engineer, requirements of training and character, professional ethics, the division of industrial practice and competition. Pure and simple problems from the various schools of engineering are used with slide-rule applications. Laboratory 3 hours per week.

ENGR 101 INTRODUCTION TO ENGINEERING (2 cr.)—Professional fields of engineering; the work of the engineer, requirements and character, professional problems from the various schools of engineering are used with slide-rule applications. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

ENGR 102 INTRODUCTION TO ENGINEERING METHODS (2 cr.)—Prerequisite ENGR 101. Slide-rule practice, an introduction to analog and digital computers, programming of digital computer, vector geometry, graphical representation of data; field trips to nearby computer center. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

ENGR 103 CONCEPTUAL DESIGN AND ANALYSIS (2 cr.)—Prerequisite ENGR 102. Engineering fundamentals and concepts in designing for production, prototype and laboratory models, automation, tape programming and vertification; design problems, class reports, and departmental visits at nearby four year college. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

ENGR 121 ENGINEERING GRAPHICS I (2 cr.)—Drawing and theories of projection. Multiview drawings, pictorial drawings and sketching, geometrical construction, sectioning, lettering, dimensioning, auxiliary views, revolutions, assembly drawings. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ENGR 122 ENGINEERING GRAPHICS II (2 cr.)—Prerequisite ENGR 121. Graphical methods used in engineering design, layout and calculation. Properties and types of graphs for engineering and scientific purposes. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ENGR 123 ENGINEERING GRAPHICS III (2 cr.)—Prerequisite ENGR 121 or equivalent. A study of the analysis and graphic presentation of the space relationship of fundamental geometric elements: point, line, plane, curved surfaces, development and vectors. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ENGR 151 MECHANIC I (STATICS) (3 cr.)—Corequisite MATH 122 or MATH 112. 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. Lecture 3 hours per week.

ENGR 152 MECHANICS II (STRENGTH OF MATERIALS) (4 cr.)—Prerequisite ENGR 151. Strength of material concepts with laboratory demonstrations and experiments. Stress and strain analysis, both elastic and plastic, with emphasis on elastic analysis of axially loaded members, connectors, beams, and columns. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ENGR 153 MECHANICS III (3 cr.)—Prerequisite ENGR 151 or equivalent. The study of rigid body mechanics, including kinetics, kinematics, and advanced strength of materials. Lecture 3 hours per week.

ENGR 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

ENGR 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ENGR 201 MECHANICS OF PARTICLES (5 cr.)—Corequisite MATH 241. Vector treatment using index notation concepts of force, mass, space, time; gravitational systems of measurements; equilibrium of discrete force systems; centroids, dry friction, planar and three dimensional kinematics and kinetics of particles, relative motion, mass moments of inertia, Newton's laws, work and energy, impulse and momentum. Lecture 5 hours per week.

ENGR 202 MECHANICS OF DEFORMABLE SOLIDS (5 cr.)—Corequisite MATH 242. Structural mechanics applied to trusses, frames; introductory mechanics of continuous media; concepts of stress, strain, stress-strain relations; stress and deformation due to longitudinal loads, torsion, and bending; eccentric loads on short posts, Euler column theory. Lecture 5 hours per week.

ENGR 203 DYNAMICS OF RIGID BODIES (3 cr.)—Prerequisites ENGR 201. Corequisite MATH 242. Vector treatment using index notation of planar and three-dimensional kinematics and kinetics of rigid bodies; mass moments of inertia, Newton's laws, work and energy, impulse and momentum, vibration applied to rigid bodies. Lecture 3 hours per week.

ENGR 206 ENGINEERING ECONOMY (3 cr.)—Economic decision process in the engineering design environment. Investment, financing, depreciation, manufacturing costs, economic selection replacement. Lecture 3 hours per week.

ENGR 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

ENGR 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ENGLISH

ENGL 01 VERBAL STUDIES LABORATORY (5 cr.)—A foundation course in composition designed for students who need help in all areas of writing to bring their proficiency to the level necessary for entrance into their respective curriculums. Emphasis on individualized instruction. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 05 ENGLISH AS A SECOND LANGUAGE (5 cr.)—A foundation course in the English language for persons whose native language is not standard English. Emphasis on production of English phonemes, intonation patterns, structural patterns, grammer, vocabulary, and idioms. Students are expected to spend a minimum of 3 hours weekly in the language laboratory. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 08 READING IMPROVEMENT (5 cr.)—A foundation course using modern techniques, equipment, and materials to increase the student's comprehension, skill, and speed in reading. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 101-102-103 COMMUNICATION SKILLS I-II-III (3 cr.) (3 cr.) (3 cr.) —Prerequisite satisfactory score on appropriate English proficiency examination. Designed to teach the student to use the English language correctly and effectively and to develop skill in the preparation of reports, articles, essays, and correspondence related to technical fields. Attention to sentence structure and paragraph development to express thoughts in lucid, coherent, well-developed form. Reading selections provide material for discussion and supply topics for frequent writing assignments. Lecture 3 hours per week.

NOTE: The student in a program that requires ENGL 101-102 and a third quarter of English or Speech should consult with his major advisor to determine which English or Speech course would be the most appropriate for his particular program. Please note that the course SPDR 136 is the equivalent of the course previously known as ENGL 136 and that it has no prerequisite; thus it can be taken at any time: 101-102-136, 101-136-102, or 136-101-102.

ENGL 111-112-113 ENGLISH COMPOSITION I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite satisfactory score on appropriate English proficiency examinations and 4 units of high school English or equivalent. Expository and argumentative writing, ranging from single paragraphs to essays of some length and complexity. Study of logical, rhetorical, and linguistic structures; the methods and conventions of preparing research papers; and the practical criticism of literary types. Lecture 3 hours per week.

ENGL 118 READING AND STUDY DEVELOPMENT (3 cr.)—A multi-level reading course with emphasis on structural analysis, critical reading, and study techniques for the development of individual skills; laboratory provides enrichment and application of techniques. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ENGL 121-122-123 JOURNALISM I-II-III (3 cr.) (3 cr.) (3 cr.)—Instruction and classroom practice in gathering, evaluating, and writing news. Techniques of page layout, newspaper make-up, rewriting, and editing. Lecture 3 hours per week.

ENGL 127 TECHNICAL WRITING (3 cr.)—Prerequisite ENGL 102 or departmental approval. Designed to develop writing proficiency in technical fields. Emphasis on collecting, organizing, and presenting materials applicable to various specialized areas. Lecture 3 hours per week.

ENGL 180 FUNDAMENTALS OF BUSINESS ENGLISH (3 cr.)—Prerequisite ENGL 102. 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. Class 3 hours per week.

ENGL 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ENGL 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

ENGL 245 ORAL LITERATURE (3 cr.)—Prerequisite ENGL 113, SPDR 136, or departmental approval. The study of historical and social aspects of oral communications media: analysis of folklore with emphasis on ballads and folk songs, epic and lyric poetry, oral traditions, television and radio plays, and their interrelation with literature. Lecture 3 hours per week.

ENGL 246 THE MODERN NOVEL (3 cr.)—A study of the modern novel. Emphasis on appreciation and interpretation of selected novels. Lecture 3 hours per week.

ENGL 247 THE MODERN DRAMA (3 cr.)—A study of the modern drama. Emphasis on the understanding and enjoyment of dramatic literature. Lecture 3 hours per week.

ENGL 248 THE MODERN SHORT STORY (3 cr.)—A study of the short story as a literary form. Emphasis on appreciation and interpretation of selected stories. Lecture 3 hours per week.

ENGL 249 MODERN POETRY (3 cr.)—A study of modern poetry. Emphasis on appreciation and interpretation of selected poems. Lecture 3 hours per week.

ENGL 250 MAJOR AMERICAN WRITERS (5 cr.)—Prerequisite ENGL 113 or departmental approval. A study of selected American writers representative of various periods. Students may receive credit for either the Survey of American Literature (ENGL 251, 252, 253) or ENGL 250. Lecture 5 hours per week.

ENGL 251-252-253 SURVEY OF AMERICAN LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite ENGL 113 or department approval. American Literature from Colonial times to the present. Emphasis on the ideas, themes, and characteristics of our national literature. Lecture 3 hours per week.

ENGL 260 MAJOR ENGLISH WRITERS (5 cr.)—Prerequisite ENGL 113 or departmental approval. A study of selected English writers representative of various periods. Students may receive credit for either the Survey of English Literature (ENGL 261, 262, 263) or ENGL 260. Lecture 5 hours per week.

ENGL 261-262-263 SURVEY OF ENGLISH LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite ENGL 113 or department approval. A survey of major English writings from early times to the modern period. Emphasis on the ideas, themes, and characteristics of English literature. Lecture 3 hours per week.

ENGL 270 MAJOR WRITERS IN WORLD LITERATURE (5 cr.)—Prerequisite ENGL 113 or departmental approval. A study in depth of writers of various cultures. Students may receive credit for either the Survey of World Literature (271, 272, 273) or ENGL 270. Lecture 5 hours per week.

ENGL 271-272-273 SURVEY OF WORLD LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite ENGL 113 or equivalent. A course designed to familiarize the student with master works of world literature. Analytical reading and critical writing toward understanding of the periods, the writers, the literary works. Lecture 3 hours per week.

ENGL 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

ENGL 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

FIRE SCIENCE

FIRE 100 FUNDAMENTALS OF FIRE SERVICE ADMINISTRATION (3 cr.)—A study of department and company organization and management, administrative procedures and methods, budgeting and reporting, control of resources, and maintenance of records. Lecture 3 hours per week.

FIRE 106 FIRE PROTECTION ORGANIZATION (3 cr.)—History and philosophy of fire service at the local, state, and national level with emphasis on the organization of the individual fire department; analysis of the overall fire problem, communications, maintenance, training, company fire fighting capabilities, apparatus and equipment. Lecture 3 hours per week.

FIRE 108 FUNDAMENTALS OF FIRE SUPPRESSION (3 cr.)—Basic concepts involved in fire suppression including fire behavior, principles of fire fighting as applied to small and large scale fires, problems involving the use of tactics, size-up, strategy and employment of equipment and manpower at various echelons. Lecture 3 hours per week.

FIRE 109 FIRE SUPPRESSION OPERATIONS (3 cr.)—The distribution and use of equipment, organization for major fires, pre-planning, command post operations, communications, equipment design and maintenance, and tactics. Lecture 3 hours per week.

FIRE 111 HAZARDOUS MATERIALS I (3 cr.)—Identification and characteristics of materials contributing to fire hazards including chemical gases, flammable liquids, and radiological materials, and an examination of their storage, handling and transportation, and related fire science problems. Lecture 3 hours per week.

FIRE 116 FUNDAMENTALS OF FIRE PREVENTION (3 cr.)—An introduction to fire safety through study of fire causes, inspection and investigation procedures. Lecture 3 hours per week.

FIRE 120 FIRE PROTECTION EQUIPMENT AND SYSTEMS (3 cr.)—Topics covered are the examination and utilizing of portable extinguisher equipment, sprinkler systems, protection systems for special hazards, and fire alarm and protection systems. Opportunities for visits to local facilities having equipment and systems affording a critical appraisal. Lecture 3 hours per week.

FIRE 137 FIRE FIGHTING TACTICS AND STRATEGY (3 cr.)—Prerequisite FIRE 106 and FIRE 108. Review of combustion and extinguishment. The problems during size-up; developing and implementing tactics and strategy during fires; and the leadership required on the fire ground. Lecture 3 hours per week.

FIRE 206 FIRE RESCUE PRACTICES (3 cr.)—Rescue practices; the human body, emergency care of victims, childbirths, artificial respiration, toxic gases, chemicals and diseases, radio-active hazards, rescue problems and techniques. Lecture 3 hours per week.

FIRE 207 RADIATION CONTROL SYSTEMS (3 cr.)—Radiation control procedures applied by the fire departments and other affected agencies. Includes familiarization with radiological instruments, human exposure to radiation, decontamination procedures, common uses of radioactive materials, and operational procedures. Demonstrations will illustrate established principles. Lecture 3 hours per week.

FIRE 208 WATER DISTRIBUTION SYSTEMS (3 cr.)—Principles, techniques, and application of water distribution systems in fire fighting. Emphasis on the use of underground mains, private water supplies, public water systems, hydrants, hose and standpipes. Laboratory equipment and materials will supplement lectures. Lecture 3 hours per week.

FIRE 216 FIRE HYDRAULICS AND EQUIPMENT (4 cr.)—Prerequisite FIRE 110. Review of basic mathematics; laws and formulas applied to fire service hydraulics, development of mental ability to solve fire flow requirements, water supply needs, and consideration of equipment standards. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

FIRE 227 BUILDING CONSTRUCTION AND CODES (4 cr.)—The various types of construction materials and their properties with emphasis on the effect of heat, water, and internal pressures generated under fire conditions. Familiarization with national, state and local ordinances and codes which influence the fire protection field. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

FIRE 237 ARSON DETECTION AND INVESTIGATION (3 cr.)—Prerequisite FIRE 106. Introduction to arson laws and types of incendiary fires. Determining fire causes, recognizing and preserving evidence; interrogation of adults and juveniles; court procedures. Lecture 3 hours per week.

FIRE 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

FIRE 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

FIRE 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

FRENCH

FREN 101-102-103 ELEMENTARY FRENCH I-II-III (4 cr.) (4 cr.) (4 cr.)—Introductory training in the speaking, understanding, reading, and writing of French with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week.

FREN 201-202-203 INTERMEDIATE FRENCH I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite FREN 103 or successful completion of two years of high school French and departmental permission. Advanced study in the speaking, understanding, reading and writing of French. French is used in the classroom. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week.

FREN 231-232-233 INTRODUCTION TO FRENCH CIVILIZATION AND LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite FREN 203 or equivalent. An introduction to the background of French life and culture and to the outstanding contributions of France to world civilization from medieval times to the present. Reading is in the original French and French is used in the classroom. Lecture 3 hours per week.

GENERAL

GENL 091-092 SEMINAR IN AMERICAN SOCIETY (1 cr.) (1 cr.)—A general survey course of the factors and forces at work in contemporary American Society. Content will be structured to develop a broad understanding of contemporary issues. Lecture 1 hour and a seminar 1 hour, Total of 2 hours per week.

GENL 100 ORIENTATION (1 cr.)—This course, required of all beginning college students, is designed essentially as an instrument of group guidance and deals with such problems as adjustment to college, purposes and functions of the college, planning for the future and making the most of the college years and what the college has to offer. Particular emphasis is placed on experiences designed to improve study habits and skills such as reading, listening and library activities. Lecture 1 hour, Laboratory or seminar 1 hour, Total of 2 hours per week.

GEOGRAPHY

GEOG 240 INTRODUCTION TO PHYSICAL GEOGRAPHY (3 cr.)—A study of the major elements of the natural environment such as land forms, weather and climate, natural vegetation, and soils. Lecture 3 hours per week.

GEOG 250 INTRODUCTION TO CULTURAL GEOGRAPHY (3 cr.)—A survey of landscape modification through human agencies and the relationships of culture and geography. Lecture 3 hours per week.

GEOG 260 INTRODUCTION TO ECONOMIC GEOGRAPHY (3 cr.)—A geographic survey of primary production, manufacturing, mining, and trade, covering agriculture, forestry, and fishing. Lecture 3 hours per week.

GEOG 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

GEOG 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

GERMAN

GERM 101-102-103 ELEMENTARY GERMAN I-II-III (4 cr.) (4 cr.) (4 cr.)—Introductory training in the understanding, speaking, reading, and writing of German with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week.

GERM 201-202-203 INTERMEDIATE GERMAN I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite GERM 103 or successful completion of two years of high school German and departmental permission. Advanced study in the understanding, speaking, reading and writing of German. German is used in the classroom. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

GERM 231-232-233 INTRODUCTION TO GERMAN LITERATURE I-II-III (3 cr.) (3 cr.)—Prerequisite GERM 203 or equivalent. Readings in selected works of German literature. German is used in the classroom. Lecture 3 hours per week.

GOVERNMENT

GOVT 80 AMERICAN GOVERNMENT (3 cr.)—A survey of the American governmental system designed to familiarize the student with the general principles and policies of our constitutional system at the local, state, and national levels. Lecture 3 hours per week.

GOVT 180 AMERICAN CONSTITUTIONAL GOVERNMENT (3 cr.)—An introductory course in American government, including fundamental concepts and principles of our constitutional system at the national, state and local levels. Lecture 3 hours per week.

GOVT 187 AMERICAN NATIONAL GOVERNMENT (5 cr.)—The organization, structure and functions of the national government in the United States. If credit was given for either GOVT 180 or GOVT 186, credit cannot be obtained for this course. Lecture 5 hours per week.

GOVT 188 STATE AND LOCAL GOVERNMENT (5 cr.)—A study of the theory, structure and functioning of, and interrelationships among, state and local governments in the United States, with illustrations from Virginia jurisdictions. Lecture 5 hours per week.

GOVT 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

GOVT 256 INTRODUCTION TO INTERNATIONAL POLITICS (3 cr.)—A study of principles and factors affecting current international politics to promote an understanding of nations' behavior with one another. Lecture 3 hours per week.

GOVT 257 CONTEMPORARY INTERNATIONAL PROBLEMS (3 cr.)—Analysis of selected contemporary issues illustrating basic problems in international relations. Some representative topics are the Middle East, Southeast Asia, East-West conflict, the rise of nationalism, and the quest for peace. Lecture 3 hours per week.

GOVT 281-282-283 UNITED STATES GOVERNMENT I-II-III (3 cr.) (3 cr.) (3 cr.)—Elements of political science, powers, organization and functions of the legislative, executive and judicial branches of the national, state and local governments in the United States; democracy, federalism, the Constitution and civil liberties. Lecture 3 hours per week.

GOVT 284-285 UNITED STATES GOVERNMENT I-II (5 cr.) (4 cr.)—Elements of political science, powers, organization, and functions of the legislative, executive, and judicial branches of the national, state and local governments in the United States; democracy, federalism, the Constitution, and civil liberties. Lecture 5-4 hours per week.

GOVT 298 SEMINAR IN PUBLIC AFFAIRS (2 cr.)—Prerequisite GOVT 180 or equivalent. Seminar in current public affairs concerning domestic and foreign policy of the United States to develop the ability to analyze and critically evaluate present problems as they relate to the functioning of the United States. Lecture 2 hours per week.

GOVT 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

HEALTH

HLTH 100 ORIENTATION TO ALLIED CAREERS (1 cr.)—An orientation to the interrelated roles and functions of various members of the health team. Lecture 1 hour per week.

HLTH 120 MEDICAL TERMINOLOGY (5 cr.)—Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, stem words, and technical terms with emphasis on proper spelling and usage. Lecture 5 hours per week.

HISTORY

HIST 101-102-103 HISTORY OF WESTERN CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.)—The development of civilization from ancient times to the present. The last two quarters deal with a survey of the period since the close of the Reformation. Lecture 3 hours per week.

HIST 111-112-113 AMERICAN HISTORY I-II-III (3 cr.) (3 cr.) (3 cr.)—A survey of United States history from its beginning in early colonial times to the present. Lecture 3 hours per week.

HIST 187 HISTORY OF AMERICAN NEGRO (3 cr.)—Prerequisites none other than having had the usual high school background in American History. It is preferred that the student have had college level American History. Concerned with introducing students to the fundamental contributions of the Negro to American society. The Negro in Art, Literature, Science, and other fields in American History. Lecture 3 hours per week.

HIST 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

HIST 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

HIST 221-222-223 AMERICAN ECONOMIC HISTORY I-II-III (3 cr.) (3 cr.) 3 cr.)—First quarter deals with economic history of the 19th century and early 20th century in the United States. The second quarter places emphasis on the 1920's and 1930's. The third quarter covers the period since 1930. Lecture 3 hours per week.

HIST 224-225 AMERICAN ECONOMIC HISTORY I-II (5 cr.) (4 cr.)—First quarter deals with economic history of the 19th and early 20th centuries in the United States. The second quarter deals with the remainder of the 20th century emphasizing the 1920's and 1930's. Lecture 5-4 hours per week.

HIST 251-252-253 HISTORY OF MODERN EUROPE I-II-III (3 cr.) (3 cr.) (3 cr.)—The political, social, and economic developments from 1500 to the present. Lecture 3 hours per week.

HIST 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

HIST 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

HIST 281-282-283 A SURVEY OF LATIN AMERICAN CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.)—A survey of Latin American civilization—in its political, economic, and social aspects—from Iberian and Pre-Columbian origins down to the present day. Lecture 3 hours per week.

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

HRIM 111-112-113 FOOD SCIENCE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite high school chemistry or biology. Interrelationship of the physical, biological and chemical principles of food, food preparation, food equipment, and food manufacturing processes. Lecture 3 hours per week.

HRIM 124-125 PRINCIPLES OF FOOD PREPARATION I-II (4 cr.) (4 cr.)—Applications of scientific principles and techniques to food preparation. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HRIM 134-135 NUTRITION I-II (3 cr.) (3 cr.)—The study of food composition and the nutrients essential to the health of human life, its function and metabolism. Lecture 3 hours per week.

HRIM 140 PRINCIPLES OF BAKING (4 cr.)—Application of scientific principles and techniques of baking. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HRIM 186 EQUIPMENT LAYOUT-DESIGN (3 cr.)—Design, layout and specification requirements of food service equipment. Work measurement studies applied to quantity food production and its interrelationship to manpower and equipment requirements. Lecture 3 hours per week.

HRIM 221-222-223 QUANTITY FOOD PREPARATION I-II-III (4 cr.) (4 cr.) (4 cr.)—Principles, standards and practices of cooking and baking applied in large quantity food production. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

HRIM 234-235 DIET THERAPY I-II (3 cr.) (3 cr.)—Application of nutrition principles in the dietary treatment of hospital patients. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

HRIM 256 CLUB MANAGEMENT (3 cr.)—Problems peculiar to the organization and management of private clubs such as boards of directors, committee organization, legal aspects, and financial considerations. Lecture 3 hours per week.

HRIM 264-265 FOOD AND BEVERAGE COST CONTROLS I-II (3 cr.) (3 cr.)—Pre-cost, pre-control methods relative to the menu, production control, purchasing, receiving, inventory control, and profit of food service system. Lecture 3 hours per week.

HRIM 266 FOOD SERVICE PURCHASING (3 cr.)—Methods and procedures for purchasing food for hotels, restaurants and institutions; markets, federal and trade grades, governmental regulations, packaging, comparative versus price buying, yields and quality controls. Lecture 3 hours per week.

HRIM 284-285 HOTEL-RESTAURANT ORGANIZATION AND MANAGEMENT I-II (3 cr.) (3 cr.)—The nature and scope of departmental functions in the hospitality industry with emphasis on operation practices and problems. Lecture 3 hours per week.

HRIM 286 CATERING (3 cr.)—The systematic study of special functions in the hospitality industry. Lecture and demonstrations in banquet layout, menus, services, sales and supervision. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

HRIM 287 HOTEL/MOTEL FRONT OFFICE PROCEDURES (3 cr.)—An analysis of the jobs in the hotel-motel front office and procedures involved in registering, accounting for, and checking out guests. Lecture 3 hours per week.

HRIM 289 HOTEL AND MOTEL LAW (3 cr.)—A study of the laws applicable to the ownership and operation of hotels and motels. The duties to guests, ejection of undesirables, liabilities for personal injuries, damage, arrest and detention of offenders. Lecture 3 hours per week.

HRIM 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

HUMANITIES

HUMN 201-202-203 SURVEY OF WESTERN CULTURE I-II-III (3 cr.) (3 cr.) (3 cr.)—A survey of the Western world which correlates the art, music and literature of the following periods: Greek and Roman, Middle Ages, Renaissance, Elizabethan, Neo-classical, Victorian and Modern. Lectures 3 hours per week.

INDUSTRIAL ENGINEERING

INDT 111-112 MATERIALS AND PROCESSES OF INDUSTRY I-II (3 cr.) (3 cr.)—The objective of this course is to familiarize the student with the materials and processes of modern industry from the drafting and design point of view. The physical properties of industrial materials such as ferrous, non-ferrous metals, woods, plastics and clay products will be studied in terms of design application, processing and fabricating methods. Students will be introduced to cutting, cold forming, hot working, welding, foundry and chipless manufacturing processes which are widely employed in contemporary industry. In addition, the science of precision measurement as applied to inspection practices will be studied. Lecture 3 hours per week.

INDT 141 METHODS OF MANUFACTURE I (3 cr.)—An introduction to an understanding of the processes and equipment used in the manufacture of metal parts, plastic materials; information includes design cost and material and tool forms involved in selecting a method of manufacture. Lectures 3 hours per week.

INDT 142 METHODS OF MANUFACTURE II (3 cr.)—Prerequisite INDT 141. Emphasis on the understanding of production techniques, production tools; includes discussions of lathes, millers, shaper, jig borer; machine controls and inspection techniques. Lecture 3 hours per week.

INDT 176 INDUSTRIAL SAFETY (2 cr.)—Principles and practices of accident prevention, analysis of accident causes, mechanical safeguards, fire prevention, housekeeping, occupational diseases, first aid, safety organization, protection equipment and general safety principles and promotion of same. Lecture 2 hours per week.

INDT 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

INDT 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

INDT 226 PLANT LAYOUT (3 cr.)—Arrangement and layout of physical facilities for maximum efficiency of production including stock arrangement, machines, layout of aisles, use of space and techniques for model construction. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

INDT 270 INDUSTRIAL MANAGEMENT (3 cr.)—A study of organizational structure; operational, financial, accounting and marketing activities, management responsibilities, planning, control, personnel, safety, labor relationships, and factors essential to effective management. Lecture 3 hours per week.

INDT 286 QUALITY CONTROL (3 cr.)—Principles of inspection and quality control, with special emphasis on setting up, maintaining and interpreting control charts. Course content includes dimensional control, basic sizes, and applications of tolerances, allowances, limits, precision measurements, comparison measurements, industrial applications, optical, electrical and air limit gauges, comparatore; inspection techniques, control charts, and statistics are introduced as quality control instruments. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

INDT 288 PRODUCTION PLANNING AND CONTROL (3 cr.)—The preparation and analysis of production, planning based on sales forecasts, operation sheets, routing, scheduling, dispatching, follow-up, inventory control, receiving stores and shipping, control forms and reports. Lecture 3 hours per week.

MARKETING

MKTG 100 PRINCIPLES OF MARKETING (3 cr.)—The principles, methods, and problems involved in the distribution and marketing of goods and services. The various marketing agents: wholesaler, broker, agent, cooperative, and trade associations. Discussions of present day problems and policies connected with the distribution and sale of commodities, pricing, advertising and promotion, and buyer motivation. Lecture 3 hours per week.

MKTG 109 PRINCIPLES OF SALESMANSHIP (3 cr.)—The development of selling standards, methods and buying motives. The organization and training processes necessary for a well coordinated sales plan through united efforts of the sales force. The training of sales personnel for maximum efficiency in selling. Lecture 3 hours per week.

MKTG 136 RETAIL ORGANIZATION & MANAGEMENT (3 cr.)—The organization of businesses to accomplish their goals in the most effective and efficient manner. Location, layout, internal management, policy development, methods of operation, merchandise control and protection, property maintenance, and analysis of results. Lecture 3 hours per week.

MKTG 150 PRINCIPLES OF INSURANCE (3 cr.)—A course in insurance principles and practices. Includes an examination of risks and applications in the principal fields of insurance including life, accident and health, fire, liability, surety, and property. Lecture 3 hours per week.

MKTG 164 PRINCIPLES OF REAL ESTATE I (3 cr.)—Practical applications of real estate management principles. Includes a study of contracts, deeds, mortgages, bonds, leases, search, real property leasing and appraisal. Lecture 3 hours per week.

MKTG 165 PRINCIPLES OF REAL ESTATE II (3 cr.)—Prerequisite MKTG 164. Continued examination of marketing fundamentals. Emphasis on the techniques required for proper selection, analysis and listing of real estate properties. How to determine needed data, how to analyze forms and records for recording and presenting data. Lecture 3 hours per week.

MKTG 217 COLOR, LINE AND DESIGN IN RETAILING (3 cr.)—The vital role played by color and design in almost every aspect of the marketing of consumer goods. Emphasis on styling, packaging, advertising, and professional layouts; basic sketching for art forms, balance and color harmony with recognition of basic period architecture as applied to consumer goods. Lecture 3 hours per week.

MKTG 218 FASHION MERCHANDISING (3 cr.)—A knowledge of fashions including development, trends, and changes making the task of the buyer, the manager and the salesman easier; customer attitudes and behavior toward style and fashion details. Lecture 3 hours per week.

MKTG 226 MERCHANDISE BUYING AND CONTROL (3 cr.)—The place of buying and inventory control in the merchandising cycle; the techniques used in developing merchandise plans, model stock, unit control, and inventory systems, merchandise selection policy and pricing for profits. Lecture 3 hours per week.

MKTG 227 ADVERTISING AND DISPLAY (4 cr.)—A survey of the forms of advertising and the principles of display as they apply to retail and other distributive businesses. Emphasis on the principles of layout and copy, media selection, analysis of cost and results, and the coordination of advertising and display activities within the store. Lecture 3 hours per week, Laboratory 2 hours per week, Total 5 hours per week.

MKTG 228 SALES PROMOTION AND CUSTOMER RELATIONS (3 cr.)—The scope and total activities of a sales promotion program designed to coordinate advertising, display and publicity. Effective use of the sales forces and store policies to develop favorable customer relationships. Institutional practices which develop goodwill for the store. Lecture 3 hours per week.

MKTG 266 REAL ESTATE SALES (3 cr.)—The fundamentals of sales principles as they apply to real estate. The prospect, his motives, his needs, and his abilities to buy real estate. Relations of broker and salesman, salesman and client and community responsibilities. Writing contracts, closing and settlement, and follow-up relations. Lecture 3 hours per week.

MKTG 267 REAL ESTATE APPRAISAL (3 cr.)—Fundamentals of real estate evaluation; methods used in determining value; application of procedures and techniques by utilizing actual appraisals. Includes the opportunities available in the appraisal field of real estate activity. Lecture 3 hours per week.

MKTG 268 PROPERTY MANAGEMENT (3 cr.)—The field of property management; professional aspects of real estate brokerage, properties, neighborhood analysis, tenants and qualifications, aspects of maintenance and repair. Lecture 3 hours per week.

MKTG 269 REAL ESTATE FINANCE (3 cr.)—Principles and practices of financing real estate sales and properties, analysis of various types of mortgage payments and contracts, financing homes and industrial properties and buildings; loan application, relations between correspondent and investor, construction loans. Lecture 3 hours per week.

MKTG 276 LAND PLANNING AND USE (3 cr.)—Land value and usage, planning, zoning regulations, building and site requirements, sanitation and utilities, highest and best use concept, population analysis, influence of market forces and public policies. Lecture 3 hours per week.

MKTG 277 LEGAL ASPECTS OF REAL ESTATE (3 cr.)—A study of Virginia real estate law including rights incident to property ownership and management, agency contract and application to real estate transfer, conveyancing, probate proceedings, trust transactions. Lecture 3 hours per week.

MKTG 290 COORDINATED INTERNSHIP (3-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

MKTG 298 SEMINAR AND PROJECT (3 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

MKTG 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

MATHEMATICS

MATH 01 DEVELOPMENTAL MATHEMATICS (5 cr.)—A foundation course which bridges the gap between a weak mathematical foundation and the knowledge necessary for the study of mathematical courses in technical and professional programs. Arithmetic, algebra, geometry and trigonometry will be covered. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

MATH 06 BASIC ARITHMETIC (5 cr.)—A foundation course in review of arithmetical principles and computations, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

MATH 11-12-13 ELEMENTS OF MATHEMATICS I-II-II (3 cr.) (3 cr.) (3 cr.)—Designed for the occupational student. Practical applications of elementary mathematics including algebra, geometry, and trigonometry to everyday problems in the manufacturing and trade world. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MATH 31-32-33 ALGEBRA I-II-III (5 cr.) (5 cr.) (5 cr.)—Fundamental algebraic calculations for students who need a survey of the basic principles of algebra. Includes the essential topics of the first two years of high school algebra. Lecture 5 hours per week.

MATH 36 PLANE GEOMETRY (5 cr.)—Prerequisite one unit of high school algebra or equivalent. Fundamentals of plane geometry and an introduction to coordinate geometry. Lecture 5 hours per week.

MATH 38 TRIGONOMETRY (5 cr.)—Prerequisite one unit of high school algebra and one half unit of high school geometry or equivalent. Fundamentals of trigonometry for students who need a survey or review of the basic principles of trigonometry. Lecture 5 hours per week.

MATH 101-102-103 FUNDAMENTALS OF MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)—A study of concepts of numbers; fundamental operations with numbers, formulas and equations, graphical analysis, binary numbers, Boolean and Matrix algebra, linear programming, elementary concepts of statistics. Lecture 3 hours per week.

MATH 111-112-113 TECHNICAL MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite satisfactory score on appropriate mathematics proficiency examinations and one unit of high school algebra and one unit of high school geometry or equivalent. Designed for the technical student. Slide rule, review of geometry, dimensional analysis, analytical geometry of the straight-line, basic algebra through the advanced algebra of exponentials and logarithms, curve sketching, numerical trigonometry, introduction to analytical trigonometry, and an introduction to calculus to emphasis those techniques useful to the engineering student. Lecture 3 hours.

MATH 121-122-123 ENGINEERING TECHNICAL MATHEMATICS I-II-III (5 cr.) (5 cr.) (5 cr.)—Prerequisite three units of high school mathematics other than general mathematics, and satisfactory score on appropriate mathematics proficiency examinations. Algebra, trigonometry, introduction to calculus, and some emphasis on graphical methods. The course sequence includes solutions of linear and quadratic equations, trigonometric functions, trigonometric curve sketching, logarithms, ratio, proportion and variation, vectors, complex numbers and the binomial theorem. Credit cannot be obtained for both this course and MATH 161-162-163 (College Mathematics). Lecture 5 hours per week.

MATH 141-142-143 INTRODUCTORY MATHEMATICAL ANALYSIS I-II-III (5 cr.) (5 cr.) (5 cr.)—Prerequisites are a satifactory score on appropriate mathematics proficiency examinations and four units of high school mathematics including two units of algebra, one of geometry, and one-half of trigonometry or equivalent. A modern unified course in analytic geometry and calculus including functions, limits, derivatives, differentials, indefinite integrals, definite integrals, and applications. Lecture 5 hours per week.

MATH 151-152-153 INTRODUCTION TO BUSINESS MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite a strong background in basic arithmetic operations. Instruction, review and drill in percentage, cash and trade discounts, mark-up, payroll, sales, property and other taxes, simple and compound interest, bank discounts, interest, investments and annuities. Lecture 3 hours per week.

MATH 161-162-163 COLLEGE MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite a satisfactory score on appropriate mathematics proficiency examination and three units of high school mathematics including two units of algebra and one unit of geometry or equivalent. A modern unified course in algebra, trigonometry, analytic geometry, and calculus for students other than those in engineering. Lecture 3 hours per week.

MATH 181-182-183 GENERAL COLLEGE MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)—Intended for students with majors other than mathematics, science or engineering. Prerequisite Algebra I and either Algebra II or Geometry and a satisfactory score on appropriate mathematics proficiency examinations. The first two quarters will include sets, the logic of algebra, the real numbers system, algebraic and transcendental functions, relations and graphs. The third quarter will include permutations, combination, probability and elementary statistics. Lecture 3 hours per week.

MATH 191-192-193 FINITE MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)—This course is intended for students with majors other than mathematics, science or engineering. Prerequisites are a satisfactory score on appropriate mathematics proficiency examinations and three units of high school mathematics including two units of algebra and one unit of geometry or equivalent. Set theory, the real number system, probability theory, vectors, matrices, linear programming, systems of linear equations, introduction to theory of games. Lecture 3 hours per week.

MATH 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

MATH 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

MATH 202 INTRODUCTION TO MATRIX ALGEBRA (4 cr.)—Prerequisite MATH 163 or MATH 143 or equivalent. Operations with matrices, determinants, systems of linear equations, vector spaces and linear transformations, bilinear and quadratic forms. Lecture 4 hours per week.

MATH 241-242-243 ADVANCED MATHEMATICAL ANALYSIS I-II-III (4 cr.) (4 cr.) (4 cr.)—(For students in Engineering and Science Curricula.) Prerequisite MATH 143. A modern course including vectors, matrices, partial differentiation, multiple integrals, infinite series, and differential equations. Lecture 4 hours per week.

MATH 271-272-273 CALCULUS I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite MATH 163 or equivalent. Topics include functions, limits, continuity, differentiation and integration of algebraic, trigonometric, and hyperbolic functions with applications, vectors in three dimensions, definite integrals, indeterminate forms, and partial differentiation. Lecture 4 hours per week.

MATH 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

MATH 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

MECHANICAL ENGINEERING

MECH 116-117 NUMERICAL CONTROL PROGRAMMING I-II (4 cr.) (4 cr.)—A study dealing with the newer concepts of work handling and automatic machining processes. New techniques in metal forming and machine processes; analysis of electrosonic machining, electrolytic metal removal, numerical controls and simplified building block numerical control system. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 118 TOOL DESIGN (3 cr.)—A basic course in design and layout of cutting tools, stamping tools, punches, gages, dies, blanking and forming tools, notching tools, progressive dies, embossing dies, instruction in use and application of these tools. Lecture 1 hour, Laboratory 5 hours, Total 6 hours per week.

MECH 119 JIG AND FIXTURE DESIGN (3 cr.)—Fundamentals of the construction and design of various types of jigs and fixtures including milling, reaming, tapping, and drilling fixtures. Preparation of complete working drawings from layouts, for interchangeable manufacture; computation of fits, limit dimensions, tolerances, tool drawing principles and methods, fundamentals of cutting tools and gages. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MECH 131 MACHINE LABORATORY I (2 cr.)—Fundamental machine operations of drilling, reaming, turning between centers, chuck work, thread chasing, shaper, layout, finishing, cutting speeds, tool care, tool grinding, surface grinder, milling machine operations and tools. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 132 MACHINE LABORATORY II (2 cr.)—A continuation of Machine Lab I with greater emphasis on practical and industrial applications and set-up will be included; inspection tools, gauges, tapers, gear cutting, square threads and fits will also be included. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 133 MACHINE LABORATORY III (2 cr.)—Continued study in which the student will combine the knowledge and skills of the machining, tool, jig and machine design courses to build a simple machine and make the necessary tools for fabrication. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 141 MATERIALS LABORATORY I (3 cr.)—Metallurgy, heat treating, tempering, hardening, statics and welding. Testing materials and analysis of effects of industrial processes on materials with emphasis on machine parts. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MECH 142 MATERIALS LABORATORY II (3 cr.)—Prerequisite MECH 141. Dynamics including treatment of force, moments, and vectors with emphasis on machine parts. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MECH 187 INTRODUCTION TO INSTRUMENTATION (4 cr.)—Broad introduction to use of industrial electro-mechanical equipment. Provides an understanding of the methods, techniques, and skills required for installation, services and operation of a variety of industrial control systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

MECH 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

MECH 237-238 MACHINE DESIGN I-II (4 cr.) (4 cr.)—The analytical design of bearings, clutches, coupling, brakes, springs, gearing systems, and power shafting. Emphasis on methods of constructing machine parts and specifications of materials and manufacturing processes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 246 METALLURGY I (4 cr.)—Prerequisite INDT 112. Fundamentals of metallurgy, grain size, effect on carbon content, and harness testing devices. Different alloys will be tested to determine the effect of heat treatment. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 247 METALLURGY II (4 cr.)—Prerequisite MECH 246. The fundamentals of physical metallurgy, of ferrous and nonferrous alloys, including crystal structures, phase diagrams, coiling curves, solid solutions, eutectic diagrams, grain characteristics, and the application of these to heat treating alloy metals. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 264 THERMODYNAMICS I (4 cr.)—Prerequisite MATH 113 or equivalent. Characteristics of gases; applied study of steam cycles and combustion processes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 265 THERMODYNAMICS II (4 cr.)—Prerequisite MECH 264. Advanced thermodynamics with emphasis on applications relating to internal combustion engines and gas turbines. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 286 PRECISION MEASUREMENTS (3 cr.)—A study of the various precision measuring instruments and their uses in modern industry. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MECH 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

MECH 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

MEDICAL SCIENCE

MEDT 107 MEDICAL REPORT TRANSCRIPTION (4 cr.)—Prerequisite MEDT 106 and ability to type 40 words per minute accurately. The operation and care of dictating and transcribing machines; development of skill in the transcription and preparation of reports which make up the medical record. Laboratory 12 hours per week.

MEDT 110 INTRODUCTION TO MEDICAL RECORD SCIENCE (3 cr.)—Prerequisite MEDT 107. Provides an orientation to the medical records field including a history of medical records; organization and functions of the medical record department with emphasis on the role of the medical records technician and interdepartmental relationships. Lecture 3 hours per week.

MEDT 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

MUSIC

MUSC 111-112-113 MUSIC THEORY I-II-III (4 cr.) (4 cr.) (4 cr.)—Elements of musical notation. Structure of scales, intervals, triads and chords. Development of ability to sing at sight and write from dictation melodies in all keys, clefs, and meters. Beginning analysis of the Bach chorale style and construction of cadential phrases in that style. Similar experience at the keyboard. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

MUSC 121-122-123 INTRODUCTION TO MUSICAL LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—The study of representative musical composition from the Middle Ages to the present. The purpose of this study is to train students in intelligent listening and to provide them with an understanding of our musical heritage and will serve as a basis for lifelong interest in music. No previous knowledge of music is required. Lecture 3 hours per week.

MUSC 138 CHORUS (1 cr.)—Courses in Ensemble consist of performance from the standard repertories including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 148 ORCHESTRA (1 cr.)—Courses in Ensemble consist of performance from the standard repertories including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 159 WOODWIND ENSEMBLE (1 cr.)—Courses in Ensemble consist of performance from the standard repertories including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 169 STRING ENSEMBLE (1 cr.)—Courses in Ensemble consist of performance from the standard repertories including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 179 BRASS ENSEMBLE (1 cr.)—Courses in Ensemble consist of performance from the standard repertories including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 189 PERCUSSION ENSEMBLE (1 cr.)—Courses in Ensemble consist of performance from the standard repertories including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 220 THE HISTORY OF JAZZ (3 cr.)—A study of the underlying elements of jazz concentrating on its cultural and historical development from its earliest stages to the present. Illustrated by musical examples through recordings and other audio-visual devices. No previous knowledge of music is required. Lecture 3 hours per week.

MUSC 221-222-223 HISTORY OF MUSIC I-II-III (3 cr.) (3 cr.) (3 cr.)—Primarily for music majors. A chronological study of musical styles from antiquity to the present time. Relationship of the historical development of music to parallel movements in art, drama, and literature. Development of techniques for listening analytically and critically to music. I. Music to 1600. II. 1600 to 1820. III. 1820 to present. Lecture 3 hours per week.

NATURAL SCIENCE SURVEYS

NASC 100 SURVEY OF SCIENCE (4 cr.)—A general survey course designed to familiarize the student with the basic principles of biological and physical sciences. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

NASC 111-112-113 MEDICAL SCIENCE I-II-III (4 cr.) (4 cr.) (4 cr.)—Human anatomy and physiology, microbiology, pathology and bacteriology; study of organs tissues, body systems and functions, chemistry as it relates to physiology, principles of physics as applied to medical science. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

NASC 126 SCIENCE IN INDUSTRY (3 cr.)—This course is designed to provide a background in the physical sciences for the draftsman and other industrial workers. 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. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

NURSING

NURS 111 FUNDAMENTALS OF NURSING I (5 cr.)—The development of nursing skills for the physical, psychological, and social needs of patients. Selected clinical laboratory experience in cooperating health and welfare agencies. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

NURS 112 FUNDAMENTALS OF NURSING II (6 cr.)—Continuation of NURS 111. Lecture 3 hours, Laboratory 9 hours, Total 12 hours per week.

NURS 113 FUNDAMENTALS OF NURSING III (8 cr.)—Continuation of NURS 112. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

NURS 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

NURS 221-222-223-224 NURSING IN MAJOR HEALTH PROBLEMS I-II-III-IV (8 cr.) (8 cr.) (8 cr.) (8 cr.)—Prerequisites NURS 111-112-113, NASC 111-112-113. Representative problems in the nursing care of patients of all age groups with illness requiring medical, surgical, and psychiatric care. Related clinical experiences to further develop the knowledge and skills required to provide nursing care for each patient's needs. The scope, prevention, diagnosis, treatment, and control of major areas of illness in the United States. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

NURS 298 SEMINAR (1-5 cr.)—The role of the graduate registered nurse. Emphasis on career opportunities, professional organizations, legal and ethical implications, and methods of planning and assigning patient care. Variable hours.

NURS 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

PHILOSOPHY AND RELIGION

PHIL 101-102 INTRODUCTION TO PHILOSOPHY I-II (3 cr.) (3 cr.)—An introductory study of some philosophical issues concerning the perception and belief of man in society. Lecture 3 hours per week.

PHIL 110 LOGIC (3 cr.)—The study of logic as the scientific investigation of valid reasoning. Lecture 3 hours per week.

PHIL 221 LITERATURE OF THE BIBLE I (3 cr.)—A study of the literature of the Old Testament. Lecture 3 hours per week.

PHIL 222 LITERATURE OF THE BIBLE II (3 cr.)—A study of the literature of the New Testament. Lecture 3 hours per week.

PHIL 226 COMPARATIVE RELIGION (3 cr.)—A survey of the literature of comparative religions of the world. Lecture 3 hours per week.

PHYSICAL EDUCATION AND RECREATION

PHED 100 FUNDAMENTALS OF PHYSICAL ACTIVITY (1 cr.)—The role of physical activity in daily living; methods of personal evaluation of physical fitness and performance, meaningful interpretations of such evaluations, and the design of activity programs and patterns. Lecture 1 hour, Laboratory 1 hour, Total 2 hours per week.

PHED 106 PHYSICAL PERFORMANCE AND CONDITIONING (1 cr.)—Principles underlying the development of performance and conditioning factors such as strength, balance, power, agility, cardiovascular function, coordination. Lecture 1 hour, Laboratory 1 hour, Total 2 hours per week.

PHED 110 ANGLING AND CASTING (1 cr.)—The fundamentals of sport fishing, spinning, spin casting, bait casting and fly casting with the related knowledges of conservation and safety. Laboratory 2 hours per week.

PHED 111 ARCHERY (1 cr.)—The fundamentals of target archery and/or field archery; equipment, safety, and conservation. Laboratory 2 hours per week.

PHED 113 BOATING (1 cr.)—Prerequisite appropriate skill in swimming. The fundamentals used in propelling and handling canoes, row boats, and other small craft; descriptive and functional terminology, construction and care of equipment, conservation, and safety. Laboratory 2 hours per week.

PHED 118 SNOW SKIING (1 cr.)—The fundamentals of snow skiing; equipment and safety. Laboratory 2 hours per week.

PHED 131 BOWLING (1 cr.)—A course designed to present the fundamentals of bowling; equipment, rules, and personal conduct. Laboratory 2 hours per week.

PHED 133 GOLF (1 cr.)—The fundamentals of golf; equipment, rules, strategy for play, and personal conduct. Laboratory 2 hours per week.

PHED 135 TENNIS (1 cr.)—The fundamentals of tennis; rules, strategy for team and individual play, and personal dress and conduct. Laboratory 2 hours per week.

PHED 151 SENIOR LIFE SAVING (1 cr.)—Prerequisite appropriate skill in swimming. The fundamentals of rescue and survival in the water; first aid and safety. Preparation for the examination for the Red Cross Senior Life Saving Certificate. Laboratory 2 hours per week.

PHED 153 SWIMMING (1 cr.)—The fundamentals of swimming; personal performance and safety. Laboratory 2 hours per week.

PHED 160 CONTEMPORARY DANCE (1 cr.)—The fundamentals and techniques employed in dance as a creative art form; choreography and performance. Laboratory 2 hours per week.

PHED 161 FOLK DANCE (1 cr.)—The fundamental step patterns, rhythmic patterns positions, and formations of the traditional and ethnic group and individual dances emphasizing those of foreign origin; dance forms, their cultural environment, social performance, and significance. Laboratory 2 hours per week.

PHED 163 SOCIAL DANCE (1 cr.)—The fundamental step patterns, rhythmic patterns and positions of the social or ballroom dance forms; dance as a significant form of social behavior. Laboratory 2 hours per week.

PHED 164 SQUARE DANCE (1 cr.)—The fundamental step and movement patterns, rhythmic patterns, and formations of the American square dance; historical significance and development. Laboratory 2 hours per week.

PHYSICS

PHYS 06 PHYSICS (5 cr.)—A foundation course in general physics designed to develop a basic understanding of physics. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

PHYS 101-102-103 INTRODUCTORY PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.) —A survey of general physics, treating briefly the fundamentals of mechanics, properties of matter, heat, magnetism, electricity, sound, light, and radiation. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

PHYS 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

PHYS 221-222-223-224 GENERAL UNIVERSITY PHYSICS I-II-III-IV (4 cr.) (4 cr.) (4 cr.) (4 cr.)—Prerequisite MATH 143 or corequisite MATH 241 or equivalent. General University Physics designed for students in engineering, physics or mathematics. Includes mechanics, relativity, electro-magnetism, ray and wave optics, statistical and quantum mechanics, solid state and nuclear physics. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

PHYS 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

POLICE SCIENCE

PLCE 100 INTRODUCTION TO LAW ENFORCEMENT (3 cr.)—The philosophy and history of law enforcement; overview of crime and police problems; organization and jurisdiction of local, state, and Federal law enforcement agencies; survey of professional career opportunities and qualifications required. Lecture 3 hours per week.

PLCE 110 PATROL ADMINISTRATION (3 cr.)—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 per week.

PLCE 111 POLICE ORGANIZATION AND ADMINISTRATION I (3 cr.)—Prerequisite PLCE 100. Principles of organization and administration in law enforcement; functions and activities; planning and research; public relations, personnel and training; inspection and control; policy formulation. Lecture 3 hours per week.

PLCE 112 POLICE ORGANIZATION AND ADMINISTRATION II (3 cr.)—Prerequisite PLCE 111. Principles of organization and administration as applied to operational services. Patrol; criminal investigation; intelligence and vice units; juvenile units; traffic administration. Lecture 3 hours per week.

PLCE 120 SPECIAL ENFORCEMENT PROBLEMS (3 cr.)—Crowd control during civil demonstrations, picketing, rioting and other emergency situations; the police role in civil defense; police problems caused by narcotics addiction; the handling of mentally or emotionally abnormal persons. Lecture 3 hours per week.

PLCE 126 PREVENTION AND CONTROL OF JUVENILE DELINQUENCY (3 cr.)—Survey of youth crime, stressing the police role in community programs of prevention and control. Lecture 3 hours per week.

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

PLCE 136 LEGAL EVIDENCE (3 cr.)—Kinds, degrees and admissibility of evidence, methods and techniques of its acquisition and use in criminal proceedings. Moot court activities are included. Lecture 3 hours per week.

PLCE 150 INTRODUCTORY POLICE PHOTOGRAPHY (2 cr.)—Fundamental photographic skills; uses of photography in law enforcement and in courtroom presentations. Practical exercises are included. Lecture 1 hour, Laboratory 2 hours per week, Total 3 hours per week.

PLCE 160 POLICE COMMUNICATION AND RECORDS (3 cr.)—Principles of organization and administration as applied to auxiliary services. Records and communications, custody, central services and police logistics. Special attention to police applications of electronic data processing and the collection of performance data. Lecture 3 hours per week.

PLCE 187 TRAFFIC ADMINISTRATION AND CONTROL (3 cr.)—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 per week.

PLCE 228 LAW ENFORCEMENT AND THE COMMUNITY (3 cr.) —An examination of the current efforts undertaken by the police to achieve an effective working relationship with the community. Among the topics studied in depth are the police image, crisis areas, public and police attitudes, and community relations activities. Lecture 3 hours per week.

PLCE 236 CRIMINAL PROCEDURES (3 cr.)—Organization and jurisdiction of Virginia law enforcement agencies; selective review of the criminal code of Virginia, with emphasis on the most frequently occurring misdemeanors not covered in "Criminal Law." Limited to students who have completed all first-year Police Science courses or who have received departmental permission. Lecture 3 hours per week.

PLCE 244 PRINCIPLES OF CRIMINAL INVESTIGATION (3 cr.)—Conduct at the crime scene; collection and handling of evidence; interviewing and interrogations; obtaining statements, admissions and confessions; testifying in court. Practical exercises are included. Lecture 3 hours per week.

PLCE 245 ADVANCED CRIMINAL INVESTIGATION (3 cr.)—Prerequisite PLCE 244. Continued study of the investigative process; introduction to scientific aids and examinations; application of investigative techniques to specific offenses. Practical exercises are included. Lecture 3 hours per week.

PLCE 270 INDUSTRIAL AND COMMERCIAL SECURITY (3 cr.)—Organization, methods, techniques and equipment for physical protection of industrial and commercial facilities and prevention of theft of merchandise and valuables by persons within and without those facilities. Practical exercises are included. Lecture 3 hours per week.

PLCE 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

PSYCHOLOGY

PSYC 28 SURVEY OF HUMAN RELATIONS (3 cr.)—A survey of the basic principles of psychology as applied to everyday problems of American living. Designed to familiarize the student entering an occupation with the attitudes and habits of successful citizens. Lecture 3 hours per week.

PSYC 110 PRINCIPLES OF APPLIED PSYCHOLOGY (3 cr.)—The general principles of perception, learning, and conscious and unconscious motivation which are operative in all practical applications of psychology to life and work. Lecture 3 hours per week.

PSYC 116 THE PSYCHOLOGY OF PERSONAL ADJUSTMENT (3 cr.)—Prerequisite PSYC 110. 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. Lecture 3 hours per week.

PSYC 128 HUMAN RELATIONS (3 cr.)—The study of human personality and its reaction upon other personalities. The application of psychology to problems in industry and private life. Some introduction to such matters as selection, training and placement of employees. Lecture 3 hours per week.

PSYC 130 CHILD GROWTH AND DEVELOPMENT (3 cr.)—Prerequisite PSYC 110 or instructor's permission. The development of the child from one stage of growth to the next, concentrating on the physical, intellectual, social and emotional factors in his personality. Recent studies in child development will be presented. The course is designed to provide a background for those students who intend to become nurses, teachers, or enter other occupations involving continuous work with children. Lecture 3 hours per week.

PSYC 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

PSYC 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

PSYC 201-202-203 GENERAL PSYCHOLOGY I-II-III (3 cr.) (3 cr.) (3 cr.)—The principles of behavior with a relating of experimental data to practical problems: the measurement of ability, sensory and perceptive processes, organic basis of behavior, hereditary, maturation, learning and thinking, motivation, emotion, personality and social factors in behavior. Lecture 3 hours per week.

PSYC 204-205 GENERAL PSYCHOLOGY I-II (5 cr.) (4 cr.)—The principles of behavior relating experimental data to practical problems: the measurement of ability, sensory and perceptive processes, organic basis of behavior, heredity, maturation, learning and thinking, motivation, emotion, personality and social factors in behavior. Lecture 5-4 hours per week.

PSYC 230 CHILD GROWTH AND DEVELOPMENT (5 cr.)—The principles and processes of human development, with emphasis upon the role of experience. Major aspects of the personality (motive, emotion, intellect, etc.) are traced through experimental stages, and their characteristic interaction in organized behavior examined. Lecture 5 hours per week.

PSYC 246 EDUCATIONAL PSYCHOLOGY (5 cr.)—Prerequisite PSYC 202 or 130 or equivalent. Human behavior and learning treated in the context of educational processes. The nature of various mental characteristics (intelligence, interest, knowledge, etc.) is examined, with special consideration given to their measurement and appraisal and their significance for educational goals. Lecture 5 hours per week.

PSYC 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

PSYC 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for the credit. Variable hours.

PUBLIC SERVICE

PBSV 100 INTRODUCTION TO HIGHWAY TRANSPORTATION (4 cr.)—Nature and scope of the Highway Transportation System. Survey of the major functional areas of the highway transportation systems with emphasis on their interaction. Lecture 4 hours, Total 4 hours per week.

PBSV 104 HIGHWAY TRAFFIC ADMINISTRATION I (4 cr.)—Examination of United States transportation systems, emphasizing efficient, safe and rapid operation. Activities and agencies concerned with increasing efficiency. System's development components, social, economic and political impacts. Survey of present and future needs. Lecture 4 hours, Total 4 hours per week.

PBSV 105 HIGHWAY TRAFFIC ADMINISTRATION II (4 cr.)—Police and court traffic administration. Administration and maintenance of motor vehicle and driver records. Traffic direction and control, traffic accident investigation, and traffic law enforcement. Communication aspects of highway traffic administration. Highway traffic education programs and public information. Motor vehicle fleet safety programs. Utilizing traffic safety research. Lecture 4 hours, Total 4 hours per week.

PBSV 108 SAFETY PRINCIPLES IN MOTOR VEHICLE TRANSPORTATION (3 cr.)—An investigation of the principles and practices which have a bearing on highway traffic safety and its attendant problems. Topics include: the role of driver education, effect of traffic density, traffic operations and control, influencing driver behavior, economics of highway safety, convenient highway transportation. Lecture 3 hours, Total 3 hours per week.

RUSSIAN

RUSS 101-102-103 INTRODUCTORY RUSSIAN I-II-III (4 cr.) (4 cr.) (4 cr.) —Fundamentals of Russian grammar; elementary translation, conversation, and reading. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SECRETARIAL SCIENCE

SECR 111 TYPEWRITING I (3 cr.)—Introduction to keyboard with emphasis on good technique and machine mastery; letter format and styles, tabulation and centering, manuscript typing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 112 TYPEWRITING II (3 cr.)—Prerequisite SECR 111 or departmental permission. Continuation of skill building with emphasis on standards required to meet job requirements in production typing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 113 TYPEWRITING III (3 cr.)—Prerequisite SECR 112 or departmental permission. Skill development with high standards required to meet job requirements in production typing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 114 TYPEWRITING IV (3 cr.)—Production typing of advanced problems involving rough drafts, tabulations, reports, and specialized business forms. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 121 SHORTHAND I (4 cr.)—Corequisite or prerequisite ENGL 101. Presentation of shorthand principles in Gregg Diamond Jubilee Series with emphasis on basic reading and writing skills, associated vocabulary and grammar. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SECR 122 SHORTHAND II (4 cr.)—Prerequisite SECR 121 or departmental permission. Reinforcement of shorthand principles, further development of general business vocabularies and English usage. General business dictation. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SECR 123 SHORTHAND III (4 cr.)—Prerequisite SECR 122 or departmental permission. Increased speed in general business dictation. Introduction of specialized business dictation with emphasis on vocabularies. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SECR 136 FILING AND RECORDS MANAGEMENT (3 cr.)—Indexing principles, filing procedures and techniques as applied to filing systems, establishment of filing system, selection of equipment and supplies, survey of system using electronics and microfilm, solution of records management problems. Lecture 3 hours per week.

SECR 156 PERSONAL DEVELOPMENT (3 cr.)—A course designed to develop, enlarge and improve the personality, over-all appearance ease in handling business and social situations with resulting self-confidence in job interviews, placement and continued employment. Lecture 3 hours per week.

SECR 216 EXECUTIVE TYPEWRITING (3 cr.)—Prerequisite SECR 113 or departmental permission. Further development of speed and accuracy on production typing with emphasis on employment standards. Instruction in use of the executive style typewriters, reports, tabulations, statistical materials and justified copy. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 217 TYPEWRITING SKILL BUILDING (3 cr.)—Prerequisite SECR 113 or departmental permission. Further development of speed and accuracy on production typing with emphasis on employment standards. Preparation for employers' secretarial placement examinations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 219 MAGNETIC TAPE SELECTRIC TYPEWRITER (3 cr.)—Prerequisite departmental permission. Operation of automatic typewriter, procedures for recording and playing back from tapes, revision and updating of tapes, merging information from two tapes. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 221 TRANSCRIPTION I (3 cr.)—Prerequisites SECR 113 and SECR 123 or 133. Review of principles of shorthand, development of vocabulary and phrases, speed building on general business dictation and transcription. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 222 TRANSCRIPTION II (3 cr.)—Prerequisite SECR 221 or departmental permission. Continuation of speed building with emphasis on particular areas of general business, developing special vocabularies, phrases, and shortcuts. Emphasis on spelling, grammar, and other transcription skills. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 223 TRANSCRIPTION III (3 cr.)—Prerequisite SECR 222 or departmental permission. Speed building in typical business dictation with speed and accuracy in transcription from shorthand notes. Preparation for employers' secretarial placement examinations. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 224-225 (LEGAL) TRANSCRIPTION I-II (3 cr.) (3 cr.)—Prerequisite SECR 221 or departmental permission. 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. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 241 SECRETARIAL PROCEDURES I (3 cr.)—Prerequisite SECR 113. Development of skills in operation of stencil and spirit duplicating machines. Preparation of copy for reproduction of offset, stencil, and spirit process. Criteria for selecting a duplicating process. Study of type styles, paper, typewriter ribbons, and carbon paper. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 242 SECRETARIAL PROCEDURES II (3 cr.)—Prerequisite SECR 241. 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. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 243 SECRETARIAL PROCEDURES III (3 cr.)—Prerequisite SECR 242. Continued emphasis on the secretary's office responsibilities, including handling of banking transactions, maintaining records on securities transactions, travel arrangements, planning of office layouts, and personnel policies. Practical experience in solving office problems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 256 MACHINE TRANSCRIPTION (3 cr.)—Prerequisite SECR 216 or departmental permission. Introduction to modern transcription incorporating good listening techniques, grammar, punctuation, and correct business English. Emphasis on mailability of copy with good production rates. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 264-265 LEGAL SECRETARIAL PROCEDURES I-II (3 cr.) (3 cr.)—Prerequisite SECR 241. Instruction in law office procedures, law office filing and record keeping, extension of legal vocabulary, court rules, reference materials, preparation of forms and pleadings. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

SECR 298 SEMINAR AND PROJECT (2 cr.)—Completion of a project or research report related to the study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

SECR 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

SOCIAL SCIENCE

SOSC 101-102-103 CONTEMPORARY AMERICAN CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.)—An analysis of the factors involved in the development of the American Society and American Culture to develop an understanding of American history, American government, American economics, and man's role in society. Lecture 3 hours per week.

SOSC 121-122-123 CURRENT AMERICAN SOCIAL PROBLEMS I-II-III (3 cr.) (3 cr.) (3 cr.)—A survey of contemporary America from the perspective of the Social Sciences designed to provide a basis for the forming of individual judgments on major American domestic issues. The Constitution of the United States provides a primary vehicle for exploration of problems underlying current political, economic, social and individual behavioral patterns and for discussions of relevant applications in the news of today. May be substituted for ECON 160, GOVT 180 & PSYC 110 in occupational-technical curricula; available as UPCT elective. Lectures 3 hours per week.

SOSC 180 PROBLEMS OF MAN IN THE MODERN WORLD (3 cr.)—Survey of contemporary social, political, and economic problems related to industrialization, urbanization, the role of government, national and international tensions. Lecture 3 hours per week.

SOSC 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

SOSC 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

SOCIOLOGY

SOCI 101-102-103 INTRODUCTORY SOCIOLOGY I-II-III (3 cr.) (3 cr.) (3 cr.)—The fundamental concepts and the general principles of sociology; social institutions, population study, human ecology and community study, culture, human nature and personality, social interaction and stratification, and social problems. Lecture 3 hours per week.

SOCI 104-105 INTRODUCTORY SOCIOLOGY I-II (5 cr.) (4 cr.)—The fundamental concepts and the general principles of sociology; social institutions, population study, human ecology and community study, culture, human nature and personality, social interaction and stratification, and social problems. (The student may take either SOCI 101-102-103 or SOCI 104-105 but not both.) Lecture 5-4 hours per week.

SOCI 106 GENERAL SOCIOLOGY (3 cr.)—The study of various forms of human association, their structure, processes and products in terms of culture systems, human nature and personality. Lecture 3 hours per week.

SOCI 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the students occupational objective, a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

SOCI 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

SOCI 236 MARRIAGE AND THE FAMILY (3 cr.)—Prerequisite SOCI 101, or 104. A study of comparative family systems and problems related to marriage and the family. Lecture 3 hours per week.

SOCI 237 MARRIAGE AND THE FAMILY (5 cr.)—Prerequisite SOCI 101, or 104. A study of comparative family systems and problems related to marriage and the family. Lecture 5 hours per week.

SOCI 240 INTRODUCTORY ANTHROPOLOGY (3 cr.)—A study of the origin and evolution of man based upon the fossil record, and an analysis of the status of modern racial grouping. Lecture 3 hours per week.

SOCI 244 INTRODUCTORY ANTHROPOLOGY (5 cr.)—A study of the origin and evolution of man based upon the fossil record, and an analysis of the status of modern racial grouping. Lecture 5 hours per week.

SOCI 246 CULTURAL ANTHROPOLOGY (3 cr.)—Prerequisite SOCI 101, 240, or 244. The application of the concept of culture to the study of contemporary societies, both primitive and modern. Such institutional areas as magic and ritual, crime, custom, law, economy, courtship, marriage and childbearing will be analyzed cross-culturally. Lecture 3 hours per week.

SOCI 247 CULTURAL ANTHROPOLOGY (5 cr.)—Prerequisite SOCI 101, 240, or 244. The application of the concept of culture to the study of contemporary societies, both primitive and modern. Such institutional areas as magic and ritual, crime, custom, law, economy, courtship, marriage and childbearing will be analyzed cross-culturally. Lecture 5 hours per week.

SOCI 276 CRIMINOLOGY (3 cr.)—Volume and scope of crime; the background of criminal behavior in the American setting; organized crime and its affiliated problems; subjective theories and explanation of crime, the control, treatment, and rehabilitation of the criminal offender. Lecture 3 hours per week.

SOCI 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

SOCI 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

SPANISH

SPAN 101-102-103 ELEMENTARY SPANISH I-II-III (4 cr.) (4 cr.) (4 cr.)—Introductory training in the understanding, speaking, reading, and writing of Spanish with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week.

SPAN 201-202-203 INTERMEDIATE SPANISH I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite Spanish 103 or successful completion of two years of high school Spanish and permission of the instructor. Advanced training in the understanding, speaking, reading, and writing of Spanish. Spanish is used in the classroom. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week.

SPAN 231-232-233 SURVEY OF SPANISH LITERATURE AND CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite SPAN 203 or equivalent. An introduction to Spanish life and culture and to the contributions of Spain to world civilization from medieval times to the present. Readings in the original Spanish. Spanish is used in the classroom. Lecture 3 hours per week.

SPEECH AND DRAMA

SPDR 106 INTRODUCTION TO THE THEATRE ARTS (3 cr.)—The principles of drama; development of theatre as an art; study of selected plays in terms of theatrical presentation; the living theatre as evidenced on stage, in the motion pictures, and on television. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SPDR 107 INTRODUCTION TO STAGECRAFT (3 cr.)—Prerequisite SPDR 106 or departmental permission. The principles of stage scenery, lighting, and costume in relation to dramatic production. Practical application in student productions with existing facilities. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SPDR 108 ACTING AND INTERPRETATION (3 cr.)—Prerequisite SPDR 106 or departmental permission. Introduction to acting through the study of techniques and style of acting; oral reading, individual and group performance of dramatic literature. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SPDR 118 DIRECTING AND ACTING (3 cr.)—Principles and methods of directing and acting in the theatre and historical dimensions. Lecture 3 hours per week.

SPDR 119 THEATRE WORKSHOP (3 cr.)—Practical experience on college productions in stagecraft scenery, lighting, costume, acting, and makeup. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

SPDR 136 SPEECH COMMUNICATIONS (3 cr.)—Proficiency in oral communication through the learning of the basic forms, uses, and techniques of speech. Emphasis on practical aspects of speech writing, listening, and oral presentation. Lecture 3 hours per week.

SPDR 137 PUBLIC SPEAKING (3 cr.)—Development of skill in speechmaking, with emphasis upon expository speaking for an introduction to persuasive speaking. Logical analysis and the use of evidence; organization and phrasing of the speech; development of effective control of voice and action. Lecture 3 hours per week.

SPDR 157 ARGUMENTATION AND DEBATE (3 cr.)—Prerequisite SPDR 136 or 137. The presentation of oral argument and debate. Emphasis upon effectiveness in the analysis of issues, study of public problems, evidence, the reasoning process, the brief as preparation for argumentation and debate, and skill in oral presentation. Lecture 3 hours per week.

SPDR 198 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

SPDR 199 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

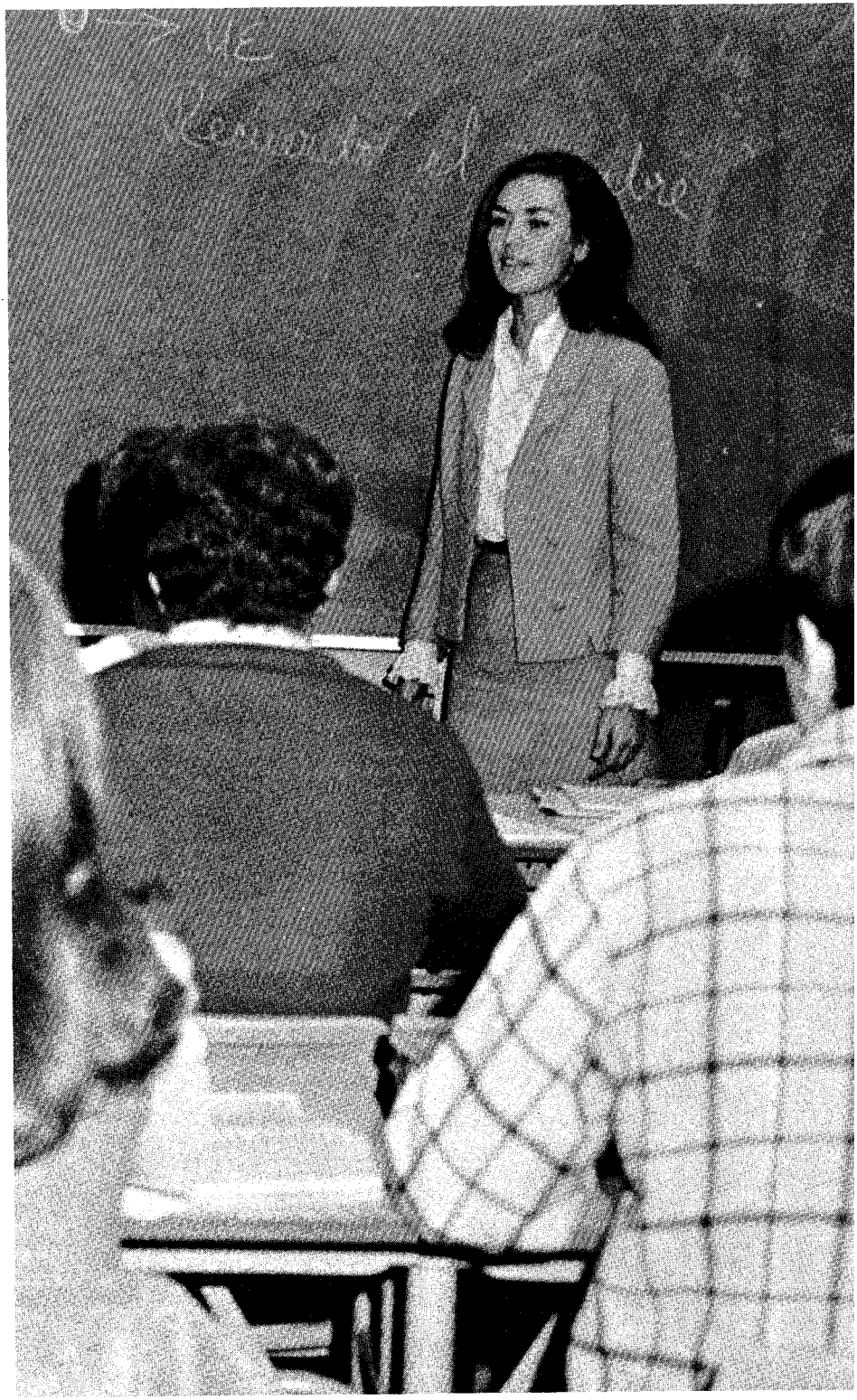
SPDR 230 ADVANCED PUBLIC SPEAKING (5 cr.)—Prerequisite departmental approval. A study of the organization and techniques of speaking in public. Development of skill in speechmaking with emphasis on the effective control of voice and action. Practice in the preparation and delivery of speech by use of tape recorder and before various size groups. Lecture 5 hours per week.

SPDR 256 GROUP DISCUSSION (3 cr.)—The principles of reflective thinking and group inquiry. Emphasis on conference leadership. Lecture 3 hours per week.

SPDR 266 THE ART OF THE FILM (3 cr.)—Prerequisite departmental approval. An introduction to the art of the film: a survey of the history of the film; viewing, discussion and analysis of selected films; introduction to the film techniques of composition, shot sequence, lighting, visual symbolism, sound effects, editing. Lecture 3 hours per week.

SPDR 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the student's occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

SPDR 299 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.



FACULTY AND STAFF

The two campuses are indicated as follows: C, Central Campus and, E, Eastern Campus. Those individuals with cross campus responsibilities are indicated as **CS, Central Staff.**

Alcorn, George M., Assistant Professor — Data Processing (C)
B.A.–Eastern Nazarene College
M.Ed.–Keene State College, University of New Hampshire

Atwood, Jerry W., Assistant Professor — Data Processing (E)
B.B.A.–Memphis State University
M.B.A.–Memphis State University

Auvil, Jean R., Assistant Professor — **Art (E)**
A.B.–Gerea College
M.A.–American University

Baker, Bruce A., Assistant Professor — Psychology (C)
B.S.–American University
M.A.–American University

Baldwin, Susan M., Instructor — Foreign Languages (C)
B.A.–Boston College
M.A.–University of Kentucky

Bandstra, James R., Instructor — Data Processing (E)
A.B.–Dordt College

Barrett, Judith, Instructor — Nursing (C)
B.S.–University of Connecticut
M.S.–University of Maryland

Billups, Fred, Associate Professor — Coordinator, Counseling Services (C)
B.A.–Wake Forest College
B.D.–Southern Baptist Theological Seminary
M.Ed.–College of William and Mary

Bimstein, Donald, Associate Professor — Police Science (C)
B.S.S.–City University of New York

Bisdorf, Donald L., Professor — **Provost (E)**
B.M.–McPhail College, Minneapolis
M.M.–Michigan State University
Ph.D.–Michigan State University

Blackstone, Edith, Associate Professor — Business Management (C)
A.A.–Bakersfield Junior College
B.A.–San Jose State College
M.S.–University of Southern California

Boardman, William, Instructor — Police Science (C)
B.S.–Michigan State University

Bock, Benjamin, Associate Professor — Government (E)
B.S.—City College of New York
M.A.—George Washington University
Ph.D.—Stanford University

Bodnar, Mary Ellen, Instructor — Mathematics (E)
A.A.—Worthington Junior College
B.S.—University of Minnesota

Bonette, Samuel J., Associate Professor — Business Management (E)
B.B.A.—Niagara University
M.A.—George Washington University

Botscheller, John V., Assistant Professor — Chemistry (E)
B.S.—City College of New York
M.S.—University of Minnesota

Bowling, Charles Richard, Instructor — Counselor (C)
A.B.—St. Mary's College
M.A.—University of Kentucky

Boyd, Marilyn, Associate Professor — Chairman, Health Technologies Division (C)
B.S.N.—Villa Maria College
M.S.N.—Catholic University of America

Bracke, Peter, Assistant Professor — Pre-Engineering (E)
B.S.—Purdue University
M.B.A.—University of Chicago

Bradley, III, James Lee, Instructor — Administrative Assistant to the President (CS)
B.F.A.—Richmond Professional Institute

Braun, Eugene A., Assistant Professor — Business Management (C)
B.S.B.A.—Bridgewater College
M.Ed.—Madison College

Broida, Judi, Instructor — Counselor (C)
B.A.—George Washington University
M.A.—George Washington University

Brown, Carolyn J., Assistant Professor — Secretarial Science (C)
B.A.—University of Kentucky
M.A.—University of Kentucky

Brunson, Evelyn Vancil, Associate Professor — Chairman, Business Science Division (E)
B.S.—East Central State College
M.B.E.—University of Oklahoma
Ed.D.—University of Oklahoma

Bryan, Jonathan R., Assistant Professor — English (C)
B.A.—University of Virginia
M.A.—The George Washington University

Buc, George L., Professor — Physics (C)
B.S.—Rutgers University
M.A.—Columbia University
Ph.D.—Rutgers University

Buckingham, Bryant, Instructor — Mathematics (E)
B.S.—Harvard University
J.D.—Northwestern University

Bulmer, Jr., Walter, Assistant Professor — Biology (C)
B.S.–Salem College
M.S.–University of Arizona

Carothers, Jerry, Instructor — Civil Technology (C)
B.S.–University of Texas

Carter, Eltse B., Assistant Professor — Chairman, Humanities Division (C)
B.S.–Florida State University
M.A.–George Washington University

Cavagnaro, Dorothy H., Instructor — Hotel, Restaurant, and Institutional Management (C)
B.H.Sc.–McGill University, Montreal, Quebec

Chapdelaine, A. J., Assistant Professor — Electronics (C)
B.S.E.T.–Capital Institute of Technology

Clark, Louis — Chief Accountant (CS)
B.A.–University of Ottawa

Clear, Thomas F., Instructor — Mathematics (C)
B.S.–Fordham University
M.A.–Teacher's College, Columbia University

Coad, Bruce E., Instructor — English (E)
B.A.–Wittenberg University
M.A.–University of North Carolina

Cohen, Marietta, Assistant Professor — Head, Nursing Program (C)
B.S.N.–University of Washington
M.A.–Columbia University

Coleman, Edward A., Associate Professor — Coordinator, Audio Visual (E)
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