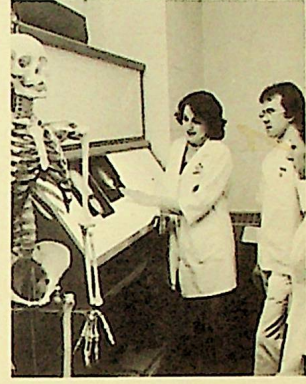


Virginia Western Community College

Catalog 1983-84



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VIRGINIA WESTERN COMMUNITY COLLEGE CATALOG



1983-84

The statements and provisions in this catalog and in the Student Handbook are not to be regarded as an irrevocable contract between the student and the College. The College reserves the sole right to change, when warranted, any of the provisions, schedules, programs, courses, or fees, as might be required.

Supplements may be issued to this catalog as considered necessary by the College.

**3095 Colonial Avenue, S.W.
Roanoke, Virginia 24015**

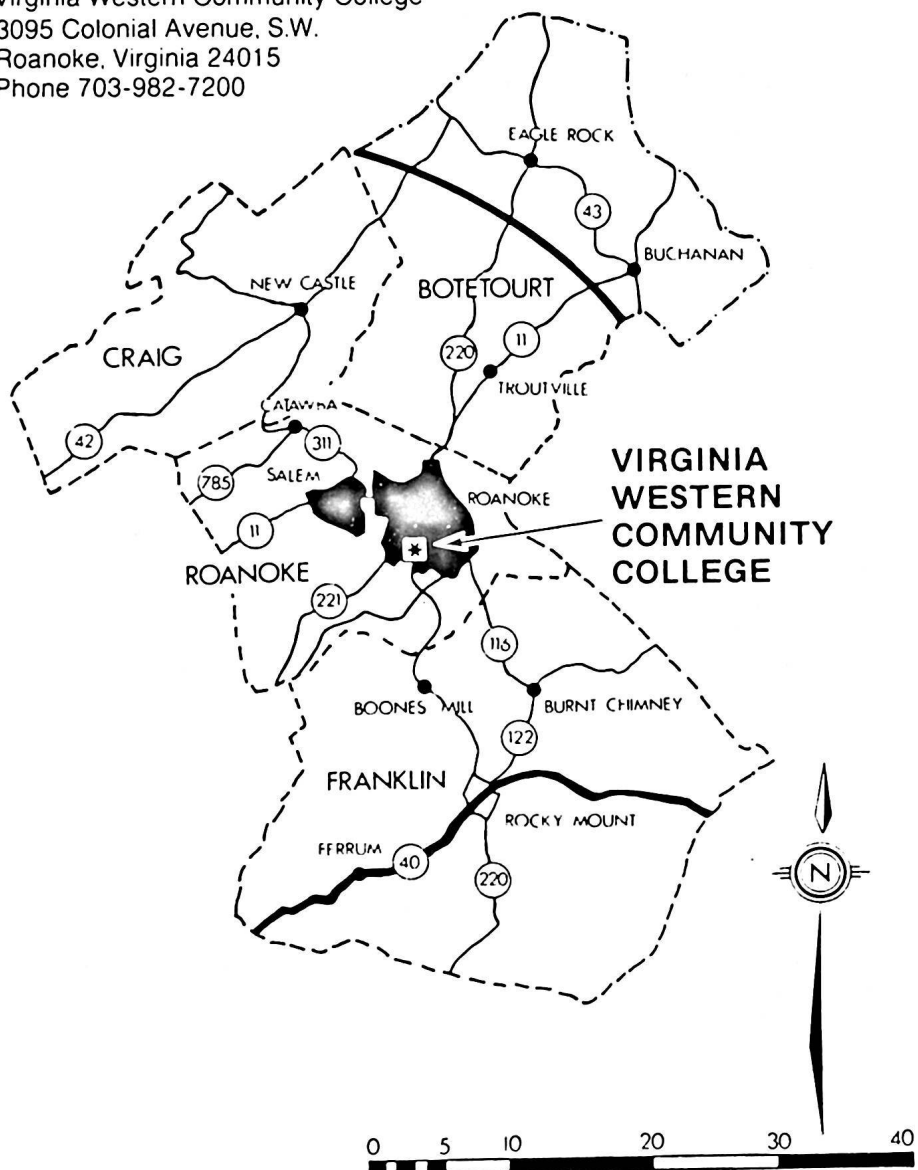
**Admissions
Business Office
Continuing Education
Counseling**

**(703) 982-7231
(703) 982-7201
(703) 982-7281
(703) 982-7237**

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

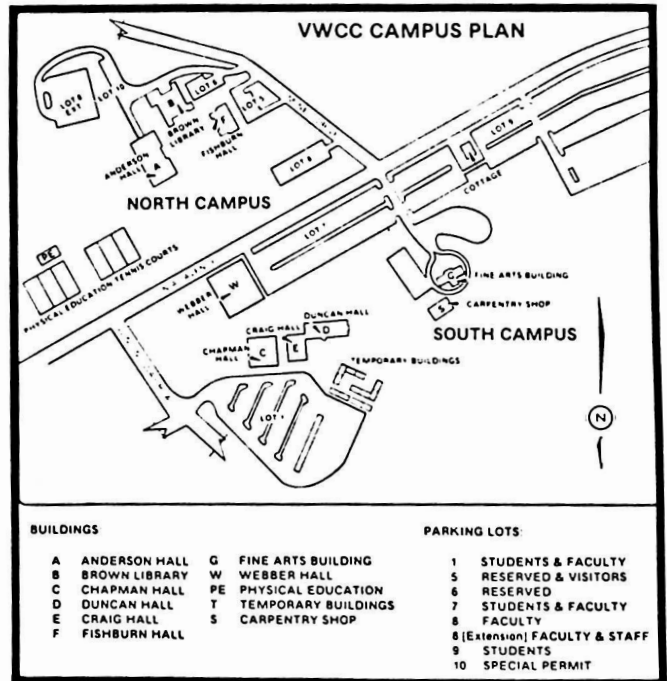
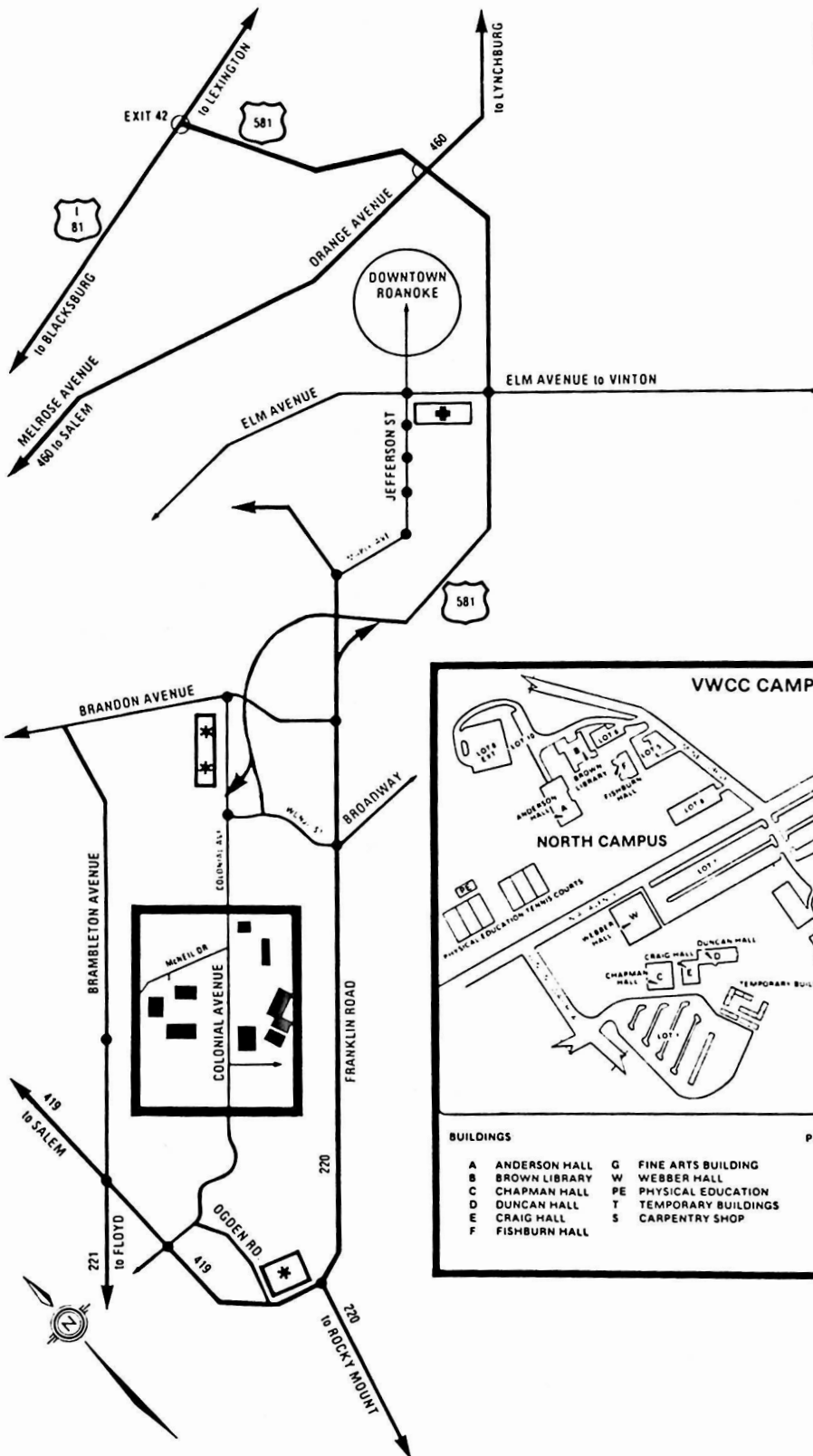
Virginia Western Community College Area

Dr. Charles L. Downs, President
Virginia Western Community College
3095 Colonial Avenue, S.W.
Roanoke, Virginia 24015
Phone 703-982-7200



Location

Virginia Western Community College



- ♦♦ Towers Shopping Center
- ♦ Tanglewood Mall
- ♦ Community Hospital

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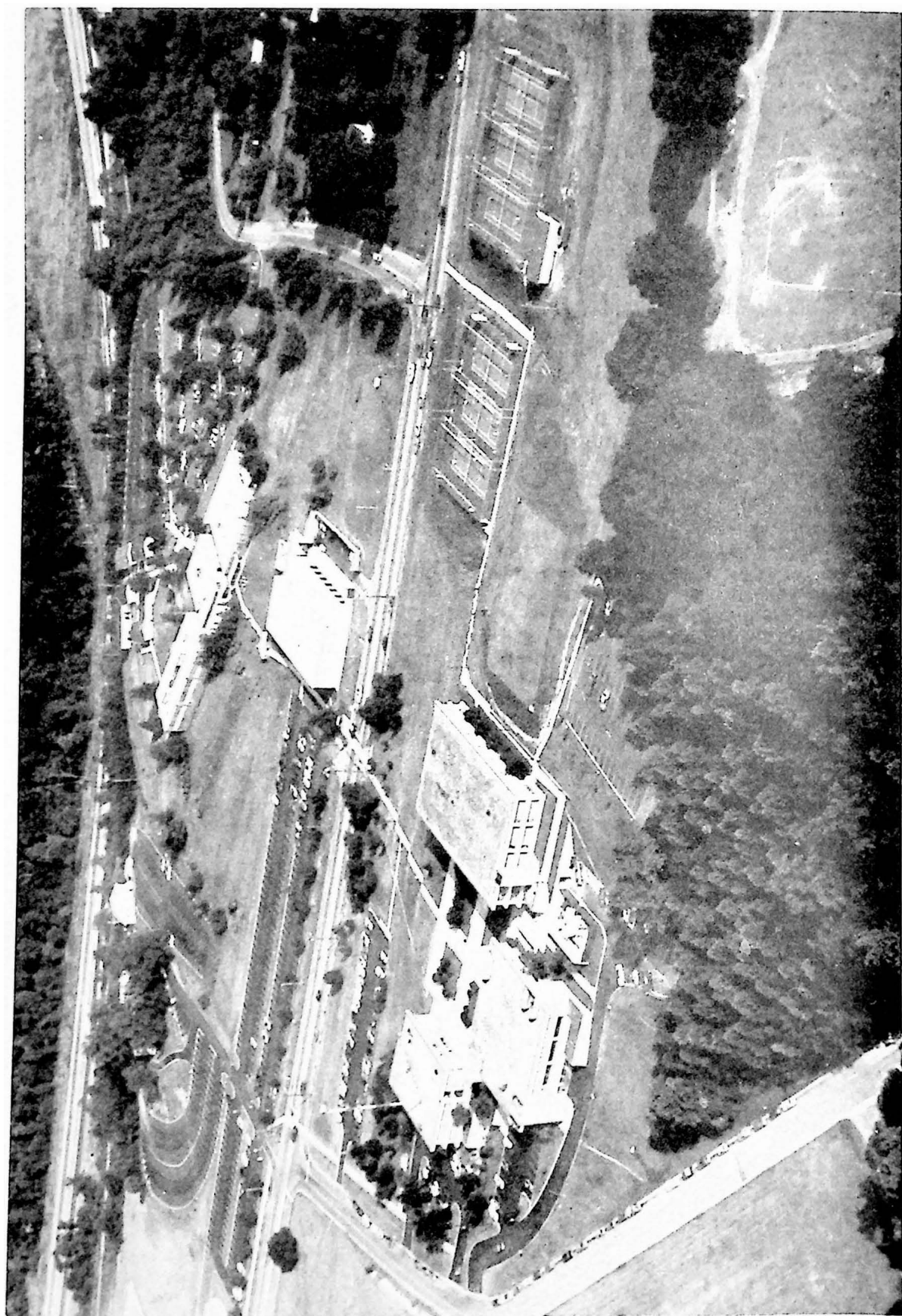
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NORTH CAMPUS



SOUTH CAMPUS

CALENDAR

Fall 1983	
Classes Begin	September 20
Thanksgiving Recess	November 24-26
Classes End	December 3
Final Exams	December 5-10
Winter 1984	
Classes Begin	January 2
Classes End	March 10
Final Exams	March 14-20
Spring 1984	
Classes Begin	March 26
Classes End	June 2
Final Exams	June 4-9
Graduation	June 15

1983

SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER						
Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat
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1984

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Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat
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30																					30	31					

Part I

GENERAL INFORMATION

THE COLLEGE

Virginia Western Community College is a two-year institution of higher education established under a state-wide system of community colleges in the Commonwealth of Virginia, and serving an area within driving distance of the City of Roanoke. This includes the cities of Roanoke and Salem, the southern portion of Botetourt County, the northern portion of Franklin County, and the counties of Craig and Roanoke. The areas covered have a population of approximately two hundred fifty thousand.

The College operates under the policies established by the State Board for Community Colleges and with the support and advice of a local Community College Board. It is financed primarily by State funds supplemented by Federal funds and by contributions from the various local political subdivisions, individuals, and businesses.

From an initial enrollment of 1,352 students, the College has grown to an enrollment of 6,188 supported by 152 full-time and 40 part-time faculty.

LOCATION AND FACILITIES

Virginia Western Community College is located on a 70-acre campus in Southwest Roanoke at 3095 Colonial Avenue.

The South Campus has five buildings, four of which were acquired in 1966 from the Roanoke Technical Institute. Webber Hall, the Occupational/Technical Building, was dedicated on September 26, 1980, by Governor John N. Dalton.

Chapman Hall houses laboratories for Civil and Mechanical Engineering Technology Programs, Photography, and Radio and Television Production. General classrooms are located in Craig Hall. Duncan Hall contains facilities for the Human Services, Nursing, and Radiologic Technology Programs, in addition to general classrooms. The Fine Arts Center is occupied by the Music and Fine Arts departments. Webber Hall houses the Bookstore, Automotive Technology and Welding Programs, and laboratories for Architectural Drafting and Engineering Graphics. In addition, three temporary buildings provide space for the Child Development Education Program, Hu-

manities Division, Writing Center, Student Special Services, and for faculty offices.

A 2100 square foot greenhouse is located on the South Campus.

The North Campus has three buildings surrounding a mall planted with flowers and shrubs selected to bloom alternately in each of the four seasons. The campus was dedicated on October 23, 1969, and its buildings were named for men influential in education or in the development of the Southwestern Virginia region.

Fishburn Hall, the Administration Building, houses Business Science classrooms and the Office of Continuing Education. Opposite is the Science Building, Anderson Hall, containing a Dental Laboratory, Reading Laboratory, Math Center, Student Activities and Student Government Office, classrooms, and faculty offices. In the center is Brown Library with a Learning Laboratory, Language Laboratory, Auditorium, and Financial Aid Office on the second floor. The Admissions and Records Offices, Counseling Center, Career Life Development Center, Office of Veterans' Affairs, Placement Office, and the Information Office are on the ground floor.

The College's six-court lighted tennis facility is located on the North Campus.

HISTORY

Since 1927, the Extension Division of the University of Virginia, its programs under the direction and supervision of the University, served students in the Roanoke Valley. In 1960, the area's educational opportunities were expanded by establishment of the Roanoke Technical Institute, its programs an extension of Virginia Polytechnic Institute. In February 1966, by authorization of the General Assembly of Virginia, these two facilities were combined into the comprehensive institution of higher education now known as Virginia Western Community College with the University of Virginia continuing to offer its upper division program.

PURPOSE

Virginia Western 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 his awareness of his role and responsibility in society. The College is devoted to serving the educational needs of its community and assumes a responsibility to help meet the requirements for trained manpower in the region through a cooperative effort with local industry, business, professions, and government.

10 GENERAL INFORMATION

Various opportunities are available for post-high school age youth and adults. These include high quality instructional programs at the associate degree level and at the preparatory or foundations level. A strong guidance and counseling program and other student services are provided to help each student make sound decisions regarding his occupational, educational, and personal-social plans.

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

1. **Occupational-Technical Education.** The occupational and technical education programs are designed to meet the increasing demand for technicians, semiprofessional workers, and skilled craftsmen for employment in industry, business, the professions, and government. The 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 freshmen 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 member of a family, a worker, a consumer, and a citizen.
4. **Continuing Adult Education.** The adult education programs enable the adults in the region to continue their learning experiences. This work includes both degree credit and non-degree credit work during the day and evening hours.
5. **Cooperative Education Programs.** The cooperative education programs are designed to enrich the student's total development by integrating classroom study with well-planned and supervised practical work experience.
The programs provide a solid foundation for career planning and vocational guidance by giving the student the opportunity to gain an understanding of the work related to his career objectives.
6. **Developmental Programs.** The developmental programs help prepare indi-

viduals 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 the individual develop the basic skills and understanding 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, speaker's bureau, and special community projects which are designed to provide needed cultural and educational opportunities for the citizens of the region.
8. **Special Training Programs.** Special training may be provided where specific job opportunities are available for new or expanding industries. This special training shall be coordinated with Virginia's economic expansion efforts and with the needs of employers.

EDUCATIONAL FOUNDATION

All gifts, grants, or donations; tangible or intangible; cash, securities, or real property received by and specifically designated for Virginia Western Community College by the giver, grantor, or donator, are deposited in the College's non-profit and charitable Educational Foundation, Inc.

RECOGNITION

The College is a division of the Virginia Community College System and is approved by the State Board for Community Colleges and by the Virginia Community College System in Virginia. The Associate Degree Programs of the College have also been approved by the State Council of Higher Education for Virginia. The College was given full academic accreditation by the Southern Association of Colleges and Schools in December 1969.

The College has institutional membership in the American Association of Community and Junior Colleges and has been approved by the Veterans Administration for V.A. assistance and by the U.S. Office of Education for various federally funded programs.

The College is listed among the approved institutions of higher education in the Education Directory of the U.S. Office of Education.

Part II

ADMINISTRATIVE INFORMATION

GENERAL ADMISSION TO THE COLLEGE

Any person who has a high school diploma or the equivalent, or who is 18 years of age, and in any case is able to benefit from a program at the College, may be admitted as a curricular student when the following items have been received by the Office of Admissions:

1. A completed "Application for Admission."
2. Official transcripts from all high schools, colleges and universities attended.

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

1. A completed "Application for Admission."

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

Each student who wants to enter a curriculum of study will be required to meet with a college counselor prior to admission to (a) discuss educational interests, (b) determine what tests may be needed, (c) plan admission to a specific curriculum or program, and (d) examine other reasonable standards to insure that the applicant possesses the potential to meet program requirements.

Students entering the College may be required to take a diagnostic test battery. The test battery is normally administered at the College prior to registration and is used to assist the counseling staff in placing students in an appropriate level of instruction.

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

SERVICES FOR THE HANDICAPPED

Persons with a physical disability who are considering applying for admission on a full- or part-time basis should schedule an appointment with a college counselor and a tour of the campus to discuss program accessibility and the needs of the individual. Handicapped applicants who plan to enroll in the College are encouraged to advise the college counselor of their need for auxiliary



DR. CHARLES L. DOWNS
PRESIDENT

aids, readers, interpreters, taped materials or other services and devices as far in advance as possible before classes begin.

STUDENT PERMANENT RECORD

The Office of Admissions and Records at Virginia Western Community College maintains files on each student attending, or who has attended, the College. These files are kept for at least three years and contain the following:

1. High school transcripts
2. Other college transcripts and evaluations
3. VWCC permanent record card
4. Correspondence with student
5. Grade change forms
6. Requests for Transcripts
7. Schedule change forms
8. Registration Identification forms

The Coordinator of Admissions and Records is the official in charge of student records. Administrators, counselors, and faculty who have need to see student records to assist an individual in his academic pursuits have access to these records. Clerical employees in Admissions and Counseling

12 ADMINISTRATIVE INFORMATION

Services originate and maintain student records. College personnel involved in institutional research may be permitted access to records on a need-to-know basis. All others are required to have written permission from the student.

The student's permanent record card is microfilmed and all other records may be destroyed after a student has not been in attendance for several quarters. A student can review his file by making a request to the Coordinator of Admissions and Records who will arrange to review the file with the student.

If a student finds that statements or other

information contained in his file are—to his knowledge—incorrect, the following procedure should be followed to clarify the situation.

- A. The student will call the Coordinator's attention to any possible errors.
- B. If the Coordinator finds the item or items to be in error, he will initiate corrective action.
- C. If the Coordinator cannot resolve the problem, it will be referred to the Dean of Student Services for review and further action. The student will be informed of any action taken.



FISHBURN HALL
ADMINISTRATION BUILDING

Students should request action as soon as possible. A record becomes permanent after three years.

Students may obtain copies of information from their file by paying a copying charge of 25¢ per page with a minimum of \$1.00 applicable. The cost applies to each request.

The information considered "Directory Information" and, therefore, available to anyone requesting such information shall include the following:

- A. Name and address
- B. Name of program
- C. Quarters in attendance

ADMISSION TO SPECIFIC CURRICULUMS

The specific requirements for each curriculum in the College are listed in the Curriculum Offerings section of the catalog. The College reserves the right to make changes in program and/or course requirements. A current Curriculum Guide Sheet (form C-3), detailing elective and required courses, is available to each student from Counseling Services. Any deviation requires divisional approval. 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 a developmental studies program and/or prerequisites.

ADMISSION OF INTERNATIONAL STUDENTS

In addition to the general requirements of the College, all international students must demonstrate proficiency in both written and spoken English.

Written English proficiency may be demonstrated by submitting acceptable scores on the "Test of English as a Foreign Language" (TOEFL—administered by the College Entrance Examination Board, Princeton, N.J.). A combined score of 500 on the TOEFL is the minimum required to be considered for admission.

If these preliminary scores are acceptable, the applicant must also demonstrate proficiency both in speaking and understanding the English language. If a personal interview at the College is not possible, a letter which testifies to the student's oral proficiency will be acceptable. This must be executed by an official of the U.S. Government residing in the student's native country. TOEFL scores must be submitted along with the application.

All current policies of the U.S. Immigration Department state that international students must show proof of how financial responsibility will be met. All other immigration policies must also be satisfied.

ADMISSION OF SENIOR CITIZENS

Under the Virginia "Senior Citizens Higher Education Act of 1974," amended in 1977, anyone who is over 60 years of age, who is a legal resident of Virginia, and whose taxable income does not exceed \$7,500, is eligible to enroll in credit courses at the College without charge. Those senior citizens whose taxable income exceeds \$7,500 may audit a maximum of three courses (credit and/or non-credit) per quarter without charge. Senior citizens must submit an application and be admitted to the College. Under the law, senior citizens will be accommodated on a space available basis (after all tuition-paying students have registered) commencing with the announced late registration period.

DEVELOPMENTAL STUDIES PROGRAM

A Developmental Studies Program is offered to assist individuals in the acquisition of skills necessary for the successful completion of their chosen program of study. After a close analysis of the high school transcript, test scores, and a personal interview with a college counselor, students may be identified for inclusion in a Developmental Studies Program.

Specialized teaching methods permit students to progress through the area of their weakness at their own rate. Personnel in the Learning, English, Reading, and Mathematics Laboratories and other faculty are available for individualized assistance to students.

A grade of "S" is awarded when all objectives required for each course are completed. A grade of "R" is awarded when students are making satisfactory progress but have not yet mastered all course objectives. Students receiving an "R" may be required to re-enroll for that course the following academic quarter. A grade of "U" indicates that students have failed to show interest or application in their studies. Students receiving a "U" will not be allowed to repeat the course, nor attempt a higher level course in the discipline during the two subsequent quarters. Exceptions require the approval of the appropriate division chairman.

Sample Developmental Studies Program

COURSE NUMBER	COURSE TITLE	CREDITS
ENGL 01	Verbal Studies	5
ENGL 08	Reading Improvement	5
MATH 01/02	Developmental Math or other Math Sequence	3
GENL 100	Orientation and/or	1

14 ADMINISTRATIVE INFORMATION

GENL 198	Study Skills and/or	1
GENL 298	Personal/Career Development	2

Some students need remedial help before enrolling in the college mathematics courses required in their curriculum of study. Students needing assistance in arithmetic and business mathematics will be placed in Math 01 or Math 02. Students with a deficiency in high school algebra will be placed in Math 06 or 07. Grades earned in developmental mathematics and English courses will not be computed in the student's grade point average. Students assigned to a developmental course will not be permitted to advance to a higher level course until they demonstrate satisfactory completion of the lower level course.

A student may not be permitted to repeat a Developmental Level Course more than once without the approval of the appropriate division chairman. A failure to remove all academic deficiencies within four academic quarters may subject the student to "Academic Suspension."

RESIDENCE REQUIREMENTS

Applicants will be required to sign a residence affidavit to determine state residency eligibility for tuition purposes. Questions concerning residency requirements should be directed to the Coordinator of Admissions and Records.

STUDENTS TRANSFERRING FROM OTHER COLLEGES

Students transferring to Virginia Western Community College have to complete an application and mail or bring it to the Admissions Office.

Transfer students should have official transcripts from all colleges attended mailed directly to the Admissions Office, Virginia Western Community College, 3095 Colonial Avenue, Roanoke, VA 24015.

If a transfer student is ineligible to return to a particular curriculum in a college previously attended, generally he will not be allowed to enroll in the same curriculum at Virginia Western until two quarters elapse or until he completes an approved developmental program at the College. Special conditions for the admission of such students, including placement on probation, will be imposed as deemed appropriate by the College.

Generally no credit will be given for courses with grades 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.

It is important that a student who wishes to transfer to Virginia Western Community College submit the application and all transcripts early. This will facilitate registering without unnecessary delay.

STUDENTS TRANSFERRING WITHIN THE VIRGINIA COMMUNITY COLLEGE SYSTEM

When a student transfers from one community college to another within the System, his grades and grade-point average (GPA) are transferred with his record. His quality points for the courses previously taken are utilized in the computation of his grade-point average (GPA).

ADVANCED PLACEMENT

Many area secondary schools offer courses to students through the Advanced Placement Program, giving them the opportunity to complete college level work while attending high school.

Virginia Western Community College grants college course credits in several subject areas to students who scored 3 or higher on Advanced Placement examinations.

Students who are eligible for advanced placement should contact the Office of Admissions and Records.

STUDENTS APPLYING FOR CREDIT OR WAIVER OF REQUIREMENTS

Students who have reason to believe that previous educational studies, training programs, work experience or test results may entitle them to an adjustment in the course requirements for a particular curriculum should contact the Coordinator of Admissions and Records to determine procedures before registering for classes.

AUDITING A COURSE

To audit a course, students must obtain permission from the appropriate division chairman prior to registering for the course during the late registration period only.

Audited courses carry no credit and do not count as a part of the student's course load. Students wishing to change status in a course from audit to credit or credit to audit must do so within the add/drop period for the session. The procedure is in the quarterly supplement to the College Catalog: Schedule of Classes.

CREDIT BY EXAMINATION

Virginia Western Community College students may be awarded college credit if they can demonstrate that previous educational study, training, or work experience entitles them to advanced standing in a course. There-

fore, the time required to complete a particular curriculum of study may be shortened by one or more quarters.

In order for the College to maintain its academic standing while recognizing competencies among its students, proficiency examinations have been defined.

The College participates in the nationally recognized

Advanced Placement Program (AP)
College Level Examination
Program (CLEP)

American College Testing Proficiency
Examination Program (PEP)

Also, locally prepared examinations are generally available for any course offered through the College. Persons desiring to earn college credit through examination are encouraged to contact Counseling Services.

CLASSIFICATION OF STUDENTS

All students are classified according to the following categories:

Curricular Student.

A full-time or part-time student working toward completion of an associate degree, diploma, certificate, or developmental program.

Non-curricular Student.

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

2. A high school student who, with the permission of his school principal, is currently 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(s) for credit;

4. A student who has not yet fulfilled all of the requirements as a curricular student but who is admitted under special consideration by the Admissions Committee of the College. It is expected that such students would fulfill all requirements within 10 days of the commencement 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 course credits. **NOTE:** A student wishing to complete his degree on schedule should take 15-17 credits per quarter.

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

Freshman. A student is classified as a freshman until he has completed 45 course credits in his designated curriculum.

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

EXPENSES

Tuition

Student tuition is paid on a credit hour basis. The typical full-time academic load is between 16-18 credits. College approval is required to enroll for more than 18 credits per quarter.

Virginia Resident \$13.50 per credit

Out-of-State Resident 58.00 per credit

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 least one year prior to the commencement of the quarter for which he is enrolling.

Payment of tuition enables the student to use the library, bookstore, and other facilities of the College.

Transcripts

Student transcripts must be requested in writing from the Admissions and Records Office.

There is no charge for an official or unofficial transcript. An official transcript is sent by the College and bears the college seal; an unofficial transcript is given to the student with "Delivered to Student" stamped on it.

Fees and Charges

There may be special fees for Physical Education, Credit by Examination, etc. Students who damage or lose school property will be expected to pay charges for such losses.

Parking

The use of an automobile on the campus by any student registered at this College is regarded as a privilege and not as a right. Students who wish to use the college parking facilities must apply for a permit from the Business Office.

A thorough understanding of the regulations regarding parking is important. City of Roanoke traffic tickets will be issued for violation of college parking regulations. Re-

peated violations will result in disciplinary action which may include removal of campus parking privileges. Where circumstances warrant, the College may have a vehicle removed at the owner's expense. Vehicles obstructing traffic, blocking other vehicles, or unauthorized vehicles parked in "Reserved" or "Handicapped" areas may be towed at the owners' expense.

Student parking on the college campus is permitted only in the spaces **marked in white**; faculty and reserved spaces are marked in yellow. The College assumes no responsibility for the care or protection of any vehicle or contents at any time it is operated or parked on campus.

Parking Fees

Three (\$3) per vehicle for student yearly permit (fall, winter, and spring quarters); \$2 per vehicle for winter and spring quarters; \$1 per vehicle for spring and summer quarters; \$1 per vehicle per quarter for Continuing Education noncredit students. There is no charge for replacement permits if the old parking decal is submitted to the Business Office. These fees are nonrefundable.

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 \$100 per quarter for the full-time student. This cost is subject to change since it is based on publishers' and suppliers' listed prices.

The Bookstore carries a complete line of textbooks, supplies, art material and general merchandise.

Rules for Bookstore Refunds

The Bookstore Manager is the only authorized person who can accept books for refund. Books returned for refund are subject to inspection and must be in new condition with no markings or other damage. The book must be presented to the Bookstore Manager within two weeks from date of purchase (date shown on cash register receipt) to be considered for a refund. Refunds are made by check which will be mailed to the student.

Refunds will be made only if the course is cancelled, or dropped (drop slip must be presented), or the incorrect book is purchased. All books with misprint, pages missing, or other publishing mistakes may be exchanged at any time for the same book by presenting the cash register receipt.

Tuition Refunds

1. Students shall be eligible for a refund for those credit hours dropped during the add/drop period for the session when the student's credit hour load falls below full-time student status. The refund will be at the full credit rate for those credits dropped below 12 hours. After the add/drop period has passed, there will be no refunds.
2. Eligibility
 - a. The student must complete a withdrawal from and obtain the appropriate signatures.
 - b. The form must be completed in the time frame described.
 - c. The student must deliver the form to the Admissions and Records Office and have it receipted and dated. This date is the official withdrawal date.

Suspension of Students for Nonpayment of Tuition and Fees, College Loans, College Fines, or Other Debts Owed the College

A student's continued attendance at the College is dependent upon proper settlement of all debts owed the institution. Should the student fail to satisfy all due and payable amounts for tuition and fees, college loans, college fines, or other debts owed the College, **the student may be suspended immediately.** If suspended, no student will be allowed to register in any succeeding quarter until all current debts owed to the College have been satisfied.

Student Accounts

No transcripts, certificates, diplomas, or degrees will be issued, nor will students be permitted to complete registration, until accounts are satisfactory to the Business Office, Bookstore, and Library.

CREDITS

Usually one credit for a course is given as follows:

1. One hour of in-class lecture plus an average of two hours of out-of-class study, or
2. Two hours of laboratory or shop study plus an average of one hour of out-of-class study, or
3. Three hours of laboratory or shop study with no regular out-of-class assignments.

Fixed credit hours are assigned to most college courses.

Variable credit (1-5 credits) is assigned to all Supervised Study, Seminar and Project, Coordinated Internship and Cooperative Education courses.

GRADING SYSTEM

The quality of performance in any academic course is reported by a letter grade, the assignment of which is the responsibility of the instructor. These grades denote the character of study and are assigned quality points as follows:

- A Excellent — 4 grade points per credit
- B Good — 3 grade points per credit
- C Average — 2 grade points per credit
- D Poor — 1 grade point per credit
- F Failure — 0 grade points per credit
- I Incomplete — No credit. Used for verifiable unavoidable reasons. Since the "incomplete" extends enrollment in the course, requirements for satisfactory completion will be established through student/faculty consultation. Courses for which the grade "I" (incomplete) has been awarded should be completed as soon as possible and in all cases must be completed by the end of the sixth week of the next quarter (excluding summer).
- R Re-enroll — No credit. The student is making progress but the course objectives have not been completed; to be used only for Developmental Studies (courses numbered 01-09). Re-enrollment for the completion of course objectives may be required.
- S Satisfactory — No credit. Student completed course objectives. Applies only to Developmental Studies and non-credit courses.
- U Unsatisfactory — No credit. Student is not making satisfactory progress. Applies only to Developmental Studies and non-credit courses.
- W Withdrawal — No credit. A student withdrawal from a course without academic penalty may be made within the first six weeks after the beginning of a quarter. During the add/drop period the registration will be deleted. After the add/drop period and through the sixth week a "W" will be given. After the sixth week the student will receive a grade of "F."
- X Audit — No credit. Permission of the Division Chairman is required to audit a course.

NOTE: Deviations from the stated grading policies may be made with the approval of

the Dean of Instruction when mitigating circumstances are properly documented.

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. Courses numbered 01 to 09 are not included.

Grade Reports

Final grade reports are mailed to the student after the end of each quarter. Final grades are a part of the student's record and are recorded on the student's permanent record card. Errors must be reported to the Records Office within six weeks of the end of the quarter in which the grade was given. A change of grade(s), even under mitigating circumstances, cannot take place after the quarter following the issuance of the grade.

DEGREES, DIPLOMAS AND CERTIFICATES

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

1. **Associate in Arts Degree (AA)** is awarded to students majoring in the Liberal Arts. Students receiving an AA generally transfer to four-year colleges or universities.

2. **Associate in Science Degree (AS)** is awarded to students majoring in specialized curriculums such as Business Administration, Engineering, Education and Science. Students receiving an AS generally transfer to four-year colleges or universities.

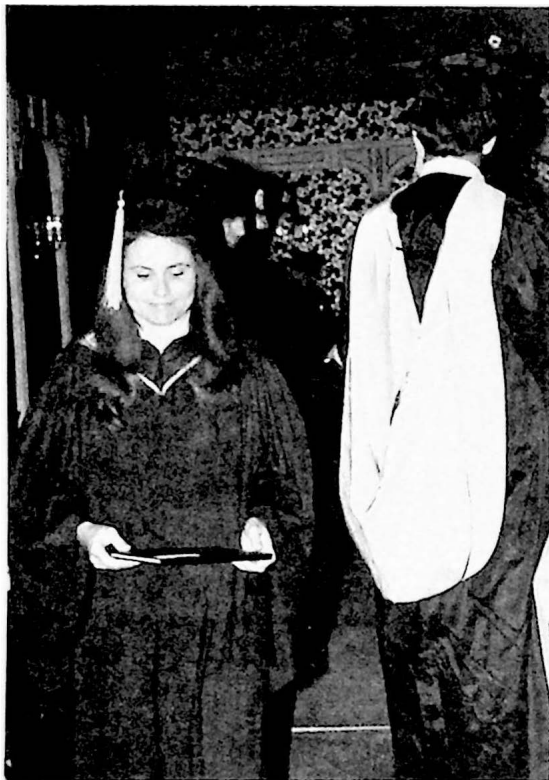
3. **Associate in Applied Science Degree (AAS)** is awarded to students majoring in an occupational-technical curriculum. Students receiving an AAS may elect to transfer to selected four-year colleges or universities or to pursue immediate employment.

4. **Diploma** is awarded to students who complete a two-year nondegree occupational curriculum.

5. **Certificate** is awarded to students who complete an approved, nondegree curriculum which is usually less than two years in length.

GRADUATION REQUIREMENTS

All students must apply for their degree, diploma, or certificate during the add/drop period of their last quarter in attendance. The degree, diploma, or certificate will be awarded if the student is certified for graduation and met all other requirements. All eligible students will graduate at the end of the spring or the summer quarter following the completion of their program. Should an



applicant not meet graduation requirements, he must ask that his request be considered for a subsequent time.

Attendance at the formal graduation exercise is required of all students. Request for waiver of this requirement must be submitted in writing to the President of the College for his consideration.

Associate Degree and Diploma Requirements

To be awarded an Associate Degree from the College, a student must:

1. Have fulfilled all of the course requirements of his curriculum as outlined in the College Catalog;
2. Have been recommended for graduation by the appropriate instructional authority in his curriculum;
3. Have completed at least 97 credits applicable to an associate degree of which 20% must be acquired at the College through classroom instruction;
4. Have earned a grade point average of at least 2 on all courses attempted which are applicable toward graduation in his curriculum;
5. Have filed an application for graduation in the Office of Admissions and Records by the required deadline;

6. Have resolved all financial obligations to the College and returned all library and other college materials.

Certificate Requirements

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. No less than 50 percent of the class credits must be earned at the College. Also, if he pursues a degree or diploma program but is unable to complete graduation requirements, he may, upon the recommendation of the appropriate instructional division and the Dean be issued a certificate provided the portion of study successfully completed is equivalent to an approved certificate program offered at the College. A curriculum GPA of 2 must be achieved.

Second Degree, Diploma, or Certificate

In awarding students an additional certificate, diploma, or degree, the College may grant credit for all previously completed applicable courses which are requirements of the additional certificate, diploma, or degree.

ACADEMIC REGULATIONS

Attendance

Instructors will provide students with a statement of their attendance policy during the first class meeting of each quarter.

When absence from a class or laboratory becomes necessary, it is the responsibility of the student to inform the instructor prior to the absence.

The student is responsible for making up all work missed during an absence. If a student cannot appear for a test or final examination, he should try to contact the instructor prior to the test period. If he is unable to reach the instructor, he should leave word with the division office.

When the number of unexcused absences for a student reaches an amount equivalent to thirty percent of the total instructional time (e.g., three weeks in a ten-week course), the instructor will drop the student from the class. If the student is doing "A/B" work at that time, the prerogative is then with the instructor. Students who are dropped from a class because of a lack of attendance will be assigned a "W" grade if the drop is made during the first six weeks of the quarter. After that time, a grade of "F" will be assigned in non-developmental courses and a grade of "R" or "U" in developmental courses. No-shows, in all cases, will be awarded a "W."

Change of Registration

Students should follow established procedures for making any changes in their programs after registration. Failure to do so could place their college record in jeopardy.

1. Withdrawal from a course:

A student does not receive a "W" automatically if he stops attending class. HE MUST FILE a Student Schedule Change Form with the Office of Admissions and Records.

2. Addition of a course:

Students may add classes by following the procedures published in the quarterly supplement to the College Catalog: Schedule of Classes.

3. Withdrawal from the College:

A student who wishes to withdraw from the College should contact a counselor to determine the appropriate procedure.

A three-quarter history of withdrawals, either student or instructor initiated, whether at the developmental or college level, constitutes a lack of normal progress. Such action may subject the student to Academic Suspension.

Transfer Between Curriculums

A student who wishes to transfer from one program or curriculum to another should discuss this with the advisor, obtain the advisee folder, and see a counselor who will make the change.

ACADEMIC STANDING

The College keeps students informed of their academic standing. A statement will be placed on their Grade Report if they are academically deficient and when they have regained acceptable academic standing. The College will assist students to increase their effectiveness in meeting the academic standards of the institution and to ultimately attain graduation. Students are expected to maintain a 2 (C) grade point average to be making normal academic progress toward graduation.

Academic Warning

Any student who fails to attain a minimum grade point average of 2 for any 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 until such time as his average is 1.5 or better. The statement "Placed on Academic Probation" will be

placed on his permanent record. A person on probation is ineligible for appointive or elective office in student organizations and usually will be required to carry less than a normal course load the following quarter. A student on academic probation is required to consult with a counselor prior to class registration. A student pursuing a degree program is cautioned that, although an average between 1.5 and 1.99 may not result in formal academic probation, a minimum of 2 in this curriculum is a prerequisite to the receipt of an associate degree. Students shall be placed on probation only after they have attempted twelve quarter credit hours. (Note: The College reserves the right to place other students on probation where circumstances warrant.)

Academic Suspension

The student on academic probation who fails to attain a grade point average of 1.5 for the next quarter for which 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. A student who has been informed that he is on academic suspension may submit an appeal in writing to the Chairman of the Admissions Committee for reconsideration of his case. A suspended student may be readmitted after termination of the suspension period and upon formal written petition to the Chairman of the Admissions Committee. Students will be placed on suspension only after they have attempted twenty-four (24) quarter credit hours. (Note: The College reserves the right to suspend other students where circumstances warrant.)

Academic Dismissal

Students who have been placed on academic suspension and achieve a 2 grade point average for the quarter following their reinstatement must maintain at least a 1.5 grade point average in each subsequent quarter of attendance. The student remains on probation until his overall grade point average is raised to a minimum of 1.5. Failure to attain a 1.5 grade point average 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. Part-time students will be dismissed only after they have attempted thirty-six (36) quarter credit hours.

SELF-ADVISING

Students are not automatically placed on self-advising. To obtain self-advising status, a student must:

1. Have completed two quarters of full-time work at the College (or completed 24 credit hours) with at least a cumulative GPA of 2.25 or more.
2. Have the written approval of a counselor or advisor ("Self-Advising Status Form").
3. Not be enrolled in a developmental course or through assessed academic preparation not show a need for developmental courses.

Each self-advising student has a faculty advisor or counselor who is available for assistance in academic areas. Students having self-advising status should, as a general rule, consult with advisors regularly about course selection, program options, and overall academic progress.

Self-advising is a status which must be maintained through consistently positive academic progress. Poor academic progress will result in the following:

1. A self-advising student will be required to meet with the advisor during the quarter following being placed on "academic warning."
2. A student on "academic probation" loses self-advising status and will be assigned to a counselor in addition to the faculty advisor. Both the counselor and the advisor must be consulted before registering for additional courses.
3. Once removed from self-advising, the status can be reinstated with approval of Counseling Services and the attainment of minimal standards for self-advising.

Self-advising students, as well as other students, are responsible for course selection.

NORMAL ACADEMIC LOAD

The normal academic load is 15-17 credits. The minimum full-time load is 12 credits and the normal maximum full-time load is 18 credits. To carry an academic load of more than 18 credits, students should have a 3.0 average or higher and must have the approval of the Coordinator of Admissions and Records or the Coordinator of Counseling.

REPEATING A COURSE

If a course is repeated once or more for credit, only the last repetition is counted toward graduation. All grades are included on the 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 Dean of Instruction and the instructor of the class.

ACADEMIC HONORS

At the end of each quarter the Dean's List is prepared, recognizing all regular full-time students who earned a grade point average of 3.2 or better. Regular full-time students who earned a grade point average of 3.5 or better are placed on the President's Honor Roll. The College cannot be responsible for newspaper publicity of these lists.

Students who have attended a VCCS community college for a minimum of 45 credit hours may be eligible for graduation honors. Appropriate honors are recorded on the diploma. The honors based on the overall academic achievement at Virginia Western Community College are as follows:

- 3.2 Cum laude (with honor)
- 3.5 Magna cum laude (with high honor)
- 3.8 Summa cum laude (with highest honor)

ACADEMIC INTEGRITY

Academic integrity is of the utmost importance to the College. Information on academic dishonesty is given in the Student Handbook.

Part III

CURRICULUMS OF STUDY

COLLEGE TRANSFER

Associate in Arts Degree (AA) in Liberal Arts with a major in Liberal Arts

Associate in Arts Degree (AA) in Visual & Performing Arts with a major in Fine Arts

Associate in Science Degree (AS) in Business Administration with a major in Business Administration

Associate in Science Degree (AS) in Education with a major in Education

Associate in Science Degree (AS) in Engineering with a major in Engineering

Associate in Science Degree (AS) in General Studies with a major in General Studies

Associate in Science Degree (AS) in Physical & Natural Sciences with a major in Science

AGRICULTURAL & NATURAL RESOURCES TECHNOLOGY

Associate in Applied Science Degree (AAS) in Agricultural Business with a major in Horticulture
(Specializations: Floriculture, and Landscape/Grower)

ARTS & DESIGN TECHNOLOGY

Associate in Applied Science Degree (AAS) in Graphics Communication with a major in Commercial Art

BUSINESS TECHNOLOGY

Associate in Applied Science Degree (AAS) in Business Management with a major in Accounting

Associate in Applied Science Degree (AAS) in Business Management with a major in Management

(Specializations: Banking and Finance, Merchandising, Real Estate, and Traffic & Transportation)

Associate in Applied Science Degree (AAS) in Business Office with a major in Secretarial Science

(Specializations: Executive, Legal, Medical, and Word Processing)

Associate in Applied Science Degree (AAS) in Data Processing with a major in Data Processing

ENGINEERING & INDUSTRIAL TECHNOLOGY

Associate in Applied Science Degree (AAS) in Architectural & Construction Technology with a major in Architecture

Associate in Applied Science Degree (AAS) in Civil Engineering Technology with a major in Civil Engineering

Associate in Applied Science Degree (AAS) in Electrical/Electronics Technology with a major in Electrical/Electronics

(Specializations: Communications, and Power)

Associate in Applied Science Degree (AAS) in Mechanical Technology with a major in Mechanical Engineering

Associate in Applied Science Degree (AAS) in Vehicle & Equipment Technology with a major in Automotive

HEALTH TECHNOLOGY

Associate in Applied Science Degree (AAS) in Dental Hygiene with a major in Dental Hygiene

Associate in Applied Science Degree (AAS) in Human Services with a major in Human Services

Associate in Applied Science Degree (AAS) in Nursing with a major in Nursing

Associate in Applied Science Degree (AAS) in Radiography with a major in Radiography

PUBLIC SERVICE TECHNOLOGY

Associate in Applied Science Degree (AAS) in Communication Technology with a major in Radio & Television Production

Associate in Applied Science Degree (AAS) in Educational Services with a major in Early Childhood Development

Associate in Applied Science Degree (AAS) in Public Safety with a major in Administration of Justice

DIPLOMA PROGRAMS

Automotive Analysis & Repair
Electronic Servicing

CERTIFICATE PROGRAMS

Air Conditioning & Refrigeration
 Architectural Drafting
 Automotive Mechanics
 Building Construction Supervision
 Child Care
 Clerical Studies
 Clerk Stenographer
 Dental Assisting
 Educational Assistant
 Engineering/Technical Assistant
 Medical Transcriptionist
 Welding

CONTINUING CAREER STUDIES PROGRAMS

Business & Industrial Supervision
 Educational Secretary
 Floral Design and Indoor Plant Care
 Landscaping and Outdoor Plant Care
 Legal Assistant
 Savings & Loan Administration

STATE AND REGIONAL SPECIALIZED PROGRAMS

In the Virginia Community College System, certain highly-specialized curriculums, though designed to serve all Virginia residents, are limited in offering to selected locations. These curriculums generally reflect geographic, demographic, or economic considerations which preclude extensive offering Statewide, and therefore usually are approved for not more than three community colleges to meet State or Regional requirements. As changing circumstances warrant and additional State and Regional needs are determined, specialized curriculums may be located in other community college regions. Accordingly, the following State and Regional Specialized Programs are identified for the Virginia Community College System.

Program	Community College
Agricultural & Natural Resources Technology Majors:	
Animal Science	Blue Ridge
Agronomy	Northern Virginia
Forestry	Paul D. Camp
Natural Resources Management & Security	Dabney S. Lancaster
Wildlife	Lord Fairfax
	Dabney S. Lancaster
Arts and Design Technology Majors:	
Media Advertising Arts	Tidewater
Printing	Blue Ridge

Business Technology

Majors:	
Aviation Administration	Northern Virginia
Office Administration & Management	Northern Virginia
Real Estate	Northern Virginia
	Tidewater
Traffic & Transportation	Tidewater

Engineering/Industrial Technology

Majors:	
Broadcast Engineering	Northern Virginia
Environmental Science	J. Sargeant Reynolds
	Wytheville
Environmental & Science	Northern Virginia
Industrial	New River
Instrumentation	New River
Machine (Tool)	New River
Marine Science	Rappahannock
	Thomas Nelson
Mining	Mountain Empire
	Southwest Virginia
Urban Regional Planning & Development	Northern Virginia

Health Technology

Majors:	
Dental Laboratory	J. Sargeant Reynolds
	Northern Virginia
Funeral Services	John Tyler
Opticianry	J. Sargeant Reynolds
	Thomas Nelson
Physical Therapy	Thomas Nelson
Radiography	Central Virginia
	Virginia Western

Public Service Technology

Majors:	
Air Traffic Control	Northern Virginia
Occupational Safety and Health	Northern Virginia
	Thomas Nelson
Radio and Television Production	Virginia Western

MINIMUM REQUIREMENTS FOR ASSOCIATE DEGREES (SB)

Associate in Arts (AA)
Associate in Science (AS)
Associate in Applied Science (AAS)

	Number of Credits (Quarter Hours)		
	AA ¹	AS ¹	AAS
Humanities			
English Composition	9	9	0
Communication Skills	0	0	6-9
Literature (English, American, or World)	6-9	0-3	— ⁹
English or Speech	0-3	0-3	
Art, Drama, Music, Humanities and/or Philosophy	0-6	0-3	3
Foreign Language			
	12-24 ²		
Social Sciences			
History (American or Western Civilization)	9	3-9	
Economics	0-9	0-9	3
Government	0-9	0-9	3
Psychology or Human Relations	0-9	0-9	3
Sociology	0-9	0-9	—

Natural Sciences and Mathematics

Natural Sciences (Laboratory) (Biology, Chemistry, Geology, Physics)	12-15	12-24 ^a	
Mathematics	9	9	
Health, Physical Education Or Recreation	3-6	3-6	3-6
Orientation	1	1	1
Electives and Other Major Field Requirements	3-21 ¹	48	75 ²
Minimum Total Number of Credits for Degree	97	97	97

¹Students are urged to acquaint themselves 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 their program and selecting electives.

²Students who have successfully completed two years of a foreign language in high school may petition for advance placement to the sophomore course of this foreign language.

³In 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, sociology and/or psychology.

⁴SOSC 101-102-103 may be substituted for ECON, GOVT, and PSYC.

⁵The Associate in Applied Science degree programs should be organized approximately as follows:

Specialized and degree related courses	50%
General education courses	25%
College electives	25%

*This requirement may be waived for the General Studies major.

year program in fine arts. Students who are interested in art but who do not elect immediately to transfer will find this program suited to their needs. **Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives.** In order to prepare for 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 course content to the first two years of the program at the four-year institution.

Special Curriculum Admission Guidelines:

A satisfactory aptitude in visual art is preferred for entry into the art program, and applicants may be asked to submit a portfolio for placement. Developmental courses may be recommended for students with deficiencies in English and mathematics.

**FINE ARTS****ASSOCIATE IN ARTS DEGREE**

Purpose: The curriculum is designed for persons who plan to transfer to a four-year program in professional art schools or to a four-

Fine Arts Curriculum

	Quarter Credit Hours		
(First Year)	1st	2nd	3rd
ARTS 121-122-123 Theory and Practice of Drawing	3	3	3
ARTS 154-155-156 Design I II III	3	3	3
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
HIST 111-112-113 United States History (or HIST 101-102-103)	3	3	3
*MATH 161-162-163 College Mathematics (or MATH 181-182-183)	3	3	3
Health 110 or Physical Education	1-3	1-3	1-3
Total Credits	17-19	16-18	16-18

(Second Year)

ARTS 111-112-113 History and Appreciation of Art	3	3	3
ARTS 274 Intro. to Printmaking	3		
ARTS 275-276 Art Printmaking Workshop		3	3
Literature (American or English)	3	3	3
Natural Science with Laboratory	4	4	4
Social Science	3	3	3
Total Credits	16	16	16

Total Minimum Credits for Degree 97

*Math courses chosen should fulfill requirement of four-year college or university the student plans to attend.

LIBERAL ARTS**ASSOCIATE IN ARTS DEGREE**

Purpose: The curriculum is designed for persons who plan to transfer to a four-year college or university to complete a bacca-

24 CURRICULUMS OF STUDY

laureate degree program, usually the Bachelor or Arts degree in the liberal arts or social sciences. Students in this program may wish to major in the following fields:

English	Philosophy
Foreign Language	Pre-Law
Humanities	Social Sciences
Journalism	Speech-Drama

Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. In order to prepare for 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 course content to the first two years of the program at the four-year institution.

Special Curriculum Admission Guidelines:

4 units of English; 2 units of college preparatory mathematics; 1 unit of laboratory science; and 1 unit of history. The remaining units are elective courses, but at least two units of a foreign language are recommended. Students are urged to check the mathematics requirement 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. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Liberal Arts Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
HIST 111-112-113 American History (or HIST 101-102-103)	3	3	3
*MATH 161-162-163 College Mathematics (or MATH 181-182-183)	3	3	3
*Foreign Language	4	4	4
Natural Science with laboratory	4	4	4
Health 110 or Physical Education		1-3	1-3
Total Credits	18	18-20	18-20
(Second Year)			
Foreign Language	4	4	4
Literature (American or English)	3	3	3
*Social Science	3	3	3

Speech		3	
Electives	6	3	0-6
Health 110 or Physical Education		1-3	
Total Credits	16	17-19	10-16
Total Minimum Credits for Degree 97			

*Math courses chosen should fulfill requirement of four-year college or university the student plans to attend.

*Students who have completed two years of a foreign language in high school with at least a "B" average should enroll in the second-year course at the college. Students must complete the intermediate level of a single college foreign language course. If the beginning language course is not taken, 12 hours of elective courses must be substituted for it.

*Social Science chosen should be a one-year sequence in either ECON 211-213-213, GOVT 281-282-283, PSYC 201-202-203, or SOCI 101-102-103.

BUSINESS ADMINISTRATION

ASSOCIATE IN SCIENCE DEGREE

Purpose: The curriculum is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in business administration. Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. In order to prepare for 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 course content to the first two years of the program at the four-year institution.



Special Curriculum Admission Guidelines:

4 units of English; 3 units of mathematics (algebra and geometry); 1 unit of laboratory science; and 1 unit of social studies. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Business Administration Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
HIST 111-112-113 United States History (or HIST 101-102-103)	3	3	3
MATH 161-162-163 College Mathematics	3	3	3
Natural Science with laboratory	4	4	4
¹ Electives	3	3	3
Health or Physical Education	1-3	1-3	1-3
Total Credits	18-20	17-19	17-19
(Second Year)			
ACCT 211-212-213 Principles of Accounting	3	3	3
¹ ECON 211-212-213 Principles of Economics	3	3	3
Literature/Speech	3	3	3
¹ Electives	6	6	6
Total Credits	15	15	15
Total Minimum Credits for Degree 97			

¹Electives must be selected from Humanities, Natural Sciences, Social Sciences.

²In addition to the Economics requirement for the community colleges, students are advised to complete a Government and Psychology course, or a full year of a sophomore social science if required by the four-year college or university to which they plan to transfer.

EDUCATION**ASSOCIATE IN SCIENCE DEGREE**

Purpose: The curriculum is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Teacher Education. Students who are considering certification in Early Childhood Education should consult the Early Childhood staff of the Virginia Western Community College. Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. In order to prepare for 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 course content to the first two years of the program at the four-year institution.

Special Curriculum Admission Guidelines:

4 units of English, 2 units of college preparatory mathematics, 1 unit of laboratory science, and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English and mathematics. Eligible students may qualify for the State Teachers' Scholarships.

Education Curriculum

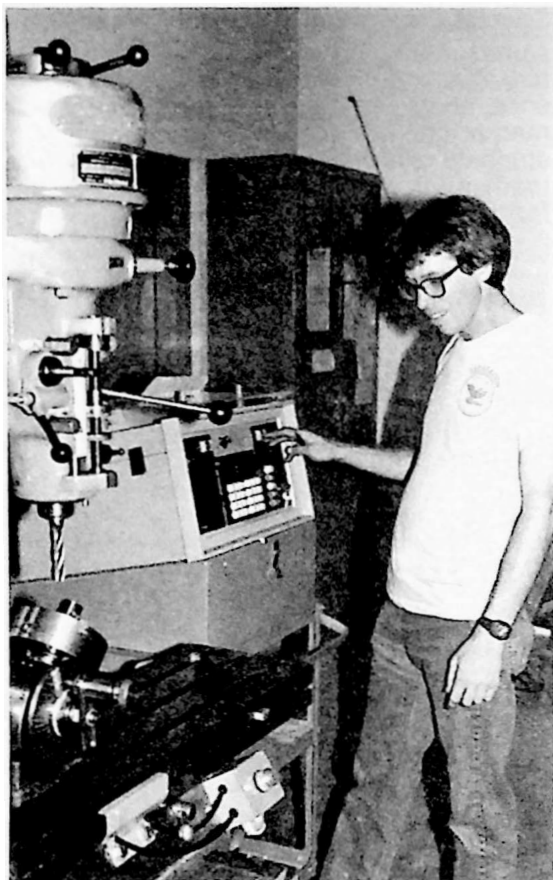
(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
HIST 101-102-103 Western Civilization (or HIST 111-112-113 United States History)	3	3	3
MATH 161-162-163 College Mathematics (or MATH 181-181-183 General College Mathematics or MATH 154-155-158 Modern Mathematics for Elementary Teachers)	3	3	3
Natural Science with laboratory	4	4	4
Electives	3	3	3
Total Credits	17	16	16
(Second Year)			
ECON 211-212-213 Principles of Economics	3	3	3
ENGL 251-252-253 Survey of American Literature (or ENGL 261-262-263 Survey of English Literature)	3	3	3
PSYC 201-202-203 General Psychology	3	3	3
SPDR 137 Public Speaking			3
Humanities Elective	3		
Electives	3	6	3
Health or Physical Education	1-3	1-3	1-3
Total Credits	16-18	16-18	16-18
Total Minimum Credits for Degree 97			

ENGINEERING**ASSOCIATE IN SCIENCE DEGREE**

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

Aerospace	Chemical	Mechanical
Agriculture	Civil	Metallurgical
Building	Electrical	Mining
Construction	Industrial	Nuclear
Ceramics		

Students are urged to acquaint themselves with the requirements of the major department in the college or university to which



transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. In order to prepare for 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 course content to the first two years of the program at the four-year institution.

Special Curriculum Admission Guidelines:

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 laboratory science; and 1 unit of social studies. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Engineering Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
CHEM 111-112-113 General Inorganic Chemistry	4	4	4
ENGL 111-112-113 English Composition	3	3	3

ENGR 104-105 Introduction to Engineering Methods	3	3	
ENGR 121-122 Engineering Graphics		2	2
ENGR 140 Statics of Particles and Rigid Bodies			3
GENL 100 Orientation	1		
MATH 141-142-143 Introductory Mathematical Analysis	5	5	5
Health or Physical Education	1-3		
Total Credits	17-19	17	17

(Second Year)

ECON 211-213-213 Principles of Economics I II III	3	3	3
ENGR 206 Engineering Economy			3
ENGR 241 Mechanics of Particles	3		
ENGR 242 Dynamics of Rigid Bodies		3	
ENGR 243 Mechanics of Deformable Solids			5
Humanities Elective		3	
MATH 241-242-243 Advanced Mathematical Analysis	4	4	4
PHYS 213 Engineering Physics			
PHYS 221-222 General University Physics	4	4	
History Elective	3		
Health or Physical Education	1-3	1-3	
Total Credits	18-20	18-20	18

Total Minimum Credits for Degree 105

GENERAL STUDIES

ASSOCIATE IN SCIENCE DEGREE

Purpose: The curriculum is designed for students who are uncertain about their vocational or educational goals. It offers sufficient flexibility so that students may take courses which are accepted in most four-year colleges and universities in a wide number of baccalaureate degree programs. It also provides greater opportunity than that offered in other college transfer programs for the student to take courses which emphasize areas of academic strength and interest. In addition, it is designed for students who want a broad two-year educational experience in a degree program but who do not intend to transfer.

Special Curriculum Admission Guidelines:

4 units of English; 2 units of college preparatory mathematics; 1 unit of laboratory science; and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English and mathematics.

General Studies Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
HIST 111-112-113 American History (or HIST 101-102-103)	3	3	3
*MATH 161-162-163 College Mathematics (or MATH 181-182-183)	3	3	3
*Natural Science with laboratory	4	4	4
Electives	3	3	3
Health 110 or Physical Education		1-3	1-3
Total Credits	17	17-19	17-19

(Second Year)

Humanities or Social Science Electives	3	3	3
Literature (American or English)	3	3	3
PSYC 201-202-203 General Psychology	3	3	3
SPDR 137 Public Speaking	3	6	6
Health 110 or Physical Education		1-3	
Total Credits	15	16-18	15

Total Minimum Credits for Degree97

*Student has the option of taking either math or a natural science; however, if transfer is contemplated, both courses should be taken. Math courses chosen should fulfill requirement of four-year college or university the student plans to attend.

SCIENCE**ASSOCIATE IN SCIENCE DEGREE**

Purpose: The curriculum is designed for persons who are interested in a pre-professional or scientific program and who plan to transfer to a four-year college or university to complete a baccalaureate degree program with a major in one of the following fields:

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

Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. In order to prepare for 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 course content to the first two years of the program at the four-year institution.



Special Curriculum Admission Guidelines:

4 units of English; 3 units of college preparatory mathematics; 1 unit of laboratory science; and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Science Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
HIST 101-102-103 History of Western Civilization (or HIST 111-112-113)	3	3	3
MATH 161-162-163 College Mathematics (or MATH 141-142-143)	3-5	3-5	3-5
¹ Science with laboratory MATH 150 or	4	4	4
² General Electives		3	2-3
Health or Physical Education	1-3	1-3	1-3
Total Credits	15-19	17-21	16-21
(Second Year)			
² Humanities Elective	3		
MATH 261-262-263 Calculus (or MATH 241-242-243 or ² General Electives)	3-4	3-4	3-4
¹ Science with laboratory	4	4	4
² Social Science Elective	3	3	3
² General Electives	3-4	7-8	6-7
Total Credits	16-18	17-19	16-18

Total Minimum Credits for Degree 97

¹Two science sequences in different disciplines are required and each sequence must be a full year with laboratory.

²Electives must be selected from the transfer courses listed on the Science C-3 Form.

HORTICULTURE**ASSOCIATE IN
APPLIED SCIENCE DEGREE**

Purpose: There is a distinct need in many horticultural and related industries for employees who have some advanced training and experience in horticulture but who are not holders of a specialized baccalaureate degree. The Associate in Applied Science Degree in Horticulture Technology is designed to prepare students to fulfill that need. During the second year students may specialize in either floriculture or landscape/grower.

Occupational Objectives:

Manager or employee in a nursery or greenhouse

Grounds maintenance operator or supervisor

Floral designer or manager of a florist shop

Employee in a retail horticultural business or a related industry



Cooperative Education: Students in this program will be provided an opportunity to obtain on-the-job training through cooperative arrangements between the college and prospective employers.

Special Curriculum Admission Guidelines:

Proficiency in high school English and 1 unit of high school algebra. Deficiencies may be removed through developmental studies.

Horticulture Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
Common to Both Options			
CHEM 110 Horticulture Chemistry			4
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
¹ GOVT 180 American Constitutional Government		3	
HORT 100 Introduction to Horticulture	4		
HORT 107 Plant Propagation			3
HORT 130 Environmental Factors in Plant Growth	3		
HORT 146 Horticulture Botany		4	
HORT 230 Greenhouse Management		3	
HORT 257 Herbaceous Plants			3
BUAD 121-122-123 Business Mathematics	3	3	3
Health or Physical Education	1-3	1-3	1-3
Speech or English			3
Total Credits	15-17	17-19	17-19

(Second Year-
Floriculture Option)

BUAD 174 Small Business Management	3		
ECON 160 Survey of American Economics		3	
HORT 120 Soils		4	
HORT 137 Plantscaping for Interior Design		3	
HORT 156 Greenhouse Crop Production		3	
HORT 216 Horticultural Entomology			4
HORT 217 Horticultural Plant Pathology	3		
HORT 250 Landscape Planning		2	
HORT 260 Flower Shop Management			3
HORT 266 House and Conservatory Plants	3		
HORT 170-270-276 Floral Design and Arranging I, II, III	2	2	2
HORT 297 Cooperative Education			1-3
MKTG 100 Principles of Marketing			3
MKTG 109 Principles of Salesmanship	3		
PSYC 128 Human Relations	3		
Horticulture Electives			2-3
Total Credits	17	17	15-18

(Second Year-
Landscape/Grower Option)

BUAD 174 Small Business Management	3		
ECON 160 Survey of American Economics		3	
HORT 110 Tools and Equipment		3	
HORT 126 Landscape Construction and Maintenance	3		
HORT 120 Soils		4	
HORT 216 Horticultural Entomology			4
HORT 217 Horticultural Plant Pathology	3		
HORT 220 Nursery Management		3	
HORT 240 Turf Green Management			3
HORT 250 Landscape Planning		2	
HORT 256 Woody Plants	3		
HORT 258 Landscape Drawing			3
HORT 297 Cooperative Education			1-3
MKTG 100 Principles of Marketing			3
MKTG 109 Principles of Salesmanship	3		
PSYC 128 Human Relations	3		
Horticulture Electives			2-3
Total Credits	18	15	16-19

Total Minimum Credits for Degree 98

*A year sequence in Social Science may be substituted.

COMMERCIAL ART
ASSOCIATE IN
APPLIED SCIENCE DEGREE

Purpose: The curriculum is designed primarily for persons who seek full-time employment in the commercial art field upon completion of the community college program.

Occupational Objectives:

Advertising	Photography
Illustrating	Related
Printing	Occupations

Special Curriculum Admission Guidelines:

Proficiency in high school English and a satisfactory aptitude for drawing. Applicants may be required to submit several sample drawings for approval before final admission is granted. Developmental courses may be recommended for students with deficiencies in English and mathematics.



30 CURRICULUMS OF STUDY

Commercial Art Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ARTS 111-112-113 History and Appreciation of Art	3	3	3
ARTS 121-122-123 Theory and Practice of Drawing	3	3	3
ARTS 154-155-156 Design	3	3	3
PHTG 101 Photography			3
¹ ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
¹ GOVT 180 American Constitutional Government		3	
¹ PSYC 128 Human Relations			3
Health 110 or Physical Education		1-3	
English 113 or Speech 137			3
Total Credits	16	16-18	18

(Second Year)

ARTS 227-228-229 Drawing IV-V-VI	3	3	3
ARTS 231-232-233 Theory and Practice of Painting	3	3	3
ARTS 261-262-263 Advertising Design	3	3	3
ARTS 271-272-273 Graphic Techniques	3	3	3
¹ PHTG 201-202-203 Advanced Photography	3	3	
ARTS 298 Seminar and Project Arts Elective or Humanities			3
201 or 202 or 203			3
Health 110 or Physical Education	1-3	1-3	
Total Credits	16-18	16-18	18

Total Minimum Credits for Degree 100

¹A year's sequence in social science may be substituted.

²Student is required to take any 2 quarters of this 3-quarter course.

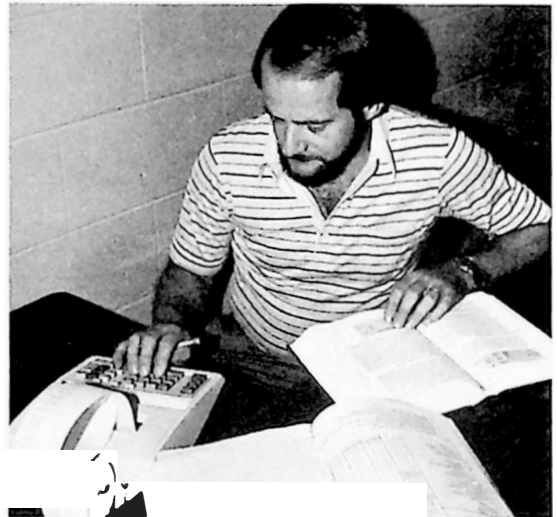
ACCOUNTING ASSOCIATE IN APPLIED SCIENCE DEGREE

Purpose: The curriculum is designed for persons who seek full-time employment in the Accounting field.

Occupational Objectives: Technician or trainee in Accounting, Auditing or Management.

Special Curriculum Admission Guidelines:

Minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.



Accounting Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211-212-213 Accounting	3	3	3
BUAD 100 Introduction to Business	3		
BUAD 164 Principles of Business Management		3	
DAPR 106 Principles of Data Processing	3		
¹ ECON 160 Survey of American Economics			3
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
¹ PSYC 128 Human Relations			3
² SECR 111 Typewriting I (or elective)		3	
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Health or Physical Education	1-3	1-3	1-3
Total Credits	17-19	16-18	16-18

(Second Year)

ACCT 261-262-263 Intermediate Accounting	3	3	3
DAPR 236 Data Processing Management			3
ACCT 231-232-233 Cost Accounting	3	3	3
ACCT 244 Business Taxes I		3	
ACCT 245 Business Taxes II			3
BUAD 241-242 Business Law	3	3	
BUAD 246 Business Finance (or Business elective)		3	
BUAD 254 Applied Business Statistics	3		
DAPR 144 Computer Concepts	3		
SECR 147 Business Communication	3		
GOVT 180 American Constitutional Government			3
Total Credits	18	15	15

Total Minimum Credits for Degree 97

¹A year sequence in Social Science may be substituted.

²Students who have completed prior training in typewriting may petition for credit by examination.

DATA PROCESSING**ASSOCIATE IN
APPLIED SCIENCE DEGREE**

Purpose: The curriculum is designed to provide the types of education and training that would be required by both business and industry.

Occupational Objectives:

Computer Programming Technician or Trainee
Related Data Processing Occupations

Special Curriculum Admission Guidelines:

Minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Data Processing Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211-212-213 Accounting	3	3	3
DAPR 106 Principles of Data Processing	3		
DAPR 121 Structured Cobol Programming I		3	
CAPR 122 Structured Cobol Programming II			3
DAPR 137 Computer Operations Management		3	
DAPR 139 Flowcharting and Computer Programming Logic	3		
DAPR 258 Computer Programming Basic			3
ENGL 111-112 English Composition		3	3
GENL 100 Orientation	1		
WOPR 116 Keyboarding For Information Processing	3		
¹ BUAD 121-122-123 (or MATH 161-162-163) Introduction to Business Math	3	3	3
Health or Physical Education		1-3	1-3
Total Credits	16	16-18	16-18

(Second Year)	Quarter Credit Hours		
	1st	2nd	3rd
BUAD 246 Business Finance		3	
BUAD 254 Applied Business Statistics	3		
BUAD 266 Financial Management			3
DAPR 123 Structured Cobol Programming III	3		
DAPR 236 Data Processing Management			3
DAPR 267 Computer Programming (RPG)		4	
DAPR 269 Computer Programming (Assembler)			4

DAPR 281-282 Systems Analysis I & II	3	3	
DAPR 286 Computer Program Applications			4
DAPR 287 Computer Software Systems		3	
ENGL 113 English Composition or SPDR 137 Public Speaking	3		
² ECON/GOVT/PSYC	3	3	3
Health or Physical Education	1-3		
Total Credits	16-18	16	17

Total Minimum Credits for Degree 97

¹If a student elects to take the math rather than the BUAD 121, 122, 123, he must complete the BUAD 123 in addition thereto.

²A one-year sequence in Social Science may be substituted for GOVT/PSYC. All students must take one quarter ECON.

MANAGEMENT

(Banking and Finance, Real Estate,
Merchandising, and Traffic and
Transportation)

**ASSOCIATE IN
APPLIED SCIENCE DEGREE**

Purpose: The curriculum is designed for persons who seek full-time employment in business and industry upon completion of the community college curriculum. Individuals who are seeking initial employment in a managerial position and those presently in management who are seeking promotion may benefit from the curriculum.

Occupational Objectives:

Management Training
Supervision
Real Estate Sales and Finance
Retail Credit
Rate Analyst
Purchase Agent
Sales Supervisor
Other related traffic and
transportation occupations

Special Curriculum Admission Guidelines:

Minimum of two units of high school math, one of which must be algebra, or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Management Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211-213-213 Accounting	3	3	3
BUAD 100 Introduction to Business	3		
BUAD 164-165 Principles of Business Management		3	3
¹ ECON 160 Survey of American Economics	3		

32 CURRICULUMS OF STUDY

ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
MKTG 100 Principles of Marketing			3
*SECR 111 Typewriting I (or Business Elective)		3	
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Health or Physical Education	1-3	1-3	1-3
Total Credits	17-19	16-18	16-18

(Second Year)			
ACCT 244 Business Taxes		3	
BUAD 241-242 Business Law	3	3	
BUAD 243 Business Law			3
BUAD 246 Business Finance		3	
BUAD 254 Applied Business Statistics	3		
BUAD 266 Financial Management			3
BUAD 276 Personnel Management			3
DAPR 106 Principles of Data Processing	3		
DAPR 144 Computer Concept I	3		
DAPR 236 Data Processing Management		3	
SECR 147 Business Communication	3		
*GOVT 180 American Constitutional Government	3		
*PSYC 128 Human Relations Business Elective		3	3
Electives			3
Total Credits	18	15	15

Total Minimum Credits for Degree 97

*A year sequence in Social Science may be substituted.
 *Students who have completed prior training in typewriting may petition for credit by examination.

Management Curriculum (Banking and Finance)

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ACCT 211-212-213 Accounting	3	3	3
BUAD 100 Introduction to Business	3		
BUAD 157 Principles of Banking Operation		3	
BUAD 164-165 Principles of Business Management		3	3
ECON 160 Survey of American	3		
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
MKTG 100 Principles of Marketing			3
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Health or Physical Education	1-3	1-3	1-3
Total Credits	17-19	16-18	16-18

(Second Year)

ACCT 244 Business Taxes		3	
BUAD 117 Principles of Security Investments	3		
BUAD 241-242 Business Law	3	3	
BUAD 243 Business Law (or Business Elective)			3
BUAD 246 Business Finance		3	
BUAD 254 Applied Business Statistics	3		
DAPR 144 Computer Concepts	3		
DAPR 236 Data Processing Management		3	
BUAD 266 Financial Management			3
BUAD 276 Personnel Management			3
DAPR 106 Principles of Data Processing	3		
SECR 147 Business Communication	3		
*GOVT 180 American Constitutional Government		3	
*PSYC 128 Human Relations Business Elective			3
Total Credits	18	15	15

Total Minimum Credits for Degree 97

*A year sequence in Social Science may be substituted.

Management Curriculum (Merchandising)

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ACCT 211-212-213 Accounting	3	3	3
BUAD 100 Introduction to Business	3		
BUAD 164 Principles of Business Management		3	
*ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
MKTG 100 Principles of Marketing			3
MKTG 136 Retail Organization and Management			3
*SECR 111 Typewriting I (or Business Elective)		3	
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Health or Physical Education	1-3	1-3	1-3
Total Credits	17-19	16-18	16-18

(Second Year)

ACCT 244 Business Taxes		3	
BUAD 241-242 Business Law	3	3	
BUAD 243 Business Law			3
BUAD 254 Applied Business Statistics	3		
BUAD 276 Personnel Management			3
DAPR 106 Principles of Data Processing	3		
*GOVT 180 American Constitutional Government			3
BUAD 246 Business Finance		3	

MKTG 109 Salesmanship	3		
MKTG 225 Principles of Advertising	3		
MKTG 226 Merchandising Buying and Control (or Marketing Elective)	3		
*MKTG 290 Coordinated Internship	1-5	1-5	
*PSYC 128 Human Relations		3	
Total Credits	15	13-17	13-17
Total Minimum Credits for Degree	97		

¹A year sequence in Social Science may be substituted.

²Students who have completed prior training in typewriting may petition for credit by examination.

³Students 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 fifth and sixth quarters.

Management Curriculum (Real Estate)

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211-212-213 Accounting	3	3	3
BUAD 100 Introduction to Business	3		
BUAD 164-165 Principles of Business Management		3	3
*ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
MKTG 100 Principles of Marketing			3
MKTG 164-165 Principles of Real Estate		3	3
Health or Physical Education	1-3	1-3	1-3
Total Credits	17-19	16-18	16-18

(Second Year)

ACCT 244 Business Taxes		3	
BUAD 241-242 Business Law	3	3	
BUAD 246 Business Finance		3	
BUAD 254 Applied Business Statistics	3		
BUAD 276 Personnel Management			3
DAPR 106 Principles of Data Processing	3		
SECR 147 Business Communication	3		
*GOVT 180 American Constitutional Government		3	
Marketing Elective			3
MKTG 150 Insurance (or Business Elective)	3		
MKTG 268 Property Management (or Marketing Elective)			3
NKTG 269 Real Estate Finance			3
MKTG 277 Real Estate Law		3	
*PSYC 128 Human Relations			3
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Total Credits	15	15	18
Total Minimum Credits for Degree	97		

¹A year sequence in Social Science may be substituted.

Management Curriculum (Traffic and Transportation)

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211-212-213 Accounting	3	3	3
DAPR 106 Principles of Data Processing	3		
BUAD 164 Principles of Business Management		3	
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
MKTG 100 Principles of Marketing			3
MKTG 131-132-133 Traffic and Transportation	3	3	3
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Health or Physical Education	1-3	1-3	1-3
Total Credits	17-19	16-18	16-18

(Second Year)

Business Elective			3
ACCT 244 Business Elective		3	
BUAD 254 Applied Business Statistics	3		
BUAD 276 Personnel Management (or Business elective)			3
*GOVT 180 American Constitutional Government		3	
MKTG 231-232-233 Interstate Commerce Law (or BUAD 241-242-243)	3	3	3
MKTG 236 Physical Distribution (or Business Elective)	3		
Marketing or Accounting Elective			3
*PSYC 128 Human Relations		3	
ECON 211-212-213 Principles of Economics	3	3	3
MKTG 238 Traffic Management		3	
MKTG 239 Problems of Transportation	3		
Total Credits	15	18	15

Total Minimum Credits for Degree 97

¹A year sequence in Social Science may be substituted.

SECRETARIAL SCIENCE

(Executive, Legal, Medical, Word Processing)

ASSOCIATE IN APPLIED SCIENCE DEGREE

Purpose: The curriculum is designed to prepare persons for full-time employment upon completion of the community college program. Individuals who are seeking initial employment in an office position and those who are seeking promotion may benefit from this curriculum.

Occupational Objectives:

Executive Secretary	Administrative
Legal Secretary	Assistant
Medical Secretary	Related Office
Stenographer	Occupations
Word Processor	

SECR 136 Filing and Records Management			3
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Health or Physical Education	1-3	1-3	1-3
Total Credits	18-20	17-19	17-19

Special Curriculum Admission Guidelines:

Minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Secretarial Science Curriculum
(Executive Secretary)

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ACCT 211 Accounting			3
BUAD 100 Introduction to Business	3		
BUAD 164 Principles of Business Management		3	
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122 Business Mathematics	3	3	
¹ SECR 111-112-113 Typewriting	3	3	3
¹ SECR 121-122-123 Shorthand	4	4	4

(Second Year)			
BUAD 241 Business Law	3		
² ECON 160 Survey of American Economics		3	
SECR 147 Business Communication	3		
² GOVT 180 American Constitutional Government			3
BUAD 123 Business Mathematics			3
² PSYC 128 Human Relations		3	
SECR 216 Executive Typewriting		3	
SECR 217 Skill Building			3
SECR 221-222-223 Transcription	3	3	3
SECR 241-242-243 Secretarial Procedures	3	3	3
³ SECR 256 Machine Transcription			3
WOPR 200 Introduction to Word Processing	3		
WOPR 126 Automatic Typing Equipment	1		
Total Credits	16	15	18

Total Minimum Credits for Degree97

¹Students who have completed prior training in typewriting and/or shorthand may petition for credit by examination.

²A year sequence in Social Science may be substituted.

³Students must have completed SECR 113 or be enrolled concurrently.



Secretarial Science Curriculum (Legal Secretary)

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211 Accounting			3
BUAD 100 Introduction to Business	3		
BUAD 164 Principles of Business Management		3	
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122 Business Mathematics	3	3	
¹ SECR 111-112-113 Typewriting	3	3	3
¹ SECR 121-122-123 Shorthand	4	4	4
SECR 136 Filing and Records Management			3
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Health or Physical Education	1-3	1-3	1-3
Total Credits	18-20	17-19	17-19

(Second Year)

BUAD 241-242 Business Law	3	3	
BUAD 243 Business Law III (or SECR 217)			3
² ECON 160 Survey of American Economics		3	
SECR 147 Business Communication	3		
² GOVT 180 American Constitutional Government		3	
² PSYC 128 Human Relations			3
SECR 216 Executive Typewriting		3	
SECR 221 Transcription	3		
SECR 224-225 Legal Transcription (SECR 222-223)		3	3
SECR 241 Secretarial Procedures	3		
³ SECR 256 Machine Transcription			3
SECR 264-265 Legal Secretarial Procedures (SECR 242-243)		3	3
WOPR 200 Introduction to Word Processing	3		
WOPR 126 Automatic Typing Equipment	1		
Total Credits	16	18	15

Total Minimum Credits for Degree 97

¹Students who have completed prior training in typewriting and/or shorthand may petition for credit by examination.

²A year sequence in Social Science may be substituted.

³Students must have completed SECR 113 or be enrolled concurrently.

Secretarial Science Curriculum (Medical Secretary)

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211 Accounting			3
² ECON 160 Survey of American Economics	3		
BUAD 164 Principles of Business Management		3	
ENGL 111-112 English Composition	3	3	

GENL 100 Orientation	1		
BUAD 121-122 Business Mathematics	3	3	
¹ SECR 111-112-113 Typewriting	3	3	3
¹ SECR 121-122-123 Shorthand	4	4	4
SECR 136 Filing and Records Management			3
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Health or Physical Education	1-3	1-3	1-3
Total Credits	18-20	17-19	17-19

(Second Year)

BIOL 154 Human Anatomy and Physiology (or HLTH 124)	3-4		
BUAD 241 Business Law		3	
SECR 147 Business Communication			3
² GOVT 180 American Constitutional Government			3
SECR 216 Executive Typewriting		3	
BUAD 123 Business Mathematics	3		
² PSYC 128 Human Relations	3	3	
SECR 221-222 Transcription			
SECR 227 Medical Transcription (SECR 223)			3
SECR 241 Secretarial Procedures	3		
³ SECR 256 Machine Transcription			3
SECR 274-275 Medical Secretarial Procedures (SECR 242-243)		3	3
SECR 217 Skill Building			3
WOPR 200 Introduction to Word Processing	3		
WOPR 126 Automatic Typing Equipment	1		
Total Credits	16-17	15	18

Total Minimum Credits for Degree 97

¹Students who have completed prior training in typewriting and/or shorthand may petition for credit by examination.

²A year sequence in Social Science may be substituted.

³Students must have completed SECR 113 or be enrolled concurrently.

Secretarial Science Curriculum (Word Processing)

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211 Accounting			3
BUAD 100 Introduction to Business or BUAD 164 Principles of Business Management	3		
BUAD 121-122 Business Mathematics	3	3	
DAPR 106 Principles of Data Processing			3
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
¹ SECR 111-112-113 Typewriting	3	3	3
¹ SECR 121-122-123 Shorthand	4	4	4
SECR 136 Filing & Records Management			3
SPDR 137 Public Speaking or ENGL 113 English Composition			3
Health or Physical Education	1-3	1-3	1-3
Total Credits	18-20	17-19	16-19

(Second Year)

BUAD 241 Business Law	3		
SECR 147 Business Communication	3		
SECR 158 Elements of Transcription		3	
SECR 216 Executive Typewriting		3	
SECR 221 Transcription	3		
SECR 241-242-243 Secretarial Procedures	3	3	3
*SECR 256 Machine Transcription			3
WOPR 126 Automated Typing Equipment	1		
WOPR 200 Introduction to Word Processing	3		
WOPR 216 Word Processing Equipment Operation		3	
WOPR 226 Principles of Word Processing Management			3
*ECON 160 Survey of American Economics		3	
*GOVT 180 American Constitutional Government			3
*PSYC 128 Human Relations			3
Total Credits	16	15	15

Total Minimum Credits for Degree 97

*Students who have completed prior training in Typewriting and/or Shorthand may petition for credit by examination.

*Students must have completed SECR 113 or be enrolled concurrently.

*A year sequence in Social Science may be substituted.

ARCHITECTURE

ASSOCIATE IN
APPLIED SCIENCE DEGREE

Purpose: The curriculum is designed to develop qualified engineering technicians. Graduates may seek immediate employment or consider opportunities available for transfer to appropriate Bachelor of Technology Programs offered by some four-year universities.

Occupational Objectives: Varied job opportunities in architectural offices, with building contractors, and with industries related to architectural technology.

Special Curriculum Admission Guidelines:

Proficiency in high school English and 2 units of mathematics (1 unit of algebra and 1 unit of geometry or trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

Architecture Engineering Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ARCH 100 Introduction to Architecture	3		
ARCH 111-112-113 Architectural Drafting I-II-III	3	3	3



ARCH 141-142 Materials and Methods of Construction I-II	3	3	
ARCH 168-169 Introduction to Solar Energy I-II	3	3	
CIVL 140 Construction Planning	3		
ENGR 151 Mechanics I			4
GENL 100 Orientation	1		
*GOVT 180 American Constitutional Government		3	
MATH 118 Introduction to Technical Mathematics I	5		
MATH 121-122 Engineering Technical Mathematics I-II	3	5	5
*PSYC 128 Human Relations			
Total Credits	18	17	18

(Second Year)

ARCH 211-212 213 Architectural Drafting IV-V-VI	3	3	3
ARCH 276 Construction Estimating	3		
CIVL 100 Introduction to Surveying		3	
CIVL 181 Surveying I			4
*ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition I-II	3	3	
ENGL or SPDR			3
ENGR 252 Engineering Mechanics II	4		
PHYS 111-112 Technical Physics I-II		4	4
CIVL 217 Structural Steel Design		4	
CIVL 218 or TE			3-4
Health/Physical Education	1-3	1-3	1-3
Total Credits	17-19	18-20	18-21

Total Minimum Credits for Degree 106

*A year sequence in Social Science may be substituted.

CIVIL ENGINEERING
ASSOCIATE IN
APPLIED SCIENCE DEGREE

Purpose: The curriculum is designed to develop qualified engineering technicians. Graduates may seek immediate employment or consider opportunities available for transfer to appropriate Bachelor of Technology Programs offered by some four-year universities.

Occupational Objectives: Varied job opportunities with construction industries and State Highway Departments.

Special Curriculum Admission Guidelines:

Proficiency in high school English and 2 units of mathematics (1 unit of algebra and 1 unit of geometry or trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

Civil Engineering Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ARCH 111-112 Architectural Drafting I, II	3	3	
CIVL 100 Introduction to Surveying		3	
CIVL 140 Construction Planning	3		
CIVL 181 Surveying I			4
ECON 160 Survey of American Economics		3	
ENGL 111-112 English Composition	3	3	
English or Speech			3
ENGR 100 Introduction to Engineering Technology			2
ENGR 151 Mechanics I			4
GENL 100 Orientation	1		
GOVT 180 American Con- stitutional Government	3		
MATH 118 Introduction to Technical Mathematics	5		
MATH 121-122 Engineering Technical Mathematics I-II		5	5
Health or Physical Education		1-3	
Total Credits	18	18-20	18

(Second Year)

CIVL 182 Surveying	4		
CIVL 217 Structural Steel Design		4	
CIVL 218 Reinforced Concrete Design			4
CIVL 230 Structural Analysis		3	
CIVL 246 Soil Mechanics			3
CIVL 247 Soil Mechanics Laboratory			1
CIVL 254 Civil Materials I (Concrete)		3	
CIVL 257 Concrete Laboratory		1	
ENGR 252 Engineering Mechanics II	4		
MATH 123 Engineering Technical Mathematics III	5		

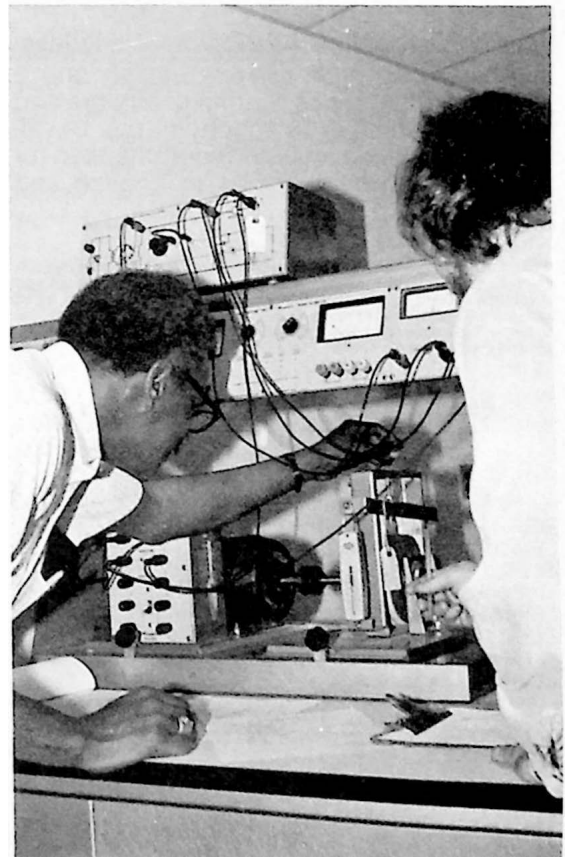
PHYS 111-112-113 Technical Physics	4	4	4
PSYC 128 Human Relations			3
Tech Elective		3-4	
Health or Physical Education	1-3		1-3
Total Credits	18-20	18-19	16-18
Total Minimum Credits for Degree	106		

*A year sequence in Social Science may be substituted.

ELECTRICAL/ELECTRONICS
ASSOCIATE IN
APPLIED SCIENCE DEGREE

Purpose: The seven-quarter Associate Degree program in Electrical/Electronics Engineering Technology has been designed to prepare the graduate for a career in a broad spectrum of Electrical Engineering Technology roles. The curriculum is composed of a sequence of lecture and laboratory courses which have been planned and selected to provide both the theoretical foundation and the application experiences essential to the understanding of the complex principles and practices of the modern electronics field.

First year students receive instruction in English, social science, mathematics, and physics along with introductory and inter-



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mediate level electrical courses. Circuit analysis techniques, industrial practices, electronic devices, and measurement and instrumentation principles are presented.

The advanced courses of the second year provide an in-depth study in electronic circuit design (both analog and digital), and application-oriented sequences in electrical machinery, electronic communications, and computer based systems. In addition to the laboratory experiences provided with each course, the student participates in a three-quarter shop and seminar-project program to develop basic skills in the fabrication of electronic devices.

Transfer opportunities exist for those desiring to complete a four-year program at certain institutions offering a baccalaureate degree in Engineering Technology.

Employment Opportunities: The curriculum is designed for persons seeking employment in a broad spectrum of Electrical Engineering Technology areas ranging from electronics, computer electronics, and communication systems, to electrical machinery, control systems, and the like. In addition, transfer opportunities exist for those desiring to complete a four-year program at certain institutions offering a baccalaureate degree in Engineering Technology.

Special Curriculum Admission Guidelines:

Proficiency in high school English and 3 units of mathematics (2 units of algebra and 1 unit of geometry or trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

*Students desiring a General Electronics Program without specialization may select a six-quarter (two-year) Associate Degree Program available on a part-time evening basis. The program requires all the courses listed below with the exception of those marked with an asterisk. In addition, the student will be required to complete both the Electrical Machinery (ELEC 145) and Electronics Communications (ELEC 150) Surveys.

Electrical/Electronics Curriculum

(First Year)	1st	Quarter Credit Hours 2nd	3rd	4th
DRFT 158 Electrical/ Electronics Drafting				2
ELEC 111-112-113 Introduction to Electrical Circuits	5	5	3	
ELEC 125 Introduction to Electronics				5
ELEC 199 Supervised Study			2	
*ELEC 211 Electrical Machines I				4
ELEC 276 Instruments and Measurements				4
ENGL 111-112 English Composition	3	3		
ENGL or SPDR			3	

ENGR 100 Introduction to Engineering	2			
GENL 100 Orientation	1			
MATH 121-122-123 Engineering Techni- cal Mathematics	5	5	5	
PHYS 111-112 Technical Physics		4	4	
Health or Physical Education	1-3	1-3	1-3	
Total Credits	17-19	18-20	18-20	15

(Second Year)

*ECON 160 Survey of American Economics				3
*ELEC 118-119 Electrical Shop	1	1		
ELEC 201-202-203 Electrical Engineering Technology	6	7	6	
*ELEC 212 Electrical Machines II	4			
ELEC 237-239 Digital Logic Circuits	4	3		
*ELEC 241-242 Commu- nications I-II		4	4	
*ELEC 250 Introduction to Computers			4	
ELEC 298 Seminar & Project				1
*GOVT 180 American Constitutional Government	3			
*PSYC 128 Human Relations		3		
Total Credits	18	18	18	

Total Minimum Credits for Degree 122

*A year sequence in Social Science may be substituted.

MECHANICAL ENGINEERING

ASSOCIATE IN APPLIED SCIENCE DEGREE

Purpose: The curriculum is designed to develop qualified engineering technicians. Graduates may seek immediate employment or consider opportunities available for transfer to appropriate Bachelor of Technology Programs offered by some four-year universities.

Occupational Objectives: The Mechanical Engineering Technician usually serves as a liaison between the engineering and production departments working with the design and development of engineering plans. Responsibilities may include estimating, inspecting, and testing engineering equipment; operating, maintaining, and repairing engineering plants; research and development; sales and representation; training and education.

Special Curriculum Admission Guidelines:

Proficiency in high school English and 2 units of mathematics (1 unit of algebra and 1 unit of geometry or trigonometry). Devel-

opmental courses may be recommended for students with deficiencies in English and mathematics.

Mechanical Engineering Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
DRFT 111-112-113 Technical Drafting I-II-III	2	2	2
ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
English or Speech			3
ENGR 100 Introduction to Engineering Technology		2	
ENGR 151 Mechanics I			4
GENL 100 Orientation	1		
GOVT 180 American Constitutional Government		3	
MATH 118 Introduction to Technical Math	5		
MATH 121-122 Engineering Technical Mathematics I-II		5	5
MECH 131-132 Machine Laboratory I-II	2	2	
MECH 199 Supervised Study Health or Physical Education	1-3	1-3	1-3
Total Credits	17-19	18-20	17-19
(Second Year)			
CIVL 230 Structural Analysis		3	
ELEC 214 Electricity			4
ENGR 252 Engineering Mechanics II	4		
MATH 123 Engineering Technical Mathematics III	5		
MATH 221 Advanced Engr. Technical Math (or T.E. *)		3-4	
MECH 156 Mechanisms	2		
MECH 257-258 Machine Design I-II		4	4
MECH 260 Thermodynamics		4	
MECH 268 Fluid Mechanics			4
PHYS 111-112-113 Technical Physics	4	4	4
PSYC 128 Human Relations	3		
WELD 120 Fundamentals of Welding			2
Total Credits	18	18-19	18
Total Minimum Credits for Degree 106			

*A year sequence in Social Science may be substituted.

*Technical Electives:

CHEM 111-112

CIVL 217

DAPR 106-144

Others with Departmental Approval

DENTAL HYGIENE ASSOCIATE IN APPLIED SCIENCE DEGREE

Purpose: The curriculum is designed to prepare selected students to serve in a dynamic and growing health service by becoming valuable members of the Dental Health team. At the successful completion of the program, a student will be eligible to take the National Board and State Board Examina-

tions in Dental Hygiene leading to licensure as a Registered Dental Hygienist (R.D.H.).

Occupational Objectives:

Private Dental Practice
Group Dental Practice
Dental Specialty Practice
Hospital Dental Service
Government Service
Dental Hygiene Education

Special Curriculum Admission Guidelines:

The applicant should have completed on the high school level four units of English, one unit of biology and chemistry or equivalent, two units of social studies, two units of mathematics (algebra I, algebra II, or geometry), or the equivalent and submit ACT (American College Test) test scores. Developmental courses may be recommended for students with deficiencies in English and mathematics. Priority will be given to applicants with high class standing. A personal interview with the Counseling Department and Dental Hygiene faculty is a part of the admission process. Considering the limited available slots, early application is highly advisable. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical and dental report indicating good general health. The program is open to male and female students.

Special Curriculum Completion Guidelines:

Students who receive a final grade lower than "C" in any required Dental Hygiene course must obtain permission from the Dental Hygiene Faculty Committee and approval of the Division Chairman to continue the major in Dental Hygiene.

The student will be responsible for transportation to and from agencies utilized for clinical experience, and the purchase of student uniforms and accessories, complete instrument kit and Dental Liability insurance. It is recommended that the student purchase health insurance in addition to the liability insurance.

Special Accreditation Status: The curriculum has been fully accredited by the Council on Dental Education of the American Dental Association.

Dental Hygiene Curriculum

(First Year)	Quarter Credit Hours			**S
	1st	2nd	3rd	
DENT 126 Oral Anatomy	3			
DENT 129 General & Oral Histology		2		

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DENT 128 Head and Neck Anatomy			2	
DENT 136 Pharmacology				2
DENT 140 Introduction to Dental Hygiene	1			
DENT 144-145 Dental Hygiene		5	5	
DENT 146 Oral Radiology			3	
DENT 150 General and Oral Pathology				3
*ENGL 113 English Composition				3
DENT 290 Coordinated Practice				3
NASC 111-112 Human Anatomy and Physiology	4	4		
NASC 113 Microbiology			4	
CHEM 101-102-103 General Chemistry	4	4	4	
ENGL 111-112 English Composition	3	3		
*GENL 100 Orientation	1			
HLTH 100 Orientation to Allied Health Careers	1			
HLTH 101, CPR	1			
Total Credits	18	18	18	11

(Second Year)

DENT 116 Dental Laboratory Materials		4		
DENT 138 Community Dental Hygiene	4			
DENT 139 Dental Assistant for Dental Hygienists		2		
DENT 147 Nutrition	3			
DENT 148 Office Practice and Ethics			2	
DENT 155 Periodontics for Dental Hygiene	2			
DENT 262-263-264 Dental Hygiene	5	5	5	
*ECON 160 Survey of American Economics			3	
*GOVT 180 American Constitutional Government		3		
*PSYC 128 Human Relations		3		
SOCI 101 Introduction to Sociology	3			
SPDR 137 Public Speaking			3	
Total Credits	17	17	13	

Total Minimum Credits for Degree 109

*GENL 198, 298 may be substituted.

*In lieu of ECON 160 and GOVT 180, SOCI 102 and 103 may be substituted. (Recommended for transfer.)

*ENGL 113 — Recommended, optional.

**S = 2nd 5-weeks in summer quarter.

HUMAN SERVICES

Associate in
Applied Science degree

Purpose: The curriculum is designed to prepare selected students to qualify as contributing members of the Human Service Delivery Team. Such workers counsel and

guide patients/clients through educational, therapeutic, rehabilitative and recreational activities. Students will be placed in a variety of human service agencies, i.e. mental hospitals, community mental health clinics, centers for children, the elderly, and the mentally retarded, and other direct service agencies which render assistance to individuals with social concerns/problems.

Occupational Objectives: Employment opportunities for the Human Services Mental Health Associate include staff positions in hospitals, mental health clinics, group homes, training centers and community service agencies.

Special Curriculum Admission Guidelines:

The applicant should hold a high school diploma or the equivalent and have completed 4 units of English, 1 unit of biology, and 2 units of social science, or an appropriate equivalent. Satisfactory performance on an appropriate test may be required for those applicants whose academic records indicate weaknesses in English and reading. A personal interview with the Counseling Department and Human Services faculty is part of the admission process. Upon notification of acceptance, applicants are required to submit a medical report indicating good health. An early application is recommended.

Special Curriculum Completion Guidelines:

Students who receive a final grade lower than a "C" in any of the courses in the human service sequence must be recommended by the Program Head and approved by the Division Chairman to continue in the program prior to repeating the course.

The student will be responsible for transportation to health agencies utilized for clinical experience and the purchase of identification pins and liability insurance.

Human Services Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
GOVT 180 American Constitutional Government	3		
HLTH 100 Orientation to Allied Courses	1		
HMSV 106 Introduction to Human Services	3		
HMSV 128 Community Resources and Services		3	
HMSV 134-135 Helping Relationships	3	3	

HMSV 190 Coordinated Practice		4	
HMSV 221 Human Behavior I		3	
MENT 116 Activity Therapies	3		
PSYC 208 Psychology of Abnormal Behavior	3		
PSYC 260 Introduction to Behavior Modification		3	
SOCI 186-187 Social Problems I-II	3	3	
SOCI 236 Marriage and the Family		3	
Total Credits	17	18	16

(Second Year)

ECON 147 (or ECON 160) Consumer Economics			3
HLTH 104 First Aid I		2	
HMSV 144-145 Group Process I-II	3	3	
HMSV 222-223 Human Behavior	3	3	
HMSV 290 Coordinated Practice	5	5	5
HMSV 298 Seminar and Project			3
PBSV 258 Social Change Skills	3		
PSYC 231-232-233 Human Growth and Development	3	3	3
Total Credits	17	16	14

Total Minimum Credits for Degree 98

NURSING

ASSOCIATE IN APPLIED SCIENCE DEGREE

Purpose: The curriculum is designed to prepare selected students to qualify as contributing members of the health team rendering direct patient care as beginning practitioners in a variety of health service facilities. At the successful completion of the program, students will be eligible to take the State Board examination leading to licensure as a registered nurse (R.N.).

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.

Special Curriculum Admission Guidelines:

The applicant must hold a high school diploma or the equivalent and have completed one unit of high school biology, chemistry, and algebra, or the equivalent with a grade of "C" or better. Developmental courses may be recommended for students with deficiencies in English and mathematics. Qualified students are admitted as applications are received. Early application is highly advisable due to the limited available



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spaces in the program. A personal interview with the Counseling Department and nursing faculty is a part of the admission process. Upon notification of acceptance to the curriculum, applicants are requested to submit medical and dental reports indicating good general health. The program is open to male and female students.

The student is responsible for transportation to and from agencies utilized for clinical experience and the purchase of student uniforms, accessories, and liability insurance.

Advanced Placement: Advanced placement is considered on an individual basis for LPNs and students who have withdrawn from other nursing education programs.

All inquiries for advanced placement may be directed to the Nursing Program Head.

Special Curriculum Completion Guidelines:

Students who receive a final grade lower than "C" in any required nursing or natural science courses must obtain permission from the Program Head and approval of the Division Chairman to continue the major in Nursing prior to repeating the course. Clinical performance is graded as satisfactory or unsatisfactory; a grade of satisfactory each quarter is required.

Students who have withdrawn from the nursing program for any reason and desire readmission must make formal application for consideration. Such students must maintain an overall "C" average or better in the interim. Students who have been unsuccessful twice in the Nursing program may not be considered for readmission.

Special Accreditation Status: The curriculum is accredited by the Virginia State Board of Nursing and the National League for Nursing.

Nursing Curriculum

(First Year)	Quarter Credit Hours			
	1st	2nd	3rd	4th
NASC 111-112 Anatomy and Physiology	4	4		
NASC 113 Microbiology			4	
ENGL 111-112-113 English Composition	3	3	3	
GENL 100 Orientation	1			
NURS 110-112 Fundamentals of Nursing	6	6		
NURS 123 Fundamentals of Nursing			6	
NURS 168 Principles of Medication	2			
NURS 221 Nursing in Major Health Problems				8

NURS 199 Clinical Conference	2	2	2	
NURS 299 Clinical Conference				4
PSYC 201-202-203 General Psychology		3	3	3
Total Credits	18	18	18	15

(Second year)

'NURS 244 Medical-Surgical Nursing I	4			
'NURS 247 Obstetric Nursing	4			
'NURS 248 Pediatric Nursing		4		
'NURS 249 Psychiatric Nursing		4		
NURS 256 Nursing Organization and Management			8	
NURS 298 (Senior Seminar)			2	
NURS 299 Clinical Conference	4	4	4	
² SOCI 101-102-103 Introductory Sociology		3	3	3
³ GOVT 180 American Constitutional Government		3		
³ ECON 160 Survey of American Economics	3			
Total Credits	15	18	17	3

Total Minimum Credits for Degree 122

¹See general course description.

²SOCI 236 may be substituted for SOCI 103.

³A year's sequence of Social Science may be substituted. (NOTE: American History is preferred for students planning to transfer to B.S.N. programs).

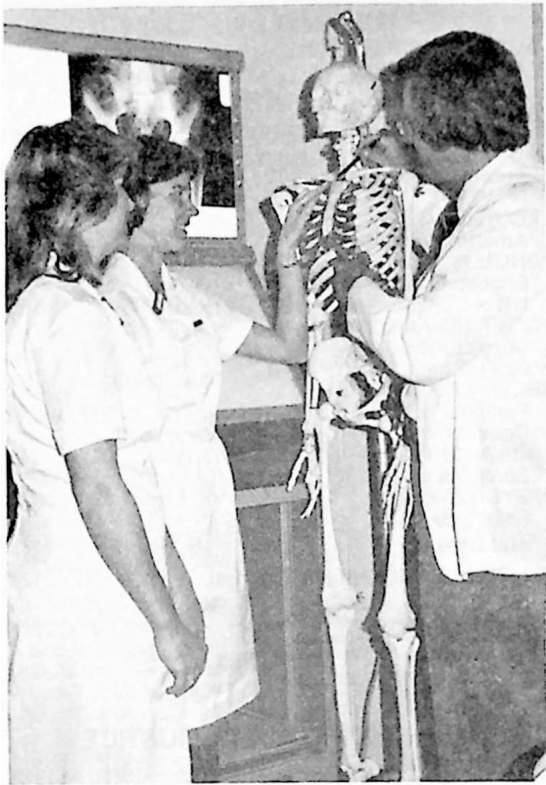
RADIOGRAPHY

ASSOCIATE IN APPLIED SCIENCE DEGREE

Purpose: The curriculum is designed to prepare selected students to qualify as contributing members of the allied health team who will care for patients under the supervision of qualified physicians. Upon completion of the curriculum which includes a three-month internship, the student is eligible to write the National Registry Examination leading to certification as a Registered Radiologic Technologist. Successful completion of the program will qualify a student to gain employment as a Radiologic Technologist.

Special Curriculum Admission Guidelines:

The applicant should have completed two units of high school science (biology, chemistry, physics) and three units of high school mathematics (algebra I, algebra II, geometry) or the equivalent. Developmental courses may be recommended for students with deficiencies in English and mathematics. Priority will be given to applicants with high class standing. A personal interview with the Counseling Department and Radiologic



Technology faculty is a part of the admission process. Considering the limited available slots, early application is highly advisable. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical report indicating good general health. The program is open to male and female students.

The student will be responsible for transportation to and from agencies utilized for clinical experience and the purchase of items such as student uniforms, accessories, and liability insurance.

Special Curriculum Completion Guidelines:

Students who receive a final grade lower than "C" in any of the courses in the Radiologic Technology sequence must be recommended by the Program Head and approved by the Division Chairman to continue the major in Radiologic Technology prior to repeating the course. Selected learning experiences will be provided at the cooperating hospitals within the geographic area served by the college.

Special Accreditation Status: The curriculum has been approved by the authority of the Joint Review Committee on Education in Radiologic Technology, Council on Medical Education of the AMA, representing the ACR and the ASRT.

Radiography

(First Year)	Quarter Credit Hours				
	1st	2nd	3rd	4th	5th
BIOL 154-155 Human Anatomy and Physiology	4	4			
ENGL 111-112-113 English Composition	3	3	3		
*GENL 100 Orientation	1				
HLTH 124	3				
MATH 111-112-113 Technical Mathematics		3	3	3	
RADL 110 Introduction to Radiology, Protection, Patient Care	3				
RADL 114-115 Principles of Exposure			4	4	
RADL 124-125-126 Radiographic Positioning		4	4	4	
RADL 141-142-143 Elementary Clinical Procedures I-II-III		3	3	3	
RADL 190 Coordinated Practice					5
RADL 210 Protection and Patient Safety					3
RADL 246 Radiographic Pathology					3
RADL 259 Radiographic Film Evaluation					3
Total Credits	14	17	17	14	14
(Second Year)					
PHYS 101-102 Introductory Physics	4	4			
RADL 216 Radiation Physics			4		
RADL 226 Radiographic Theory Correlation				3	
RADL 241-242-243 Advanced Clinical Procedures	5	5	5		
RADL 250 Radiologic Specialties		3			
RADL 258 Case History Evaluation					2
RADL 276 Departmental Administration			1		
RADL 290 Coordinated Internship					8
RADL 298 Supervised Study/Scientific Paper	1				
RADL 299 Supervised Study/Review for Registry					3
*SSE	3	3	3		
Total Credits	13	16	15	13	—

Total Minimum Credits for Degree.....133

*GENL 198, 298 may be substituted.

*Three quarters of Social Science may be selected from the following: PSYC 128, GOVT 160, ECON 160; PSYC 201, 202, 203.

AUTOMOTIVE ASSOCIATE IN APPLIED SCIENCE DEGREE

Purpose: The curriculum is primarily designed to train persons for full-time employment.

Occupational Objectives:

Automotive Diagnostician
Sales and Service
Service Manager
Tune-up Specialist

Special Curriculum Admission Guidelines:

Proficiency in high school English and mathematics (1 unit of algebra). Developmental courses may be recommended for students with deficiencies in English and mathematics. The purchase of hand tools and personal safety equipment is the financial responsibility of the individual student.

Automotive Curriculum

(First Year)	1st	2nd	3rd	4th
AUTO 126 Anti-Pollution Systems				4
AUTO 131-132-133 Automotive Technology I, II, III	6	6	6	
AUTO 138 Automotive Vehicle Inspection				3
AUTO 141-142 Applied Math for Auto Tech. I, II		3	3	
AUTO 170 Introduction to Diesel Engines				3
AUTO 180 Introduction to Diesel-Powered Vehicles				2
AUTO 191-192-193 Automotive Systems I, II, III	4	4	4	
AUTO 236 Automotive Heating & Air Conditioning				3
AUTO 268 Automotive Alignment				2
ENGL 109 Communication in Business & Industry		3		
*ENGL 08 Reading Improvement	0			
GENL 100 Orientation	1			
MECH 131 Machine Laboratory			2	
SPDR 137 Public Speaking			3	
WELD 120 Fundamentals of Welding	2			
WELD 122 Arc Welding I				
Total Credits	13	18	18	17

**(Second Year)**

AUTO 231-232-233 Automotive Technology IV, V, VI	6	6	6	
AUTO 287-288 Shop Management I, II	3	3		
AUTO 291-292-293 Automotive Systems IV, V, VI	4	4	4	
*ECON 160 Survey of American Economics		3		
ENGL 111-112 English Composition I, II				6
*GOVT 180 American Constitutional Government	3			
HLTH 110 Concepts of Personal & Community Health			3	
BUAD 121-122 Business Math I, II				6
*PSYC 128 Human Relations			3	
Total Credits	16	16	16	12
Total Minimum Credits for Degree 126				

*Satisfactory completion of ENGL 08 for 5 equivalent credits is required for students having reading deficiencies.
 *A year sequence in Social Science may be substituted.

ADMINISTRATION OF JUSTICE**ASSOCIATE IN
APPLIED SCIENCE DEGREE**

Purpose: This curriculum has two primary purposes: (1) to prepare the student for careers in the Criminal Justice field, and (2) to provide the first two years academic foundation for transfer into a four-year liberal arts or professional degree program in the discipline. The courses are particularly attractive to non-majors as interesting electives in a subject matter that is of concern to all. The program is especially enriched by course offerings taught by professionals in Police, Court, and Correctional agencies.

Occupational Objectives: The curriculum is designed to aid those seeking careers (or seeking advancement in careers) in

Law Enforcement (Local, State, Federal)
 Private and Public Security
 Law (paralegal, prosecution/defense attorney, judge, court administration)
 Corrections (Jail/Prison and community-based agencies, probation/parole, and rehabilitation program staff)
 Juvenile Justice (counseling, casework)

Educational Objectives: The curriculum is designed for maximum transferability from Virginia Western to four-year institutions which have baccalaureate degree programs in Administration of Justice, Criminal Justice, Criminology, Law Enforcement, Police Science, and Public Service. Most of these

four-year degree programs are Social Science oriented, which is the orientation of this curriculum; and it easily merges with pre-law programs at most four-year institutions as well. A number of the careers listed under Occupational Objectives above will require a four-year degree, so it is essential that students consult early with the Program Head concerning career and academic goals.

Administration of Justice Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ADJU 100 Introduction to Law Enforcement	3		
ADJU 120 Introduction to Corrections		3	
ADJU 126 Prevention and Control of Juvenile Delinquency			3
ADJU 134-135 Criminal Law I-II	3	3	
ADJU 176 Criminology	3		
ADJU 228 Law Enforcement and the Community		3	
ADJU 240 Constitutional Law for Police			3
ADJU Elective			3
ENGL 111-112-113 English Composition	3	3	3
*GENL 100 Orientation	1		
HLTH 110 Concepts of Personal and Community Health			3
SOCI 101-102-103 Introductory Sociology	3	3	3
SPDR 137 Public Speaking		3	
Total Credits	16	18	18
(Second Year)			
ADJU 237 Administration of Justice			3
ADJU Elective	3	3	3
ADJU Elective	3	3	
*Elective	(1)	(1)	(1)
*Elective	4(3)	4(3)	4(3)
GOVT 281-282-283 United States Government I-II-III	3	3	3
PSYC 201-202-203 General Psychology I-II-III	3	3	3
Total Credits	16	16	16

Total Minimum Credits for Degree 100

*GENL 198 or 298 may be taken in lieu of GENL 100 with counselor approval.

*Either three 4-credit hour courses in laboratory science or Spanish, or three 3-credit hour courses in mathematics and three 1-credit hour courses in physical education.

EARLY CHILDHOOD DEVELOPMENT

ASSOCIATE IN APPLIED SCIENCE DEGREE

Purpose: This curriculum is designed to enable graduates to qualify as directors, assistant directors, teachers, assistant teachers or as classroom aides in programs for young children. The curriculum has been



established to provide competency in areas proposed by the professional child development community: ability to set up a safe and healthy learning environment, skills to advance the physical and intellectual competence of young children and to build positive self-concepts and individual strengths, the ability to organize and sustain positive functioning of children and adults in a group in a learning environment, to coordinate the home and out-of-home child rearing practices and expectations, and to carry out the supplementary responsibilities related to programs for children. In addition, this curriculum will prepare students for national assessment by the Child Development Associate Consortium.

Those students who are interested in working with special needs children should consult with the Early Childhood Development staff prior to registration and course selection.

In addition to the courses offered at the campus, courses are offered at child care centers and school sites. For information on establishing such courses, consult the Social Sciences Division Chairman or the Early Childhood Development staff.

Occupational Objectives: Positions in independent child care centers and kindergartens, family day care homes, nursery schools,

foster care providers, hospital centers, homemaker services, centers for children with special needs, residential child care facilities and industry associated centers. In addition, this program with appropriate electives qualifies graduates for positions as elementary school classroom aides.

Special Curriculum Admission Guidelines:

A personal interview with the Counseling Department and the Early Childhood Development faculty is a part of the admission process. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical report indicating good mental and physical health. The program is open to both male and female applicants. Satisfactory performance on an appropriate test may be required of those applicants whose records indicate academic weakness in English, reading or mathematics.

Special Curriculum Completion Guidelines:

Students who receive a final grade lower than "C" in any of the courses in the Early Childhood Development sequence must be approved by the program faculty to continue the major in Early Childhood Development prior to repeating the course. Each student is responsible for transportation to and from field sites used for laboratory experience.

Early Childhood Development Curriculum

(First Year)	*Quarter Credit Hours		
	1st	2nd	3rd
EDUC 120 Introduction to Early Childhood Education	3		
EDUC 121-122 Early Childhood Education I-II		3	3
EDUC 137 Creative Activities			3
*EDUC 190 Coordinated Internship	3	4	4
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
HLTH 104 First Aid		2	
HLTH 156 Child Health and Nutrition	3		
PSYC 110 Applied Psychology		3	
PSYC 231-232-233 Human Growth and Development	3	3	3
SPDR 137 Public Speaking			3
Total Credits	16	18	16

(Second Year)

*ECON 160 Survey of American Economics	3		
EDUC 106 Language Arts for Young Children	3		
EDUC 140 Modern Mathematics Concepts		3	
EDUC 175 Parent Education	3		
EDUC 186 Child Study		3	
EDUC 188 Affective Education in the Classroom			3

EDUC 210 Introduction to Special Education	3		
EDUC 287 Management of Child Care Centers			3
*EDUC 290 Coordinated Internship			3
*GOVT 180 American Constitutional Government		3	
MUSC 109 Music for Children	3		
PHED 153 Swimming			1
SOCI 166 School and Community Relations		3	
SOCI 236 Marriage and Family Electives		4	3
Total Credits	15	16	16

Total Minimum Credits for Degree 97

*Coordinate with Education 120, 121 and 122.

*Coordinate with Education 188 and 186.

*Sociology 101-102 may be substituted.

*Course may be offered in quarters different from those above.



RADIO AND TELEVISION PRODUCTION

ASSOCIATE IN APPLIED SCIENCE DEGREE

Purpose: With the growth of commercial and educational broadcasting in Virginia, the need for personnel trained in radio and television is expanding. The curriculum is designed primarily for persons seeking employment in radio and television upon graduation.

Occupational Objectives:

Advertising Agency Assistant
Radio Program Producer
Script and Continuity Writer
Television Director/Producer
Television Studio Technician

Special Curriculum Admission Guidelines:

Proficiency in high school English. It is recommended that applicants have a personal interview with the broadcasting faculty to discuss their educational goals and occupational objectives. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Radio and Television Production Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
BCST 110 Introduction to Radio/Television	3		
BCST 111-112-113 Radio/TV Production	4	4	4
BCST 134-135 Speech for Radio/TV		3	3
BCST 138 TV Studio Art I	3	3	
Elective		3	
*ECON 160 Survey of American Economics		3	
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
*GOVT 180 American Constitutional Government			3
PHTG 101 Photography I			3
SPDR 141 Voice & Diction I	3		
Health or Physical Education	1-3	1-3	1-3
Total Credits	18-20	17-19	17-19

(Second Year)

BCST 214-215 Technical Problems of Radio/TV		3	3
BCST 216 Radio/TV Management and Operation		3	
BCST 217 Radio/TV News			3
BCST 226 Writing for Radio/TV	3		
BCST 236 Broadcast Advertising and Sales		3	
BCST 257 Social Problems in American Broadcasting			3
BCST 281-282-283 Advanced Radio/TV Production	5	5	5
BCST 298 Seminar and Project (or BCST 290/299)			2
BUAD 100 Introduction to Business (or approved elective)	3		
Elective		3	
*PSYC 128 Human Relations	3		
*SECR 111/E Typewriting (or approved elective)	3		
Total Credits	17	17	16
Total Minimum Credits for Degree	102		

*A year sequence in Social Science may be substituted.



AUTOMOTIVE ANALYSIS AND REPAIR (DIPLOMA)

Purpose: The curriculum is primarily designed to train persons for full-time employment. A majority of the courses are transferable to the Associate Degree program.

Occupational Objectives:

Automotive Troubleshooting and Repair
Sales and Service
Tune-up Specialist

Special Curriculum Admission Guidelines:

Proficiency in high school English and general mathematics. Developmental courses may be recommended for students with deficiencies in English and mathematics. The purchase of hand tools and personal safety equipment is the financial responsibility of the individual student.

Automotive Analysis and Repair Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
AUTO 131-132-133 Automotive Technology I, II, III	6	6	6
AUTO 141-142 Applied Math for Automotive Technology I, II		3	3
AUTO 191-192-193 Automotive Systems I, II, III	4	4	4
ENGL 109 Communication in Business & Industry		3	

48 CURRICULUMS OF STUDY

•ENGL 08 Reading Improvement	0		
GENL 100 Orientation	1		
MECH 131 Machine Laboratory I			2
ENGL or SPDR			3
WELD 120 Fundamentals of Welding	2		
WELD 122 Arc Welding I		2	
Total Credits	13	18	18

(Second Year)

AUTO 231-232-233 Automotive Technology IV, V, VI	6	6	6
AUTO 287-288 Shop Management I, II	3	3	
AUTO 291-292-293 Automotive Systems IV, V, VI	4	4	4
*ECON 160 Survey of American Economics		3	
*GOVT 180 American Constitutional Government	3		
HLTH 110 Concepts of Personal & Community Health			3
*PSYC 128 Human Relations			3
Total Credits	16	16	16

Total Minimum Credits for Diploma 97

*Satisfactory completion of ENGL 08 for 5 equivalent credits is required for students having reading deficiencies.
 *A year sequence in Social Science may be substituted.

ELECTRONIC SERVICING (DIPLOMA)

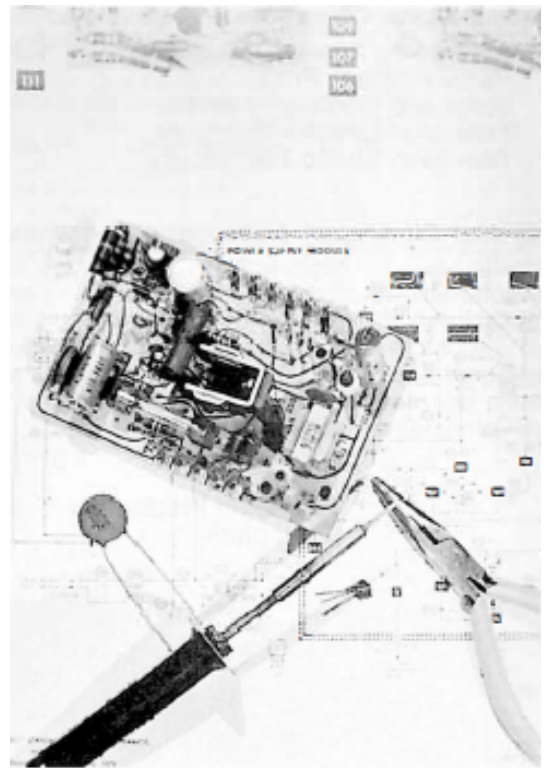
Purpose: The curriculum is designed to meet present and future needs for trained electronic service personnel in and around the Roanoke area. Full-time employment may be sought immediately upon completion of this program.

Occupational Objectives: Electronics home entertainment servicing including color TV, radio, hi-fi, and FM stereo. industrial electronic repair and maintenance MATV/CATV installer.

Special Curriculum Admission Guidelines: Proficiency in high school English and general mathematics. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Electronic Servicing Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ECON 160 Survey of American Economics	3		
ELEC 11-12 Electricity I-II	4	4	
ELEC 40 Electronics I			7
ELEC 118-119 Electrical Shop	1	1	
ENGL 166 College Reading	3		
ENGL 109 Communications in Business and Industry		3	



GENL 100 Orientation	1		
GOVT 180 American Constitutional Government			3
MATH 11-12 Elements of Mathematics I-II	3	3	
RDTV 74-75 Radio/TV Electronics		4	4
Total Credits	15	15	14

(Second Year)

BUAD 100 Introduction to Business			3
ELEC 26 Pulse and Digital Circuits		4	
ELEC 68 Electronics II	6		
ELEC 142 Review for FCC Radio Telephone License			3
ELEC 150 Introduction to Communication System		4	
PSYC 128 Human Relations	3		
RDTV 51-52-53 Advanced Servicing Techniques	6	6	6
Total Credits	15	14	12

Total Minimum Credits for Diploma 85

*ARCHITECTURAL DRAFTING (CERTIFICATE)

Purpose: The curriculum is primarily designed to train persons for full-time employment.

Occupational Objectives:

Architectural Aide
 Architectural Draftsman

Special Curriculum Admission Guidelines:

Proficiency in high school English and general mathematics. Developmental courses may be recommended for students with deficiencies in English and mathematics.

**Architectural Drafting Curriculum**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ARCH 111-112-113 Architectural Drafting I-II-III	3	3	3
ARCH 141-142 Materials and Methods of Construction I-II		3	3
Technical Elective	3		
Total Credits	6	6	6

(Second Year)			
ARCH 211-212-213 Architectural Drafting IV-V-VI	3	3	3
MATH 118 Introduction to Technical Mathematics I		5	
MATH 121 Engineering Technical Mathematics I			5
Total Credits	3	8	8

Additional required courses that may be taken any quarter:

'ECON 160 Survey of American Economics	3
English or Speech Elective	3
'GOVT 180 American Constitutional Government	3
'PSYC 128 Human Relations	3
Total Credits	12

Total Minimum Credits for Certificate 49

***AIR CONDITIONING AND REFRIGERATION
(CERTIFICATE)**

Purpose: The curriculum is primarily designed to train persons for full-time employment.

Occupational Objectives:

Service Technician
Installation Technician

Special Curriculum Admission Guidelines:

Proficiency in high school English and general mathematics. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Air Conditioning and Refrigeration Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
AIRC 11-12-13 Air Conditioning I-II-III	3	3	3
ELEC 94-95 Practical Electricity I-II		3	3
MATH 11 Elements of Mathematics I	3		
Total Credits	6	6	6

(Second Year)			
AIRC 14-15-16 Air Conditioning IV-V-VI	3	3	3



*Requires departmental approval.

*A year sequence in Social Science may be substituted.

50 CURRICULUMS OF STUDY

Elec 20 Electronics Survey			3
ELEC 73 Electrical and Control Systems		3	
ELEC 76 Electrical Power	3		
Total Credits	6	6	6

Additional required courses that may be taken any quarter:

'ECON 160 Survey of American Economics	3		
ENGL/SPDR Elective	3		
'GOVT 180 American Constitutional Government	3		
'PSYC 128 Human Relations	3		
Total Minimum Credits for Certificate			48

*Requires part-time enrollment over a two-year period.
 *A year sequence in Social Science may be substituted.



AUTOMOTIVE MECHANICS (CERTIFICATE)

Purpose: The curriculum is primarily designed to train persons for full-time employment.

Occupational Objectives:

Automotive Mechanic
Sales and Service

Special Curriculum Admission Guidelines:

Proficiency in oral and written communication skills and general mathematics. The purchase of hand tools and personal safety equipment is the financial responsibility of the individual student.

Automotive Mechanics Curriculum

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
AUTO 100 Automotive Practice	3		
AUTO 121 Automotive Fuel Systems I	4		
AUTO 122 Automotive Fuel Systems II		4	
AUTO 136 Automotive Lubrication & Cooling Systems		3	
AUTO 154 Power Trains I			4
AUTO 238 Automotive Air Conditioning			3
Total Credits	7	7	7

(Second Year)

AUTO 267 Automotive Suspension and Braking Systems			4
AUTO 284 Automotive Service Procedures and Tune-up I	3		
AUTO 285 Automotive Service Procedures and Tune-up II		3	
AUTO 287 Shop Management and Customer Relations I	3		
AUTO 288 Shop Management and Customer Relations II		3	
INDT 176 Industrial Safety			2
Total Credits	6	6	6

Additional required courses that may be taken any quarter:

ECON 160 Survey of American Economics	3
ENGL/SPDR Elective	3
PSYC 128 Human Relations	3
GOVT 180 American Constitutional Government	3
	12

Total Minimum Credits for Certificate 51

BUILDING CONSTRUCTION SUPERVISION (CERTIFICATE)

Purpose: The curriculum is primarily designed to upgrade or initially train persons for entry level positions in the Building Trades Industry.

Occupational Objectives:

Building Trades Laborer
Building Trades Supervisor
Building Inspector
Building Maintenance
Building Supplies Sales and Service

Special Curriculum Admission Guidelines:

Proficiency in oral and written communication skills and general mathematics. Students with deficiencies may require developmental studies.



Building Construction Supervision Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
• ARCH 141-142 Materials & Methods of Construction I-II		3	3
• BLDG 109 Architectural Blueprint Reading and Sketching		3	
• BLDG 146 Building Construction Carpentry			3
• CIVL 140 Construction Planning	3		
• MATH 11 Elements of Mathematics I	3		
Total Credits	6	6	6
(Second Year)			
• ARCH 276 Construction Estimating	3		3
BUAD or DAPR Elective			
• BUAD 114 Principles of Supervision		3	
• BLDG 147 Principles of Concrete & Masonry Practices	3		
CIVL 100 Introduction to Surveying			3
ELEC 94 Practical Electricity I		3	
Total Credits	6	6	6
Additional required courses that may be taken any quarter:			
ECON 160	3		
ENGL/SPDR	3		
GOVT 180	3		
	9		

Total Minimum Credits for Completion 45

*Students completing these courses for 24 credit hours are eligible to receive a Certificate of Career Studies.

CHILD CARE (CERTIFICATE)

Purpose: The curriculum is designed to introduce interested persons, including parents, to the field of early childhood education and to provide opportunities for individuals presently working in this field or allied professions to improve the knowledge and skills necessary to foster growth in young children—intellectual, social, physical, emotional and creative. Also, this curriculum has been established to provide competencies in the areas proposed by the Child Development Associate Consortium.

Occupational Objectives: Positions in day care centers, nursery schools, playground programs, foster homes, hospital playrooms, family day care facilities, home-training programs, and other facilities offering services for pre-school children.

Special Curriculum Admission Guidelines:

Evidence that the applicant possesses the intellectual, emotional, and physical capacities and the interest and aptitude necessary for relating successfully to young children. Developmental courses may be recommended for students with deficiencies in English and mathematics. The program is open to both male and female applicants. Applicants are required to have an interview with the Child Development Education faculty prior to entering this program. Each student is responsible for transportation to and from field sites used for laboratory experience.



Students considering advanced work in Early Childhood Development are advised to consult the catalog listing Child Development Education, A.A.S. Degree and/or Pre-Teacher Education.

Child Care Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
¹ ECON 160 Survey of American Economics		3	
EDUC 106 Language Arts for Young Children		3	
EDUC 120 Introduction to Early Childhood Education	3		
EDUC 121-122 Childhood Education I-II		3	3
EDUC 137 Creative Activities for Children			3
EDUC 190 Coordinated Practice in Child Development Education	3	4	4
ENGL 111 English Composition I	3		
² GENL 100 Orientation	1		
¹ GOVT 180 American Constitutional Government			3
HLTH 104 First Aid I			2
HLTH 156 Child Health and Nutrition	3		
PSYC 110 Principles of Applied Psychology		3	
PSYC 130 Child Growth and Development	3		
SOCI 166 School and Community Relations			
Total Credits	16	19	15

Total Minimum Credits for Certificate 50

¹A year sequence in Social Science may be substituted.

²Optional—if needed.

CLERICAL STUDIES (CERTIFICATE)

Purpose: The curriculum is primarily designed to train persons for full-time employment following graduation.

Occupational Objectives:

Typist	Receptionist
File Clerk	Related Office Work

Special Curriculum Admission Guidelines:

Applicant must meet the general requirements for admission to the College. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Clerical Studies Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
BUAD 100 Introduction to Business	3		
BUAD 108 Business Machines (or BUAD 123)			2-3



DAPR Elective (or BUAD/SECR Elective)			3
¹ ECON 160 Survey of American Economics		3	
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
¹ GOVT 180 American Constitutional Government	3		
MATH 50 Business Math I (or BUAD 121)	3		
¹ PSYC 128 Human Relations		3	
² SECR 111-112-113 Typewriting	3	3	3
SECR 136 Filing & Records Management			3
³ SECR 138 Office Record-keeping		3	
⁴ SECR 139 Clerical Procedures			3
⁴ SECR 157 Machine Transcription			3
SPDR 137 Public Speaking		3	
Total Credits	16	18	17-18
Total Minimum Credits for Certificate			51

¹A year sequence in Social Science may be substituted.

²Students who have completed prior training in typewriting may petition for credit by examination.

³Student is required to have MATH 50 or BUAD 121 as prerequisite.

⁴Student must be enrolled in or have completed SECR 113.

DENTAL ASSISTING (CERTIFICATE)

Purpose: The Certificate Degree in Dental Assistant curriculum is designed to prepare selected students to serve in a dynamic and growing health service by becoming valuable members of the Dental Health Team allowing for an in-depth study of expanded functions in keeping with the dental laws of Virginia.

At the successful completion of the program, a student will be eligible to take the National Certifying examination leading to a Certified Dental Assistant (C.D.A.).

Occupational Objectives:

- Private Dental Practice
- Hospital Dental Service
- Group Dental Service
- Government Service
- Dental Specialty Practice
- Dental Assisting Education

Special Curriculum Admission Guidelines:

The applicant should have completed on the high school level four units of English, one unit of laboratory science (preferably biology), two units of social studies, one unit of mathematics, (preferably algebra). Developmental courses may be recommended for students with deficiencies in English and mathematics. Priority will be given to applicants with high class standing. A personal interview with the Counseling Department and Dental Assistant faculty is a part of the admission process. Considering the limited available slots, early application is highly advisable. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical and dental report indicating good general health. The program is open to male and female students.

Students majoring in Dental Assisting are admitted annually. Classes begin in September; therefore, early application is desirable.

Special Curriculum Completion Guidelines:

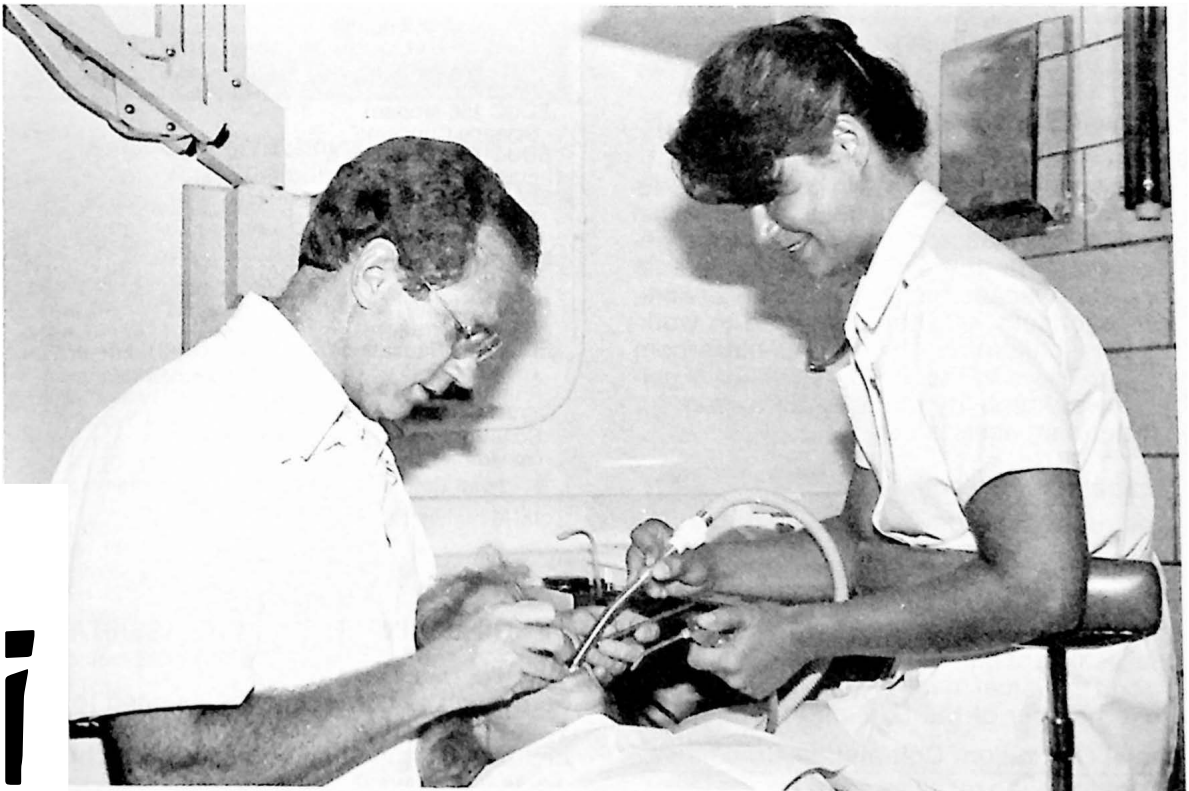
Students who receive a final grade lower than "C" in any required Dental Assistant course must obtain permission from the Dental Assistant Faculty Committee and approval of the Division Chairman to continue the major in Dental Assistant.

The student will be responsible for transportation to health agencies utilized for clinical practice and the purchase of uniforms, accessories and Dental Liability Insurance. It is recommended that the student purchase health insurance in addition to the liability insurance.

Special Accreditation Status: The curriculum has been fully accredited by the Commission on Dental Accreditation of the American Dental Association.

Dental Assisting Curriculum

		Quarter			
		1st	2nd	3rd	4th
DENT 108 Introduction to Dental Health Care	3				
DENT 110 Introduction to Dental Materials	4				



54 CURRICULUMS OF STUDY

DENT 121 Chairside Assisting I	4			
DENT 122 Chairside Assisting II		4		
DENT 123 Chairside Assisting III			6	
DENT 124 Chairside Assisting IV			5	
DENT 146 Oral Radiographic Techniques	3			
DENT 149 Dental Office Management Procedure			3	
DENT 156 Oral Radiographic Practicum		1		
DENT 159 Nutrition for the Dental Assistant		2		
DENT 161 Dental Care Science I	3			
DENT 162 Dental Care Science II		3		
DENT 163 Dental Care Science III			3	
DENT 176 Advanced Clinical Procedures			3	
ENGL 111 English Composition I		3		
GENL 100 Orientation	1			
HLTH 101 Cardiopulmonary Resuscitation Modular System		1		
NASC 130 Body Structure and Function	3			
PSYC 128 Human Relations			3	
GOVT 180 American Constitutional Government		3		
ECON 160 Survey of American Economics			3	
Total Credits	18	17	15	14

Total Minimum Credits for Certificate 64

*GENL 198 or 298 may be taken in lieu of GENL 100 with counselor approval.

EDUCATIONAL ASSISTANT (CERTIFICATE)

Purpose: With the changing patterns in education, there is a need for qualified personnel to assist the classroom teacher. The Certificate Program for Educational Assistants consists of academic training, course work, and practicum experience needed in working with children in the school-classroom setting. The curriculum is designed to permit upward mobility to the AAS Program for instructional assistants.

Occupational Objectives:

Instructional Aide

Special Curriculum Admission Guidelines:

In addition to admissions guidelines established for the College, entry into the instructional assistant curriculum requires evidence of good physical health, and an interview with a member of the Education faculty.

Special Curriculum Completion Guidelines:

Any student who receives a final grade lower

than "C" in any of the education courses must obtain permission from the Division Chairman to continue the major in education. The curriculum is designed to provide approximately one-half of the requirements in general education and related areas of study. The remainder of the courses are designed to give both theory and practice within the specific area of study. The courses are designed to provide as much practical experience as possible. Graduates will be awarded a Certificate for Educational Assistant.

Educational Assistant Curriculum

	1st	Quarter Credit Hours 2nd	3rd	4th
GENL 100 Orientation	1			
ENGL 111 English Composition	3			
HLTH 110 Personal & Community Health	3			
SOCI 106 General Sociology	3			
EDUC 120 Introduction to Early Childhood Education	3			
EDUC 140 Modern Math Concepts	3			
ENGL 112 English Composition		3		
ECON 160 Survey of American Economics		3		
Elective Art or Music		3		
EDUC 117 Introduction to Reading Methods		3		
EDUC 137 Creative Activities for Children		3		
SPDR 137 Public Speaking or English Elective			3	
PSYC 128 Human Relations			3	
EDUC 150 Modern Science Concepts			3	
EDUC 136 Materials & Equipment for Aides			3	
EDUC 161 Education Techniques I (Practicum)			3	
ENGL 146 Literature for Children				3
PSYC 130 Child Growth & Development				3
EDUC 162 Educational Techniques II (Practicum)				3
GOVT 180 American Constitutional Government				3
Total Credits	16	15	15	12

Total Minimum Credits for Certificate 58

ENGINEERING/TECHNICAL ASSISTANT (CERTIFICATE)

Purpose: The curriculum is designed to provide an opportunity for the student to specialize in specific engineering/technical areas.

Occupational Objectives: Graduates may consider a wide array of job opportunities in industry or receive a maximum of transfer credit and continue their education in a similar associate degree level curriculum offered by the College.

Special Curriculum Admission Guidelines: Proficiency in high school English and general mathematics. Developmental courses may be recommended for students with deficiencies in English and mathematics.



Engineering/Technical Assistant Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
DRFT 111-112-113 Technical Drafting (or Technical Electives)*	2-3	2-3	2-3
ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
English or Speech			3
ENGR 100 Introduction to Engineering Technology			2
GOVT 180 American Constitutional Government		3	
MATH 118 Introduction to Technical Mathematics	5		
MATH 121 Engineering Technical Mathematics		5	
PSYC 128 Human Relations			3
Technical Electives	3-4	3-4	3-4
Total Credits	16-18	16-18	13-15
Total Minimum Credits for Certificate	45		

*A year sequence in Social Science may be substituted.

*Department approval required for Technical Electives.

MEDICAL TRANSCRIPTIONIST (CERTIFICATE)

Purpose: The curriculum is designed to prepare selected students to qualify as contributing members of the health-care team.

Occupational Objectives: Medical transcriptionists are employed in departments of Medical Records, Radiology and Pathology in hospitals and other health care facilities. Employment in a physician's office may include medical transcription as well as general office work.

Special Curriculum Admission Guidelines:

The applicant should have completed four units of high school English, one unit of high school laboratory science (preferably biology), two units of social studies, one unit of high school mathematics, and two units of high school typewriting or the equivalent. Developmental courses may be recommended for student with deficiencies in English and mathematics. Priority will be given to applicants with high class standing. A personal interview with the Counseling Department and Medical Transcriptionist faculty is part of the admission process. Considering the limited available slots, early application is highly advisable. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical report indicating good health. The student will be responsible for transportation to and from agencies utilized for clinical experience. The program is open to both male and female students.

Special Curriculum Completion Guidelines:

Students who receive a final grade lower than "C" in any of the courses in the Medical Transcriptionist sequence must be recommended by the instructor and approved by the Division Chairman to continue in the major.

Medical Transcriptionist Curriculum

	Quarter Credit Hours			
	1st	2nd	3rd	4th
GENL 100 Orientation	1			
HLTH 124 Medical Terminology I	3			
HLTH 125 Medical Terminology II		2		
SOSC 100 The Individual and His World				4
ENGL 111-112-113 English Composition	3	3	3	
NASC 111 Health Science	4			
SECR 112-113 Typewriting	3	3		
SECR 136 Filing and Records Management			3	

SECR 157 Machine Transcription	3			
SECR 159 Machine Transcription-Medical		3		
MDRS 190 Coordinated Practice		3	8	
PSYC 128 Human Relations		3		
MDRS 199 Supervised Study				1
SECR 237 Principles of Word Processing				3
Total Credits	14	14	16	12

Total Minimum Credits for Certificate 56

*BIOL 154 may be substituted.

CLERK STENOGRAPHER (CERTIFICATE)

Purpose: This curriculum is designed to provide training in the art and skills of clerical and stenographic practice.

Occupational Objectives:

Stenographer
Typist
File Clerk
General Office Work

Special Curriculum Admission Guidelines:

Applicants must meet the general requirements for admission to the College. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Clerk Stenographer Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
BUAD 100 Introduction to Business	3		
¹ BUAD 108 Business Machines (or BUAD 123)			2-3
² ECON 160 Survey of American Economics		3	
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
³ GOVT 180 American Con- stitutional Government			3
MATH 50 Business Mathe- matics (or BUAD 121)	3		
² PSYC 128 Human Relations		3	
³ SECR 111-112-113 Typewriting	3	3	3
³ SECR 121-122-123 Shorthand	4	4	4
SECR 136 Filing and Records Management		3	
SECR 139 Clerical Office Procedures			3
SECR 157 Machine Transcription			3
Total Credits	17	19	18-19

Total Minimum Credits for Certificate 54

¹Student is required to have MATH 50 or BUAD 121 as prerequisite.

²A year sequence in Social Science may be substituted.

³Students who have completed prior training in typewriting and/or shorthand may petition for credit by examination.



WELDING (CERTIFICATE)

Purpose: The curriculum is primarily designed to upgrade or initially train persons for full-time employment.

Occupational Objectives:

Arc, Gas, Mig and Tig Welding
Welding Supervisor
Welding Inspector
Sales and Service Industry

Special Curriculum Admission Guidelines:

Proficiency in oral and written communication skills and general mathematics. Students with deficiencies will require developmental studies. The purchase of personal safety clothing is the financial responsibility of the individual student.

Welding Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ELEC 94-95 Practical Electricity I-II		3	3
MATH 11 Elements of Mathematics	3		
WELD 120 Fundamentals of Welding	2		
WELD 121 Oxyacetylene Welding & Cutting		2	
WELD 122 Arc Welding I			2
Total Credits	5	5	5

(Second Year)

DRFT 171-172 Blueprint Reading I-II	2	2	
ELEC 76 Electrical Power	3		
INDT 176 Principles of Industrial Safety			2
WELD 123 Arc Welding II	2		
WELD 124-125 Inert Gas Welding I-II		2	2
WELD 136 Welding Metallurgy			3
Total Credits	7	4	7

Additional required courses that may be taken any quarter:

ECON 160 Survey of American Economics	3		
English Elective	3-5		
GOVT 180 American Constitutional Government	3		
PSYC 128 Human Relations	3		
Total Credits	12-14		

Total Minimum Credits for Certificate 45

CONTINUING CAREER STUDIES

The Continuing Career Studies Program is designed to meet the short-term training needs of the adult part-time students. Under the program the student can select an option which is composed of a core of college credit courses which focus on a particular field or area of study. The options normally are offered during the evening at a rate of one or two courses per quarter. Each option represents a distinct "mini-curriculum" in a specialized area. The work necessary to complete an option amounts to the equivalent of one to three quarters of full-time college work. Upon satisfactory completion of an option the graduate will be awarded the Certificate in Continuing Career Studies. Many of the courses offered through this program can be used also to satisfy degree requirements in certificate and associate degree programs.

Admission Requirements: Admission to the Continuing Career Studies Program is based upon the general requirements of the College. Developmental courses may be recommended for students with deficiencies in English, reading, or mathematics. Some options may require additional special admission requirements.

Length: Variable. Each option can be completed in a minimum of three quarters.

Program Options:

Business and Industrial Supervision
Educational Secretary
Floral Design and Indoor Plant Care
Landscaping and Outdoor Plant Care
Legal Assistant
Savings & Loan Administration

BUSINESS AND INDUSTRIAL SUPERVISION

Occupational Objectives:

Supervisory positions

Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
BUAD 110 Human Relations & Leadership Training	3		
BUAD 114 Principles of Supervision I	3		
INDT 176 Principles of Industrial Safety	2		
BUAD 115 Principles of Supervision II		3	
BUAD 164 Principles of Business Management I		3	
ECON 160 Survey of American Economics		3	
BUAD 288 Communications in Management			3
ACCT 211 Principles of Accounting I			3
BUAD 165 Principles of Business Management II			3
Total Credits	8	9	9
Total Minimum Credits for Completion	26		

EDUCATIONAL SECRETARY

Occupational Objective:

Educational Secretary



Curriculum

	Quarter Credit Hours			
	1st	2nd	3rd	4th
BUAD 177 Principles of School Organization & Management	3			
EDUC 156 Fundamentals of School Law	3			
EDUC 157 History & Philosophy of Education (or EDUC 120—Introduction to Early Childhood Education or PSYC 130—Child Growth and Development)		3		
HLTH 109 Introduction to School First Aid, Health and Safety (or HLTH 110—Concepts of Personal and Community Health & Safety)		1		
SECR 100 Secretarial Skills Review		3		
SECR 138 Office Recordkeeping (or ACCT 211—Principles of Accounting I or ACCT 14—Bookkeeping I)			3	
SECR 139 Clerical Procedures			3	
SOCI 166 School and Community Relations				3
SOSC 180 Problems of Man in the Modern World (or PSYC 128—Human Relations)				<u>3</u>
Total Credits	6	7	6	6

Total Minimum Credits for Completion 25

FLORAL DESIGN AND INDOOR PLANT CARE

Occupational Objectives: Positions requiring skills in selecting, installing, and maintaining indoor plants; floral designer; florist sales work.

Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
*HORT 106 Fundamentals of Horticulture	3		
HORT 137 Landscaping for Interior Design		3	
HORT 170 Floral Design and Arranging I	2		
*HORT 260 Flower Shop Management			3
HORT 266 House and Conservatory Plants	3		
HORT 270 Floral Design and Arranging II		2	
HORT 276 Floral Design and Arranging III			<u>2</u>
Total Credits	8	5	5

Total Minimum Credits for Completion 18

*HORT 100 may be substituted for HORT 106. With departmental approval a horticulture elective may be substituted for HORT 260.

LANDSCAPING AND OUTDOOR PLANT CARE

Occupational Objectives: Landscape positions requiring skills in selecting, installing, and maintaining outdoor plants; nursery work; garden center sales.

Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
*HORT 106 Fundamentals of Horticulture	3		
*HORT 141 Horticulture and Landscaping			3
HORT 250 Landscape Planning		2	
HORT 256 Woody Plants	3		
HORT 258 Landscape Drawing		3	
HORT Horticulture Elective			<u>3</u>
Total Credits	6	5	6

Total Minimum Credits for Completion 17

*HORT 100 may be substituted for HORT 106 and HORT 126 may be substituted for HORT 141.

LEGAL ASSISTANT

Occupational Objectives: Assist lawyers in legal research and in daily routine matters.



Curriculum

	Quarter Credit Hours						
	1st	2nd	3rd	4th	5th	6th	7th
ENGL 137 Technical Writing	3						
LEGL 100 Overview of the Legal Process	3						
LEGL 257 Real Estate Law		3					
LEGL 134 Domestic Relations		3					
PSYC 128 Human Relations			3				
LEGL 126 Legal Research			3				
LEGL 244 Real Estate Abstracting				3			
GOVT 180 American Constitutional Government				3			
LEGL 258 Administration of Decedent's Estates					3		
LEGL 246 Law of Income Taxation					4		
LEGL 234 Estate Planning						3	
LEGL 251 Legal Transactions						3	
LEGL 240 Corporate Law							3
ECON 160 Survey of American Economics							3
Total Credits	6	6	6	6	7	6	6
Total Minimum Credits for Completion							

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Curriculum

	Quarter Credit Hours								
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
BUAD 140 Introduction to Savings & Loan		3							
ACCT 211 Accounting I		3							
BUAD 236 Savings & Time Deposit Banking			3						
ENGL 137 Technical Writing		3							
BUAD 114 Principles of Supervision I				3					
BUAD 118 Real Estate Law—Savings & Loan			3						
ECON 211 Principles of Economics I				3					
BUAD 115 Principles of Supervision II					3				
BUAD 119 Real Estate Law—Savings & Loan					3				
PSYC 128 Human Relations							3		
MKTG 164 Principles of Real Estate I							3		
ECON 212 Principles of Economics II								3	
SPDR 137 Public Speaking								3	
BUAD 257 Home Mortgage Lending									3
Total Credits	6	6	6	3	6	6	6	3	3
Total Minimum Credits for Completion									

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Courses are offered during fall and winter quarters.

SAVINGS AND LOAN
ADMINISTRATIONOccupational Objectives:

Management Training
Supervision
Real Estate Finance

Part IV

DESCRIPTIONS OF COURSES

CONTINUING EDUCATION AND COMMUNITY SERVICES PROGRAMS

In order to provide the widest possible diversification of educational opportunity, Virginia Western Community College schedules credit and noncredit courses and programs to meet educational and training needs outside the realm of traditional college studies. These include classes, institutes, forums, workshops, lectures, and courses to provide: (1) individual cultural enrichment; (2) individual job skill improvement; (3) hobby and leisure time activity training; (4) service to commerce and industry in upgrading employee skills; (5) special services focused on societal and community development.

State general fund tax dollars are not used to support noncredit community service programs.

GENERAL COURSE INFORMATION

Course Numbers

Courses numbered 01-09 are courses for Developmental Studies. The credits earned in these courses are not applicable toward associate degree programs; however, upon approval of the Dean of Instruction, some developmental courses may provide credit applicable to basic occupational diploma or certificate programs. Students may reregister for these courses in subsequent quarters as necessary until the course objectives are completed.

Courses numbered 10-99 are basic occupational courses for diploma and certificate 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 freshman courses applicable toward an associate degree, and/or certificate and diploma programs.

Courses numbered 200-299 are sophomore courses applicable toward an associate degree, and/or certificate and diploma 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 or 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 class each week (including laboratory, shop, supervised study, and co-operative work experiences) are indicated for each course in the course description. The number of lecture and laboratory hours in class each week are also "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, as listed in the course description, each student also must spend some time on out-of-class assignments under his own direction. Usually each credit hour per course requires an average of three hours of in-class and out-of-class study each week.

Course Prerequisites

If any prerequisites are required before enrolling in a course, these prerequisites 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 in that sequence. When corequisites are required for a course, 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 Dean of Instruction and instructional department.

ACCOUNTING

ACCT 14-15 BOOKKEEPING I-II (3 cr.) (3 cr.) — A study of the complete cycle of double-entry bookkeeping. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

ACCT 114-115 APPLIED ACCOUNTING I-II (3 cr.) (3 cr.) — Practical accounting as applied to retail stores, professional individuals in firms, and to personal service occupations; accounting forms and practical accounting procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

ACCT 197 — See General Usage Courses Page 76.

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 227 MANAGERIAL ACCOUNTING (3 cr.) — Prerequisite ACCT 262. Preparation, analysis, and interpretation of accounting and financial data for managerial purposes. Lecture 3 hours per week.

ACCT 229 AUDITING (3 cr.) — Prerequisite 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 231-232-233 COST ACCOUNTING I-II-III (3 cr.) (3 cr.) — Prerequisite 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 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 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 261-262-263 INTERMEDIATE ACCOUNTING I-II-III (3 cr.) (3 cr.) — Prerequisite ACCT 211-212-213. Extensive analysis of the principle elements of accounting systems and statements. Lecture 3 hours per week.

ACCT 297 — See General Usage Courses Page 76.

ADMINISTRATION OF JUSTICE

ADJU 100 INTRODUCTION TO LAW ENFORCEMENT (3 cr.) — The philosophy and history of law enforcement; overview of crime and police problems; organization and jurisdiction of local, state, and federal law enforcement agencies, survey of professional career opportunities and qualifications required. Lecture 3 hours per week.

ADJU 109 SECURITY OFFICERS—DUTIES AND RESPONSIBILITIES (3 cr.) — A broad overview of the theory and practice of duties of security officers, guards, watchmen, merchant police and private police — leading toward the objective of licensing and professionalization. Lecture three hours per week. This course does not count towards degree requirements in ADJU program.

ADJU 114-115 POLICE ORGANIZATION AND ADMINISTRATION I-II-III (3 cr.) (3 cr.) — Prerequisite ADJU 100. Police functioning at the administrative level. The organization and management of line operations, staff and auxiliary services, including investigative, juvenile, and vice units. The organization and management of personnel, internal control, planning and research, and housing and material functions. Lecture 3 hours per week.

ADJU 117 SPECIAL ENFORCEMENT PROBLEMS (3 cr.) — Crowd control during civil demonstrations, picketing, rioting, and other emergency situations; the police role in civil defense; police problems caused by narcotics addiction; the handling of mentally or emotionally disturbed persons. Lecture 3 hours per week.

ADJU 120 INTRODUCTION TO CORRECTIONS (3 cr.) — The philosophy and overview of corrections and related problems as an important dimension in the administration of justice; history of corrections, career opportunities, purposes of correctional jurisdictions. Lecture 3 hours per week.

ADJU 124 JAIL OPERATIONS AND MANAGEMENT I (3 cr.) — Prerequisite ADJU 120. Correctional history as a frame of reference; security procedures in jail operation; the effect of the jail climate on inmates and personnel; criteria for effective supervision of prisoners; correctional aspects of inmate discipline; handling special prisoners. Lecture 3 hours per week.

ADJU 125 JAIL OPERATIONS AND MANAGEMENT II (3 cr.) — Prerequisite ADJU 124. The functions of jail management as it relates to jail and community programs, planning of jail operation, legal problems in jail administration, community relations, personnel supervision. Lecture 3 hours per week.

ADJU 126 PREVENTION AND CONTROL OF JUVENILE DELINQUENCY (3 cr.) — Survey of youth crime, stressing the police role in community programs of prevention and control. The philosophy and functioning of the juvenile courts as related to the juvenile problems. Lecture 3 hours per week.

ADJU 129 TREATMENT OF THE OFFENDER (3 cr.) — The theory, practice and problems in the fields of probation and parole as well as an institutional and community treatment of juvenile and adult offenders. Lecture 3 hours per week.

ADJU 134-135 CRIMINAL LAW I-II (3 cr.) (3 cr.) — Major crimes; their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasis on the common law and Virginia adaptations. Lecture 3 hours per week.

ADJU 136 LEGAL EVIDENCE (3 cr.) — Kinds, degrees, and admissibility of evidence; methods and techniques of its acquisition, use in criminal proceedings, moot court activities. Lecture 3 hours per week.

ADJU 137 LEGAL EVIDENCE I (3 cr.) — Trial procedure; kinds and rules of; witnesses; credibility and impeachment; and, the hearsay rule—its expectations; confessions and admissions. Lecture 3 hours per week.

ADJU 140 INTRODUCTION TO SECURITY ADMINISTRATION (3 cr.) — The historical, philosophical, and legal basis of security. The role of security in a modern society. A survey of the administrative personnel and physical aspects of the security field. Lecture 3 hours per week.

ADJU 144 CORRECTIONAL LAW I (3 cr.) — Prerequisite ADJU 120. A study of the consequences of convictions of criminal acts committed by adults and juveniles; the sentencing process; the various types of attack upon the validity of convictions. Lecture 3 hours per week.

ADJU 146 SPECIAL AND CURRENT SECURITY PROBLEMS (3 cr.) — An analysis of special problem areas such as security education and training, community relations, white-collar crime, drug abuse, theft control, shoplifting, document control, subversion and sabotage, protection of classified information, control of proprietary information and business espionage, labor problems, civil disturbances, natural and man-made disasters. Lecture 3 hours per week.

ADJU 147 PRINCIPLES OF LOSS PREVENTION (3 cr.) — An overview of the functional operations of various specialized areas of security such as, theft and risk control, security surveys and loss prevention management in proprietary and governmental institutions. Lecture 3 hours per week.

ADJU 164 HUMAN RELATIONS IN LAW ENFORCEMENT SUPERVISION I (3 cr.) — Prerequisite ADJU 100. The art of supervising personnel through the utilization of motivation, important morale factors, methods of developing effective policies and procedures of discipline, and effective ways of employing discipline toward positive results. Lecture 3 hours per week.

ADJU 171-172-173 FORENSIC SCIENCE I-II-III (4 cr.) (4 cr.) (4 cr.) — Fundamentals of forensic science. Fundamental characteristics of criminal laboratory analysis; fingerprinting, drug identification, crime scene detection, photography, blood, semen, neutron activation analysis. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ADJU 176 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.

ADJU 218 NARCOTICS AND DANGEROUS DRUGS (3 cr.) — History and development of Narcotics and Dangerous Drug traffic in the United States; classification and identification; symptoms and effects; magnitude and cost; legislative controls; laboratory and field testing; investigative methods and procedures; and rehabilitation efforts. Lecture 3 hours per week.

ADJU 228 LAW ENFORCEMENT AND THE COMMUNITY (3 cr.) — The current efforts undertaken by the police to achieve an effective working relationship with the community; police image, crisis areas, public and police attitudes, and community relations activities. Lecture 3 hours per week.

ADJU 231-232 CRIMINAL LAW, EVIDENCE, AND PROCEDURES I-II (3 cr.) (3 cr.) — Major crimes; their classification, elements of proof, intent, conspiracy, responsibility, parties and defenses. Emphasis on the common law and Virginia adaptations. Kinds, degrees, and admissibility of evidence; methods and techniques of its acquisition, use in criminal proceedings, moot court activities. Review of court systems with emphasis on procedures from incident to final disposition of the accused and on applicable principles of criminal and civil law. Intended to satisfy transfer requirements from one year of Criminal Law. Lecture 3 hours per week.

ADJU 233 CRIMINAL LAW, EVIDENCE, AND PROCEDURES III (3 cr.) — Review of court systems with emphasis on procedures from incident to final disposition of the accused and on applicable principles of criminal and civil law. Intended to satisfy transfer requirements for one year of Criminal Law. Lecture 3 hours per week.

ADJU 237 ADMINISTRATION OF JUSTICE (3 cr.) — Review of court systems with emphasis on procedures from incident to final disposition of the accused and on applicable principles of criminal and civil law. Includes field trips and guest lectures by representatives of local agencies and tribunals. Limited to students who have successfully completed five quarters of the Associate in Applied Science Degree program in Police Science, or who have secured departmental permission. Lecture 3 hours per week.

ADJU 240 CONSTITUTIONAL LAW FOR POLICE (3 cr.) — A survey of the background and application of Constitutional provisions, both State and Federal, pertinent to the functions of law enforcement officers. Includes such topical areas as speech; press and assembly; arrest and detention; search and seizure; interrogations and confessions; self-incrimination and assistance of counsel; double jeopardy; speedy and fair trial; humane punishment; and civil rights. Lecture 3 hours per week.

ADJU 246 PRINCIPLES OF CRIMINAL INVESTIGATION (3 cr.) — Conduct at the crime scene; collection and handling of evidence; interviewing and interrogation; obtaining statements, admissions, and confessions; testifying in court, practical exercises. Lecture 3 hours per week.

ADJU 247 ADVANCED CRIMINAL INVESTIGATION (3 cr.) — Prerequisite ADJU 246. Continued study of the investigative process; introduction to scientific aids and examination; application of investigative techniques to specific offenses; practical exercises. Lecture 3 hours per week.

ADJU 276 INDUSTRIAL AND COMMERCIAL SECURITY (3 cr.) — Organization, methods, techniques and equipment for physical protection of Industrial and commercial facilities and prevention of theft of merchandise and valuables by persons within and without those facilities. Practical exercises. Lecture 3 hours per week.

ADJU 277 PROPRIETARY AND GOVERNMENTAL

SECURITY (3 cr.) — Prerequisite ADJU 276. Continuation and expansion of principles and procedures begun in ADJU 276. Field work and visits to various types of establishments and installations. Inquiry into internal controls of organizations. Application of investigative procedures and techniques. Lecture 3 hours per week.

ADJU 286 PATTERNS OF INMATE BEHAVIOR (3 cr.) — A study into the varying patterns of inmate behavior; methods and procedures of managing such behavior; Implementation of programs to favorably change some behavior; signs of the developing of particular behavior patterns; the interpretation of certain behavior. Lecture 3 hours per week.

ADJU 287 ELEMENTARY PRINCIPLES OF PROBATION AND PAROLE (3 cr.) — Prerequisite ADJU 120. Probation and Parole as methods for treating offenders; history; organization and administration; eligibility; selection; revocation and termination; procedures and techniques; trends. Lecture 3 hours per week.

ADJU 288 PROGRESSIVE AND INNOVATIVE PROGRAMS IN CORRECTIONS (3 cr.) — A comparative study between past, present, and proposed programs in corrections. Emphasis will be placed on the most current and productive correctional programs proposed, or in use. Lecture 3 hours per week.

ADJU 289 CORRECTIONAL COUNSELING (3 cr.) — The principles and processes of counseling in correctional facilities, and other related fields. Major aspects of counseling theory and principles along with practical application of same. Lecture 3 hours per week.

ADJU 290 — See General Usage Courses Page 76.

ADJU 298 — See General Usage Courses Page 76.

AGRICULTURE

AGRI 130 INTRODUCTION TO SOIL SCIENCES (3 cr.) — Biological, physical, edaphic, and social factors that influence crop production. Emphasis is placed on various phases of soil and plant sciences and how each area relates to both urban and rural populations. Lecture 3 hours per week.

AGRI 140 HOME VEGETABLE GARDENING (3 cr.) — Fundamentals of family vegetable garden planning and arrangement, seed selection, cultivation, soil management, and cultivation practices necessary for selected regional crops. Lecture 3 hours per week.

AGRI 236 AGRICULTURAL CHEMICALS (4 cr.) — A study of farm chemical pesticides, their ingredients, formulation, and farm application, with emphasis on the effective and safe use of chemicals in agricultural pest control. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

AGRI 270 FARM TAXES AND RECORDS MANAGEMENT (3 cr.) — Principles of taxation relating to farm income taxes with emphasis on tax minimization, preparation of farm tax returns, and farm records. Lecture 3 hours per week.

AIR CONDITIONING AND REFRIGERATION

AIRC 11 AIR CONDITIONING I (3 cr.) — Designed to introduce and explain basic principles of refrigeration and systems. Deals with the composition and state of matter, liquid vapor, equilibrium, pressure, density, pressure-volume-temperature relationship. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AIRC 12 AIR CONDITIONING II (3 cr.) — The law of gases, temperature scales, heat work, power, energy, heat transfer and elementary refrigeration systems. Included is a thorough study of types of systems used in refrigeration. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AIRC 13 AIR CONDITIONING III (3 cr.) — The theory and application of compressors, condensers, evaporators, expansion valves and capillary tubes used in refrigeration systems. Freezing process of foods and refrigeration load calculators are included. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AIRC 14 AIR CONDITIONING IV (3 cr.) — Study of properties of air temperature, relative humidity, specific heat, condensation, evaporation, psychometrics, basic parts of systems, functions, problems, principles of operation, air-cooling, water cooling, load calculation, and estimating procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AIRC 15-16 AIR CONDITIONING V-VI (3 cr.) (3 cr.) — Psychometric properties of air, heat, load and gain calculation, heated and chilled water systems, duct design, pipe sizing, air distribution, and air comfort requirements. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

ARCHITECTURE

ARCH 100 INTRODUCTION TO ARCHITECTURE (3 cr.) — An intensive course outlining the history and impact of architecture. Emphasis on the dynamics and social aspects of architecture and society. Lecture 3 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 the use of drafting equipment, lettering, free-hand orthographic and pictorial sketching, geometric construction, and orthographic drawing. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 112 ARCHITECTURAL DRAFTING II (3 cr.) — Prerequisite ARCH 111 or equivalent. An introduction to complex one- and two-point perspectives, basic techniques of shade and shadow construction in orthographic drawings, development of construction details using appropriate materials, indications and symbols, study of model construction, and drafting techniques with pen and ink. 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, free-hand 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 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.) — 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 structural relationships 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 168-169 INTRODUCTION TO SOLAR ENERGY I-II (3 cr.) — A survey of the principles involved in the planning and design of solar heated buildings. An overview of the development, application, and operation of active and passive systems. Topics include energy use and conservation heat loss calculations, simplified

procedures for sizing of systems and determining solar contribution. Lecture 3 hours per week.

ARCH 197 — See General Usage Courses Page 76.

ARCH 211 ARCHITECTURAL DRAFTING IV (3 cr.) — Prerequisite ARCH 113. Preparation of structural plans, elevation, wall sections, and details for building construction with emphasis on structural components. Appropriate details and drawings necessary for construction. 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. Preparation of plans and details for building construction with emphasis on 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 including structural components, mechanical equipment, and millwork drawings. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 276 CONSTRUCTION ESTIMATING (3 cr.) — Interpretation of working drawings for a project; preparation of material and labor quantity surveys for plans and specifications; approximate and detailed estimates of cost, and bid and contract procedures. Detailed inspection of the construction by comparing the finished work to the specifications. Lecture 3 hours per week.

ARCH 290, 298 — See General Usage Courses Page 76.

ARCH 297 — See General Usage Courses Page 76.

ARTS

ARTS 110 ART APPRECIATION (3 cr.) — A survey of art from prehistoric times to the present day. Architectural styles, sculpture, and painting by lecture and slide illustrations. 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 beginning with prehistoric art and following the mainstream of western civilization to the present. Lecture 3 hours per week.

ARTS 121-122-123 THEORY AND PRACTICE OF DRAWING I-II-III (3 cr.) (3 cr.) (3 cr.) — Representational and nonrepresentational drawings in charcoal, wash, pencil, and varied combinations of media. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 154-155-156 DESIGN I-II-III (3 cr.) (3 cr.) (3 cr.) — Introduction to the concepts of two and three dimensional design and the theory and use of color. Field trips related to design concepts. Lecture 1 hour, Laboratory 4 hours, Total 5 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, freehand, and mechanical lettering; other forms of letters used in today's graphic layout and design. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 197 — See General Usage Courses Page 76.

ARTS 227-228-229 DRAWING IV-V-VI (3 cr.) (3 cr.) (3 cr.) — Prerequisite ARTS 123 or divisional permission. Advanced study of concepts with emphasis on the drawing as a work of art, and on creative independence. Related gallery assignments. 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 123**. Abstract and representational painting in watercolor, oil, and tempera with emphasis on design, color, composition and value. Lecture 1 hour, Laboratory 4 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 visual communications as applied to advertising design in newspaper, magazine, direct mail advertising, house organs, etc. Analysis of the influence on layout by contemporary art. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ARTS 266-267-268 ILLUSTRATION I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite **ARTS 123** or divisional permission. Introductory course of materials and methods in the following fields: fashion, product, interior, furniture, editorial illustration, introduction to cartooning. Lecture 1 hour, Laboratory 4 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 4 hours, Total 5 hours per week.

ARTS 274 INTRODUCTION TO ART PRINTMAKING (3 cr.) — A lecture workshop designed to introduce the student or print collector to printmaking from an historical and technical point of view from early wood block through the more contemporary modes of intaglio printing. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 275-276 ART PRINTMAKING WORKSHOP I-II (3 cr.) (3 cr.) — The full range of art printmaking; beginning with wood block and progressing to serigraphy, photo silkscreen, intaglio, and lithography. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 297 — See General Usage Courses Page 76.

ARTS 298 — See General Usage Courses Page 76.

AUTOMOTIVE

AUTO 100 AUTOMOTIVE SHOP PRACTICES (3 cr.) — Shop practices for the automotive laboratory including laboratory and shop safety, identification and use of hand tools, general power equipment and maintenance of an automotive shop. Basic operating procedures of installed shop equipment. Occupational Safety and Health Act standards. Lecture 3 hours per week.

AUTO 106 AUTO MECHANICS FOR THE LAYMAN (2 cr.) — A brief study of the automobile with emphasis on operation and maintenance. Topics include tires, brakes, cooling, lubrication, ignition, fuel system, and suspension. Lecture 1 hour, Laboratory 2 hours, Total 3 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 133-193**. 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 131-132-133 AUTOMOTIVE TECHNOLOGY I-II-III (6 cr.) (6 cr.) (6 cr.) — A study of the operation, construction, repair and servicing of the major components of the automobile. Topics include laboratory and shop safety, use of tools and equipment, overhaul techniques and maintenance procedures. Lecture 4 hours, Laboratory 6 hours, Total 10 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 138 AUTOMOTIVE VEHICLE INSPECTION (3 cr.) — The course is designed to provide information on how to perform automotive vehicle safety inspection. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 141-142 APPLIED MATHEMATICS FOR AUTOMOTIVE TECHNICIANS I-II (3 cr.) (3 cr.) — Includes a review of arithmetic skills, conversion of units, consumer mathematics, solution of linear algebraic expressions, and the solving of applied problems in torque, horsepower, piston displacement, etc. Lecture 3 hours per week.

AUTO 154-155 POWER TRAINS I-II (4 cr.) (4 cr.) — Analysis of transmission, propeller shaft, joints, differential, and rear axle identification of repairs and adjustments. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 170 INTRODUCTION TO DIESEL ENGINE (3 cr.) — Prerequisite **AUTO 133-193**. A study of the modern diesel engine including its construction, fuel system, lubrication, cooling, induction, exhaust systems, maintenance, minor adjustment and repair, and tune-up procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 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 lubrication 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 180 INTRODUCTION TO DIESEL-POWERED VEHICLES (2 cr.) — A survey of diesel-powered vehicles, their uses, characteristics, advantages, and complexity; and of the various systems that comprise the overall vehicle. The student will be able to recognize and identify all the major components of the vehicle and have an understanding of their purpose and inter-relationship. Includes the fundamentals of routine preventive maintenance. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

AUTO 191-192-193 AUTOMOTIVE SYSTEMS I-II-III (4 cr.) (4 cr.) (4 cr.) — The fundamental systems of the automobile including the lubrication, cooling, fuel and basic ignition systems are covered with emphasis on theory of operation, inspection, adjustments, and repair procedures. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

AUTO 197 — See General Usage Courses Page 76.

AUTO 199 — See General Usage Courses Page 76.

AUTO 231-232-233 AUTOMOTIVE TECHNOLOGY IV-V-VI (6 cr.) (6 cr.) (6 cr.) — Prerequisites **AUTO 131-132-133**. An advanced study of the more complicated major components of the automobile. The use of the modern electronic and mechanical diagnostic procedures is used in the testing and evaluation of repair problems. Estimation of repair costs and performance checks are conducted. Lecture 4 hours, Laboratory 6 hours, Total 10 hours per week.

AUTO 236 AUTOMOTIVE HEATING AND AIR CONDITIONING (3 cr.) — A study of separate and combined automotive heaters and air conditioners including direct and vacuum operated controls, basic principles of refrigeration, adjustments, general ser-

icing, and charging of air condition systems. Lecture 2 hours, Laboratory 2 hours, Total 4 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 267 AUTOMOTIVE SUSPENSION AND BRAKING SYSTEMS (4 cr.) — Operation, design, construction, repair and servicing of braking and suspension systems; use of tools and test equipment, evaluation of test results, estimation and repair cost, front and rear suspension alignment, power and standard steering, and power, standard and disc brakes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

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 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 — See General Usage Courses Page 76.

AUTO 291-292-293 AUTOMOTIVE SYSTEMS IV-VI (4 cr.) (4 cr.) (4 cr.) — Prerequisites AUTO 191-192-193. An advanced study of the systems of the automobile. Topics include the brake system, engine and chassis electrical systems, and other systems with emphasis on theory of operation and practice in trouble-shooting. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

AUTO 298 — See General Usage Courses Page 76.

BIOLOGY

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 104-105 GENERAL BIOLOGY I-II (6 cr.) (6 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 4 hours, Laboratory 6 hours, Total 10 hours per week.

BIOL 114-115 GENERAL BOTANY I-II (4 cr.) (4 cr.) — Prerequisite BIOL 101 (not open to students who have completed BIOL 102 and 103). A study of the seedless plants, algae, fungi, mosses and liverworts, and ferns and their "allies" with emphasis on life cycles, morphology and taxonomy. A study of the seed plants, conifers and flowering plants with emphasis on anatomy, morphology, taxonomy, and evolution; principles of genetics, ecology, and physiology are considered. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 124-125 GENERAL ZOOLOGY I-II (4 cr.) (4 cr.) — Prerequisite BIOL 101 (not open to students who have completed BIOL 102 and 103). Introduction to the Invertebrates and vertebrates, presenting basic biolog-

ical principles, and emphasizing evolutionary relationships, life histories, and economic importances. Cellular structure and physiology are considered. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 154-155 HUMAN ANATOMY AND PHYSIOLOGY I-II — See NASC 111-112.

BIOL 176 MICROBIOLOGY — See NASC 113.

BIOL 198, 199 — See General Usage Courses Page 76.

BIOL 214 INTRODUCTION TO NONVASCULAR PLANTS (4 cr.) — Prerequisites BIOL 103 or equivalent (not open to students having had BIOL 114-115). Designed to cover the lower plants including the algae, fungi, and bryophytes. Studies of major taxonomic groups—their morphology, life cycles, ecology, physiology, economic importance. Sight recognition and collections may be required. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 215 INTRODUCTION TO VASCULAR PLANTS (4 cr.) — Prerequisites BIOL 103 or equivalent (not open to students having had BIOL 114-115). Designed to cover the higher plants beginning with those that have vascular tissue, and including flowering and nonflowering plants. Studies of major taxonomic groups—their morphology, life cycles, ecology, physiology, economic importance. Sight recognition and collection may be included. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 216 PLANT LIFE IN VIRGINIA (3 cr.) — The field identification and ecological relationships of the native plants of Virginia: the identification of shrubs, vines, weeds, wildlife flowers, ferns and mushrooms. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

BIOL 220 INTRODUCTORY VERTEBRATE ZOOLOGY (4 cr.) — Prerequisite BIOL 103 or equivalent (not open to students having had BIOL 124-125). Fundamentals of vertebrate anatomy, physiology, embryology, classification and evolution. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 226 INTRODUCTORY INVERTEBRATE ZOOLOGY (4 cr.) — Prerequisite BIOL 103 or the equivalent (not open to students having had BIOL 124-125). The biology of invertebrate animals with special reference to structure, embryology, function, ecology, classification, and evolution. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 251-252-253 HUMAN ANATOMY AND PHYSIOLOGY I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisites BIOL 103 and one year of college chemistry, or divisional permission. Consideration of basic biological principles as revealed by anatomical and physiological studies. An integrated study of the systems of the human body including gross and microscopic structures and their physiology. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 256 INTRODUCTORY GENETICS (5 cr.) — Prerequisite BIOL 103 or equivalent, or departmental permission. History and development of the science of genetics, with emphasis on Mendelian concepts, their modification, and application to human problems. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

BIOL 264 GENERAL ECOLOGY I (3 cr.) — Prerequisite BIOL 103 or divisional permission. Study of the interrelationships between organisms and the natural and cultural environments with emphasis on survey of population, communities and ecosystems. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BIOL 268 MICROBIOLOGY (6 cr.) — Prerequisites BIOL 103 and one year of college chemistry or divisional permission. Introduction to microbiology, morphology and activities of microorganisms. Control of microorganisms, infection, immunity and other antibody reactions; study of infections and infectious diseases.

Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

BIOL 276 REGIONAL FLORA (3 cr.) — Family characteristics of vascular plants including principal phylogeny and classifications based principally on local flora. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BIOL 298, 299 — See General Usage Courses Page 76.

BROADCASTING

BCST 110 INTRODUCTION TO RADIO/TV (3 cr.) — An historical overview of broadcasting; pioneer radio to television. The forces that have shaped broadcasting and its influence on society. Lecture 3 hours per week.

BCST 111-112-113 INTRODUCTION TO RADIO/TV I-II-III (4 cr.) (4 cr.) (4 cr.) — An introduction to the field of radio and television communications including a historical overview of the field. Introduction to the organization and principles of radio and television production and operation from commercial and noncommercial point of view. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BCST 134-135 SPEECH FOR RADIO/TV I-II (3 cr.) (3 cr.) — Prerequisites BCST 111 and SPDR 141. Broadcast announcing including technical problems, techniques and modes of articulatory expression in varied broadcast situations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BCST 138-139 TV STUDIO ART I-II (3 cr.) (3 cr.) — Designed for the prospective producer-director; the design and use of graphics, scenery and props, the use of color, special effects and animation. Lecture 3 hours per week.

BCST 197 — See General Usage Courses Page 76.

BCST 214-215 TECHNICAL PROBLEMS OF RADIO/TV I-II (3 cr.) (3 cr.) — Prerequisite BCST 113. A study of radio and television technical problems. Equipment operating characteristics including transmission, the audio board, camera, audio and video tape recording, editing and splicing; special purpose equipment such as reverb units and special effects; sound control, effect of color intensity, chroma and hue, FCC license requirements. Lecture 3 hours per week.

BCST 216 RADIO/TV STATION MANAGEMENT AND OPERATION (3 cr.) — Prerequisite BCST 113. Broadcast management responsibility; simulated decision making; the roles of government, public interest and programming in radio and television management and operation. Lecture 3 hours per week.

BCST 217 RADIO/TV NEWS (3 cr.) — Prerequisite BCST 216. The principles and techniques of news organization; to provide experience in writing, editing and reporting news; and to develop an understanding of broadcast ethics and responsible news in a free society. Lecture 3 hours per week.

BCST 226 WRITING FOR RADIO/TV (3 cr.) — The written communication process; writing and planning of continuity for radio and television; documentary writing. Lecture 3 hours per week.

BCST 236 BROADCAST ADVERTISING & SALES (3 cr.) — Prerequisites BCST 113 and BCST 216. The role of advertising in broadcasting today. Emphasis on the structure of sales departments, rating systems, rate cards and the purpose of time brokers on network levels. Concentration also on the structure of advertising agencies and their relationship with broadcast installations. Lecture 3 hours per week.

BCST 257 SOCIAL PROBLEMS IN AMERICAN BROADCASTING (3 cr.) — Prerequisite BCST 113. The dominant issues in contemporary broadcasting includ-

ing the role of pressure groups, violence and the mass media, the influence of advertising, censorship, and broadcasting's enormous potential. Lecture 3 hours per week.

BCST 267 FILM PRODUCTION (3 cr.) — The study of form and structure of film-making, including interrelationship of work and image, major problems and techniques of elementary filmmaking. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BCST 281-282-283 ADVANCED RADIO/TV PRODUCTION I-II-III (5 cr.) (5 cr.) (5 cr.) — Prerequisite BCST 113. Advanced radio and television program production and direction: production environment and organization; producer-director responsibilities and techniques; practical exercises in student production and direction. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

BCST 290, 298, 299 — See General Usage Courses Page 76.

BCST 297 — See General Usage Courses Page 76.

BUILDING

BLDG 109 ARCHITECTURAL BLUEPRINT READING AND SKETCHING (3 cr.) — The basic principles involved in blueprint reading and sketching for the construction trades. Emphasis on reading, understanding, and interpreting standard types of architectural drawings and symbols including plans, elevations, sections and details. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

BLDG 146 BUILDING CONSTRUCTION CARPENTRY (3 cr.) — Woodworking technologies in the construction vocation of carpentry. Introduction to types of framing and building materials and equipment used in residential and light commercial construction. Emphasis will be placed on the development of skills in the safe use of both hand and machine woodworking tools and the development of construction terminology. Includes laboratory involvement in wall framing and carpentry practices. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

BLDG 147 PRINCIPLES OF CONCRETE AND MASONRY PRACTICES (3 cr.) — The fundamentals of concrete technology and masonry practices, develop an understanding of ingredients of concrete, properties of concrete, mix proportions and testing procedures which result in quality-controlled products, concrete form use and removal. Introduction to masonry; the use of hand tools, mixing and laying of block and brick. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

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 108 BUSINESS MACHINES (2 cr.) — A course to develop proficiency in the use of office machines such as calculator. 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 114 PRINCIPLES OF SUPERVISION I (3 cr.) — Fundamentals of supervision including responsibilities of the supervisor, factors relating to his work and that of his subordinates, aspects of job leadership and effective human relations as related to efficient supervision. Lecture 3 hours per week.

BUAD 115 PRINCIPLES OF SUPERVISION II (3 cr.) — Prerequisite BUAD 114. Types of supervisory functions including job management, work improvement, training and orientation of employees, evaluation of employee performance, communications, and the handling of various relationships among and between employees and management. 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 118 REAL ESTATE LAW — SAVINGS AND LOAN (3 cr.) — This course is designed to familiarize those working in Savings and Loan Associations with the legal aspects involved in real estate transactions. Involved is a study of the history of real estate law, terminology, mortgages, land development, zoning and building ordinances, taxes, and landlord-tenant relationships. Lecture 3 hours per week.

BUAD 119 REAL ESTATE LAW II — SAVINGS AND LOAN (3 cr.) — Prerequisite BUAD 118. Designed to familiarize those working in Savings and Loan Associations with legal aspects involved in real estate transactions. History of real estate law, terminology, mortgages, land development, zoning and building ordinances, taxes, and landlord-tenant relationships. Lecture 3 hours per week.

BUAD 121-122-123 BUSINESS MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.) — A sequence of three courses with instruction, review and drill in solving mathematical problems arising from normal business activities, integrating the use of calculating machines as a tool. 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, and annuities. Lecture 3 hours per week.

BUAD 157 PRINCIPLES OF BANK OPERATIONS (3 cr.) — The economic importance of banks, the receiving functions, processing of cash items, bookkeeping operations, posting systems, paying teller operations, collection services, legal relationship with depositors, characteristics of negotiable instruments, the savings and time deposit function, management of bank funds, loans and investments, general bank accounting, account analysis and service charges, internal controls, international financial services, trust services, safe deposit services, growth of the American banking system, the Federal Reserve System, government supervision, banking and public service. Lecture 3 hours per week.

BUAD 164 PRINCIPLES OF BUSINESS MANAGEMENT I (3 cr.) — 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 166 MANAGEMENT PRINCIPLES SEMINAR (3 cr.) — Topics include management of personal time, contributions of the individual manager, management planning, effective decisions, and staffing for strength. Also included will be problem cases for practical applications. Lecture 3 hours per week.

BUAD 174-175 SMALL BUSINESS MANAGEMENT I-II (3 cr.) (3 cr.) — A study of management problems which 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, case studies involving actual business situations. Lecture 3 hours per week.

BUAD 176 ADMINISTRATIVE OFFICE MANAGEMENT (3 cr.) — Prerequisite BUAD 164. Principles of office management. The study of office organization and layout; work flow, office procedures, standards, personnel and supervision, equipment, centralized services; and current office management trends. Lecture 3 hours per week.

BUAD 177 PRINCIPLES OF SCHOOL ORGANIZATION AND MANAGEMENT (3 cr.) — Basic office management skills and systems designed to teach the educational secretary how to function more effectively as an office assistant. Emphasis is on decision making and priority setting within an educational frame of reference. Directs the individual toward job enrichment and challenge by developing initiative and confidence. Lecture 3 hours per week.

BUAD 197 — See General Usage Courses Page 76.

BUAD 236 SAVINGS AND TIME DEPOSIT BANKING (3 cr.) — Traces the historical development of savings institutions and an understanding of the basic economic functions of the savings process. Review of the economics of the savings process in order to clarify important differences between financial savings by individuals or organizations and real savings that appear as capital formation. Different types of financial savings are reviewed in order to describe the system of financial flows of income to capital investment. Lecture 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, partnership, corporations, property, and the Uniform Commercial Code. Lecture 3 hours per week.

BUAD 246 BUSINESS FINANCE (3 cr.) — Prerequisite ACCT 211-212-213. Problems involved in the acquisition and use of funds necessary to the conduct of business. Sources and instruments of capital and finance, financial organizations, and financing of operations and adjustment. Lecture 3 hours per week.

BUAD 247 BANK INVESTMENTS (3 cr.) — The economic background of investments; federal government, federal agency and municipal securities; general obligation and revenue bonds; markets for Treasury and municipal securities; general nature of bank liquidity; primary and secondary reserves; security prices; yield curves and their uses; safety considerations; tax and related considerations; investment policies. Lecture 3 hours per week.

BUAD 251 BUSINESS STATISTICS I (3 cr.) — Prerequisite MATH 183 or MATH 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, 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 barometric 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.) — Prerequisite BUAD 122. An introductory course in statistics. Collection, presentation, and analysis of data through ratios, percentages, and averages. Emphasis on the practical application of statistical measures to business situations. Lecture 3 hours per week.

BUAD 256 TRUST FUNCTIONS AND SERVICES (3 cr.) — The services rendered by institutions engaged in the trust business. An introduction to the services and duties involved in trust operations; the distinction between the business and legal aspects of trust functions. Lecture 3 hours per week.

BUAD 257 HOME MORTGAGE LENDING (3 cr.) — A picture of the mortgage market is presented; the acquisition of a mortgage portfolio, mortgage plans and procedures, mortgage loan processing and servicing, and the obligations of the mortgage loan officer in overall portfolio management. Lecture 3 hours per week.

BUAD 258 INSTALLMENT CREDIT (3 cr.) — The techniques of installment lending including establishment of credit, obtaining and checking information, servicing the loan, and collecting amounts due. Lecture 3 hours per week.

BUAD 259 CREDIT ADMINISTRATION (3 cr.) — Statement and a discussion of factors influencing and determining loan policy. Methods of credit investigation and analysis, credit techniques, specific credit problems, and regular as well as unusual types of loans. Lecture 3 hours per week.

BUAD 266 FINANCIAL MANAGEMENT (3 cr.) — Prerequisite BUAD 246. A basic course in Financial Management that includes the study of Capital Budgeting, Working Capital Management, Cost of Capital, and Long Run Financing. Both theoretical and applied techniques will be studied from the viewpoint of the supplier and user of funds. Lecture 3 hours per week.

BUAD 268 BANK MANAGEMENT (3 cr.) — Presents new trends which have emerged in the philosophy and practice of management. Study and application of the principles provide new and experienced bankers with a working knowledge of bank management. Utilizes the case method of solving management problems. Lecture 3 hours per week.

BUAD 276 PERSONNEL MANAGEMENT (3 cr.) — The problems and issues in the administration of personnel action. 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 287 PUBLIC RELATIONS IN MANAGEMENT (3 cr.) — A survey of public relations as a management

responsibility. Includes philosophy and techniques of public relations; application to employee, public customer, and stockholder relations; lecture, demonstrations, and problem cases for practical application. Lecture 3 hours per week.

BUAD 288 COMMUNICATIONS IN MANAGEMENT (3 cr.) — Functions of communication in management. Methods of communicating purposefully with emphasis on gathering, organizing and transmitting facts and ideas. Review of basic techniques of effective oral and written communications. Lecture 3 hours per week.

BUAD 289 PRACTICES AND PHILOSOPHIES OF MANAGEMENT (3 cr.) — Provides an opportunity to develop an understanding of appropriate attitudes related to human situations so that the individual may become a more useful and responsible member of an organization and prepare for positions of greater administrative responsibility. Analysis and discussion of cases to develop the ability to think and act responsibly. Consideration of principles; philosophies and ethical values to broaden the scope and growth of the administrator. Management development deals with men, motivation, and morale designed for managers, foremen, supervisors, and department heads. Lecture 3 hours per week.

BUAD 297 — See General Usage Courses Page 76.

BUAD 298, 299 — See General Usage Courses Page 76.

CHEMISTRY

CHEM 05 DEVELOPMENTAL CHEMISTRY FOR HEALTH SCIENCES (4 cr.) — A developmental course introducing the basic principles of inorganic and organic chemistry with emphasis on application in the health sciences. CHEM 05 can be used at VWCC as a replacement for a high school chemistry prerequisite. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 101-102-103 GENERAL CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.) — This is a beginning sequence for the non-science major, intended for students who will take no further chemistry courses. The experimental and theoretical aspects of the various branches of chemistry are discussed and emphasis is placed on the concepts and ideas of the science. Particular attention is given to introductory organic and biochemistry and the role of chemistry in human affairs is treated. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 110 HORTICULTURAL CHEMISTRY (4 cr.) — Introduction to chemical principles, inorganic and organic structural chemistry and the theory and practice of pH. The role of the chemical elements including trace elements in plant growth. Chemicals used such as fungicides, insecticides, fertilizers, and growth regulators. Chemical nomenclature, pH and other general and specific measurements will be practiced. 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.) — Prerequisite Algebra I, II or MATH 07. This is the beginning sequence for science and engineering majors. The sequence covers the fundamental theories and laws of chemistry. The laboratory emphasizes the quantitative aspects of the course content. The student is expected to have a strong background in mathematics. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 114-115 GENERAL INORGANIC CHEMISTRY I-II (6 cr.) (6 cr.) — Two quarter sequence covering CHEM 111-112-113. Lecture 4 hours, Laboratory 5 hours, Total 9 hours per week.

CHEM 197 — See General Usage Courses Page 76.

CHEM 198, 199 — See General Usage Courses Page 76.

CHEM 241-242-243 ORGANIC CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite CHEM 113 or equivalent. The fundamentals of organic chemistry. The structure, physical properties, synthesis, and typical reactions of the various series of aliphatic, alicyclic and aromatic compounds with attention to reaction mechanisms. Representative carbon compounds are synthesized with emphasis on basic laboratory techniques. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 297 — See General Usage Courses Page 76.

CHEM 298, 299 — See General Usage Courses Page 76.

CIVIL ENGINEERING TECHNOLOGY

CIVL 100 INTRODUCTION TO SURVEYING (3 cr.) — Introduction to surveying equipment and instruments; distance and angle measurements with mathematical principles applied; maintenance and adjustments of surveying equipment. Basic surveying operations including: curves, earthwork, and traverse computations, city and route surveying, spiral, vertical and transition curves, highway safety and design. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

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

CIVL 181-182 SURVEYING I-II (4 cr.) (4 cr.) — Prerequisite Algebra, Plane Geometry, Basic Trigonometry, or MATH 118. Introduction to surveying, chaining and pacing, direct and profile leveling, measurements of angles, transit-tape traversing, traverse analysis, calculation of areas, adjustment of instruments. Basic and 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 197 — See General Usage Courses Page 76.

CIVL 217 STRUCTURAL STEEL DESIGN (4 cr.) — Prerequisite ENGR 152 or equivalent. Design, investigation, and detailing of basic structural steel members of steel frame structures. Lecture 4 hours per week.

CIVL 218 REINFORCED CONCRETE DESIGN (4 cr.) — Prerequisite ENGR 252 or equivalent. Design, investigation and detailing of reinforced concrete structural members used in the construction of concrete framed structures. Lecture 4 hours per week.

CIVL 230 STRUCTURAL ANALYSIS (3 cr.) — Prerequisite ENGR 151 or equivalent. Analysis of statically determinate and indeterminate structures based on both the principles of statics and geometric conditions. Lecture 3 hours per week.

CIVL 246 SOIL MECHANICS (3 cr.) — Soil and its relationship to engineering construction. Includes soil weight-volume relationships, stress, shear and strain, bearing capacity, sampling procedures, consolidation, settlement, slope stability, with introduction to retaining walls, piles, underground conduits, and earthdams. Lecture 3 hours per week.

CIVL 247 SOIL MECHANICS LABORATORY (1 cr.) — Corequisite CIVL 246 or equivalent. Practical soil sampling, classification by Unified Soil Classification System and by ASTM and AASHTO specifications for classifying soils. Laboratory testing of soils to predict engineering performance. Laboratory 3 hours per week.

CIVL 254 CIVIL MATERIALS I (CONCRETE) (3 cr.) — Properties of portland cement concrete, methods of mix design, use and placement of concrete. Lecture 3 hours per week.

CIVL 257 CONCRETE LABORATORY (1 cr.) — Corequisite CIVL 254. Mixing, curing, testing and quality control of concrete. Laboratory 3 hours per week.

CIVL 290, 297, 298 — See General Usage Courses Page 76.

DATA PROCESSING

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 121-122-123 STRUCTURED COBOL PROGRAMMING I-II-III (3 cr.) (3 cr.) (3 cr.) — Designed for students with no previous knowledge of computers and/or COBOL, who wish to learn COBOL programming. Incorporates the learning of COBOL with the methods and styles of "Structured" and "Modular" programming. Provides actual experience in the use of basic programming structures, COBOL logic, the basic COBOL language subset, auxiliary storage, and the program development process. 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 139 FLOWCHARTING AND COMPUTER PROGRAMMING LOGIC (3 cr.) — Instruction in the basic logic and flowcharting of business application programs. Topics include basic input/output, crossfooting and final totals, comparing, control codes in input records, report headings, subroutines and programmed switches, control breaks, sequential file updating, table searches, and internal sorting. Lecture 3 hours per week.

DAPR 197, 198 — See General Usage Courses Page 76.

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

DAPR 258 COMPUTER PROGRAMMING: BASIC (3 cr.) — Prerequisite DAPR 106 and instructor's permission. The study and development of programming capabilities in Basic All Purpose Symbolic Instruction Circle (BASIC); including program logic, file manipulations, file development, solving of business oriented problems. The BASIC language is used in an interactive mode of communication with a computer. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 267 COMPUTER PROGRAMMING (RPG) (4 cr.) — Prerequisite DAPR 144 or equivalent. 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. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 269 COMPUTER PROGRAMMING (ASSEMBLER) (4 cr.) — Prerequisite DAPR 144 or equivalent. 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 debugging and core-dump reading will be given major emphasis. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 281 SYSTEMS ANALYSIS I (3 cr.) — Prerequisite DAPR 256 and 130. A study of the overall computer-based systems analysis and design process; information problems of business organization and the interrelationships of functions; nature of business problem isolation and definition; initial phase of systems and evaluation. Lecture 3 hours per week.

DAPR 282 SYSTEMS ANALYSIS II (3 cr.) — Prerequisite DAPR 281 and 138. The systems design and implementation phases relating to initial automation; upgrading 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 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 or equivalent. A study of components, functions, and relationships of computer operating systems and their interactions with user programs. Lecture 3 hours per week.

DAPR 297, 298, 299 — See General Usage Courses Page 76.

DENTAL

DENT 108 INTRODUCTION TO DENTAL HEALTH CARE DELIVERY (3 cr.) — Introduction to dental profession and supporting personnel; history and development of dentistry; the role of the dental auxiliaries in clinical setting and to members of dental laboratory craft and others of the dental health team; dental ethics and jurisprudence; professional and education opportunities. Lecture 3 hours per week.

DENT 110 INTRODUCTION TO DENTAL MATERIALS (4 cr.) — Introduction to the physical and chemical characteristics, uses, and manipulation of materials used in dental procedures, clinical and laboratory. Emphasis on the general principles of physical properties and the specifications program of the American Dental Association. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

DENT 116 DENTAL LABORATORY MATERIALS (4 cr.) — A study of the chemical composition, physical properties, and uses of metallic and nonmetallic dental materials, denture and tooth resins, porcelain, waxes and duplicating materials. The laboratory exercises are designed to illustrate the properties and uses of the materials studied including their inherent limitations. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

DENT 121-122 CHAIRSIDE ASSISTING I-II (4 cr.) (4 cr.) — Prerequisites DENT 100, 110, 101-102 or corequisite. The proper procedures of reception and preparation of the patient; care of 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, and expanded duties limited to dental assistants. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 123 CHAIRSIDE ASSISTING III (6 cr.) — A continuation of DENT 122. The student will be involved in the actual experience of clinical procedures and chairside assisting. Lecture 1 hour, Laboratory 15 hours, Total 16 hours per week.

DENT 124 CHAIRSIDE ASSISTING IV (5 cr.) — A continuation of 123 with a practicum course designed to involve the student in clinical procedures and chairside assisting. Laboratory 15 hours per week.

DENT 126 ORAL ANATOMY (3 cr.) — The study of the anatomy, structure, morphology and function of the oral structures including primary and permanent dentition. Laboratory procedures to include identification eruption sequence, reproduction of tooth form through drawings, study of skills, principles of occlusion and root anatomy with correlation of tooth form and position to intra-oral arch. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DENT 128 HEAD AND NECK ANATOMY (2 cr.) — A detailed study of the anatomy and physiology of the structures of the head and neck. Lecture 2 hours per week.

DENT 129 GENERAL AND ORAL HISTOLOGY (2 cr.) — The study of the minute structure of the tissues of the body with particular reference to the teeth and the supporting tissues. Morphology of different tissues, early embryonic development, histologic features of the structures of the oral cavity. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

DENT 136 PHARMACOLOGY (2 cr.) — The chemical therapeutic agents used in dentistry, including their preparation, effectiveness, and specific applications. Lecture 2 hours per week.

DENT 138 COMMUNITY DENTAL HEALTH (4 cr.) — Introduction of the dental hygienist to community health problems, public health, and related institutions. An opportunity will be provided for student teaching in dental education at various grade levels in area public schools. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

DENT 139 DENTAL ASSISTING (2 cr.) — Dental Hygiene students will receive instruction in phases of chairside assisting as members of the dental health team. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

DENT 140 INTRODUCTION TO DENTAL HYGIENE (1 cr.) — Introduction to the dental hygiene profession through seminar and laboratory. A review of the role of the dental hygienist in dentistry; dental history, ethics, and professional organizations. Students will be oriented in the basic skills of dental hygiene prevention and nomenclature appropriate to the dental profession. Lecture 0 hours, Laboratory 2 hours, Total 2 hours per week.

DENT 144 DENTAL HYGIENE I (5 cr.) — The introduction to clinical knowledge and skills for the performance of dental hygiene services, and medical and dental emergencies, basic skills components, lab manikins, and patient practice. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

DENT 145 DENTAL HYGIENE II (5 cr.) — Prerequisite DENT 144. Clinical performance of dental hygiene services; includes the use and techniques of dental radiology. Lecture 2 hours, Laboratory 9 hours, Total 11 hours per week.

DENT 146 ORAL RADIOGRAPHIC TECHNIQUES (3 cr.) — A study of the nature, physical behavior, biological effects, methods of control, safety precautions, and techniques for exposing, processing and mounting x-rays. Laboratory procedures will include the application of these techniques. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DENT 147 NUTRITION (3 cr.) — Study of nutrition as it relates to dentistry and general health. The principles of nutrition as applied to the clinical practice of dental hygiene. Lecture 3 hours per week.

DENT 148 OFFICE PRACTICE AND ETHICS (2 cr.) — The principles of dental ethics and economics as they relate to the dental hygienist. The course will also include a study of jurisprudence and office procedures. Lecture 2 hours per week.

DENT 149 DENTAL OFFICE MANAGEMENT PROCEDURES (3 cr.) — Prerequisites DENT 108, DENT 121. Instruction and practice in the management of a dental office in areas such as appointment and recall systems, reception techniques, financial records and accounting procedures, insurance claims, purchase and inventory of supplies and equipment, filing systems. Emphasis is on the role of a dental assistant as office manager. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DENT 150 GENERAL AND ORAL PATHOLOGY (3 cr.) — Introduction to general pathology with consideration of the common diseases affecting the human body. Particular emphasis is given to the study of pathological conditions of the mouth, teeth and their supporting structures. Lecture 3 hours per week.

DENT 155 PERIODONTICS FOR DENTAL HYGIENE (2 cr.) — Introduction of periodontics to the dental hygienist—atomy and physiology, periodontal pathology and clinical determination of cases. Techniques in prevention and management of periodontics and special patient problems. Lecture 2 hours per week.

DENT 156 ORAL RADIOGRAPHIC PRACTICUM (1 cr.) — Practicum will include five weeks using dexter manikin, remaining time spent taking x-rays on clinical patients through the performance of full mouth radiographic surveys. Laboratory 3 hours, Total 3 hours per week.

DENT 159 NUTRITION FOR DENTAL ASSISTANTS (2 cr.) — A study of the significance of foods and their relationship to dental health. Techniques in counseling patients in food selection will be correlated with clinical activity. Lecture 2 hours, Total 2 hours per week.

DENT 161 DENTAL CARE SCIENCE I (3 cr.) — Prerequisite Entrance into Dental Assist. Program. An introductory course stressing oral dental anatomy with emphasis on the deciduous and permanent dentition and specified oral structures. Lecture 3 hours per week.

DENT 162 DENTAL CARE SCIENCE II (3 cr.) — Prerequisite DENT 161. Basic microbiology, pathology, and oral pathological conditions as related to the role of the Dental Assistant. Lecture 3 hours per week.

DENT 163 DENTAL CARE SCIENCE III (3 cr.) — Prerequisite DENT 162. Pharmacology as related to dentistry and the principles involved in dental health education programs. Lecture 3 hours per week.

DENT 176 ADVANCED CLINICAL PROCEDURES (3 cr.) — Prerequisites DENT 111-112 and DENT 122. Supervised clinical training in direct patient-care functions beyond the scope of traditional chairside assisting. Practical application of the dental assistant treatment procedures authorized in the Dental Laws of Virginia. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

DENT 190, 199 — See General Usage Courses Page 76.

DENT 262 DENTAL HYGIENE IV (5 cr.) — Lecture to include oral diagnosis, orthodontics and seminar. Laboratory—dental prophylaxis and oral hygiene preventive procedures to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lecture 1 hour, Laboratory 12 hours, Total 13 hours per week.

DENT 263 DENTAL HYGIENE V (5 cr.) — Lecture to include pedodontics and seminar. Laboratory dental prophylaxis and oral hygiene preventive procedure to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lecture 1 hour, Laboratory 12 hours, Total 13 hours per week.

DENT 264 DENTAL HYGIENE VI (5 cr.) — Lecture to include dental research and seminars. Laboratory—dental prophylaxis and oral hygiene preventive procedures to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lecture 1 hour, Laboratory 12 hours, Total 13 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 158 ELECTRICAL-ELECTRONICS DRAFTING (2 cr.) — Applications of drafting procedures with emphasis on working and functional drawings and direct applications to electrical and electronic components and circuits. Lecture 1 hour, Laboratory 3 hours, Total 4 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 or permission of instructor. 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.

ECONOMICS

ECON 147 CONSUMER ECONOMICS (3 cr.) — Designed to foster an understanding of the American economic system and the individual's role as a consumer in that system. Lecture 3 hours per week.

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

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 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 3 hours per week.

ECON 214-215 PRINCIPLES OF ECONOMICS I-II (5 cr.) (4 cr.) — Two quarter sequence covering ECON 211-212-213. Lecture 5 hours per week in ECON 214 and Lecture 4 hours per week in ECON 215.

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 246 MONEY AND BANKING (3 cr.) — A review of the history of American banking institutions; banking theories, principles and practices; emphasis is placed on relationship of finances to business structure, operations and organization; present-day financial structures, agents, problems and institutions are examined in depth. Lecture 3 hours per week.

ECON 256 CONTEMPORARY ECONOMIC PROBLEMS (3 cr.) — Prerequisite ECON 160 or 211. An intense study of the major economic problems facing society today. Emphasis will be placed on both proper analysis of economic problems and formulation of corrective policy. The course will further endeavor to develop the student's critical faculties by exposure to the divergent opinions of eminent economists and open classroom debate and discussion. Lecture 3 hours per week.

ECON 298, 299 — See General Usage Courses Page 76.

EDUCATION

EDUC 106 LANGUAGE ARTS FOR YOUNG CHILDREN (3 cr.) — The techniques and methods for encouraging the development of language skills in the young child. Improvement of vocabulary, speech and discussion stimulation will be emphasized. Surveys the best prose and verse, examines techniques of storytelling, and stresses use of audio-visual materials. Lecture 3 hours per week.

EDUC 117 INTRODUCTION TO READING METHODS (3 cr.) — Introduction to the current practices of teaching reading in the elementary school. Familiarization with materials currently in use, observation of various reading techniques and trends in the classroom. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 120 INTRODUCTION TO EARLY CHILDHOOD EDUCATION (3 cr.) — Corequisite EDUC 190. Introduction to early childhood development through activities and experiences in prekindergarten, kindergarten and primary programs; classroom organization and procedures, use of classroom time and materials, ap-

proaches to education for young children, and curricular procedures. Lecture 3 hours per week.

EDUC 121-122 CHILDHOOD EDUCATION I-II (3 cr.) (3 cr.) — Corequisite EDUC 190. Designed to focus attention on the easily observable characteristics of children from birth through the adolescent period. The lessons will outline the characteristics in several categories: general, relations with adults, intellectual skills, physical growth, and relations with children in their own age group. Lecture 3 hours per week.

EDUC 126 LEARNING DISABILITIES (3 cr.) — Designed for early childhood and primary grades personnel and primarily concerned with identification, assessment, and amelioration of specific learning problems from a preventive rather than remedial standpoint. Includes a survey of both in-depth and informal assessment procedures and devices, with application to "matching" differential diagnosis with specific instructional materials and strategies. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 129 THE PRACTICE OF CHILD CARE (3 cr.) — An overview of the various aspects involved with the operation of child care institutions as applied to those who are employed in the actual practice and to those who may be seeking employment in the field. Topics including early childhood development; developing positive behavioral patterns; materials resources and activities; administrative aspects of operation; nutrition and health for the preschool child; encouraging parent involvement; and the emergency situations and obligations are usually examined. Course is normally structured as series of seminars with various experts providing leadership for each topic studied. Lecture 3 hours per week.

EDUC 136 MATERIALS AND EQUIPMENT FOR INSTRUCTIONAL AIDES (3 cr.) — The preparation of view graphs, the construction of graphic charts, and other aids; how to select slides and develop materials for classroom presentation, the operation, care, and use of instructional equipment, including audio-visual equipment most used in the classroom. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 137 CREATIVE ACTIVITIES FOR CHILDREN (3 cr.) — Designed to prepare individuals for working with young children in art and other creative activities. Emphasizes coverage of suitable materials and the laboratory application. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 140 MODERN MATHEMATICS CONCEPTS (3 cr.) — The techniques and materials used to develop mathematical patterns and concepts in pre-school and primary modern mathematics programs. Instructional aides will learn to prepare, collect, and work with materials used to develop mathematical concepts in children. Lecture 3 hours per week.

EDUC 150 MODERN SCIENCE CONCEPTS (3 cr.) — The content and methods of teaching science in the elementary school, beginning with the everyday environment of the child and leading to basic generalizations in science. Lecture 3 hours per week.

EDUC 156 FUNDAMENTALS OF SCHOOL LAW (3 cr.) — An introduction to Virginia public school law as it pertains to the educational secretary. Lecture 3 hours per week.

EDUC 157 HISTORY AND PHILOSOPHY OF EDUCATION FOR SCHOOL SECRETARIES (3 cr.) — Designed to acquaint the educational secretary with the history and philosophy of education in America. Current issues and their implication for social change are discussed in this course. Lecture 3 hours per week.

EDUC 161-162-163-164 EDUCATIONAL TECHNIQUES I-II-III-IV (3 cr.) (3 cr.) (3 cr.) (3 cr.) — Prerequisite EDUC 121. Designed to provide instructional assistants with the supervised practical experience neces-

sary for effective assistance to the classroom teacher. Includes supervised experience with children at selective schools, child care centers and other institutions of learning to give prospective instructional assistants opportunities to observe, participate and evaluate the interaction of teachers, instructional assistants and children. Lecture will include preparation and practicum experiences for reviews and evaluation of those experiences. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 175 PARENT EDUCATION II (3 cr.) — Advanced topics in parenting with special emphasis on group and individual concerns. Topics will be centered on preschool and elementary age children. A family case study will be required, and techniques of working with parent groups will be demonstrated. Lecture 3 hours per week.

EDUC 186 CHILD STUDY (3 cr.) — Prerequisite PSYC 130. An advanced course in child development including methods of child study, theories of child development, implications for direct work with children, and a case study of an individual child. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

EDUC 188 AFFECTIVE EDUCATION IN THE CLASSROOM (3 cr.) — A lecture/discussion/experientially based course, designed to teach the basic human relations skills needed to function as an effective teacher. The focus will be on communication skills and instructional strategies that have high probability for facilitating human potential in the classroom. Students will learn a new method for resolving conflict, a new model for consulting with parents and other skills needed to foster the mental health of both students and teachers and permit both to grow and actualize themselves. Lecture 3 hours per week.

EDUC 189 NUTRITION AND HUMAN DEVELOPMENT (3 cr.) — Food requirements and feeding of infants, children and adults throughout the life cycle. Hygiene and childhood diseases will be discussed as related to nutrition. Special emphasis will be placed on the development of food habits and current concerns in foods and nutrition. Lecture 3 hours per week. (See also HLTH 156).

EDUC 190 COORDINATED PRACTICE IN CHILD DEVELOPMENT EDUCATION (1-5 cr.) — to be corequisite with EDUC 120, 121, 122.

EDUC 198 SEMINAR AND PROJECT IN CHILD DEVELOPMENT EDUCATION (1-5 cr.)

EDUC 199 SUPERVISED STUDY (1-5 cr.)

EDUC 210 INTRODUCTION TO SPECIAL EDUCATION (3 cr.) — Prerequisites PSYC 130 and EDUC 121. A brief overview of the history of special education. The role and responsibilities of the paraprofessional in special education. Emphasis will be on working with educationally and neurologically handicapped. Lecture 3 hours per week.

EDUC 246 EDUCATION LAW (3 cr.) — The application of rules of law to the operation of the public schools in Virginia. Legal aspects of the principal instruments of school activities, rights and liabilities of school employees, legal aspects of negotiable instrumental and securities. Lecture 3 hours per week.

EDUC 260 SURVEY OF MENTAL RETARDATION (3 cr.) — Designed to acquaint the student on how to deal effectively with such problems as early identification, parental and family adjustment, education, and school adjustment. Includes coverage of agencies and organizations providing assistance to the retarded and designates procedures and methods that can be implemented in working with language and arithmetical concepts, motor training, and the building of pre-vocational skills. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 286 ADVANCED CHILD STUDY (4 cr.) — Pre-

requisite PSYC 130 or 231. An advanced course in child development including methods of child study, theories of child development, implications for direct work with children, and a case study of an individual child. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

EDUC 287 MANAGEMENT OF CHILD CARE CENTERS (3 cr.) — Prerequisite EDUC 120. Budgeting and managing a child care center. Communication with and observation of local child care centers and participation in one professional conference or workshop will be required. Lecture 3 hours per week.

See also the description of other courses in the curriculum listed under sociology, psychology, health, mental health, mathematics, etc.

ELECTRICITY AND ELECTRONICS

ELEC 11-12-13 ELECTRICITY I-II-III (4 cr.) (4 cr.) — Corequisite MATH 11 or equivalent. Principles of electricity covering resistance, current, and voltage in both AC and DC circuits. Lecture 4 hours per week.

ELEC 20 ELECTRONICS SURVEY (3 cr.) — The study of the electron and its behavior in passive and active circuits and components. Electrical-electronic components and circuits demonstrated as applied to modern Electronic Systems. Lecture 3 hours per week.

ELEC 21-22-23 ELECTRONICS I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite ELEC 12 or equivalent. Introduction to vacuum tube, semiconductor principles and circuitry. Lecture 4 hours per week.

ELEC 27 PULSE CIRCUITS (4 cr.) — Prerequisite ELEC 68. Review of networks, transient analysis, linear and non-linear waveshaping. Pulse circuit use in counting, delays, synchronization, frequency division, logic and comparator circuits as applied to time, pulse and digital systems, circuit and systems analysis. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 40 ELECTRONICS (7 cr.) — Prerequisite ELEC 11-12. Use of vacuum tubes and solid state devices in electronic circuits. Practical application through test/measuring instruments and building applicable electronic circuitry. Lecture 3 hours, Laboratory 12 hours, Total 15 hours per week.

ELEC 68 ELECTRONICS (6 cr.) — Prerequisite ELEC 40. The design concepts of untuned voltage and power amplifiers; special amplifying circuits, audio distribution, and audio devices with correlated laboratory. Lecture 3 hours, Laboratory 8 hours, Total 11 hours per week.

ELEC 73 ELECTRICAL AND CONTROL SYSTEMS (3 cr.) — Prerequisite ELEC 95 or equivalent. Trouble shooting and servicing electrical controls, electric motors, motor controls, motor starters, relays overloads, instruments and control circuits. Lecture 3 hours per week.

ELEC 74 ELECTRICAL POWER (4 cr.) — Prerequisite ELEC 12 or equivalent. Circuit elements, direct current circuits and motors, single and three-phase circuits and motors, power distribution systems and protective devices. Lecture 4 hours per week.

ELEC 75 ELECTRICAL AND CONTROL SYSTEMS (4 cr.) — Prerequisite ELEC 74. Trouble shooting and servicing electrical controls, electric motors, motor controls, motor starters, relays, overloads, instruments and control circuits. Lecture 4 hours per week.

ELEC 76 ELECTRICAL POWER (3 cr.) — Prerequisite Permission of Instructor. Circuit elements, direct current circuits and motors, single and three-phase circuits and motors, power distribution systems and protective devices. Lecture 3 hours per week.

ELEC 94-95 PRACTICAL ELECTRICITY I-II (3 cr.) (3 cr.) — The fundamentals of electricity, terminology and symbols, diagrams, the principles essential to the understanding of general practices, safety, and the practical aspects of residential and non-residential wiring and electrical installation. Lecture 3 hours.

ELEC 111-112 INTRODUCTION TO ELECTRICAL CIRCUITS I-II (5 cr.) (5 cr.) — Corequisites ENGR 100, MATH 121-122 respectively. The study of resistance, magnetism, inductance, capacitance, and the transient state. An introduction to circuit theorems as applied to direct current circuits. Electrical circuits employing complex algebra, equivalent circuit theorems and modern techniques for the solution of complex circuit problems. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

ELEC 113 INTERMEDIATE ELECTRICAL CIRCUITS (3 cr.) — Prerequisite ELEC 112. Corequisite MATH 123, ELEC 199. Continuation of ELEC 112 with emphasis in application of circuit theorems to AC networks. Both single and polyphase circuits are studied with treatment to both active and passive circuit elements. Lecture 3 hours per week.

ELEC 118-119 INTRODUCTION TO ELECTRICAL SHOP I-II (1 cr.) (1 cr.) — Use of hand tools commonly found in the electrical and electronics industry. A variety of projects requiring fabrication of electrical-mechanical equipment are developed, tested and reports written. Laboratory 3 hours per week.

ELEC 125 INTRODUCTION TO ELECTRONICS (5 cr.) — Prerequisite ELEC 113. The theory, properties, and application of vacuum tube and solid state devices and introductory concepts of digital circuit design. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

ELEC 141-142 REVIEW FOR FCC RADIO TELEPHONE LICENSE I-II (3 cr.) (3 cr.) — Requirements for the second class and the first class examinations. Lecture 3 hours per week.

ELEC 145 INTRODUCTION TO ELECTRICAL MACHINES (4 cr.) — Prerequisite ELEC 113 or equivalent. Construction, theory of operation, and application of direct and alternating current machinery and transformer. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 150 INTRODUCTION TO COMMUNICATION SYSTEMS (4 cr.) — Prerequisite ELEC 113. An introduction to the techniques, application, design principles and regulation of digital and analog communication systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 197, 198, 199 — See General Usage Courses Page 76.

ELEC 201-202-203 ELECTRICAL ENGINEERING TECHNOLOGY I-II-III (6 cr.) (7 cr.) (6 cr.) — Prerequisite ELEC 125 and MATH 123. The concepts of electron and solid-state physics, application of vacuum, gas, and semi-conductor diodes and triodes to electronic circuits. Advanced semiconductor theory; amplifier operating characteristics and design considerations; laboratory experiments demonstrate the application to various circuits. Application of principles to complex electronic systems; laboratory experiments demonstrate the operating characteristics of single-stage circuits. Lecture 5 hours, Laboratory 3-6-3 hours, Total 8-11-8 hours per week.

ELEC 211 ELECTRICAL MACHINES (4 cr.) — Prerequisite ELEC 113. Construction, theory operation and application of direct current machinery. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 213 ELECTRICAL MACHINES AND INDUSTRIAL CONTROLS (4 cr.) — Prerequisite ELEC 211 and ELEC 125. Construction, theory of operation, characteristics, and application of alternator, synchronous motors, induction motors, and fractional horsepower

motors. Introduction to the principles of industrial control, circuit diagram functions and symbols to "traditional" motor control, the principles of operation and application of the devices used for control and protection. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 213 ADVANCED INDUSTRIAL CONTROLS (4 cr.) — Prerequisite ELEC 212. A survey of principles and "building blocks" of industrial controls. Analyzing involved control circuits, principles of operation and application of special electro-magnetic and electronic devices, feedback circuits, and static control including devices, logic symbols, and Boolean algebra. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 214 ELECTRICITY (4 cr.) — Prerequisite MATH 122. A course for non-electrical students covering direct and alternating current theory with some introduction to electrical machines. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 237 DIGITAL LOGIC CIRCUITS (4 cr.) — Prerequisite ELEC 125. A comprehensive course in the design and use of digital logic circuits using standard integrated circuits and the functional block approach. Emphasis on the characteristics and use of TTL, ECL, and COS/MOS ICs to design encoders, decoders, counters, and registers. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 239 DIGITAL LOGIC CIRCUITS II (3 cr.) — Prerequisites ELEC 237 or equivalent. Continuation of ELEC 237, with hardware applications in computer systems. The 8080 based microprocessor is studied, with emphasis on interfacing it to the "outside world." Its application in data acquisition and as a system controller is studied. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

ELEC 241-242-243 COMMUNICATIONS I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisites ELEC 125 and MATH 123. The study of modulation and power in modulated waves, sinusoidal oscillations and oscillators. RF amplifiers and detectors, and AM receivers. The study of transmitters and receivers; FM receivers, RF power amplification, AM, SSB, and FM transmitters, and an introduction to transmission lines and antennas, measurements, microwave frequencies; introduction to radar and television systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 248 MICROWAVE TECHNIQUES (3 cr.) — Prerequisite ELEC 125. Microwave techniques to introduce the special requirements when using very high frequency equipment as klystrons, cavity resonators, slotted lines and waveguide type transmission devices. Lecture 3 hours per week.

ELEC 250 INTRODUCTION TO COMPUTERS (4 cr.) — Prerequisite ELEC 237. The concepts and features of electronic computers; fundamentals of internal operations, number systems, digital circuits, Boolean algebra, basic logical design techniques, analysis in input-output devices, control and arithmetic units, memory units and limited programming. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 276 INSTRUMENTS AND MEASUREMENTS (4 cr.) — Prerequisite ELEC 113 or equivalent. Corequisite ELEC 125. A study of circuits used in electronic measurements and application of these circuits in testing instruments such as oscilloscopes, vacuum tube voltmeters, and bridges; 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 297, 298, 299 — See General Usage Courses Page 76.

ENGINEERING

ENGR 100 INTRODUCTION TO ENGINEERING TECHNOLOGY (2 cr.) — Corequisite MATH 118. Professional fields of engineering technology; work of the engineering technologist, requirements of training and character, professional ethics, and division of industrial practice and competition, engineering problems with calculator and computer applications. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

ENGR 104 INTRODUCTION TO ENGINEERING (3 cr.) — Corequisite MATH 141 or equivalent. Introduction to professional fields of engineering; historical background; professional ethics and responsibilities of engineers. Application of hand calculator to engineering problem solving. Basic Graphic Techniques and U.S. customary and S.I. units and their conversions. Lecture 3 hours per week.

ENGR 105 INTRODUCTION TO ENGINEERING METHODS (3 cr.) — Introduction to the digital computer. Use of Scientific language, programming engineering problems. Lecture 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, study of vector geometry, properties and types of graphs for engineering and scientific purposes. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ENGR 140 STATICS OF PARTICLES AND RIGID BODIES (3 cr.) — Prerequisite MATH 142. Review of vector algebra. Vector treatment of concept of force, mass, space, and time. Units of measurement (including both U.S. customary and S.I. units). Equilibrium of discrete force systems; centroids, dry friction; and distributive forces. Truss and simple frame analysis. Lecture 3 hours per week.

ENGR 151 MECHANICS I (STATICS) (4 cr.) — Corequisite MATH 121. Principles of statics; resultants and equilibrium of force systems; trusses and frames; structures containing three-force members; centroids; moments of inertia; dry friction. Lecture 4 hours per week.

ENGR 197 — See General Usage Courses Page 76.

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 241 MECHANICS OF PARTICLES (3 cr.) — Prerequisite ENGR 140. Vector treatment of planar and three-dimensional kinematics and kinetics of particles; relative motion, Newton's laws, work and energy, impulse and momentum, vibration of particles. Lecture 3 hours per week.

ENGR 242 DYNAMICS OF RIGID BODIES (3 cr.) — Prerequisite ENGR 241. Vector treatment 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 243 MECHANICS OF DEFORMABLE SOLIDS (5 cr.) — Prerequisite ENGR 140. 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 252 ENGINEERING MECHANICS II (Strength of Materials) (4 cr.) — Prerequisite ENGR 151. Introductory mechanics of continuous media. Concepts of stress and deformation due to longitudinal loads; torsion and bending, plane stress. Lecture 4 hours per week.

ENGR 297 — See General Usage Courses Page 76.

ENGLISH

ENGL 01 VERBAL STUDIES LABORATORY (1.5 cr.) — A developmental course in composition designed for students who need help in all areas of writing to bring their proficiency to the level necessary for entrance into their respective curriculums. Emphasis on individual instruction. Students may reregister for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 05 ENGLISH AS A SECOND LANGUAGE (1.5 cr.) — A developmental course in the English language for persons whose native language is not standard English. Emphasis on production of English phonemes, intonation patterns, structural patterns, grammar, vocabulary, and idioms. Students are expected to spend a minimum of 3 hours weekly in the language laboratory. Students may reregister for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 08 READING IMPROVEMENT (1.5 cr.) — A developmental course using modern techniques, equipment, and materials to increase the student's comprehension, skill, and speed in reading. Students may reregister for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 100 OCCUPATIONAL ENGLISH (3 cr.) — Develops basic, practical English skills in oral and written communication. The emphases are basic organization principles, approaches to media analysis, job-related vocabulary building, listening, writing, and speaking skills. Practical skills such as handling customer complaints, writing various types of letters, and preparation for a job interview are included. This course is intended for certificate students. Lecture 3 hours per week.

ENGL 109 COMMUNICATION IN BUSINESS AND INDUSTRY (3 cr.) — Functions of communications in business and industry. Methods for communicating effectively in business and industry with emphasis on gathering, organizing, and transmitting information. Review of basic techniques of effective oral and written communications. Lecture 3 hours per week.

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 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 137 TECHNICAL WRITING (3 cr.) — Prerequisite ENGL 112 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 146 LITERATURE FOR CHILDREN (3 cr.) —

Surveys the history of children's literature, recognizes learning theory and developmental factors influencing reading and reading interests, and utilizes bibliographic tools in selecting books and materials for children. Emphasizes extensive reading and examination of books for recreational interests and educational needs of children. Lecture 3 hours per week.

ENGL 166 COLLEGE READING (3 cr.) — A course designed to facilitate college reading improvement in a variety of areas including rate of comprehension, vocabulary, study skills, and help in alleviating special problems in reading. Using modern equipment, materials, and techniques, the student will pursue a course of study set up between him and the instructor based on his needs, abilities, and goals as ascertained by test results and diagnostic interviews. Lecture 3 hours per week.

ENGL 199 — See General Usage Courses Page 76.

ENGL 228 CREATIVE WRITING I (3 cr.) — Prerequisite ENGL 111, 112, 113 or divisional permission. Designed to introduce the student to the fundamentals of writing creatively, involving primarily the use of the imagination. Samples of creative writings will be studied to observe the methods employed in writing poetry, essays, and short stories. Lecture 3 hours per week.

ENGL 234 CREATIVE WRITING II (3 cr.) — Prerequisite ENGL 228. A continuation of Creative Writing (ENGL 228) including experiments in novel, short story, and play-writing. 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 251-252-253 SURVEY OF AMERICAN LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite ENGL 113 or departmental 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 261-262-263 SURVEY OF ENGLISH LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite ENGL 113 or departmental 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 299 — See General Usage Courses Page 76.

FRENCH

FREN 101-102-103 INTRODUCTORY FRENCH I-II-III (4 cr.) (4 cr.) (4 cr.) — The understanding, speaking, reading and writing of French with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

FREN 107-108-109 CONVERSATION IN FRENCH (3 cr.) (3 cr.) (3 cr.) — Prerequisite FREN 103. Practice in speaking French, stressing correctness of structure, pronunciation, fluency, and the vocabulary of everyday situations. Lecture 3 hours per week.

FREN 121-122-123 CONVERSATIONAL FRENCH I-II-III (3 cr.) (3 cr.) (3 cr.) — An introductory course with major emphasis on oral communication, conversational communication and cultural mores and customs. Sufficient attention given to practical aspects of reading and writing. An activity-oriented course. Lecture 3 hours per week.

FREN 199 — See General Usage Courses Page 76.

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 understanding, speaking, reading, and writing of French. French used in the classroom. Lecture 3 hours, Laboratory 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.

FREN 299 — See General Usage Courses Page 76.

GENERAL

GENL 100 ORIENTATION (1 cr.) — Orientation is a course designed to aid Virginia Western students in their personal, social, and academic adjustment to the college community. Orientation is an exploratory course with major emphasis placed on self-awareness, career awareness, individual goal setting and career decision making.

GENL 106 PERSONAL DEVELOPMENT FOR WOMEN (2 cr.) — Personal Career Development for Mature Women is a counseling course designed specifically to meet the psychological and educational adjustment needs of the mature female college student. The course is an exploratory course seeking to aid the student in defining and resolving situational and personal factors which may impede intellectual and personal growth and development. Major emphasis is placed on self-exploration, career exploration, decision making and the development of a career self-identity.

GENL 108 CAREER DEVELOPMENT (3 cr.) — Career Development is a course designed to assist students in understanding themselves, their values, interest and aptitudes as these personal characteristics relate to career choice and the world of work. A major component of the course is career exploration and the application of decision-making skills to career choice.

GENL 198 STUDY SKILLS (3 cr.) — Study Skills is a course designed to aid the student in clarifying attitudes toward education as they apply to future goals, assist the student in understanding expectations of educators, and assist the student in becoming aware of and defining barriers which prevent successful study habits and skills. Study Skills will also assist the student in planning strategies to overcome nonproductive study habits, and assist the student in implementing positive study behavior.

GENL 298 PERSONAL DEVELOPMENT (2 cr.) — Personal Development is a counseling course in student life skills. The dynamics and contents of the course seek to integrate human relations training, problem solving skills, decision making, and goal setting. Major emphasis is placed on assisting the students toward a better understanding of themselves and their educational experience in preparation for adult roles in society. Emphasis is placed on examining personal and environmental factors which limit or enhance one's personal development. Emphasis is also placed on the acquisition of more effective communication skills for personal learning and development.

GENL 299 JOB ENTRY TECHNIQUES (3 cr.) — Job Entry Techniques is a course designed to give the student experience in resume writing, preparation of applications, letters of application, and in successfully preparing for and completing a job interview. The course places major emphasis on the development of desirable work attitudes and habits.

NOTE: The following "General Usage Courses" apply to multiple curriculums and prefix sections. The titles and descriptions are generally applicable for such use.

(Insert Appropriate Prefix) 90, 190, 290 COORDINATED PRACTICE IN (Insert Appropriate Discipline) (1-5 cr.) — Supervised practice in selected health agencies coordinated by the College. Credit/Practice Ratio maximum 1:5 hours. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 90, 190, 290 COORDINATED INTERNSHIP IN (Insert Appropriate Discipline) (1-5 cr.) — Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 97, 197, 297 COOPERATIVE EDUCATION IN (Insert Appropriate Discipline) (1-5 cr.) — Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curriculums at the discretion of the College. Credit/Work Ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 98, 198, 298 SEMINAR AND PROJECT IN (Insert Appropriate Discipline) (1-5 cr.) — Completion of a project or research report related to the student's occupation and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 99, 199, 299 SUPERVISED STUDY IN (Insert Appropriate Discipline) (1-5 cr.) — Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

GEOGRAPHY

GEOG 240 PHYSICAL GEOGRAPHY (3 cr.) — A study of the major elements of the natural environment such as land forms, weather and climate, native vegetation, and soils: Including their origins and distribution patterns. Provides a framework for understanding interrelationships of man and his physical setting in today's world. (college transfer) NO PREREQUISITE.

GEOG 250 CULTURAL GEOGRAPHY (3 cr.) — A study of human interrelationships and cultural diversity: the distribution of lands, peoples, and cultures. Considers the complex forces responsible for events in the world today. (college transfer) NO PREREQUISITE.

GEOG 260 ECONOMIC GEOGRAPHY (3 cr.) — A study of the production, movement, exchange, and consumption of goods and services and of the world distribution patterns of these activities. Stresses the physical setting and its limitations on the current, complex economic situation of the world we live in. (college transfer) NO PREREQUISITE.

GEOLOGY

GEOL 101-102-103 GENERAL GEOLOGY I-II-III (4 cr.) (4 cr.) (4 cr.) — Physical geology, the various modifying agencies at work upon the earth, and their effects. The composition and structure of the earth as a whole. Historical geology, the history of the earth and its plants and animals from the beginning to the present, with emphasis on the principles involved in interpreting geologic evidence. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

GEOL 104-105 GENERAL GEOLOGY I-II (6 cr.) (6 cr.) — Two quarter sequence covering GEOL 101-102-103. Lecture 4-5 hours, Laboratory 6-3 hours, Total 10-8 hours per week.

GEOL 198, 199 — See General Usage Courses Page 76.

GERMAN

GERM 101-102-103 INTRODUCTORY GERMAN I-II-III (4 cr.) (4 cr.) (4 cr.) — The understanding, speaking, reading, and writing of German with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

GERM 107-108-109 CONVERSATIONAL GERMAN I-II-III (3 cr.) (3 cr.) (3 cr.) — Three quarter sequence built around German language films, textbook and taped recordings. Basic Conversational German as currently spoken. Includes use of language lab by individual students. Lecture 3 hours per week.

GERM 199 — See General Usage Courses Page 76.

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 299 — See General Usage Courses Page 76.

GOVERNMENT

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 level. Lecture 3 hours per week.

GOVT 256 INTRODUCTION TO INTERNATIONAL POLITICS (3 cr.) — A study of principles and factors affecting current international politics to promote an understanding of nation's behavior with one another. Lecture 3 hours per week.

GOVT 257 CONTEMPORARY INTERNATIONAL POLITICS (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 258 CONTEMPORARY NATIONAL PROBLEMS (3 cr.) — Prerequisite GOVT 281 or permission of Instructor. Selected issues illustrating basic problems in public affairs in the United States in such areas as national, state, and local politics, governmental theory and civil rights. Lecture 3 hours per week. (Note: This would be a parallel to GOVT 257, in the area of domestic problems.)

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.) — Two quarter sequence covering GOVT 281-282-283. Lecture 5-4 hours per week.

GOVT 298, 299 — See General Usage Courses Page 76.

HEALTH

HLTH 100 ORIENTATION TO ALLIED HEALTH CAREERS (1 cr.) — An orientation to the interrelated roles and functions of various members of the health team. Lecture 1 hour per week.

HLTH 101 CARDIOPULMONARY RESUSCITATION MODULAR SYSTEM (1 cr.) — Training in coordinated mouth-to-mouth artificial ventilation and heart compression based upon the American Red Cross ap-

proved method. Successful completion of all phases of the course results in Red Cross certification in CPR. Lecture 1 hour per week.

HLTH 104 FIRST AID I (2 cr.) — The principles and techniques of safety and first aid according to the accepted content of a standard first aid course. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

HLTH 109 INTRODUCTION TO SCHOOL FIRST AID, HEALTH AND SAFETY (1 cr.) — Designed to acquaint the educational secretary with the essential elements of first aid, health and safety with emphasis on recognizing the extent and nature of sicknesses, injuries, and health problems. Lecture 1 hour per week.

HLTH 110 CONCEPTS OF PERSONAL AND COMMUNITY HEALTH (3 cr.) — A course designed to study the concepts related to the maintenance of health, principles of safety, and the prevention of illness at the personal and community level. Lecture 3 hours per week.

HLTH 124 MEDICAL TERMINOLOGY I (3 cr.) — Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, stem words, and technical terms with emphasis on proper spelling and usage. Lecture 3 hours per week.

HLTH 125 MEDICAL TERMINOLOGY II (2 cr.) — A continuation of HLTH 124 for those students in health-related curriculums requiring additional understanding of medical terms. Lecture 2 hours per week.

HLTH 130 HEALTH EDUCATION (2 cr.) — A course for nonhealth majors designed to study health from the individual's mental, social and physical well-being, and to study the principles, techniques, methods, and procedures relating to health practices. Lecture 2 hours, Laboratory 1 hour, Total 3 hours per week.

HLTH 138 ETHICS FOR HEALTH CARE PERSONNEL (3 cr.) — A study of ethical concepts of health care. Confidentiality, patient records, personal appearance, professionalism with patients/clients, associates, and awareness of types of health care facilities. Lecture 3 hours per week.

HLTH 140 INTRODUCTION TO DRUG USE AND ABUSE (3 cr.) — An introductory survey of the drugs used and abused in contemporary society, with emphasis upon sociological, physiological and psychological effects of drugs. Lecture 3 hours per week.

HLTH 156 CHILD HEALTH AND NUTRITION (3 cr.) — Understanding the physical needs of the pre-school child and the methods by which these are met. Emphasis upon health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety as related to health growth and development. Lecture 3 hours per week.

HISTORY

HIST 101-102-103 HISTORY OF WESTERN CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.) — The development of western 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 UNITED STATES HISTORY I-II-III (3 cr.) (3 cr.) (3 cr.) — A survey of United States history from its beginning in early colonial times to the present. Lecture 3 hours per week.

HIST 114-115 AMERICAN HISTORY I-II (5 cr.) (4 cr.) — Two quarter sequence covering HIST 111-112-113. Lecture 5-4 hours per week.

HIST 160 WOMEN IN HISTORY (3 cr.) — A survey of the role of women and attitudes toward women in the Western World, with emphasis on women in American history. An inquiry into the origins of these attitudes

will be followed by a survey of the role of women in various societies. Finally, the contemporary women's movement will be examined in the light of historical perspective. Lecture 3 hours per week.

HIST 187-188-189 BLACK HISTORY I-II-III (3 cr.) (3 cr.) (3 cr.) — A survey of the history of the Afro-American, his relationships and contributions to the American society; the period of slavery, the period of caste subordination; the period of new mobility and growing Black protest. Lecture 3 hours per week.

HIST 198, 199 — See General Usage Courses Page 76.

HIST 206 AMERICAN HISTORY SINCE WORLD WAR II (3 cr.) — An in-depth investigation of modern history from 1945 to the present with special emphasis on American involvement in International affairs. Lecture 3 hours per week.

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 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 261-262-263 HISTORY OF ENGLAND I-II-III (3 cr.) (3 cr.) (3 cr.) — The history of England from Roman times to the present. The first quarter encompasses the period from Roman and Anglo-Saxon times through the Wars of the Roses; the second quarter from 1485-1783; and the third quarter, from 1783 to the present. Lecture 3 hours per week.

HIST 273 THE HISTORY OF VIRGINIA III (3 cr.) — A survey of the cultural, political, economic history of the Commonwealth from its Elizabethan beginnings to the present. The first quarter covers the period ending in 1789; the second, from 1789 through 1900; the third, the twentieth century. Lecture 3 hours per week.

HIST 298, 299 — See General Usage Courses Page 76.

HORTICULTURE

HORT 100 INTRODUCTION TO HORTICULTURE (4 cr.) — An introduction to the commercial horticulture industry and an overview of horticultural technology including occupational opportunities. Survey of basic structures, equipment, facilities, and physical arrangements of nurseries, greenhouses, and floral establishments. An introduction to growing, facility maintenance, transplanting and planting will form the laboratory experience. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HORT 105 FLOWER GARDENING (3 cr.) — Basic home gardening techniques for growing of perennials, annuals, bulbs, and home propagation. Lecture 3 hours per week.

HORT 106 FUNDAMENTALS OF HORTICULTURE (3 cr.) — A general study of plant growth and development, horticultural principles and practices, horticultural crops with emphasis on ornamental crops. Lecture 3 hours per week.

HORT 107 PLANT PROPAGATION (3 cr.) — Principles and applied practices of sexual and asexual methods of commercial and home propagation of horticultural plants. Skill-oriented emphasis placed on propagation techniques using seed, cutting, grafting, budding, layering, and division. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 108 GARDENING AND LAWN CARE FOR THE HOMEOWNER I (3 cr.) — Landscape planning, the fundamental chemistry of fertilization, soil treatment, pruning, and plant growth and development for the

homeowner, gardener and professional nurseryman. Lecture 3 hours per week.

HORT 110 TOOLS AND EQUIPMENT (3 cr.) — Prerequisite HORT 100. The tools and equipment currently in use in horticulture. Emphasis on the more complicated power-operated equipment including spreaders, sprayers, saws, and tractors. Safety, good maintenance and minor repair stressed. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 120 SOILS (4 cr.) — Prerequisites CHEM 110 and HORT 100. Theoretical and practical knowledge of soils in terms of horticultural activity. Includes soil identification, properties, analysis, fertilizers, sterilization, mixtures, and safety measures involving equipment used in soil work. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HORT 126 LANDSCAPE CONSTRUCTION AND MAINTENANCE (3 cr.) — Development of skills and competencies in practical application of landscape design theory. Construction, planning, and maintenance of a class landscaping project required. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

HORT 130 ENVIRONMENTAL FACTORS IN PLANT GROWTH (3 cr.) — Environmental factors which affect plant growth including rainfall, humidity, wind temperatures, sunlight, irrigation, heating, and shading methods. The relationship of day length and flowering, supplemental lighting and darkening systems, dormancy and methods of inducing and breeding dormancy. Lecture 3 hours per week.

HORT 137 PLANTSCAPING FOR INTERIOR DESIGN (3 cr.) — A survey course which deals with the concepts, principles, and applied practices of innovative interior designing with plants for commercial and residential environments. Includes identification, selection, and cultural requirements and design characteristics of appropriate plant material. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 140 PLANT IDENTIFICATION (3 cr.) — A course in plant identification and landscape uses providing a foundation for a mental inventory of available plant materials in the immediate area with emphasis placed on materials utilized in commercial and home landscaping. Lecture 3 hours per week.

HORT 141 HORTICULTURE AND LANDSCAPING (3 cr.) — Seasonal application of the principles concerning horticulture and landscaping; practical application for home planning and planting; plant taxonomy and desired habitats for acceptable and successful plants for the area; soil testing, fertilizers, insecticides and fungicides. Lecture 3 hours per week.

HORT 146 HORTICULTURAL BOTANY (4 cr.) — An elementary study of the principles of botany with application in commercial horticulture, considers fundamental aspects of taxonomy, anatomy, reproduction, morphology, physiology, and genetics of plants. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HORT 156 GREENHOUSE CROP PRODUCTION (3 cr.) — Examines commercial practices related to production of major floricultural crops. Consideration of production requirements, environmental control and management, and cultural techniques affecting production of pot plants and cut flowers. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 158 VEGETABLE PRODUCTION (2 cr.) — A study of principles and practices of home and commercial vegetable production; examines crops of major economic importance in regard to classification, culture, soil preparation, cultivation, weed control, crop rotation, insect and disease control, marketing, and storage. Lecture 2 hours per week.

HORT 170 FLORAL DESIGN AND ARRANGING (2 cr.) — An introduction to floral design with emphasis

on the use of silk and dried materials. Students practice using basic floral designs in making arrangements and wreaths for special occasions such as Thanksgiving and Christmas. Lecture 2 hours per week.

HORT 197, 199 — See General Usage Courses Page 76.

HORT 216 HORTICULTURAL ENTOMOLOGY (4 cr.) — A study of the major insect pests which attack horticultural crops. Considers insect identification as well as appropriate control practices, methods and materials. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

HORT 217 HORTICULTURAL PLANT PATHOLOGY (3 cr.) — A study of the major diseases which attack horticultural crops. Considers methods for accurate identification and diagnosis of disease problems and appropriate control measures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 220 NURSERY MANAGEMENT (3 cr.) — The aspects of nursery work including plant growing, planting, transplanting, balling, burlapping, business methods in the nursery, buying and stocking the nursery and merchandising in this specialized area. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 230 GREENHOUSE MANAGEMENT (3 cr.) — The phases of greenhouse activity including seedbed preparation, plant selection, and utilizing the materials presented in prerequisite courses as they apply to growing under glass; business and selling practice peculiar to this phase of the industry. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 240 TURF GREEN MANAGEMENT (3 cr.) — The study of turf grasses in use in this geographical area including propagation and production, planting, maintenance, weed control, insect and disease control, trouble shooting problems, studies regarding the relationship between turf grasses, soils, fertilizers, irrigation and drainage requirements. Practical experience in turf grass management in park areas and golf courses. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 250 LANDSCAPE PLANNING (2 cr.) — Prerequisite HORT 100 or HORT 106. The basic symbols used in landscape plans. Drafting and blueprint reading, the preparation of simple landscape plans, and the interpretation of plans designed by a landscape architect. Includes the fundamentals of landscape design, planning areas, walks, drives, and the effective use of trees, lawns, shrubs, ground cover, and foundation plantings. Laboratory 4 hours, Total 4 hours per week.

HORT 256 WOODY PLANTS (3 cr.) — Identification, culture, and uses of woody plants used in landscaping. Includes deciduous and evergreen, wild and cultivated shrubs and trees. Laboratory 6 hours per week.

HORT 257 HERBACEOUS PLANTS (3 cr.) — Identification, culture and uses of annuals, biennials, and perennials used in landscaping. Laboratory 6 hours per week.

HORT 258 LANDSCAPE DRAWING (3 cr.) — Acquaints the student with the use of drafting equipment. Major emphasis is on proper drawing techniques and proper use of media. Class projects include hard line and free-style landscape drawing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

HORT 260 FLOWER SHOP MANAGEMENT (3 cr.) — The art of floral design as to form, style, and composition. Considers location, management, and operation of a flower shop, and the arrangement of flowers for home, church, hotels, and public buildings. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 266 HOUSE AND CONSERVATORY PLANTS (3 cr.) — Identification, culture, and propagation of potted and conservatory plants. Considers the environmental problems unique to the growth of indoor plants and

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their use in indoor landscaping. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 270 FLORAL DESIGN AND ARRANGING (2 cr.) — A practical introduction to floral design with an emphasis on the use of fresh flowers. Students practice arranging and designing centerpieces, corsages, boutonniers, bud vases, etc. Laboratory 4 hours per week.

HORT 276 FLORAL DESIGN AND ARRANGING (2 cr.) — Prerequisite HORT 270. A continuation of floral design and arranging with emphasis on acquisition of basic skills related to floral designs created by retail florists. Students will design and create wreaths, baskets, sprays, wedding flowers and corsages in the laboratory. Laboratory 4 hours per week.

HORT 290, 297, 298, 299 — See General Usage Courses Page 76.

HUMAN SERVICES

HMSV 106 INTRODUCTION TO HUMAN SERVICES (3 cr.) — An overview of human services, types of agencies and delivery systems, and human services as a career field. Emphasis will be on developing the generalist concept and the role of the associate degree graduate to other human service personnel. Lecture 3 hours per week. Prerequisite — Instructor's permission.

HMSV 110 INTRODUCTION TO DEVELOPMENTAL DISABILITIES (3 cr.) — Survey of developmental disabling conditions; implications for treatment. Specific content will focus on mental retardation, epilepsy, cerebral palsy, and autistic behavior patterns. Lecture 3 hours per week.

HMSV 128 COMMUNITY RESOURCES AND SERVICES (3 cr.) — A study of federal, state, and local agencies, their functions, limitations and interrelationships. Emphasis is placed on determining stated purpose of an agency as related to delivery of human services, and procedures for referrals, team-building, and regional cooperation. Lecture 1 hour, Laboratory 5 hours, Total 6 hours per week.

HMSV 134-135 HELPING RELATIONSHIPS I-II (3 cr.) (3 cr.) — Development of skills needed to function effectively in helping relationships. A major emphasis will be to increase students' self-awareness in order to enable them to relate to and help others more effectively. Students will learn to identify personal skill strengths and deficits, to set goals, and to develop plans for achieving personal and program goals. Second quarter emphasis will be transfer of these skills to client needs. Lecture 3 hours per week.

HMSV 144-145 GROUP PROCESS I-II (3 cr.) (3 cr.) — A study of the stages of group development, the role of the group leader and the various kinds of groups. Students will be introduced to various models of group processes that are involved in the helping process. Second quarter students will increase their skill development through increased experiences in group facilitating and leadership. Lecture 3 hours per week.

HMSV 190 COORDINATED PRACTICE IN HUMAN SERVICE (4 cr.)

HMSV 211 ALCOHOL/DRUG ABUSE REHABILITATION PROGRAMS I (3 cr.) — A comprehensive course designed to provide knowledge, skills, and insight for working with drug and alcohol abuse programs. The course will emphasize personal growth, goal and value assessment, development of "helping relationships" and counseling for individual and group needs. Students will be provided opportunities for field experience in treatment centers. Lecture 3 hours per week.

HMSV 221-222-223 HUMAN BEHAVIOR I-II-III (3 cr.) (3 cr.) (3 cr.) — Designed to develop the understanding and knowledge of working with individuals, families,

groups, organizations and communities within the socio-cultural context. The course emphasizes normal development of social systems through states. Attention is given to major theoretical approaches to individual, community and organization development and is sequential in keeping with the life cycle focus. Lecture 3 hours per week.

HMSV 290 COORDINATED PRACTICE IN HUMAN SERVICE (5 cr.) (5 cr.) (5 cr.)

HMSV 298 SEMINAR AND PROJECT IN HUMAN SERVICE (3 cr.)

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, and Modern. Lecture 3 hours per week.

INDUSTRIAL ENGINEERING TECHNOLOGY

INDT 176 PRINCIPLES OF 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. Lecture 2 hours per week.

LEGAL ADMINISTRATION

LEGL 110 AN OVERVIEW OF THE LEGAL PROCESS (3 cr.) — A review of the processes of basic American law as legal decisions are made by the judicial, legislative and administrative agencies. An overview of the American judicial system, the sources of law, and the general relationship between the federal and state court system. Lecture 3 hours per week.

LEGL 126 LEGAL RESEARCH (3 cr.) — Provides an understanding of the function of the law library and will assist in developing research skills through the use of digests, encyclopedias, reporter systems and practice manuals. Lecture 3 hours per week.

LEGL 134 DOMESTIC RELATIONS (3 cr.) — Elements of valid marriage, grounds for divorce and annulment; separation, defenses, custody, support, alimony, tax consequences; out-of-state divorces and validity; jurisdiction and service. Review and analysis of separation and custody agreements, documents in divorce proceedings, change of name proceedings and adoptions. Lecture 3 hours per week.

LEGL 234-235 ESTATE PLANNING I-II (3 cr.) (3 cr.) — An introduction to various devices used to plan estates, including wills, revocable and irrevocable trusts, joint ownership, powers of appointment, life insurance and the like. Students consider the utility of various plans, in the light of different property arrangements, family situations, and estate objectives of typical decedents. Lecture 3 hours per week.

LEGL 240 CORPORATE LAW (3 cr.) — The fundamental principles of corporate law including capitalization, articles of incorporation, by-laws, tax returns, reports, financial statements and minutes, officers, employment contracts and special problems. Lecture 3 hours per week.

LEGL 244 REAL ESTATE ABSTRACTING I (3 cr.) — The study of abstracting titles to real estate, recordation of instruments affecting land, use and mechanics of general indices, anatomy and composition of recorded documents for purposes of abstracting, search

and mechanics of the title examination, description of land, priority of liens, liens imposed by localities, titles through wills, descent and chancery suits, and adverse possession. Review of legal consequences of bankruptcy, warranties, covenants, restrictions, dower-curtsey, easements and riparian rights as it affects titles to land. Lecture 3 hours per week.

LEGL 246 LAW OF INCOME TAXATION (3 cr.) — A study of the law of income taxation—state, federal and local—including preparation of income tax returns and related materials. A survey of the various administrative and judicial tribunals, and their jurisdiction, involved in the determination of income tax controversies. Lecture 4 hours per week.

LEGL 251 LEGAL TRANSACTIONS I (3 cr.) — Commercial principles and practices, Uniform Commercial Code. Major emphasis on contracts, warrants, title, consideration, performance, parties, subject matter and remedies for breach; torts, sales, negotiable instruments; consumer protection; insurance; wills and inheritance; bankruptcy, statute of limitations. Lecture 3 hours per week.

LEGL 257 REAL ESTATE LAW (3 cr.) — Principles and practices of real estate law, including titling, interstate succession and probate problems, liens, encumbrances and restrictions, legal descriptions, surveying and research, contracting, financing, taxation, lending and bankruptcy. Lecture 3 hours per week.

LEGL 258 ADMINISTRATION OF DECEDENT'S ESTATES (3 cr.) — The course is designed to teach students how to administer an estate efficiently. It includes instruction on substantive areas of law, as well as instruction on preparation of forms and provides samples for the efficient administration of decedent's estates. 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 131-132-133 TRAFFIC AND TRANSPORTATION I-II-III (3 cr.) (3 cr.) (3 cr.) — The requirements for traffic managers and others connected with such fields as railroading, trucking, and air travel. The course outlines the development of transportation, transportation regulations, tariffs and rates, and the regulations and applications of traffic management. Lecture 3 hours per week.

MKTG 136 RETAIL ORGANIZATION & MANAGEMENT (3 cr.) — The organization of business 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 157 PRINCIPLES OF CASUALTY INSURANCE AND SURETY BONDING (3 cr.) — Prerequisite MKTG 150 or equivalent. Automobile liability insurance and policy terms, workmen's compensation and employer's liability, comprehensive liability, professional and personal liability, fidelity and surety bonds, theft coverages, miscellaneous casualty coverages, multiple-line trends and coverages, health insurance. 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 examinations 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 168 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. Lecture 3 hours per week.

MKTG 197 — See General Usage Courses Page 76.

MKTG 208 BANK PUBLIC RELATIONS AND MARKETING (3 cr.) — The basis of public relations, both internal and external; the why, what, and how of public relations and marketing. An overview in terms of what everyone in banking should know about the essentials of bank public relations and marketing. Lecture 3 hours per week.

MKTG 209 SALES MANAGEMENT (3 cr.) — From the viewpoint of management, study of the organization and operation of the sales division within the business enterprise. Planning, organizing, and controlling the total sales effort; use of the case method of learning. Lecture 3 hours per week.

MKTG 218 FASHION MERCHANDISING (BUYING AND CONTROL) (3 cr.) — Develops an understanding of the major considerations involved with the buying and merchandising of fashion products. Emphasis is placed on the dynamics of fashion and consumer buying patterns and sources of buying information are analyzed and studied. Discusses fashion buying and inventory control in the merchandising cycle; techniques used in developing fashion buying plans; model stock, unit control and inventory systems. Merchandising selection policy and pricing for profit. Lecture 3 hours per week.

MKTG 220 INTRODUCTION TO FASHION DESIGN (3 cr.) — An introductory course in the basic techniques of the development of fashions. Also includes pencil sketching of original designs and a complete study of the garment industry and fashion designers. Lecture 3 hours per week.

MKTG 225 PRINCIPLES OF ADVERTISING (3 cr.) — Study of the functions, principles, and techniques of advertising, including the role of advertising in the marketing system. 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 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 force and store policies to develop favorable customer relationships. Institutional practices which develop goodwill for the store. Lecture 3 hours per week.

MKTG 231-232-233 INTERSTATE COMMERCE LAW I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite MKTG 133 or equivalent. A study of transportation law including the Interstate Commerce Act. First quarter devoted to constitutional issues, nature of interstate commerce, franchises, and combinations of carriers. Second quarter devoted to finance, rates, and services. Third quarter concerned with procedure, loss and damage, and related statutes. Lecture 3 hours per week.

MKTG 236 PHYSICAL DISTRIBUTION (3 cr.) — Business firm's functions and activities in the evaluation, purchase, and direction of transportation services provided by various transportation media; selection of transportation media, private transportation and management of equipment, order processing, supply scheduling, inventory control and customer service in developing a total system approach to marketing logistics. Lecture 3 hours per week.

MKTG 238 TRAFFIC MANAGEMENT (3 cr.) — Prerequisite MKTG 131. The purpose, function, and operation of traffic management; the differences in various areas of traffic; and the relationship to other business operations. Lecture 3 hours per week.

MKTG 239 PROBLEMS IN TRANSPORTATION (3 cr.) — Prerequisite MKTG 231. Preparation and presentation of cases as Interstate Commerce Commission practitioner and witness; drafting of pleadings; briefs, and petitions, submission of testimony and exhibits in written and oral form with experience on the witness stand. 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 evaluations; method 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.) — Prerequisite MKTG 165. 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 274 ADVANCED REAL ESTATE SALES (3 cr.) — Advanced fundamentals of real estate brokerage and sales procedures as they apply to the real estate business. Relations of broker and salesmen, salesmen and client, and responsibilities. Writing contracts, closing and settlements, and follow-up relations. Lecture 3 hours per week.

MKTG 275 ADVANCED REAL ESTATE APPRAISAL (3 cr.) — Advanced fundamentals of real estate evaluation; methods used in determining value; advanced procedures and techniques by utilizing actual appraisals; discussion of the many fields available in appraisal activity of real estate. 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 278 REAL ESTATE ECONOMICS (3 cr.) — Nature and classification of land economics, the development of property, construction subdivision, economic values and real estate evaluation, real estate cycles and business fluctuations, residence market trends, rural property and special purpose property trends. Lecture 3 hours per week.

MKTG 279 REAL ESTATE INVESTMENT (3 cr.) — An examination of Real Estate Investment with emphasis on tax shelters, limited partnerships, syndications, exchanges and modern techniques of mortgage equity requirements and depreciation guidelines. Lecture 3 hours per week.

MKTG 297, 298, 299 — See General Usage Courses Page 76.

MATHEMATICS

MATH 01 DEVELOPMENTAL MATHEMATICS (3 cr.) — A developmental course in arithmetic for students who need to build up their arithmetic skills before entering higher level mathematics courses. Lecture 3 hours per week.

MATH 02 PRE-ALGEBRA (3 cr.) — A developmental course which is designed to bridge the gap between arithmetic and the College's business mathematics sequence BUAD 121-122-123. Topics include fundamental operations in arithmetic and algebra, percents, simple equations, ratios and proportions, and word problems. Lecture 3 hours per week.

MATH 06-07 BASIC ALGEBRA I-II (5 cr.) (5 cr.) — A developmental course in review of algebra, designed to develop the mathematical proficiency necessary for selected curriculum entrance. MATH 06 covers the basic material normally covered in high school Algebra I while MATH 07 covers the material in Algebra II. Lecture 5 hours per week.

MATH 08 BASIC GEOMETRY (3 cr.) — A developmental course in review of geometry, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Lecture 3 hours per week.

MATH 09 BASIC TRIGONOMETRY (3 cr.) — A developmental course in review of trigonometry, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Lecture 3 hours per week.

MATH 11-12-13 ELEMENTS OF MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.) — Designed for the occupational student. Practical applications of elementary mathematics including algebra, geometry, trigonometry to everyday problems in the manufacturing and trade world. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MATH 41 AIR CONDITIONING MATHEMATICS I (4 cr.) — Fractions, decimals, sign of operation, equations, Ohm's law, subtraction, multiplication, and division of signed numbers, work and power problems. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

MATH 50 BUSINESS MATHEMATICS (3 cr.) — Review of the fundamentals of mathematics related to business activities. Emphasis on the use of percents, discounts, interest, depreciation, insurance calculations, and other practical business problems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MATH 99 — See General Usage Courses Page 76.

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 sketching, numerical trigonometry,



introduction to analytical trigonometry, introduction to analytical trigonometry, and an introduction to calculus to emphasize those techniques useful to the engineering student. Lecture 3 hours per week.

MATH 118-119 INTRODUCTION TO TECHNICAL MATHEMATICS I-II (5 cr.) (5 cr.) — Prerequisite 2 units of high school math including Algebra or satisfactory score on the mathematics placement test. Applications of arithmetic, algebra, geometry and trigonometry to technical problems. Lecture 5 hours per week.

MATH 121-122-123 ENGINEERING TECHNICAL MATHEMATICS I-II-III (5 cr.) (5 cr.) (5 cr.) — Prerequisite MATH 118 or three units of high school mathematics other than general mathematics, or 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 130 MATHEMATICS FOR COMMUNITY AND SOCIAL SERVICES (4 cr.) — Intended for students enrolled in the Community and Social Services curriculum and related areas. Includes a review of arithmetic skills, an introduction to basic algebra, consumer mathematics, interpretation of graphs and tables, and elementary statistics. Lecture 4 hours per week.

MATH 141-142-143 INTRODUCTORY MATHEMATICAL ANALYSIS I-II-III (5 cr.) (5 cr.) (5 cr.) — Prerequisites are a satisfactory score on appropriate mathematics proficiency examination or four units of high school mathematics including two units of algebra, one of geometry, and one-half of trigonometry or equivalent. Students not adequately prepared for MATH 141 should complete MATH 161-162 prior to enrolling in MATH 141. A modern unified course in analytic geometry

and calculus including functions, limits, derivatives, differentials, indefinite integrals, definite integrals, and vector analysis. Lecture 5 hours per week.

MATH 150 INTRODUCTION TO COMPUTER MATHEMATICS (2 cr.) — Prerequisite 2 units of high school math. An introduction to the computer with an emphasis on fundamental skills needed in mathematics, business, and science. Students will be required to utilize The Basic Language to solve problems from different disciplines. Not for Data Processing or Engineering Majors. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

MATH 161-162 COLLEGE MATHEMATICS I-II (3 cr.) (3 cr.) — Prerequisite a satisfactory score on appropriate mathematics proficiency examinations or three units of high school mathematics including two units of algebra and one unit of geometry or MATH 07. A course in precalculus mathematics. Topics include college algebra, functions, analytic geometry, logarithms, exponentials, matrices, trigonometry, and applications. Lecture 3 hours per week. MATH 161-162 with MATH 163 completes a unified sequence in algebra, trigonometry, analytic geometry, and an introduction to calculus.

MATH 163 COLLEGE MATHEMATICS III (3 cr.) — Prerequisite: MATH 162 or four units of high school mathematics including two units of algebra, one unit of geometry, and one half unit of trigonometry or equivalent. Topics include limits, continuity, differentiation, applications, and a brief introduction to integration. MATH 163 with MATH 161-162 completes a unified sequence in algebra, trigonometry, analytic geometry, and an introduction to calculus. MATH 163 with MATH 261-262-263 provides a four quarter calculus sequence designed for students with majors other than physics or 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, business administration, or engineering. Prerequisite Algebra I and either Algebra II or Geometry or a satisfactory score on appropriate mathematics proficiency examinations or MATH 06. The first two quarters will include sets, the logic of algebra, the real number system, algebraic and transcendental functions, relations and graphs. The third quarter will include permutations, combinations, probability and elementary statistics. Lecture 3 hours per week.

MATH 198, 199 — See General Usage Courses Page 76.

MATH 202 INTRODUCTION TO MATRIX ALGEBRA (4 cr.) — Prerequisite MATH 163, 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 221-222 ADVANCED ENGINEERING TECHNICAL MATHEMATICS I-II (4 cr.) (4 cr.) — Prerequisite MATH 123. Differential and integral calculus with emphasis on applied problems in the appropriate technological fields. 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 course comprising infinite series, multiple integrals, linear algebra, and ordinary differential equations. Lecture 4 hours per week.

MATH 261-262-263 ADVANCE COLLEGE MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite MATH 163 or equivalent. A continuation of the calculus sequence begun in MATH 163 for students other than those in engineering or physics. Topics included are differentiation and integration of exponential, logarithmic, and trigonometric functions; sequences and series; solid analytic geometry; multiple integrals; and introduction to differential equations. Lecture 3 hours per week.

MATH 281-282-283 STATISTICS I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite MATH 162 or MATH 183 or departmental approval. Introduction to the fundamental ideas of statistics, including a brief treatment of elementary probability, descriptive statistics, distributions, problems of sampling, normal distributions, measures of central tendency, sampling variance, confidence intervals, estimation, testing of hypotheses, regression correlation, and analyses of variance. Lecture 3 hours per week.

MATH 298, 299 — See General Usage Courses Page 76.

MECHANICAL ENGINEERING TECHNOLOGY

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.) — Continued study of practical and industrial applications and set up, inspection tools, gauges, tapers, gear cutting, square threads and fits. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 156 MECHANISMS (2 cr.) — The purpose and actions of cams, gear trains, levers, and other mechanical devices used to transmit control. A study of motions of linkages, velocities and acceleration of points within a link mechanism; layout method for designing cams and gear train. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 197 — See General Usage Courses Page 76.

MECH 199 — See General Usage Courses Page 76.

MECH 257-258 MACHINE DESIGN I-II (4 cr.) (4 cr.) — Prerequisite ENGR 252 and MATH 123. The analytical design of bearings, clutches, couplings, brakes, springs, gearing systems, and power shafting. Emphasis on methods of constructing machine parts and specifications of materials and manufacturing processes. Lecture 4 hours per week.

MECH 260 THERMODYNAMICS I (4 cr.) — Prerequisite MATH 123. Characteristics of gases; applied study of gas cycles and combustion processes. Lecture 4 hours.

MECH 268 FLUID MECHANICS (4 cr.) — Prerequisite ENGR 151. Properties of fluids and fluid flow. Bernoulli's Theorem, measuring devices, viscosity and dimensional analysis. Emphasis on pumps, piping, and fluid motors. Lecture 4 hours per week.

MECH 297, 298 — See General Usage Courses Page 76.

MEDICAL RECORDS

MDRS 190 COORDINATED PRACTICE — Supervised training in Medical Records, Pathology and Radiology departments in hospitals.

MDRS 199 — See General Usage Courses Page 76.

MENTAL HEALTH

MENT 116 ACTIVITIES THERAPIES (3 cr.) — The use of recreation, art, crafts and music as therapeutic tools with the emotionally disturbed and mentally retarded. Planning social programs and special events for the needs of the individual and consistent with his overall treatment plan and/or social goals, current laws affecting activities, use of volunteers and use and care for audio-visual media. Laboratory will include participa-

tion in games, crafts, and other activities that could be used with various age groups and persons presenting particular problems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MUSIC

Theory and Composition

MUSC 109 MUSIC FOR CHILDREN (3 cr.) — A study of the selection and use of music for children's activities. Music for singing, rhythm, and movement. Use of the keyboard and autoharp. Emphasis on pre-school through elementary grades. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MUSC 111-112-113 MUSIC THEORY I-II-III (4 cr.) (4 cr.) (4 cr.) — Elements of musical notation. Structure of scales, intervals, and 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 131-132-133 CLASS VOICE I-II-III (2 cr.) (2 cr.) (2 cr.) — An introduction to the many aspects of singing from the physical act through the aesthetic experience. The course is designed for the average singer who desires vocal improvement, and for the voice major as an addition to and extension of skills and knowledge necessary for his artistic development. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

MUSC 138 CHORUS (1 cr.)

MUSC 141-142-143 CLASS PIANO I-II-III (2 cr.) (2 cr.) (2 cr.) — Instruction in keyboard fundamentals. Standard repertoire. Designed to give the student the necessary proficiency to meet the basic keyboard requirements of a non-piano major in Music, and for the student who desires improvement in the keyboard techniques. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

MUSC 211-212-213 ADVANCED MUSIC THEORY I-II-III (4 cr.) (4 cr.) (4 cr.) — Continuation of MUSC 111-112-113. Development of facility in the analysis and usage of diatonic and chromatic harmonies. Continued study in analysis of Bach style, slightsinging and ear training, and keyboard harmony. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

History and Literature

MUSC 121-122-123 MUSIC APPRECIATION I-II-III (3 cr.) (3 cr.) (3 cr.) — This course aims to increase the variety and depth of the student's knowledge in music and related cultural activities. Aural comprehension of music through listening to compositions from the various historical periods while noting the changes in musical elements in each period. Lecture 3 hours per week.

MUSC 238 CHORUS (1 cr.)

MUSC 148 ORCHESTRA (1 cr.) — Students may receive credit for orchestra through participation in the Roanoke Symphony or Roanoke Youth Symphony.

MUSC 224-225 THE HISTORY OF OPERA I-II (3 cr.) (3 cr.) — Development of operatic style through the study of representative works from 1600 to present. Lecture 3 hours per week.

MUSC 249 BAND (1 cr.)

NATURAL SCIENCE

NASC 100 SURVEY OF SCIENCE (4 cr.) — A general survey course designed to familiarize the student with the principles of the biological and physical science.

Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

NASC 111-112 HEALTH SCIENCE I-II (4 cr.) (4 cr.) — Prerequisite: one unit of high school biology or departmental approval. Human anatomy and physiology. Body systems and functions. Replaces BIOL 154-155. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

NASC 113 HEALTH SCIENCE III (4 cr.) — Microbiology. The characteristics and activities of microorganisms, showing their essential relation to diagnosis, treatment, and prevention of diseases. Fundamentals of bacteriology, emphasizing their relationship to individual community health. Replaces BIOL 176. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

NASC 125 CONSERVATION OF NATURAL RESOURCES: Man and the Environment (3 cr.) — A study of the natural resources of Earth in the broadest sense: the components of man's physical and biological environment. The importance of rational use of air, water, living space, food supply, energy and minerals is considered in relation to man's future in Earth's ecosystem. NO PREREQUISITE.

NASC 130 BODY STRUCTURE AND FUNCTION (3 cr.) — A survey of the structure and function of the human body. This course is designed as a non-transfer course for Dental Assistant students. Lecture 3 hours per week.

NASC 154-155 ASTRONOMY I-II (3 cr.) (3 cr.) — The history of astronomy and the development of astronomical thought leading to the birth of modern astronomy and its most recent developments. Particular stress will be placed on astronomical instruments and measuring techniques, along with an examination of the solar system with emphasis on the Earth, moon and adjacent planets, the Milky Way galaxy and extragalactic objects. 154—Lecture 3 hours per week; 155—Lecture 2 hours per week, Laboratory 2 hours, Total 4 hours per week.

NURSING

NURS 98 GERIATRIC NURSING ASSISTANT (5 cr.) — A course in basic nursing care of the geriatric patient in the extended care facility, or home setting. Areas taught are communication skills, interpersonal relationships, basic human needs, ethics, anatomy and physiology, hygienic care, elimination, nutrition and special feeding needs, safety, infection control, admission and discharge procedures, care of the terminally ill, and care of equipment. Upon successful completion of the course, the student will have the necessary competencies to function under the direct supervision of a licensed nurse. Lecture 3 hours, clinical Laboratory 6 hours, Total 9 hours per week.

NURS 99 NURSING ASSISTANT—Hospital-Based Program (5 cr.) — A course in basic nursing care of the patient in the hospital or the home. Areas taught are hygienic care, comfort, and safety measures, elimination, transfer activities, body mechanics, care of equipment, special feeding needs, and admission and discharge procedures. Lecture 3 hours, clinical Laboratory 6 hours, Total 9 hours per week.

NURS 110 FUNDAMENTALS OF NURSING I (6 cr.) — The development of nursing skills for the physical, psychological, and social needs of patients. Selected clinical laboratory experiences in cooperating health agencies. This course includes content of Health 100 and Nursing 111 and replaces these two courses as a prerequisite to Nursing 112 and 123. Lecture 4 hours, Laboratory/Clinic 6 hours, Total 10 hours per week.

NURS 112 FUNDAMENTALS OF NURSING II (6 cr.) — Prerequisite NURS 110. Continuation of NURS 110.

Lecture 3 hours, Clinical 9 hours, Total 12 hours per week.

NURS 123 FUNDAMENTALS OF NURSING III (6 cr.) — Prerequisites NURS 110, 112. Includes development of nursing skills for the physical, psychological and social needs of patients. Selected clinical laboratory experiences in cooperating health agencies. Lecture 3 hours, Laboratory 9 hours, Total 12 hours per week.

NURS 168 PRINCIPLES OF MEDICATION ADMINISTRATION (2 cr.) — Elementary principles of medication administration including dosage calculation, major drug classifications, drug legislation, legal aspects of medication administration and drug action on specific body systems. Lecture 2 hours per week.

NURS 199 PRE- AND POSTCLINICAL CONFERENCE (2 cr.) — Preparation by student with instructor guidance for the day's plan for executing assignment, methods of implementation and completion; demonstrations, research, oral and written reports, case presentation to students and instructor. This course is conducted on a one to one basis between individual students and instructor. Lecture 2 hours, Total 2 hours per week.

NURS 221 NURSING IN MAJOR HEALTH PROBLEMS (8 cr.) — Prerequisites NURS 110-112-123, BIOL 154-155-176. 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 U.S. Lecture 4 hours, Clinical 12, Total 16 hours per week.

NURS 244 MEDICAL SURGICAL NURSING (4 cr.) — Prerequisites NURS 221, BIOL 154-155-176. Designed to develop nursing skills in caring for critically ill patients. Emphasis placed on cardiovascular, respiratory, renal and nervous systems. Nursing care of patients with major surgical conditions is also included. Related clinical experience in cooperating health agencies. Lecture 2 hours, Clinical 6 hours, Total 8 hours per week.

NURS 247 OBSTETRICAL NURSING (4 cr.) — Prerequisites NURS 221, BIOL 154-155-176. Designed to develop nursing skills in caring for mothers in the antepartum, intrapartum and postpartum periods, as well as care of the newborn infant. Related clinical experience in cooperating health agencies. Lecture 2 hours, Clinical 6 hours, Total 8 hours per week.

NURS 248 PEDIATRIC NURSING (4 cr.) — Prerequisite NURS 221, BIOL 154-155-176. Designed to develop nursing skills in caring for both well and ill children in a variety of settings. Emphasis is placed on theories of growth and development and the family as a unit. Related clinical experience in cooperating health agencies. Lecture 2 hours, Clinical 6 hours, Total 8 hours per week.

NURS 249 PSYCHIATRIC NURSING (4 cr.) — Prerequisites NURS 221, BIOL 154-155-176. Designed to develop nursing skills in caring for patients with emotional illnesses. The course content explores various treatment models, diagnostic categories and rehabilitative measures. Related clinical experience in cooperating health agencies. Lecture 2 hours, Clinical 6 hours, Total 8 hours per week.

NURS 256 NURSING ORGANIZATION AND MANAGEMENT (8 cr.) — Prerequisites NURS 221, BIOL 154, 155, 176. Focus is on beginning management skills of planning, organizing, directing and controlling as related to nursing. Emphasis is placed on leadership styles, conflict resolution, formal and informal groups, socialization and legal aspects of nursing. Consideration is also given to management in special situations, including emergencies, disasters, burns, community

agencies and intravenous therapy. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

NURS 257 RE-ENTRY INTO NURSING (8 cr.) — Prerequisite Registered Nurse License. Nursing care of the acutely ill adult patient. Designed for R.N.'s who have been inactive for at least three years. Course content includes diagnosis, treatment and nursing management of major medical and surgical illnesses. Other areas included are pharmacology, drug dosage calculation, legal aspects, leadership skills and selected advanced nursing procedures. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

NURS 298 (SENIOR SEMINAR) — Provides an opportunity for senior students to explore in depth topics and issues of current interest through independent study and research.

NURS 299 SUPERVISED STUDY (4 cr.) — Assignment preparations, pre- and postconference. Preparation by student with instructor guidance for the day's assigned activities. Includes discussion of plans for completion of assignment, methods of implementation after completion of assignments, demonstrations, oral and written reports, research, case presentation to the group, and individual presentations to the instructor. This course is conducted on a one to one basis between individual students and instructor. A higher number of credit hours is assigned in the 2nd year due to the increased number of assignments, complexity of care given, increased expectations of student research and correlation of knowledge, and increased number of clinical conferences.

PHILOSOPHY AND RELIGION

PHIL 101-102-103 INTRODUCTION TO PHILOSOPHY I-II-III (3 cr.) (3 cr.) (3 cr.) — An introductory study of some philosophical issues concerning the perception and belief of man in society. Lecture 3 hours per week.

PHOTOGRAPHY

PHTG 101 PHOTOGRAPHY I (3 cr.) — Principles of photography and fundamental techniques of the camera in relation to the expressive possibilities in visual communication and design. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

PHTG 201-202-203 ADVANCED PHOTOGRAPHY I-II-III (3 cr.) (3 cr.) (3 cr.) — Advanced creative techniques in all areas of photography, stressing skill in lighting, portraiture, and commercial applications of photography. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

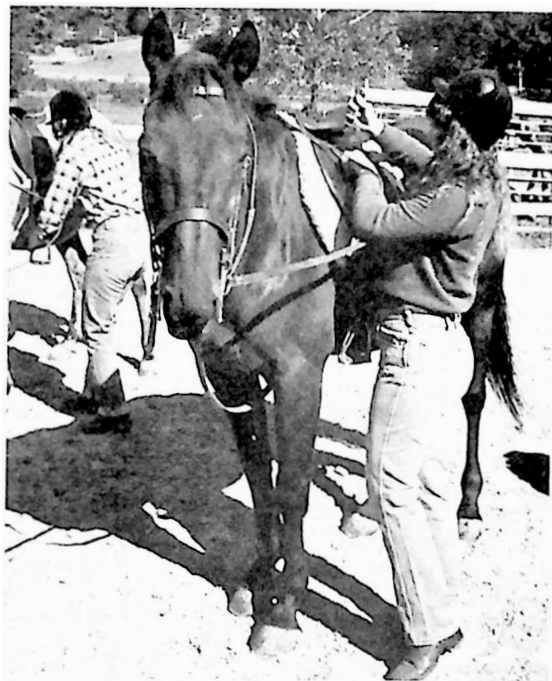
PHYSICAL EDUCATION & RECREATION

PHED 101-102-103 PHYSICAL EDUCATION I-II-III (1 cr.) (1 cr.) (1 cr.) — The study of recreational activities which will have value for more effective use of leisure time. The development of skills and methods in archery, badminton, bowling, golf, tennis, volleyball and other sports and activities appropriate to the local season, and facilities available. Lecture 1 hour, Laboratory 1 hour, Total 2 hours per week.

PHED 101 FOOTBALL (1 cr.) Laboratory 2 hours per week.

PHED 111 ARCHERY (1 cr.) Laboratory 2 hours per week.

PHED 113 BOATING (1 cr.) Laboratory 2 hours per week.



PHED 114 EQUITATION (1 cr.) Laboratory 2 hours per week.

PHED 115 ICE SKATING (1 cr.) Laboratory 2 hours per week.

PHED 118 SNOW SKIING (1 cr.) Laboratory 2 hours per week.

PHED 119 WATER SKIING (1 cr.) Laboratory 2 hours per week.

PHED 131 BOWLING (1 cr.) Laboratory 2 hours per week.

PHED 133 GOLF (1 cr.) Laboratory 2 hours per week.

PHED 135 TENNIS (1 cr.) Laboratory 2 hours per week.

PHED 136 FUNDAMENTALS OF ROLLER SKATING (1 cr.) Laboratory 2 hours per week.

PHED 138 SELF DEFENSE (1 cr.) Laboratory 2 hours per week.

PHED 139 INTERMEDIATE TENNIS (1 cr.) Laboratory 2 hours per week.

PHED 151 LIFE SAVING (1 cr.) Laboratory 2 hours per week.

PHED 153 SWIMMING (1 cr.) Laboratory 2 hours per week.

PHED 157 INTERMEDIATE SWIMMING (1 cr.) Laboratory 2 hours per week.

PHED 170 BASKETBALL (1 cr.) Laboratory 2 hours per week.

PHED 172 SOCCER (1 cr.) Laboratory 2 hours per week.

PHED 173 SOFTBALL (1 cr.) Laboratory 2 hours per week.

PHED 174 VOLLEYBALL (1 cr.) Laboratory 2 hours per week.

PHED 207 BEG. TENNIS (1 cr.) Laboratory 2 hours per week.

PHED 241 KARATE (1 cr.) Laboratory 2 hours per week.



PHYSICS

PHYS 101-102-103 INTRODUCTORY PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.) — A survey of general physics; 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 111-112-113 TECHNICAL PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite three units of high school mathematics; corequisite MATH 121. Precision measurement, properties of matter, hydrostatics and hydraulics; force and motion, Newtonian mechanics, vectors and graphic solutions, statics, dynamics, rotary motion, heat and thermodynamics, heat engines, sound acoustics; the theory of wave motion, light and optics, magnetism and electricity, DC and AC circuits and machines. An introduction to electronics and nuclear energy for industrial purposes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 121-122-123 PRINCIPLES OF PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite three units of high school mathematics including two units of algebra and one unit geometry. An introductory course in Physics satisfying the science distribution requirements for majors other than Physics or Engineering. The fundamental principles of mechanics, heat, electricity and magnetism, wave motion, atomic and nuclear physics. Attention is given to the historical development and philosophical significance of physical concepts and theories. Application to elementary problems and the role of physics in the modern world. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 131-132-133 APPLIED PHYSICS I-II-III (3 cr.) (3 cr.) (3 cr.) — The fundamentals of physics with laboratory exercises to parallel lectures. Deals with the properties of matter, basic Newtonian mechanics. The second quarter course includes the study of heat, light, optics and sound as wave phenomena. The general

course includes a study of electricity and magnetism. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

PHYS 198, 199 — See General Usage Courses Page 76.

PHYS 213 ENGINEERING PHYSICS III (3 cr.) — Prerequisite MATH 143 or equivalent and PHYS 222. General University Physics designed for students in engineering, physics of mathematics. Includes wave optics, quantum effects, atomic structure and nuclear physics. Except for the lab, PHYS 213 and PHYS 223 cover the same content. Lecture 3 hours per week.

PHYS 221-222-223 GENERAL UNIVERSITY PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite MATH 143 or equivalent. General University Physics is designed for students in engineering, physics or mathematics. Includes mechanics, relativity, electricity and magnetism, electromagnetic waves, optics, quantum mechanics, atomic structure, and nuclear physics. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 298, 299 — See General Usage Courses Page 76.

PSYCHOLOGY

PSYC 110 PRINCIPLES OF APPLIED PSYCHOLOGY (3 cr.) — The general principles of perception, learning, and conscious and unconscious motivation which are operative in all practical applications of psychology to life and work. Lecture 3 hours per week.

PSYC 116 THE PSYCHOLOGY OF PERSONAL ADJUSTMENT (3 cr.) — Characteristics of mental health. Psychological principles applied to the development of a mature personality and the problems of everyday life. Effective methods of 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.) — The development of the child concentrating on the physical, intellectual, social and emotional factors in his personality. Recent studies in child development. Provides a background for students who intend to become nurses, teachers, or enter other occupations involving continuous work with children. Lecture 3 hours per week.

PSYC 198, 199 — See General Usage Courses Page 76.

PSYC 201-202-203 GENERAL PSYCHOLOGY I-II-III (3 cr.) (3 cr.) (3 cr.) — The study of human 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 factor 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 4-5 hours per week.

PSYC 208 PSYCHOLOGY OF ABNORMAL BEHAVIOR (3 cr.) — Prerequisite: Instructor's permission. Exploration of the range of human behavior known as abnormal. Emphasis placed on criteria of abnormality, individual and social causes of psychopathology, major categories for classification of behavior, possibilities for treatment and personal adjustment. Lecture 3 hours per week.

PSYC 231-232-233 HUMAN GROWTH AND DEVELOPMENT I-II-III (3 cr.) (3 cr.) (3 cr.) — The study of interpretation of human behavior through the life cycle. Concepts and principles describing the dynamics of human development and behavior and their relation to the work and purpose of the school. The scientific method, heredity, psychological development, perception, motivation, learning, emotions, cognitive processes, personality, frustration, intelligence, and mental processes. Lecture 3 hours per week.

PSYC 246 EDUCATIONAL PSYCHOLOGY (5 cr.) — Prerequisite PSYC 202, 130 or equivalent. Human behavior and learning treated in the context of educational processes. The nature of various mental characteristics such as intelligence, interest, knowledge; their measurement and appraisal and their significance for educational goals. Lecture 5 hours per week.

PSYC 257 LAW ENFORCEMENT PSYCHOLOGY (3 cr.) — Prerequisite PSYC 110 and 116. Intergroup relations and police work. Some facts about racial, religious, and national differences. Prejudice, suggestion, emotion, frustration and aggression in interpersonal and intergroup situations. Types of abnormal behavior likely to be encountered in police work. Lecture 3 hours per week.

PSYC 260 INTRODUCTION TO BEHAVIOR MODIFICATION (3 cr.) — Survey of the history of behaviorism and the principles and applications of behavior modification. Observation of the training and skills employed in threatment programs based on behavior modification methodology. Lecture 3 hours per week.

PSYC 298, 299 — See General Usage Courses Page 76.

PUBLIC SERVICE

PBSV 150 INTRODUCTION TO COMMUNITY AND SOCIAL SERVICE (3 cr.) — Consideration of the basic principles, scope, and functions, as well as the practices and current trends in community and social service work. A broad view of the field is presented to provide

students with an appreciation of community and social service work as a career. Lecture 3 hours per week.

PBSV 256 INTERVIEWING SKILLS (3 cr.) — A study and analysis of the technique of interviewing. Includes the significance of representing a government or private agency, human relations, confidentiality, beginning the interview, interchange of information, handling complaints and criticism, ending the interview. Lecture 3 hours per week.

PBSV 258 SOCIAL CHANGE SKILLS (3 cr.) — Institutions and why they change or fail to change. The differing strategies for effecting change. Examination of techniques employed by people attempting change. Lecture 3 hours per week.

PBSV 259 SOCIAL LEGISLATION (3 cr.) — An examination of current and prospective programs dealing with legislation relevant to community services. Covers Federal, State, and municipal programs; interrelationships among governmental agencies; authority and responsibility for administration. Lecture 3 hours per week.

RADIO & TELEVISION

RDTV 51-52-53 ADVANCED SERVICING AND TROUBLESHOOTING TECHNIQUES I-II-III (6 cr.) (6 cr.) (6 cr.) — Prerequisite RDTV 75 or equivalent. Stage-by-stage analysis of Electronic Circuitry used in monochrome and color television receivers. Emphasis will be placed upon developing the student's ability to isolate and repair faults found in electronic equipment using the television receiver as an instructional tool. Lecture 3-3-3 hours, Laboratory 6-6-6 hours, Total 9-9-9 hours per week.

RDTV 74 RADIO/TV ELECTRONICS I (4 cr.) — Prerequisite ELEC 11. A circuits-system concept with emphasis on both vacuum tube and solid state power supplies, voltage amplifiers, including audio frequency, intermediate frequency, radio frequency and video amplifiers, oscillators, converttermixers and detector,



basic receiver systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RDTV 75 RADIO/TV ELECTRONICS II (4 cr.) — Prerequisite RDTV 74. Systems analysis and applications of circuits as applied to receivers, phonographs, recorders and other media in the home entertainment and communications field. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RDTV 80 CET LICENSE PREPARATION (3 cr.) — Prerequisite ELEC 68 and RDTV 52. Provides a broad review of the principles relating to home entertainment electronics that may be encountered on the CET (Certified Electronics Technician) exam. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

RADIOGRAPHY

RADL 110 INTRODUCTION TO RADIOLOGY, PROTECTION, PATIENT CARE (3 cr.) — A brief history of the radiologic profession, the preliminary code of ethics and conduct for radiologic students, and the basic fundamentals of radiation protection. The care and handling of the sick and injured patient in the radiology department. The use of contrast media necessary in the investigation of the internal organs. Lecture 3 hours per week.

RADL 114 PRINCIPLES OF EXPOSURE I (4 cr.) — The control and use of radiation to produce safe levels of radioactive energies necessary for the production of radiographs. Includes the developmental process necessary to produce artifact free radiographs. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 115 PRINCIPLES OF EXPOSURE II (4 cr.) — Prerequisite RADL 114. The controlled use of radiation producing sources both natural and man-made includes studies in the employment of exposure relative to pediatric radiology. In addition, the course will include topics dealing with equipment maintenance and minor repairs of x-ray equipment. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 124 RADIOGRAPHIC PROCEDURES I (4 cr.) — Positioning the patient's anatomical structures on the radiograph with emphasis on positioning of the extremities, chest, skull, and gross examination of the abdomen. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 125 RADIOGRAPHIC PROCEDURES II (4 cr.) — Prerequisite RADL 124. Emphasis on radiographic procedures such as inner ear studies, pediatric radiology, intra oral examination and other more complex examinations. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 126 RADIOGRAPHIC PROCEDURES III (4 cr.) — Prerequisite RADL 125. The use of special radiographic and surgical procedures employed in the more complicated investigation of internal conditions in the human body. Contrast media, drug reactions, special equipment and techniques will be included. Lecture 3 hours, Laboratory 3 hours per week, Total 6 hours per week.

RADL 141 ELEMENTARY CLINICAL PROCEDURES I (3 cr.) — Designed to develop technical skills in fundamental radiographic procedures. Emphasis is placed on manipulation of general equipment and on patient care. Related clinical experience in cooperating health agencies. Clinic 16 hours per week.

RADL 142 ELEMENTARY CLINICAL PROCEDURES II (3 cr.) — Prerequisite RADL 141. Designed to develop technical skills in fundamental radiographic procedures. Emphasis is placed on osseous studies including skull procedures. Related clinical experience in cooperating health agencies. Clinic 16 hours per week.

RADL 143 ELEMENTARY CLINICAL PROCEDURES III (3 cr.) — Prerequisite RADL 141 and 142. Designed

to develop technical skills in fundamental radiographic procedures. Emphasis is placed on basic contrast media studies. Related clinical experience in cooperating health agencies. Clinic 16 hours per week.

RADL 190, 199 — See General Usage Courses Page 76.

RADL 210 RADIATION PROTECTION AND RADIOBIOLOGY (3 cr.) — Prerequisite RADL 110. A comprehensive study of the methods and devices used for protection from ionizing radiation. Includes the theories of biological effects, cell and organism sensitivity and the somatic and genetic effects of ionizing radiation. Current radiation protection philosophy will be related to protecting the patient and technologist. Lecture 3 hours per week.

RADL 216 APPLIED RADIATION PHYSICS (4 cr.) — Prerequisite RADL 114, the circuiting and electronics of x-ray machines. The structure of radioactive generators and the resultant isotopes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 226 CORRELATED RADIOGRAPHIC THEORY (3 cr.) — Prerequisites RADL 250 and RADL 210. Intensive correlation of all major radiologic technology subject areas. Study of interrelationships of areas in biology, physics, principles of exposure, radiologic positioning and special procedures. Lecture 3 hours per week.

RADL 241 ADVANCED CLINICAL PROCEDURES I (5 cr.) — Prerequisite RADL 143. Designed to reinforce technical skills in fundamental radiographic procedures and introduce more intricate contrast media studies. Emphasis is placed on technical proficiency, application of radiation protection, nursing skills and exposure principles. Clinic 24 hours per week.

RADL 242 ADVANCED CLINICAL PROCEDURES II (5 cr.) — Prerequisite RADL 241. Concepts of pediatric radiography, advanced technical procedures and imaging modalities. Emphasis is placed on correlation of all preceding radiographic theory toward total responsibility for the patient in the technical area. Clinic 24 hours per week.

RADL 243 ADVANCED CLINICAL PROCEDURES III (5 cr.) — Prerequisite RADL 242. Introduction to application of radiation therapy, nuclear medicine, ultrasound and radiation physics. Emphasis is placed on perfecting all technical skills and developing an awareness of related areas utilizing ionizing radiation. Clinic 24 hours per week.

RADL 246 RADIOGRAPHIC PATHOLOGY (3 cr.) — A survey of common medical and surgical disorders that may have an effect on the outcome of a finished radiograph. It is also a study of how these disorders present themselves radiographically. Neoplasia, trauma, bacterial and viral diseases, circulatory, degenerative, and congenital disease will be covered. Illness related to the cardiovascular, respiratory, digestive, biliary, urinary, reproductive, central nervous, and skeletal systems as well as the ductless glands, and the vascular and lymphatic glands will be discussed. Emphasis will be placed on the correlation of the above illnesses with radiographs. Lecture 3 hours per week.

RADL 250 RADIOLOGIC SPECIALITIES (3 cr.) — Introduction to the study and treatment of disease as it relates to Nuclear Medicine, Radiation Oncology, Ultrasound, Imaging Modalities and other innovations in the field of radiology. Special emphasis will be placed on theory, principles of operation and clinical application of these specialities. Lecture 3 hours per week.

RADL 258 CASE HISTORY EVALUATION (2 cr.) — Prerequisite RADL 126. Orientation to medical records department, clinical history taking and evaluation of general diagnostic procedures relative to radiology. Lecture 2 hours per week.

RADL 259 RADIOGRAPHIC FILM EVALUATION (3 cr.) — Prerequisite RADL 257. Use of a film evaluation procedure to differentiate between diagnostic quality

and poor quality films, recognition of anatomic structures, and critique of exposure factors. Lecture 3 hours per week.

RADL 276 RADIOLOGY DEPARTMENTAL ADMINISTRATION (1 cr.) — Purpose of this course is to acquaint the radiology student with the planning and operations of the radiology departments. Particular emphasis will be placed on work flow, call scheduling, inter- and intradepartmental communications and budgetary cost centers. Lecture 1 hour per week.

RADL 290, 298, 299 — See General Usage Courses Page 76.

SECRETARIAL SCIENCE

SECR 11 TYPEWRITING I (3 cr.) — The typewriting keyboard and skills essential to obtain employment in an office occupation. Correct typing techniques and practice in production problems such as centering, letters, manuscripts, simple tabulations, and forms. Lecture 1 hour, Laboratory 4 hours, Total 5 hours.

SECR 20 BASIC STENOGRAPHIC SKILLS (3 cr.) — Elementary skills fundamental to the effectiveness of shorthand; sensitivity to phonetic sounds; mechanics of spelling and word differentiation with emphasis on the vocabulary of business; word syllabification, division and capitalization; mechanics of punctuation and sentence structure common to transcription; introduction to first lessons of shorthand theory. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 67 PROOFREADING (2 cr.) — Course deals with the importance of proofreading and the development of proofreading skills. An intense review of grammar, punctuation, capitalization, numbers, and word division is included. Using correct terminology and spelling aids are emphasized. References are made to the proper styles of correspondence, titles, and abbreviations. Lecture 2 hours per week.

SECR 100 SECRETARIAL SKILL REVIEW (3 cr.) — Designed to provide the educational secretary with the opportunity to review office skills based on individual needs in typewriting, shorthand, machine transcription, and selected office machines. Lecture 3 hours per week.

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, tabulation, 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 111. Shorthand principles in Gregg Diamond Jubilee Series with emphasis on reading and writing skills, associated with 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 gener-

al 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 124 SHORTHAND IV (4 cr.) — Prerequisite SECR 123. Speed building in typical business dictation with accuracy in transcription from shorthand notes. Use of Gregg dictation tapes for building speeds. 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 138 OFFICE RECORDKEEPING (3 cr.) — Concentration on the types of recordkeeping duties performed by secretaries including financial tax, payroll, personnel and inventory. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 139 CLERICAL PROCEDURES (3 cr.) — Designed to fuse skills acquired in typewriting, recordkeeping, business mathematics, and communication classes in performing clerical activities in the office. Special emphasis is placed on development of skills in the operation of stencil and spirit duplicating machines, selection of duplication process, and a study of type styles, paper, typewriter ribbons. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 147 BUSINESS COMMUNICATIONS (3 cr.) — Prerequisites ENGL 111 and SECR 112. Review of English grammar with emphasis on application of its principles to today's business. Special emphasis on the secretary's role in and contribution to the preparation of business communications. Lecture 3 hours per week.

SECR 157 MACHINE TRANSCRIPTION (3 cr.) — An introduction to machine transcription incorporating good listening techniques, grammar, punctuation, and correct business English. Practice in transcribing machine dictation. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 158 ELEMENTS OF TRANSCRIPTION (3 cr.) — A comprehensive study of the skills essential to transcription effectiveness; mechanics of spelling, word differentiation, and punctuation; work syllabification, division, and capitalization; and mechanics of sentence structure. Lecture 3 hours per week.

SECR 159 MEDICAL MACHINE TRANSCRIPTION (3 cr.) — Prerequisite SECR 157 and SECR 113. Designed to focus on machine transcription to attain proficiency in the use of medical vocabulary, forms and procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 197, 198 — See General Usage Courses on Page 76.

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, tabulation, 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. 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 (GENERAL) TRANSCRIPTION (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 227 (MEDICAL) TRANSCRIPTION (3 cr.) — Prerequisite SECR 222 or departmental permission. Medical secretary preparation. Development of skill in taking dictation and transcribing material involving medical shorthand forms and phrases. Proficiency in use of medical vocabulary forms, and procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 236 SPECIALIZED TYPEWRITER APPLICATIONS (3 cr.) — Prerequisite SECR 113 or program permission. Development of proficiency in use of a variety of specialized typewriters, including the executive typewriter and automatic typewriters involving magnetic tape or cards and similar electronic word processing devices. Emphasis on techniques and applications, with development of speed and accuracy in production operation. Lecture 2 hours, Laboratory 3 hours, Total 5 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, communication services, telephone techniques, and the use of reference materials. Emphasis 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 ADVANCED 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 274-275 MEDICAL SECRETARIAL PROCEDURES I-II (3 cr.) (3 cr.) — Prerequisite SECR 241. Instruction in medical office procedures, medical office filing and record keeping, extension of medical vocabulary, preparation of medical reports, and special correspondence requirements. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 297, 298, 299 — See General Usage Courses Page 76.

SOCIAL SCIENCE

SOSC 100 THE INDIVIDUAL AND HIS WORLD (4 cr.) — A course designed to relate the individual to his total environment. Four course units: (1) the individual and his psychological and social environment; (2) the individual and his political environment; (3) the individual and his economic environment; and (4) the individual and ecology. Students may enroll at the beginning of any unit, none of which are prerequisite to the other. Lecture 4 hours per week.

SOSC 180 PROBLEMS OF MAN IN THE MODERN WORLD (3 cr.) — Survey of contemporary social, psychological, political, and economic problems related to industrialization, urbanization, the role of government, national and international tensions. Lecture 3 hours per week.

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.) — 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 5-4 hours per week.

SOCI 140 INTRODUCTION TO TRANSACTIONAL ANALYSIS (3 cr.) — Designed to give a conceptual framework for understanding how the socialized personality affects others in social interaction and to introduce the concept of choice in alternative behavior that facilitates communication. Lecture 3 hours per week.

SOCI 166 SCHOOL AND COMMUNITY RELATIONS (3 cr.) — Techniques of working with parents and community groups for the purpose of establishing greater rapport between the school and the community. Emphasis on identifying pressure groups, recognizing problems of cultural and ethnic groups, and the handling of unusual problems involving the school and the community. Lecture 3 hours per week.

92 DESCRIPTIONS OF COURSES

SOCI 177 RELIGION AND SOCIETY (3 cr.) — Prerequisite SOCI 101. Designed to familiarize the student with the changing role of religion in contemporary society and to examine issues raised by such changes. Religious value schemes discussed and examined in the context of our modern world. Lecture 3 hours per week.

SOCI 186-187 SOCIAL PROBLEMS I-II (3 cr.) (3 cr.) — Application of sociological concepts and methods to the analysis of current social problems in the United States including delinquency and crime, mental illness, drug addiction, alcoholism, and sexual behavior; population crisis, race relations, family and community disorganization, poverty, automation, wars and disarmament. Lecture 3 hours per week.

SOCI 198, 199 — See General Usage Courses Page 76.

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 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 246 CULTURAL ANTHROPOLOGY (3 cr.) — Prerequisite SOCI 101 or 240. 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 crossculturally. Lecture 3 hours per week.

SOCI 250 APPALACHIAN FOLK CULTURE (3 cr.) — Prerequisites SOCI 101, SOCI 246 or instructor's approval. A study of the folk culture of the Appalachian region, with emphasis upon its social history, customs, oral traditions, and material culture. Lecture 3 hours per week.

SPANISH

SPAN 101-102-103 INTRODUCTORY SPANISH I-II-III (4 cr.) (4 cr.) (4 cr.) — The understanding, speaking, reading, and writing of Spanish with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SPAN 199 — See General Usage Courses Page 76.

SPAN 201-202-203 INTERMEDIATE SPANISH I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite SPAN 103 or successful completion of two years of high school Spanish and departmental permission. Advanced study in the understanding, speaking, reading, and writing of Spanish. Spanish is used in the classroom. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SPAN 299 — See General Usage Courses Page 76.

SPEECH AND DRAMA

SPDR 106 INTRODUCTION TO THE THEATRE I (3 cr.) — The principles of drama; the study of the development of the theatre production; study of selected plays as theatrical presentations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SPDR 111 ACTING I (3 cr.) — A study of styles of acting. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SPDR 119 THEATRE WORKSHOP (1-5 cr.) — Organization and work in the various activities of play production. Practice in set design, stage carpentry, theatre development, sound, costumes, light, stage managing, props, promotion, and stage crew. May be repeated for credit. Variable hours.

SPDR 121 THEATER APPRECIATION I (3 cr.) — A study of play production. Consideration of process,

style, organization, the written drama, and career opportunities. Lecture 3 hours per week.

SPDR 136 ORAL COMMUNICATIONS (3 cr.) — A study of effective communication with emphasis on speaking and listening. Lecture 3 hours per week.

SPDR 137 PUBLIC SPEAKING (3 cr.) — Development of skill in speechmaking. Lecture 3 hours per week.

SPDR 141-142-143 VOICE AND DICTION I-II-III (3 cr.) (3 cr.) (3 cr.) — A study through phonetics of the correct speech sounds, drills in pronunciation, enunciation, and voice usage. Lecture 3 hours per week.

SPDR 198 — See General Usage Courses Page 76.

SPDR 296, 299 — See General Usage Courses Page 76.

WELDING

WELD 120 FUNDAMENTALS OF WELDING (2 cr.) — An introduction to the history of oxyacetylene welding and SMAW, the principles of welding, cutting and nomenclature of the equipment and assembly of units. Welding procedures such as practice of puddling, running flat beads, different types of joints in the flat position. Safety procedures in the use of tools and equipment are stressed. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 121 OXYACETYLENE WELDING & CUTTING (2 cr.) — Prerequisite WELD 120 or equivalent. A continuation of study of oxyacetylene welding and cutting. Welding procedures such as fusion and nonfusion processes are included in various positions. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 122 ARC WELDING I (2 cr.) — Prerequisite WWELD 121 or equivalent. A study of operation of AC transformers, and DC machines. Studies are made of welding heat, polarities, and electrodes for use in joining various alloys by the SMAW process. Safety procedures are emphasized throughout the course. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 123 ARC WELDING II (2 cr.) — Prerequisite WELD 122 or equivalent. A continuation of the study of arc welding. Welding procedures such as practices of different types of joints in various positions, intermittent and build-up. Welds are made and tested so that student may detect his weakness. Safety procedures are emphasized throughout the course. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 124 INERT GAS WELDING I (2 cr.) — Prerequisite WELD 123 or equivalent. An introduction to and practical operations in the use of inert gas shield arc welding. A study is made of equipment operation, safety and practice in flat position. GMAW (MIG) principles are thoroughly covered. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 125 INERT GAS WELDING II (2 cr.) Prerequisite WELD 124 or equivalent. A continuation of the study of inert gas arc welders with emphasis placed on GTAW (TIG). A study is made of equipment, set-up, safety and operation. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 136 WELDING METALLURGY (3 cr.) — The study of steel classifications, heat treatment procedures, properties of ferrous and non-ferrous metals. Techniques and practices of testing welding joints. Destructive, non-destructive, visual, magnetic and fluorescent testing. Lecture 3 hours per week.

WELD 198 — See General Usage Courses Page 76.

WORD PROCESSING

WOPR 116 KEYBOARDING FOR INFORMATION PROCESSING (3 cr.) — Develop a keyboarding proficiency with emphasis on speed and accuracy for use

with a variety of keyboards found on electronic text-data entry devices. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

WOPR 126 AUTOMATED TYPING EQUIPMENT (1 cr.) — A self-instructional laboratory course designed to develop proficiency in the operation of automated typing equipment. Laboratory 3 hours per week.

WOPR 200 INTRODUCTION TO WORD PROCESSING (3 cr.) — A study of modern word processing administrative support concepts in the organization, operation, and control of office functions. Includes principles, methods, and techniques involved in current word processing technology, with emphasis on personnel, equipment, procedures, and environment. Also includes career opportunities in word processing. Lecture 3 hours per week.

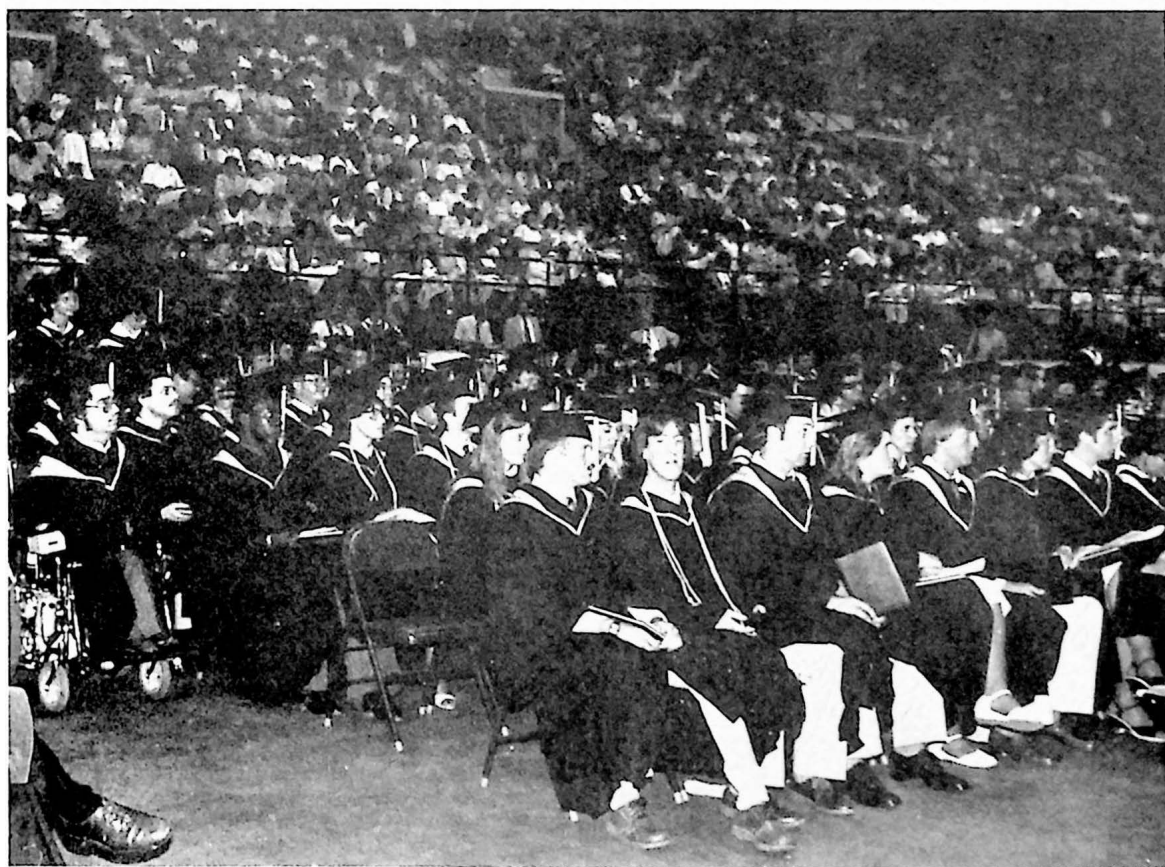
WOPR 216 WORD PROCESSING EQUIPMENT OPERATION (3 cr.) — Instruction in use and operation of word processing equipment. Development of proficiency in the use of specialized units with a variety of input methods. Satisfactory completion of the course should result in the acquisition of job entry skills in the field of word processing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

WOPR 224 WORD PROCESSING PROCEDURES I (3 cr.) — Introduction to a systems approach of the functional management of the office. Includes all phases of

administrative work and correspondence support for office tasks and paperwork production. Experiences will be offered by actual hands-on operation of word processing equipment, as well as simulations representing the activities of a complex office. Skills involved include listening, using numbers, keyboarding, dictation, transcription, composing, revising, proofreading, copying, duplicating, filing, distributing, and accepting responsibilities as assigned by managers. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

WOPR 225 WORD PROCESSING PROCEDURES II (3 cr.) — Continuation of WORD PROCESSING PROCEDURES I. Study and use of word processing equipment and techniques. Advanced instruction in the following word processing skills: listening, using numbers, keyboarding, dictation, transcription, composing, revising, proofreading, copying, duplicating, filing, distributing and accepting responsibilities as assigned by managers. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

WOPR 226 PRINCIPLES OF WORD PROCESSING MANAGEMENT (3 cr.) — Introduction and analysis of the supervisor's role in the operation of the information processing cycle and its changing technology. Emphasis on management techniques and skills as related to the word processing concept. Lecture 3 hours per week.



Part V

STATE AND LOCAL ORGANIZATION

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Mr. Richard M. Watson, Craig County

PRESIDENT

Dr. Charles L. Downs

ADMINISTRATIVE OFFICES

- Dr. Charles L. Downs President of the College
 B.A. — The George Washington University, 1958
 M.A. — Florida State University, 1965
 Ph.D. — University of Georgia, 1969
- Archer, J. Andrew Chairman, Division of Science and Mathematics
 A.A. — Reinhardt Junior College, 1959 Professor
 A.B. — Mercer University, 1961
 M.A. — George Peabody College, 1965
 Ph.D. — George Peabody College, 1972
- Blalock, Dwight E. Dean of Financial and Administrative Services
 B.S. — University of Alabama, 1966 Associate Professor
 M.S. — Virginia Commonwealth University, 1970
- Coleman, Ronald L. Director, Continuing Education
 B.S. — Virginia Commonwealth University, 1965 Associate Professor
 M.Ed. — University of Virginia, 1969
- Emick, Mark Q., Sr. Coordinator of Development
 A.S. — Virginia Western Community College, 1969 Assistant Professor
 B.S. — Virginia Commonwealth University, 1971
 M.A. — Virginia Polytechnic Institute & State University, 1976
- Gentry, Carroll L. Chairman, Division of Business
 B.S. — East Tennessee State University, 1966 Professor
 M.B.A. — East Tennessee State University, 1967
 C.A.G.S. — Virginia Polytechnic Institute & State University, 1978
- Hancock, F. Gordon Coordinator, Admissions & Records
 B.S. — Virginia Polytechnic Institute, 1963 Associate Professor
 M.E. — University of Virginia, 1977
- Hillman, David L. Director, Learning Resources
 B.A. — College of William & Mary, 1969 Assistant Professor
 M.L.S. — University of Maryland, 1972
- Houston, Charles A. Coordinator, Institutional Research
 B.S. — University of Tennessee, 1964 Professor
 M.M. — University of Tennessee, 1969
 Ph.D. — Virginia Polytechnic Institute & State University, 1976
- Knisely, Ellie F. Coordinator, Learning Laboratory
 B.S. — California, PA State College, 1966 Associate Professor
 M.A. — West Virginia University, 1967
- Mays, Clarence C., Jr. Chairman, Division of Humanities
 B.S. — University of Virginia, 1961 Professor
 M.Ed. — University of Virginia, 1965
 Ed.D. — University of Virginia, 1973
- Moore, Dolores K. Public Information Officer
 Diploma — Lehrerinnen Seminar, 1946 Assistant Professor
 Interpreter's Diploma — Rackow Schule, 1947
- Nickens, Harry C. Dean of Student Services
 B.S. — Tennessee Tech University, 1966 Professor
 M.A. — Tennessee Tech University, 1968
 Ed.D. — University of Tennessee, 1972
- Phelps, Hugh B. Chairman, Division of Engineering/Industrial Technology
 B.M.E. — Clarkson College of Technology, 1950 Professor
 M.M.E. — Clarkson College of Technology, 1956

96 FACULTY

- Pullen, Paul T. Dean of Instruction
 A.B. — Asbury College, 1949 Professor
 M.Div. — Asbury Theological Seminary, 1951
 M.Th. — Pittsburgh Theological Seminary, 1957
 M.Ed. — University of Pittsburgh, 1958
 Ph.D. — University of Pittsburgh, 1961
- Sellers, Harry Manager, Administrative Data Processing
 A.S. — Virginia Commonwealth University, 1971 Assistant Professor
 B.S. — Virginia Commonwealth University, 1973
 M.Ed. — Virginia Polytechnic Institute & State University, 1980
- Shirley, W. T. Chairman, Division of Social Sciences
 B.A. — Furman University, 1948 & Public Service Technology
 M.A. — University of North Carolina, 1950 Associate Professor
- Singer, Madelyn H. Chairman, Division of Health Technology
 B.A. — Brooklyn College, 1942 Professor
 M.A. — Columbia University, 1946
- Suggs, Del Coordinator of Counseling Services
 B.A. — Wake Forest University, 1959 Associate Professor
 M.Div. — Southeastern Baptist Seminary, 1968
 Th.M. — Southeastern Baptist Seminary, 1973
 Ed.D. — University of North Carolina, Greensboro, 1978

Faculty

- ADKINS, Gary M. Assistant Professor
 B.S. — Virginia Polytechnic Institute & State University, 1972 Counselor
 M.A. — Virginia Polytechnic Institute & State University, 1976
- AKERS, Vicki L. Assistant Instructor
 A.A.S. — University of Kentucky, 1975 Radiologic Technology
- ARMINIO, Robert L. Assistant Professor
 B.Arch. — University of Virginia, 1968 Architecture
- BAKER, J. W., Jr. Assistant Professor
 A.A.S. — Roanoke Technical Institute, 1965 Electrical Engineering
 B.S. — Virginia Polytechnic Institute & State University, 1971 Technology
 M.S. — Virginia Polytechnic Institute & State University, 1975
- BANKS, Helen K. Instructor
 A.B. — Grove City College, 1947 Reading
 M.S. — Radford College, 1978
- BANKS, Robert G. Professor
 B.S. — Indiana University of PA, 1948 Music
 M.Ed. — The Pennsylvania State College, 1952
 Ed.D. — University of North Carolina at Greensboro, 1976
- BASS, James Louis, III Assistant Professor
 B.S. — University of Tennessee, 1960 Biology
 M.A. — Vanderbilt University, 1977
- BENSON, G. Don Professor
 B.S. — Texas Western College, 1964 Physics
 Ph.D. — Vanderbilt University, 1971
- BIRMINGHAM, Michael G. Associate Professor
 B.A. — St. Bonaventure University, 1967 Business Management
 M.P.A. — University of Missouri, 1969
- BLEASE, Alfred D. Associate Professor
 B.S. — Brown University, 1961 Physics
 M.S. — University of Maine, 1965

BLOMBERG, Albert A. A.S. — Boston University, 1960 B.S. — Northeastern University, 1968 M.S. — Virginia Polytechnic Institute & State University, 1974	Associate Professor Automotive Technology
BOLT, Patricia H. B.S. — Longwood College, 1961 M.A. — Radford College, 1977	Assistant Professor Secretarial Science
BONDS, Ethel B.A. — Bennett College, 1971 M.A. — Virginia Polytechnic Institute & State University, 1973	Instructor English
BOWMAN, Betty R. B.S. — Madison College, 1960 M.Ed. — Virginia Polytechnic Institute, 1969 D.Ed. — Virginia Polytechnic Institute & State University, 1977	Professor Accounting
BRANSCOM, Sallie D. B.S. — Radford College, 1957 M.Ed. — University of Virginia, 1962	Associate Professor Accounting
BROWN, Martha B. B.S.S.A. — Women's College, University of North Carolina, 1957 M.A. — East Carolina University, 1961	Associate Professor Secretarial Science
BRUSATI, John F. A.B. — Southwestern College, 1962 B.D. — Duke University, 1966 M.S. — Radford College, 1971	Associate Professor Sociology
CALLIS, Tracy G. B.S. — Virginia Polytechnic Institute, 1963 M.S.Ed. — Virginia Polytechnic Institute & State University, 1975 C.A.G.S. — Virginia Polytechnic Institute & State University, 1977	Associate Professor Data Processing
CAPPS, John S. B.A. — Virginia Polytechnic Institute & State University, 1974 M.A. — Virginia Polytechnic Institute & State University, 1977	Instructor English
CARTER, Douglas, Jr. B.A. — University of Arizona, 1966 M.A. — University of Arizona, 1969	Associate Professor Speech & Drama
CHENG, Fa-Hwa B.S. — National Taiwan University, 1961 M.S. — Virginia Polytechnic Institute, 1966 Ph.D. — Virginia Polytechnic Institute & State University, 1971	Professor Civil Engineering Technology
CLOWER, Carol B.S. — Virginia Polytechnic Institute & State University, 1976 M.A. — Radford College, 1978 M.S. — Radford College, 1978	Assistant Professor Counselor
CLOWSER, Margaret P. B.A. — Virginia Polytechnic Institute & State University, 1970 M.A. — Virginia Polytechnic Institute & State University, 1971	Assistant Professor English
COOK, Patricia F. Certificate — Virginia Western Community College, 1971	Instructor Dental Assistant
CRAIG, Betty C. A.B. — Hollins College, 1946 M.A.L.S. — Hollins College, 1971	Assistant Professor English
CRAWFORD, Robert J. A.A.S. — Virginia Western Community College, 1973	Assistant Professor Electronic Servicing
CRITES, Richard W. A.A.S. — Olney Community College, 1965 B.S. — Eastern Illinois University, 1967 M.S. — Eastern Illinois University, 1968	Associate Professor Biology

98 FACULTY

CROCKETT, S. R., Jr. B.A. — University of Virginia, 1958 M.S. — Radford College, 1967	Assistant Professor English
CROTTY, A. Eugene B.S. — University of Virginia, 1955 M.B.A. — University of Virginia, 1957 C.P.A. — Virginia, 1959	Professor Business Administration
DAVID, Rita H. Certificate — Radiologic Technology, Stevens Clinic Hospital, 1950	Instructor Radiologic Technology
DILLARD, Carol K. B.A. — Wilmington College, 1968 M.Ed. — University of Arkansas, 1976 Ph.D. — Virginia Polytechnic Institute & State University, 1981	Assistant Professor Human Services
DILLION, William B. A.A.S. — Sue Bennett College, 1958 B.S. — Eastern Kentucky State University, 1962 M.S. — Radford University, 1979	Assistant Professor Accounting
DULANEY, Jack A.A.S. — Virginia Western Community College, 1978	Assistant Professor Automotive Analysis & Repair
DURHAM, Linda E. A.B. — Elon College, 1968 M.M. — University of North Carolina, 1971	Assistant Professor Music
EADS, Sally A. B.A. — Agnes Scott College, 1965 M.A. — University of Virginia, 1967	Assistant Professor History
ELLIOTT, Helen Yvonne B.S. — Radford College, 1968 M.A. — Virginia Polytechnic Institute & State University, 1974	Instructor English
EWING, Larry E. A.B. — Franklin & Marshall College, 1965 M.A. — Pennsylvania State University, 1967 Ed.D. — Virginia Polytechnic Institute & State University, 1976	Professor Counselor
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About applications and admission to Virginia Western Community College

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Counseling Services

About testing, counseling, and program selection

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Business Office

About student accounts

Telephone: 982-7201

Financial Aid Office

About applications and Financial Aid Handbook

Telephone: 982-7331

Veterans' Affairs Office

About applications for program of education and training

Telephone: 982-7395

Career and Placement Services

About career counseling services

Telephone: 982-7298

Continuing Education Office

About courses

Telephone: 982-7281

Business Science Division

About programs of study

Telephone: 982-7272

Engineering/Industrial Technology Division

About programs of study

Telephone: 982-7275

Health Technology Division

About programs of study

Telephone: 982-7307

Humanities Division

About programs of study

Telephone: 982-7271

Mathematics & Science Division

About programs of study

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Social Science & Public Service Technology Division

About programs of study

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VISITORS

The College welcomes visitors to the campus. Interviews and tours may be arranged through the Information Office. It is advisable to make an appointment in advance.

Place
Stamp
Here

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