DCC

Danville Community College

2018-19 Catalog

Who do you want to be tomorrow?

WELCOME to DCC!

Vision:

Danville Community College will be the college of choice in our region for exemplary educational programs and services.

Mission:

Danville Community College is committed to providing quality comprehensive higher education and workforce programs and services to promote student success and to enhance business and community development.

NOTE: The printed catalog is provided as a guide and may not be a comprehensive and accurate listing of all available programs, course sequences, requirements, etc. after printing. Please check **www.dcc.vccs.edu/catalog** for the most up-to-date information.

Table of Contents

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Abbreviations:
CSC: Career Studies Certificate (A career-centered credential between 9 and 29 credit hours) • **D: Diploma** (A two-year program with an emphasis on a career/technical area)
C: Certificate (Minimum of 30 credit hours) • **A.A.S.: Associate of Applied Science** (Generally a two-year terminal degree program intended for immediate employment after graduation) • **A.A. & S.: Associate of Arts & Science** (Generally a two-year degree program intended for transfer to a four-year college/university)

Campus/Area Maps

(P) Parking
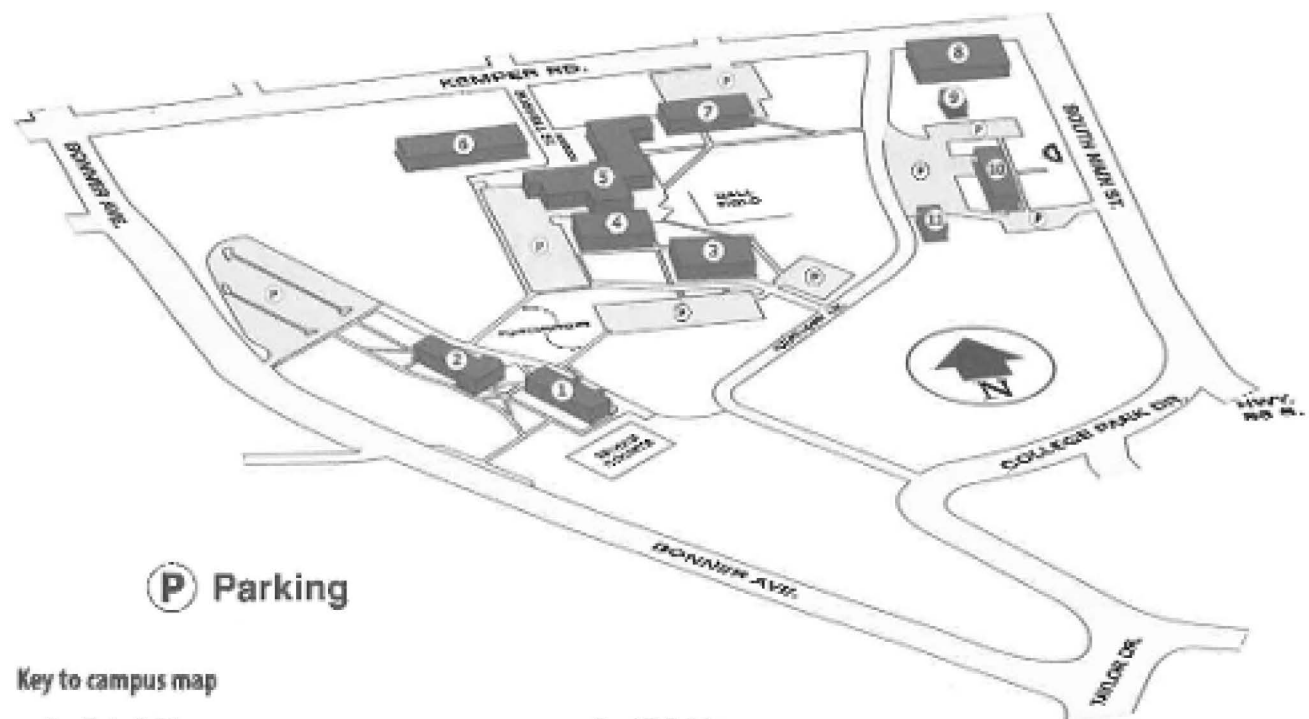
Key to campus map

1. Taylor Building
2. Temple Building
3. Whittington W. Clement Learning Resources Center
4. Student Center
5. Charles R. Hawkins Engineering and Industrial Technologies Building
6. John H. Zechman Facilities Support Center
7. Hill Building
8. Foundation Hall
9. Carrington Child Development Center
10. Wyatt Building
11. Womack Hall

★ Main Campus
  1008 South Main Street
▲ RCATT
  121 Slayton Ave.
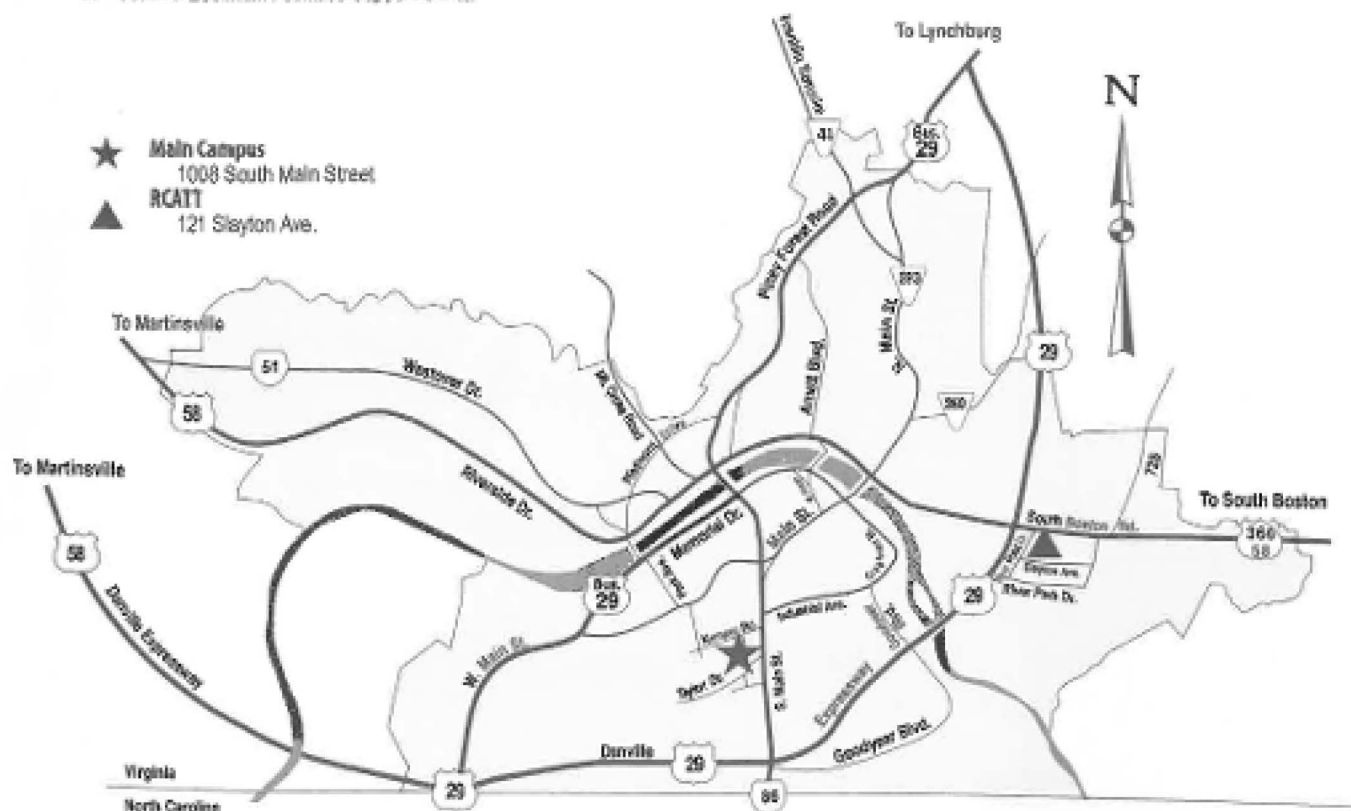
Locations & Office Hours

Administrative Office Hours
8 a.m. to 5 p.m. Mon-Fri
Email: info@dcc.vccs.edu
www.danville.edu

Danville Main Campus
1008 South Main St., Danville, VA 24541
434.797.2222 • Toll Free: 800.560.4291
434.688.0136 (vp) • FAX: 434.797.8514

Whittington W. Clement Learning
Resources Center (Main Campus)
Mary M. Barksdale Library Hours
(During Full-Session Classes)
Mon - Thurs: 8 a.m. - 9 p.m.
Fri: 8 a.m. - noon • Sat: Closed • Sun: 1 - 5 p.m.
(Fall and Spring Semesters only)
Learning Assistance Center Hours
Mon - Thurs: 7:30 a.m. - 6:30 p.m.
Fri: 8 a.m. - noon • Sat: Closed • Sun: 1 - 5 p.m.
(Fall and Spring Semesters only)

Regional Center for Advanced
Technology & Training (RCATT)
121 Slayton Ave., Danville, VA 24541
434.797.6437

Southern Virginia Higher
Education Center
820 Bruce Street
South Boston, VA 24592
434.572.5456 or 434.572.5451

2018-19 Academic Calendar

FALL 2018

Advising by Appointment and Registration for Fall Semester............................April 1-August 21
Final Week for Fall 2018 Registration..August 16-21
Last Day for New Student Registration...August 21
Payment of Tuition*..June 1-August 21
Faculty Planning and Preparation Days..August 13-17
Classes Begin...August 22
Swaps/Drops *(Classes cannot be added without the approval of the instructor)*..........August 22-28
Holiday - No Classes (Labor Day)..September 3
Last Day to Withdraw With Full Tuition Refund..September 7
Institutional Effectiveness Day..October 4
No Classes - Faculty Planning and Preparation Days.......................................October 16 and 18
Mid-term Grades Posted..October 17-21
Last Day to Withdraw w/o Mitigating Circumstances ("W" Grade Issued).............October 30
Advising by Appointment and Registration for Spring Semester................Nov. 1-Dec. 11, 2018
and Jan. 2-4, 2019
No Classes - Faculty Research Day..November 21
Holiday No Classes (Thanksgiving)......................................College closes at noon November 21;
Closed November 22-23
Classes End..December 11
Final Exams..December 12-18
Faculty Planning and Preparation Days...December 19-21
College Closed..December 24-31

SPRING 2019

Holiday - College Closed..January 1
Advising by Appointment and Registration for Spring Semester..............Nov. 1-Dec. 11, 2018
and Jan. 2-4, 2019
Final Week for Spring 2018 Registration...January 2-4
Last Day for New Student Registration..January 4
Payment of Tuition*...November 1, 2018 – January 4
Faculty Planning and Preparation Days...January 2-4
Classes Begin..January 7
Swaps/Drops *(Classes cannot be added without the approval of the instructor)*.........January 7-11
Holiday - No Classes (Martin Luther King, Jr.)..January 21
Last Day to Withdraw with Full Tuition Refund...January 23
Mid-term Grades Posted...March 4-10
No Classes - Spring Break..March 11-15
Last Day to Withdraw Without Mitigating Circumstances ("W" Grade Issued)...............March 22

SPRING 2018 continued...

Advising by Appointment & Registration for Summer.....................................April 1 until summer semester classes begin

Advising by Appointment & Registration for Fall...April 1 until fall semester classes begin

Institutional Effectiveness Day...April 10
Classes End...April 30
Exams...May 1-3; 6-7
Faculty Planning and Preparation Days...May 8-10; 13-15
Graduation...**Saturday**, May 11

SUMMER 2019	**Full Session** (10 Weeks)	**1st Session** (5 Weeks)	**2nd Session** (5 Weeks)
Advising by Appointment	April 1-May 10	April 1-May 10	April 1-May 10; May 21-June 25
Registration and Payment of Tuition for Summer Session*	April 1-May 17	April 1-May 17	April 1-June 22
Final Week for Registration	May 13-May 17	May 13-May 17	June 17-21
Last Day to Add Class(es)	May 17	May 17	June 21
Classes Begin	May 20	May 20	June 27
Swaps/Drops Only+	May 21-24	May 22	June 24
+Swaps cannot be processed without the approval of the instructor			
Holiday - No Classes (Mem. Day)	May 27	May 27	
Last Day to Withdraw with Full Tuition Refund	May 31	May 24	June 27
Last Day to Withdraw w/o Mitigating Circumstances^	July 1	June 7	July 12
^("W" Grade Issued)			
Holiday - No Classes (Indep. Day)	July 4		July 4
Classes End	July 26	June 21	July 26

***Payment of Tuition**: (A) **Early registration**: Students are expected to have all payment arrangements, including financial aid, finalized at least 30 calendar days prior to the first day of classes.*
*(B) **Standard** registration: Students registering within 30 days of the first day of classes are expected to have all payment arrangements finalized, including financial aid, within seven calendar days of registration.*

All students are expected to finalize tuition payment, including financial aid, with the appropriate DCC office prior to attending any class(es). Failure to pay for classes, including with financial aid, can result in classes being removed from the student's schedule.

College Information

General Information

Danville Community College is a two-year institution of higher education under the statewide Virginia Community College System. DCC's service area includes the City of Danville, Pittsylvania County, and Halifax County. The college, its employees, and students are governed by the policies established by the State Board for Community Colleges with the support and advice of the Danville Community College Board.

DCC promotes and maintains educational and employment opportunities without regard to race, color, sex, ethnicity, religion, gender, age (except when age is a bona fide occupational qualification), disability, national origin, or other non-merit factors. DCC prohibits sexual harassment, including sexual violence. Inquiries related to the college's nondiscrimination policies should be directed to: Title IX Coordinator/Affirmative Action Officer, Danville Community College, 1008 S. Main St., Danville, VA 24541, 434.797.8524; toll free: 800.560.4291, ext. 8524, or 434.688.0136 (VP); or email titleix@dcc.vccs.edu.

Danville Community College values the multi-cultural diversity of its students, faculty, and staff. We are committed to creating and nurturing a campus environment that both welcomes and empowers all individuals. We recognize cultural differences of background, experience, and national origin, and we seek to promote a genuine understanding and appreciation for these differences. We also seek to recognize and promote the common bonds of humanity, which cross the boundaries of cultural differences.

History

Danville Community College developed from two institutions. Danville Technical Institute opened in 1936 as Danville Textile School, becoming Danville Technical Institute in 1941. The Danville Division of Virginia Polytechnic Institute first began as an engineering division in 1946, and was later expanded to include the first two years of coursework for all engineering, business administration, liberal arts, and science majors. DCC was one of the original four colleges to join the Virginia Community College System in 1966.

Programs

DCC offers more than 100 programs in general education, college transfer, and career training, along with customized classes to meet the needs of business and industry.

College Goals

1. Educational Programs: DCC will provide quality credit and non-credit educational programs and instruction.
2. Faculty and Staff: DCC will have an excellent and diverse faculty and staff.
3. Academic and Student Services: DCC will provide quality services to assist students in achieving their academic and personal goals.
4. Educational Environment: DCC will have facilities, equipment, and technology that enhance an effective learning environment.
5. Outreach Programs: DCC will have a comprehensive outreach program.
6. Community Relations: DCC will foster effective partnerships.
7. Resources: DCC will obtain and use resources to achieve its mission and goals.

DCC General Education Goals and Student Learning Outcomes*

DCC graduates will demonstrate competency in the following general education areas.

1. Communication A competent communicator can interact with others using all forms of communication, resulting in understanding and being understood, including the ability to:

1.1 understand and interpret complex materials;
1.2 assimilate, organize, develop, and present an idea formally and informally;
1.3 use standard English;
1.4 use appropriate verbal and non-verbal response in interpersonal relations and group discussions;
1.5 use listening skills; and
1.6 recognize the role of culture in communication.

* Complements Virginia Community College System General Education Goals & Student Learning Outcomes (www.vccs.edu) Reaffirmed by DCC Curriculum Committee, October 28, 2014.

2. Critical Thinking A competent critical thinker evaluates evidence carefully and applies reasoning to decide what to believe and how to act, including the ability to:

2.1 discriminate among degrees of credibility, accuracy, and reliability of inferences drawn from given data;
2.2 recognize assumptions, or presuppositions in any given source of information;
2.3 evaluate the strengths and relevance of arguments on a particular question or issue;
2.4 weigh evidence and decide if generalizations or conclusions based on the given data are warranted;
2.5 determine whether certain conclusions or consequences are supported by the information provided; and
2.6 use problem-solving skills.

3. Cultural and Social Understanding A culturally and socially competent person possesses an awareness, understanding, and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national, and global communities, including the ability to:

3.1 assess the impact that social institutions have on individuals and culture—past, present, and future;
3.2 describe their own as well as others' personal ethical systems and values within social institutions;
3.3 recognize the impact that arts and humanities have upon individuals and cultures;
3.4 recognize the role of language in social and cultural contexts; and
3.5 recognize the interdependence of distinctive world-wide social, economic, geo-political, and cultural systems.

4. Information Literacy A person competent in information literacy recognizes when information is needed and has the ability to locate, evaluate, and use it effectively, including the ability to:

4.1 determine the nature and extent of the information needed;
4.2 access needed information effectively and efficiently;

Information Literacy, continued...

4.3 evaluate information and its sources critically and incorporate selected information into his or her knowledge base;

4.4 use information effectively, individually, or as a member of a group, to accomplish a specific purpose; and

4.5 understand the economic, legal, and social issues surrounding the use of information and access and use information ethically and legally.

5. Personal Development A person engaged in personal development strives for physical well-being & emotional maturity, including the ability to:

5.1 develop and/or refine personal wellness goals;

5.2 develop and/or enhance the knowledge, skills, and understanding to make informed academic, social, personal, career, & interpersonal decisions.

6. Quantitative Reasoning A person competent in quantitative reasoning possesses the skills and knowledge necessary to apply the use of logic, numbers, and mathematics to deal effectively with problems and issues, including the ability to:

6.1 use logical and mathematical reasoning within the context of various disciplines;

6.2 interpret and use mathematical formulas;

6.3 interpret mathematical models such as graphs, tables, and schematics, and draw inferences;

6.4 use graphical, symbolic, and numerical methods to analyze, organize, and interpret data;

6.5 estimate and consider answers to mathematical problems in order to determine reasonableness;

6.6 represent mathematical information numerically, symbolically, and visually, using graphs and charts.

7. Scientific Reasoning A person competent in scientific reasoning adheres to a self-correcting system of inquiry (the scientific method) and relies on empirical evidence to describe, understand, predict, and control natural phenomena, including the ability to:

7.1 generate consistent arguments based on empirical evidence;

7.2 distinguish between scientific and non-scientific arguments;

7.3 reason by deduction, induction, and analogy;

7.4 distinguish between causal and correlational relationships; and

7.5 recognize methods of inquiry that lead to scientific knowledge.

Accreditation

DCC is one of 23 colleges in the Virginia Community College System. The associate degree curricula of the college have been approved by the State Council of Higher Education for Virginia. DCC is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award the associate degree. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, GA 30033, telephone 404.679.4500 for questions about the accreditation of DCC.

Note: The commission is to be contacted only if there is evidence that appears to support an institution's significant non-compliance with a requirement or standard.

Outcomes Assessment Requirements

The Commonwealth of Virginia requires a comprehensive plan for student outcomes assessment. The DCC plan was approved by the State Council of Higher Education for Virginia in 1987 and has been reviewed each year. The plan includes procedures to ensure that DCC has an effective process for improving instructional and student development programs, including assessing general education competencies of associate degree-seeking students. Students are required to participate in the assessment procedures appropriate to their curricula. For additional information, contact the Director of Planning, Effectiveness and Research at 434.797.8576.

Degree-seeking students are required to take a core competency test designed to measure general education achievement competencies prior to graduation. No minimum score is required for graduation. Individual test results will remain confidential. Group scores will be used for accountability to the state and for improvement of academic programs.

Enrollment Information
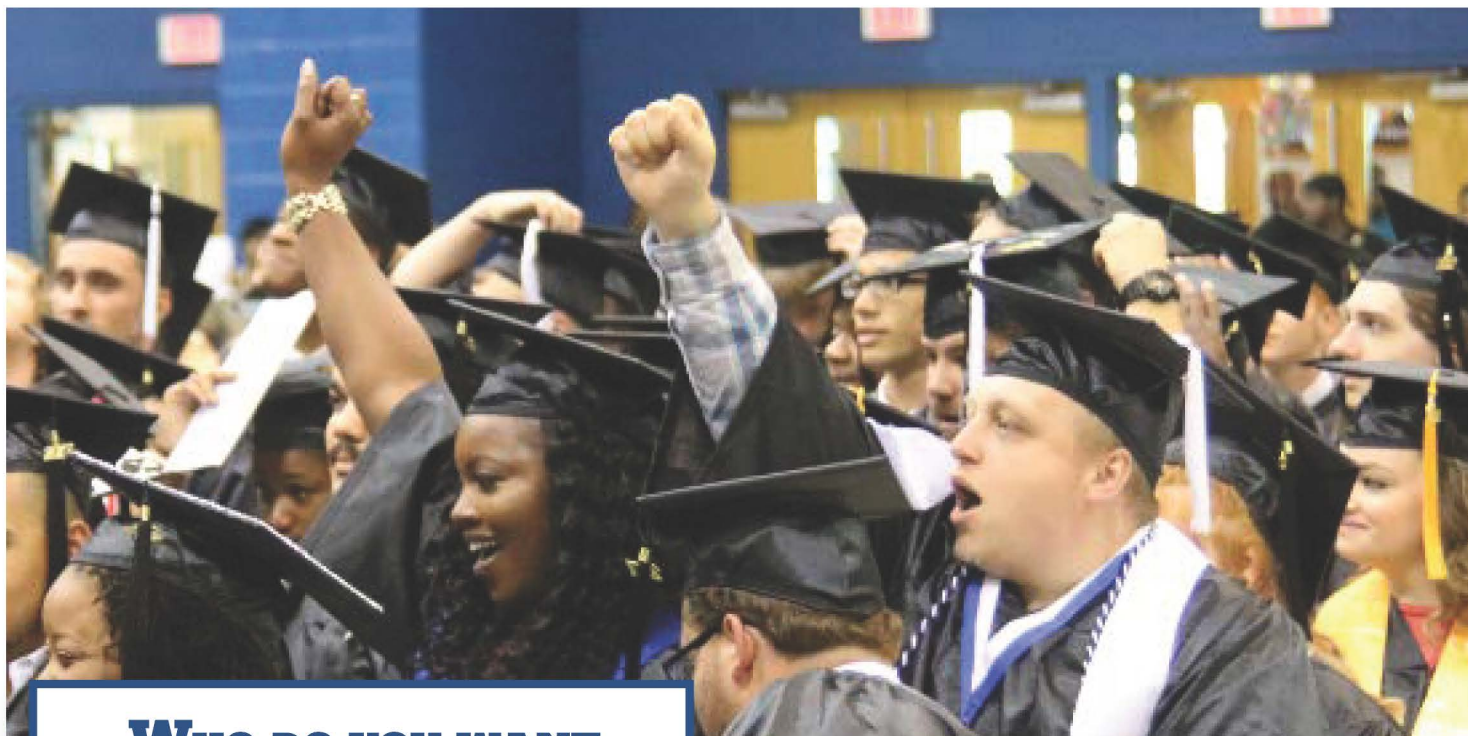
Admissions Information

DCC has an open admissions policy. Individuals are eligible if they are high school graduates or the equivalent, or if they are 18 years of age or older and show that they are able to benefit academically from college study, as demonstrated by assessment in reading, writing, and math. However, students may be required to participate in developmental studies before beginning coursework in a particular field of study.

Minimum scores:

	Virginia Placement Test (VPT)	Compass	Asset
Reading	ENF 1	62	35
Writing	ENF 1	32	35
Math	MTE 1	25	33

Exceptions to this policy may be made by the college president only for documented reasons.

DCC ROCKS (Student Orientation)

DCC ROCKS (Registration, Orientation, Computer Knowledge and Support) sessions are mandatory for new students prior to the start of classes. After applying to DCC, students should sign up for DCC ROCKS at **www.dcc.vccs.edu/DCCROCKS.** This is a great opportunity to meet students, faculty and staff, and take care of the following all in one day:

- Meet with an advisor and choose a class schedule
- Learn how to use myDCC
- Take a tour of campus
- Obtain a DCC Student ID card and free parking permit

Curricular Admission

1. Apply online at www.danville.edu

High school transcripts may be required for admission to the college and certain programs. Homeschool graduates must provide a graduation date and may be required to provide documentation of coursework.

2. Demonstrate readiness for placement.

A. Take the Virginia Placement Test.

Make an appointment for testing at 434.797.8460 or email dcc_placement@dcc.vccs.edu. Students are strongly encouraged to complete the online practice tests at www.dcc.vccs.edu/studentServices/Admissions/PlacementTesting

Students who take the math and/or English Virginia Placement Test and do not enroll in developmental courses are allowed to take one retest within 12 months. Students who attempt a developmental course will be ineligible for a retest. Exceptions to this policy may be made on a case-by-case basis in accordance with established college procedures.

B. Request a Placement Waiver

In determining students' readiness for college-level English and math courses, DCC will use the following means and measures. Transcripts and test scores should be sent to the Student Support Services Office for review. **For adult learners, see further info on placement waiver eligibility in the Multiple Measures 2.0 section.**

- Any student who has earned an associate degree or higher, or who has earned a C or better in college-level courses in math and/or English at a regionally accredited institution, will be exempt from placement testing provided they meet the prerequisites for the respective courses in their chosen program of study. Students must provide transcripts for approval.
- Any student who has successfully completed current developmental courses at a VCCS institution will be exempt from placement testing in those areas.
- Any student who has successfully completed developmental courses at a non-VCCS institution may have coursework evaluated for placement. Students must provide transcripts for approval.
- Students enrolling in Career Studies Certificate programs may be waived from placement testing, unless a course in the program requires a reading, writing, or math prerequisite. Please contact the Admissions Office for more information regarding these programs.
- A recent (within past 5 years) high school or homeschool graduate may submit a high school/homeschool transcript or an approved test score for placement evaluation.

NEW! Multiple Measures 2.0 for Adult Learners

Students who meet the following criteria may not have to take the Virginia Placement Test. Please speak to an academic advisor or counselor.

- High school graduate and been a graduate for at least five years or
- Active military personnel or veteran; or
- Have completed and earned an overall GPA of 2.5 or greater in the Career Studies Certificate that stacks within the chosen degree program.

Students participating in the Multiple Measures 2.0 project and enrolling in college-level courses without taking the placement test agree to participate in supportive learning assistance if or when they receive a grade below 80% on any major assignment in their class(es) during their first semester. Participation in this program includes the understanding that if the student does not participate in supportive learning assistance, as defined below, and does not earn a final course grade of "C" or better, the student will need to take the college placement test and will be placed in the mathematics or English course designated by the placement test. The placement test will need to be taken before registering for courses requiring prerequisites for the next semester.

Math placement will be determined using one of the following measures:

Math Placement Measures #	HSGPA or Score Range	Placement
HSGPA and Algebra II and One Algebra Intensive Course* *Algebra Intensive Courses above Algebra II: Trigonometry, Math Analysis, Pre-Calculus, Calculus,	3.0 or higher	MTE 1-9 Satisfied
HSGPA and Algebra II	3.0 or higher	MTE 1-5 Satisfied
HSGPA and Algebra I	3.0 or higher	MTE 1-3 Satisfied
SAT – Math	530 or above	MTE 1-9 Satisfied
	510-520 range	MTE 1-5 Satisfied
ACT – Subject Area Test Math	22 or above	MTE 1-9 Satisfied
	19-21 range	MTE 1-5 Satisfied
GED – Math	165 or above	MTE 1-5 Satisfied
	155-165 range	MTE 1-3 Satisfied

 # = Students may complete the VPT – Calculus for placement into Pre-Calculus II, Calculus, and 200-level Statistics. Placement directly into Pre-Calculus II, Calculus, and 200-level Statistics based on HSGPA and highest level courses taken will be at the discretion of the college.

English placement will be determined using one of the following measures:

English Placement Measures	HSGPA or Score Range	Placement
HSGPA	3.0 or higher	ENG 111
	2.7-2.9	ENF3/ENG 111
SAT-ERW (Evidence-Based Reading and Writing)	480 or above	ENG 111
	460-470 range	ENF3/ENG 111
ACT-Subject Area Tests English and Reading	18 or above	ENG 111
	15-17 range	ENF3/ENG 111
GED-English	165 or above	ENG 111

High school GPA (HSGPA) is valid for five (5) years after the date of high school graduation. SAT, ACT and GED Test scores are valid for five (5) years after the date of the test. Virginia Placement Test-English and Math scores are valid for five (5) years after the date of the test. Previously taken developmental courses will be valid for five (5) years after term taken.

Non-Curricular Admission

Examples include specialized workforce training through an employer, personal interest courses, or summer courses taken by a student at another institution. Any student wishing to take a single course at the college must satisfy all required pre-requisites.

1. **For credit courses:** Complete an application for admission, including the Domicile Determination Form, at **www.danville.edu/BecomeaStudent**.

For non-credit courses: See course schedule and register online at **https://dcc.augusoft.net**, or call Workforce Services at 434.797.8430.

2. Acceptance by the college does not ensure admission to a specific curriculum or course. Non-curricular students must satisfy all required course prerequisites or placement testing requirements before enrolling in specific college-level courses.

3. Non-curricular students may meet with a DCC counselor to review course options.

Admissions to Specific Curricula

In addition to the general admission requirements above, specific requirements are listed for each program of the college where applicable. Among items generally considered in determining students' eligibility for admission to a curriculum are their educational/ occupational experiences and other reasonable standards to ensure that they can successfully complete the program requirements. Students who do not meet the requirements for a specific program or course may improve chances of eligibility by completing developmental courses.

Readmission

Former students who have not been enrolled for a period of three years or more must submit a new application: **www.danville.edu/BecomeAStudent.**

Auditing a Course

Students who wish to attend a course without taking the exam or receiving credit may register to audit through the usual registration process and paying the normal tuition. Permission of the division dean or another appropriate academic administrator is required. Audited courses carry no credit and do not count as part of the student's course load. Students desiring to change status in a course from audit to credit or from credit to audit must do so within the add/drop period for the course. Students seeking credit for a previously audited course must re-enroll in the course for credit and pay normal tuition to earn a grade other than "X." Advanced standing credit should not be awarded for a previously audited course.

Dual Enrollment (High School Student Admission)

Visit DCC's dual enrollment webpage at
www.dcc.vccs.edu/dualenrollment

The main purpose of community colleges is to serve students who have graduated from or are beyond the compulsory age limit for public schools. However, qualified high school students may enroll at DCC, subject to the following conditions:

Dual Enrollment Partnerships

Dual enrollment partnerships are governed by an annually renewable contractual agreement between the school/district and DCC to allow academically qualified high school juniors and seniors* to enroll in college courses that are applicable to degree, diploma, certificate, or career studies certificate programs offered at DCC. Students from school divisions with whom the college has a current dual enrollment contractual agreement may enroll in DCC classes for dual enrollment credit. These courses will be listed on both the student's college and high school transcripts.

High School-Based Dual Enrollment

DCC and school divisions may develop contractual agreements to offer dual enrollment program pathways, academies, and courses at the high school. Such offerings may be taught by approved high school teachers who meet VCCS faculty credential requirements and are qualified by the college to teach course(s) in the program of study.

DCC faculty and administrators are responsible for identifying high school dual enrollment program offerings; selecting and qualifying high school faculty to teach college courses; professional development of dual enrollment faculty; and oversight and evaluation of program standards, including assessment of student learning outcomes, program learning outcomes and instructional effectiveness.

Early College, Dual Enrollment Programs and Academies

DCC and school divisions may develop contractual agreements to offer dual enrollment program pathways and academies on the college campus. Such courses are taught by full-time or adjunct community college faculty.

Independent Dual Enrollment (Concurrent/Homeschooled Student Enrollment)

Independent dual enrollment allows individual high school students to enroll in courses at DCC without requiring a contractual agreement between the college and school or division. A qualified high school junior or senior* may be admitted to any college-level credit-bearing course, with permission of the high school principal (or designee) and the parent/guardian. The student must meet dual enrollment admissions standards. Independent dual enrollment courses shall be listed on the student's college transcript.

Prior to admission, the college must receive a completed Concurrent Enrollment/Homeschooled Student Enrollment Form approved and signed by the student, the student's parents and high school principal, and be approved by the DCC Admissions Committee. Students interested in independent dual enrollment should contact DCC Admissions.

Dual Enrollment Student Admissions

Although high school and home school students are not normally qualified for general admission, DCC may offer admission to those students who meet additional criteria. Dual enrollment is restricted to high school juniors and seniors* and home school students studying at the high school junior or senior levels. Home school students must also provide a copy of a home school agreement approved by the school district or a letter from the local school board or a copy of the letter filed by the parent or legal guardian declaring home school. Documentation of parental permission is required for all dual enrollment students.

Students enrolling in a dual enrollment course must meet all course prerequisites. DCC shall not enroll public or private high school students or homeschooled students in developmental courses.

Admission of younger students: Because admitting freshman or sophomore students is considered exceptional, the college-ready status of each prospective freshman and sophomore student will be treated on a case-by-case basis. Formal approval by the college president is required. All students admitted under this section must demonstrate readiness for college by meeting the criteria below.

Admission Criteria		VPT	Compass	Asset	PSAT	SAT	ACT	SOL
Transfer Courses:	English/writing	ENG 111	76	43	n/a	n/a	18	n/a
	Reading	ENG 111	81	42	n/a	n/a	18	n/a
	Writing/reading	ENG 111	n/a	n/a	390	480	n/a	n/a
	Mathematics	MTE 1	25	33	500	530	22	Algebra 1 - pass
Career & Technical Courses:	English/writing	ENF 1	32	35	n/a	n/a	18	n/a
	Reading	ENF 1	62	35	n/a	n/a	18	n/a
	Writing/reading	ENF 1	n/a	n/a	390	480	n/a	n/a
	Mathematics	MTE 1	25	35	500	530	22	Algebra 1 - pass

Senior Citizens Admission

Students are classified as senior citizens if they are 60 years of age or older and enrolled in credit or non-credit courses without tuition charge under provisions of the Senior Citizen Higher Education Act of 1974, as amended. To enroll tuition-free in credit or non-credit courses on a space-available basis, students should meet the following criteria (not to exceed three courses per semester):

- Be 60 years of age or older prior to the semester of enrollment;
- Be a legal resident of Virginia;
- Have had a taxable income not exceeding $23,850 for income tax purposes for the year preceding enrollment (tax documents should be submitted for verification to the DCC Admissions Office); and
- Must be admitted to the college as a student.

Interested senior citizens should contact the DCC Admissions Office. Any person meeting the above criteria will be admitted to a course only after all tuition-paying students have been accommodated.

International Student Admission

DCC is a two-year, nonresidential, commuter college that welcomes applications from qualified international students who meet the college's academic, financial, and language requirements. Before processing a request for admission and issuing a form I-20 for the F-1 Visa, the following documents must be submitted: Completed DCC application, proof of the equivalent of an American high school diploma, official TOEFL scores, verification of financial support sufficient to enroll as a full-time student without the need to work off campus, a doctor's statement certifying good health, a brief statement of desire to attend DCC, and a photocopy of the applicant's passport. After the student's I-20 is issued, the student must complete the college assessment test (VPT), enroll in a minimum of 12 credit hours in a transfer program and file a copy of the passport and I-94 card with the Admissions Office. Students seeking I-20 must be enrolled in a two-year program. International students are not able to sustain employment at the school or in the community. International students are not allowed to receive financial aid and scholarships.

Applications and all required paperwork must be received by **April 30** for admission to the fall term; by **August 30** for admission to the spring term; or by **February 15** to be admitted for the summer term. No applications will be taken after the dates indicated for each semester.

Other Immigrant Status Admission

It is the policy of Danville Community College to admit those applicants who are immigrants residing in Virginia who have graduated from a Virginia high school with a high school diploma or equivalent, even if they are not able to document their legal presence. Those who are undocumented will pay tuition at the out-of-state rate. DCC will follow State Council for Higher Education for Virginia Domicile Guidelines for establishing domicile.

Domicile Requirements

The Virginia Community College System, including Danville Community College, is guided by the Code of Virginia and the regulations of the State Council of Higher Education on determining domicile. Each student applying for admission must complete a Domicile Determination Form in order to be declared legally domiciled in Virginia. Students must verify that one year before the date of entering the term for which they are requesting in-state tuition status, they have given up any previous domicile and were living in Virginia with the unqualified intention of remaining in Virginia. Please contact DCC Admissions for more information regarding residency requirements. It is the student's responsibility to submit documentation and provide clear and convincing evidence regarding their domicile. In the event that a student's circumstances change after a semester has begun, the student's tuition status may be eligible for reclassification. This reclassification shall be effective for the next academic semester or term following the date of the application for reclassification. Students should follow DCC's domicile appeals policy.

Domicile Appeals Process

A student who disagrees with an initial tuition classification may submit a Domicile Reclass-ification Form to the Domicile Appeals Committee within 10 calendar days of the initial notification. The committee will respond to the appeal within 15 calendar days. The Domicile Appeals Committee shall consist of two members of the Student Services Office. No person who serves at one level of this appeals process shall be eligible to serve at any other level of this review. If the student still disagrees with the classification, he/she may file a final written appeal with the **Vice President of Academic and Student Services Dr. Debra Holley,** dholley@dcc.vccs.edu, which must be made within five calendar days of the student's notification of the first appeal. The VP will notify the student in writing of the final decision within 30 calendar days of receipt of the appeal. A student who is not satisfied with the outcome of the review by the VP may appeal to the appropriate circuit court. The student must file a petition for review with the court within 30 calendar days of receipt of the decision by the VP.

DCC Policy Related to Legislation Regarding Admissions

Language on the web application informs applicants that their information is being transferred to the State Police. In the event that the State Police determine a DCC applicant is listed on the Sex Offender Registry, the State Police will notify DCC. When the college receives such notification, the following procedures apply:

1. The applicant will be denied admission to DCC in accordance with its admission policy as published in this catalog. The decision is final and not subject to appeal.
2. If the applicant registers for classes and becomes a student before the college receives notification from the State Police, the student will immediately be informed that he/she is being administratively withdrawn from classes and will receive a tuition refund. An applicant, in this instance, may invoke his/her right to an appeal.

Admission Denied / Revoked

DCC reserves the right to evaluate and document special cases and to refuse or revoke admission if the college determines that the applicant or student poses a threat, is a potential danger, is significantly disruptive to the college community, or if such refusal or revocation is considered to be in the best interest of the college. DCC also reserves the right to refuse admission for applicants who have been expelled or suspended from, or determined to be a threat, potential danger or significantly disruptive by another college. The decision to refuse or deny admission is final and not subject to appeal. Students whose admission is revoked after enrollment will be given due process.
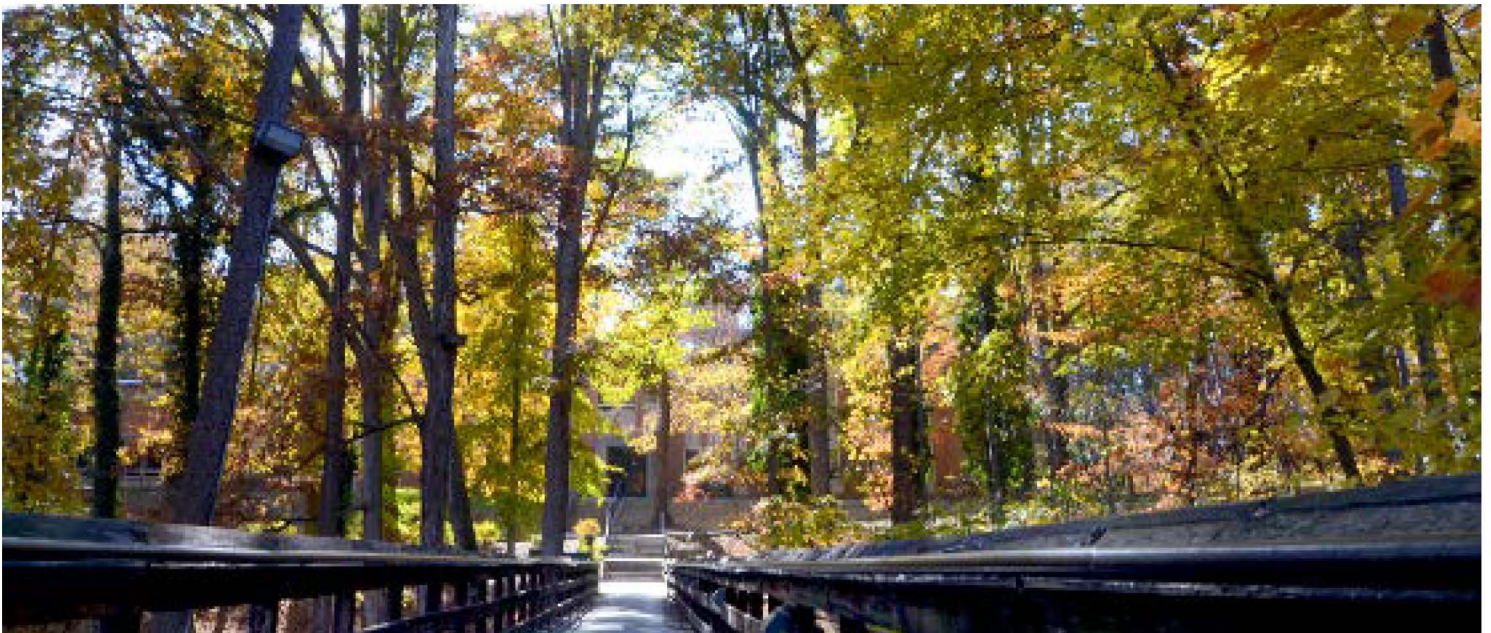
Appeals Process for Revoked Admission

When a student's admission is revoked, he/she may invoke the appeal process. Students who have registered for class but not yet started classes will be administratively withdrawn, and an appropriate service indicator will be placed on the student's record that will prevent the student from registering for classes. If the student is already attending classes, DCC will reserve class enrollment until the appeal process is complete, but the individual will not be allowed to attend class during the appeal process. The college will make every effort to expedite the appeals timeline.

1. The student will receive a certified letter with return receipt from the Dean of Student Support Services notifying the student of the revoked admission and outlining the appeal process.

2. The student may write a letter of appeal to the Dean of Student Support Services, Ms. Cheryl Terry, in which he/she (1) provides justification for consideration of admission/reinstatement and (2) discloses the nature of the offense and/or conviction serving as the basis for DCC's action to revoke admission. If the student is a convicted sex offender, the letter should include a statement acknowledging his/her understanding that his/her identity and status as a convicted sex offender will be publicized on the college campus in accordance with federal and state law if he/she is admitted or reinstated. ***The letter of appeal must be submitted to the Dean of Student Support Services within seven (7) business days of notification by DCC.***

3. A panel of five (5) full-time faculty and/or administrators will review the information submitted and make a decision by a simple majority vote within fourteen (14) business days of receiving the letter of appeal. The Dean of Student Support Services will serve as the convener of the panel and will be a member of the panel. Panel discussions will be confidential.

4. If the panel determines that the withdrawn student represents a threat or potential danger to the college and/or the revoked admission/withdrawn enrollment is considered to be in the best interest of the college, the following apply:

1. The student's admission to DCC will remain revoked.
2. Student will be administratively withdrawn from classes, if classes have been held.
3. An enrolled student will receive a tuition refund. Tuition refunds will not be granted for students removed from DCC for disciplinary reasons.

5. The Dean of Student Support Services will inform the student by certified letter/return receipt requested of the decision of the appeals panel. The decision of the appeals panel shall be final.

> **APPEALS CONTACT:**
> **Ms. Cheryl Terry**
> Dean of Student Support Services
> Wyatt Building 111, 434.797.6435
> **cterry@dcc.vccs.edu**

Advanced Standing Credit

NEW! DCC Expressway Programs

Work at your own pace • Get credit for job experience or prior learning • DCC Expressway programs provide the same learning opportunities as traditionally structured classes but offer the flexibility for students to work at their own pace, to show competencies through prior learning credit, and/or satisfactory completion of assessments meeting certain minimum criteria. Students interested in the DCC Expressway program should make their intentions known when applying DCC. The student will then be directed to the appropriate program advisor. If a student decides the DCC Expressway program is not a good fit, he/she will have the option to enroll in the traditional program at any time before or after beginning the program.

AP (Advanced Placement)

Many area high schools offer AP or honors courses, giving high school students the opportunity to complete college-level work. A minimum AP score of 3 is required for credit at DCC. An official copy of

the AP transcript must be submitted to the DCC Admissions Office in order to obtain credit. Unofficial, student copies, or high school transcripts noting the AP credit will not be accepted.

CLEP (College Level Examination Program)

CLEP is a national examination-based program that allows students to obtain college credit for prior academic achievement. DCC accepts most of the CLEP-offered exams and uses the American Council on Education recommended minimum score of 50 for awarding credit. An official copy of the CLEP transcript must be submitted to the DCC Admissions Office. Unofficial or student copies of transcripts will not be accepted. CLEP examinations are not offered through DCC.

IBO (International Baccalaureate)

Students who have completed the Standard Level certificate with a score of 5 to 7 in the International Baccalaureate program may be granted credit for a variety of courses. Students must have an official transcript sent from the IBO to the DCC Admissions Office in order to be considered.

Police Academy Certificates

Per the Articulation Agreement between the VCCS and the Virginia Department of Criminal Justice, students who have satisfactorily documented successful completion of the Virginia State Police Academy or a regional and independent certified training academy shall be awarded appropriate credit. Relevant documentation must be submitted to the Dean of Arts, Sciences, & Business, Dr. Paul Fox (**pfox@dcc.vccs.edu**).

Credit for Military Training

Prior military training, courses, and occupational specialty may all be considered for college credit. As a member of Service Members Opportunity Colleges (SOC), DCC follows the American Council on Education's (ACE) Guide to the Evaluation of Educational Experiences in the Armed Services in determining the value of learning acquired in military service as applied to the student's program of study. Credit in certain technical areas may require approval by the division administrator.

Credit may be granted as recommended by college faculty, ACE, the National College Credit Recommendation Service, or other organization approved by the college.

In addition to the above, DCC may award academic credit to any enrolled student who has successfully completed a military training course or program as part of military service that is applicable to DCC program requirements and is:

- Recommended for academic credit by a national higher education association that provides academic credit recommendations for military training courses or programs;
- Noted on the student's military transcript issued by any of the U.S. Armed Forces; or
- Otherwise documented in writing by any of the U.S. Armed Forces.

In order to receive military training credit, the student must submit a military transcript which includes the ACE recommended credit and initiate a request for evaluation to the DCC Admissions Office. ***Note: If the student submits only the DD214 and no military transcript, only credit for HLT/PED electives will be awarded.*** Students who have completed basic training, regardless of the date, may receive credit for HLT/PED electives.

Previous Completion Credit (Work Experience/ Experiential Learning Credit)

Students may be awarded college credit if they can demonstrate that previous educational study or training/work experience entitles them to credit for specific courses applicable to their program of study. Documentation must be submitted with the request for credit and will be retained in the student's file. The supporting documentation must include samples of work or projects completed. Students wishing to be awarded previous completion credit for a specific course should contact the division office in which the course is taught. DCC reserves the right to place a time limit on credit for prior learning experiences. The academic administrator, in consultation with the admissions coordinator, will determine if courses taken more than five years previously can be used in the student's current program of study.

Using Advanced Standing for Graduation Requirements

A limit of 75% of the number of program credits may be awarded through advanced standing credit. Credit for portfolio-based prior experiential learning may be awarded for no more than 25% of the required program credit hours. Advanced standing credits may not be used to fulfill the graduation residency requirement. A minimum of 25% of the credit required for graduation in the curriculum must be earned at DCC. All accepted advanced standing credits will be acknowledged and recorded on the student's permanent record with the transferring agency or other source of credit identified. No unsuccessfully attempted advanced standing applications or examination results will be recorded on the student's permanent record. The following shall apply:

1. To earn credit for prior learning, student must be admitted to the curriculum in which advanced standing is requested.

2. Advanced standing will be awarded only for courses in which a student is not currently and has not been previously enrolled.

Course Acceptance Policy

1. The program administrator responsible for evaluating a student's previous coursework shall:

- Determine the acceptability of each course the student wishes to transfer or apply toward the program requirements based upon his/her knowledge of any changes that have occurred since the course(s) was completed;
- Give particular attention to courses in areas that have had significant technological changes in recent years (e.g., electronics, automotive, graphic imaging, information systems, administrative support technology);
- As deemed appropriate, seek the input of faculty or other administrators regarding the proper course of action.

2. Courses which are determined to have outdated information and whose acceptance would not assure the student of having current skills may be used to meet elective credit requirements.

3. Students who have kept their educational training current through their job activities may have their coursework given special consideration for acceptance.

4. Because of the diversity of courses offered and the differences in changes that occur over a given time, no specific time frame can be established for courses whose content may have become obsolete. However, it is recommended that all courses taken more than five years ago be carefully reviewed for their current relevance.

5. The decision to accept/not accept a course(s) should be made with the idea that a student's graduation indicates current and relevant competencies in the program of study.

Advanced Standing and Prior Learning Credit Appeals

Student who disagree with the decision on acceptance of prior learning credit or advanced standing should discuss their concerns with the instructor or administrator who rendered the decision within 10 calendar days of receiving the decision. If the student's concerns are not resolved in this manner, he/she may appeal the decision within seven (7) calendar days to the appropriate division administrator, or to the Vice President for Academic and Student Services (if it was the division administrator rendered the decision). The administrator or VP will conduct a review. The second appeal decision is final.

Registration

Registration is held prior to the beginning of each semester or term. Specific registration dates are listed in the college's academic calendar in this catalog and at **www.danville.edu**. Students may only add classes that **have not yet met** unless instructor approval is obtained. Once classes start, students who need to drop/add classes may do so during the Swaps and Drops period.

All students are encouraged to register online through MyDCC. Curricular (program-placed) students should contact their academic advisor to register. For more information, contact Admissions at 434.797.8467 or **admissions@dcc.vccs.edu**.

Course Offerings

DCC reserves the right to cancel, withdraw, or combine classes when necessary. Classes with insufficient enrollment normally are canceled the first week of class (see Tuition Refund Policy).

Tuition Rates as of Fall 2017:

Virginia residents	$153.25/credit hour
Out-of-state residents	$350.85/credit hour
Out-of-state business contract rate*	$234.25/credit hour
E-rate (in-state residents)**	$153.25/credit hour
E-rate (out-of-state)**	$256.25/credit hour
Veterans & dependents of active-duty military	$153.25/credit hour
Out-of-state military contract rate	$174.25/credit hour

For current costs, contact the DCC Business Office at 434.797.8418 or visit **www.dcc.vccs.edu/ student Services/FeesandExpenses.htm**.

Tuition & Fees

Tuition rates and fees are established by the State Board for Community Colleges.

Payment of Tuition and Fees

Students must pay all tuition and fees on the same day that they register for classes, or risk cancellation of their registration. Students who have not paid tuition and fees are not allowed to attend class(es).

All students are assessed mandatory "Non-E&G" fees by the college as follows:

Student Activity Fee: $2 per credit hour. Funds are used for social, cultural, and educational student activities.

Maintenance Fee: $1 per credit hour. Funds are used to maintain college parking lots.

VCCS Technology Fee: $8.50 per credit hour for which they enroll. Funds support acquisition of technology for academic purposes.

Capital Fee: Students with out-of-state residences are charged $21 per credit hour.

E-rate Tuition: Applicable to designated distance learning courses delivered entirely online and designated as W in the class section.

Students are responsible for any college property that they damage or lose (such as laboratory or shop equipment, supplies, library books, and materials).

Tuition Rate notes:

* The business contract rate applies to Virginia employers and federal agencies located in Virginia. It allows the business contract rate to be charged to employers for employees who have an out-of-state domicile. Charges to employers for in-state domiciled employees are at the in-state tuition rate. All mandatory E&G fees apply (including capital fee on those employees with an out-of-state domicile). It is for students who do not qualify for in-state tuition rates and are enrolled in classes provided in a contract between their employers and Danville where the employer pays the students' tuition directly to the college. The contract rate is only applicable to Virginia employers; any employers physically located outside of Virginia that choose to send employees to Danville will be billed at out-of-state tuition rates.

**The e-rate applies to designated online courses.

Nonpayment of Tuition & Fees, or Other College Debts

A student's continued attendance at DCC is dependent upon proper settlement of all debts owed the college. Transcripts, certificates, diplomas, or degrees will not be issued, nor will students be permitted to complete registration, until accounts are cleared satisfactorily with the Business Office, Bookstore, or Library. Should the student fail to satisfy all due and payable amounts for tuition and fees, college loans, fines, or other debts owed the college, DCC may initiate disciplinary action in accordance with the Code of Student Conduct and Discipline Policy.

Bad Check/Dishonored Payment: DCC assesses a $35 service charge for handling returned checks or dishonored credit/debit card payments for accounts not in past-due collection status, or $50 when the account is in past-due collection status.

Waived Tuition

23.1-609. Surviving spouses and children of certain individuals; tuition and fee waivers.

Effective *until* January 15, 2018: The surviving spouse and any child between the ages of 16 and 25 of an individual who was killed in the line of duty while employed or serving as a (i) law-enforcement officer, including as a campus police officer appointed under Article 3 (§ 23.1-809 et seq.) of Chapter 8, sworn law-enforcement officer, firefighter, special forest warden pursuant to § 10.1-1135, member of a rescue squad, special agent of the Department of Alcoholic Beverage Control, state correctional, regional or local jail officer, regional jail or jail farm superintendent, sheriff, or deputy sheriff; (ii) member of the Virginia National Guard while serving on official state duty or federal duty under Title 32 of the United States Code; or (iii) member of the Virginia Defense Force while serving on official state duty, and any individual whose spouse was killed in the line of duty while employed or serving in any of such occupations, is entitled to a waiver of undergraduate tuition and mandatory fees at any public institution of higher education under the conditions in the next section.

Effective as of January 15, 2018: The surviving spouse and any child between the ages of 16 and 25 of an individual killed in the line of duty while employed or serving as a (i) law-enforcement officer, including a campus police officer appointed under Article 3 (§ 23.1-809 et seq.) of Chapter 8, sworn law enforcement officer, firefighter, special forest warden pursuant to § 10.1-1135, rescue squad member, special agent of the Virginia Alcoholic Beverage Control Authority, state correctional, regional or local jail officer, regional jail or jail farm superintendent, sheriff, or deputy sheriff; (ii) member of the Virginia National Guard while serving on official state duty or federal duty under Title 32 of the United States Code; or (iii) member of the Virginia Defense Force while serving on official state duty, and any individual whose spouse was killed in the line of duty while employed or serving in any of such occupations, is entitled to a waiver of undergraduate tuition and mandatory fees at any public institution of higher education under the following conditions:

Conditions

1. The chief executive officer of the deceased individual's employer certifies that such individual was so employed and was killed in the line of duty while serving or living in the Commonwealth; and

2. The surviving spouse or child is admitted to, enrolls at, and is in attendance at DCC and applies for the waiver. Waiver recipients who make satisfactory academic progress are eligible for renewal of such waiver.

Certification must be submitted to Student Accounts/Cashier so that a determination can be made on the request for waived tuition and fees.

For further information, contact the DCC Office of Veterans' Affairs (Dr. Carl Amos, 434.797.8429 or camos@dcc.vccs.edu). All recipients of veterans' benefits must be in an approved curriculum as recognized by the Veterans' Administration and must maintain a GPA of no less than 1.5 after 12 credit hours have been completed, excluding developmental classes**.**

Transcripts & Grading

Official Transcripts

Students and alumni can request official transcripts online via MyDCC (if attendance was within past 10 years), by mail (Admissions Office, Wyatt Building, 1008 South Main St., Danville, VA 24541), or by fax (434.797.8451). In order to release transcripts, the student must provide the following:

- Student name at time of enrollment
- Student ID number (EMPLID #) or Social Security Number
- Date of enrollment (if prior to 1984)
- Student signature

Transcripts will not be released to third parties without written permission from the student.

Unofficial Transcripts

Students and alumni who attended within the last 10 years may obtain an unofficial transcript via MyDCC.

Grading System

The quality of performance in any academic course is reported by a letter grade assigned by the instructor. 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. Grades denote the character of study and are assigned 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 point per credit

P Pass - No grade point credit (applies to special courses. P/U Option: No more than 7 credits can count toward graduation.)

R Re-enroll - No grade point credit (used only for Developmental Studies courses).

S Satisfactory - No grade point credit (used only for Developmental Studies courses).

U Unsatisfactory - No grade point credit (applies to specialized courses and seminars).

W Withdrawal - No credit ("W" implies that the student was making satisfactory progress in the course at the time of withdrawal or that the withdrawal was officially made before the "deadline" date published in the college calendar.) See Withdrawal Policy in the next section.

Grading system, continued from previous page...

I Incomplete - No grade point credit. Used only for verifiable, unavoidable reasons that a student is unable to complete a course within the normal course time. To be eligible to receive an "I" grade, the student must (1) have satisfactorily completed more than 50% of the course requirements and (2) must request the faculty member to assign the "I" grade and indicate why it is warranted. The faculty member has the discretion to decide whether the "I" grade will be awarded. Since the "incomplete" extends enrollment in the course, requirements for satisfactory completion shall be established through consultation between the faculty member and the student. In assigning the "I" grade, the faculty member must complete documentation that (1) states the reason for assigning the grade; (2) specifies the work to be completed and indicates its percentage in relation to the total work of the course; (3) specifies the date by which the work must be completed; and (4) identifies the default grade (B, C, D, F, P, R, or U) based upon course work already completed. Completion dates may not be set beyond the subsequent semester (to include summer term) without written approval of the chief academic officer of the campus. The student will be provided a copy of the documentation.

Colleges will establish procedures to ensure that all "I" grades that have not been changed by the faculty member through the normal grade change processes are subsequently changed to the default grade assigned by the faculty member. An "I" grade will be changed to a "W" only under documented mitigating circumstances, which must be approved by the VP for Academic and Student Services.

X Audit - No credit (Permission of the division dean is required to audit a class.)

CR Prior Credit - Credit received by exam and/or credit received for prior learning

Grading – Developmental Studies Courses

S (Satisfactory) shall be assigned for satisfactory completion of the course.

R (Re-enroll) shall be assigned to a student who makes satisfactory progress during the term but has not completed course objectives. This grade, used only for developmental studies, is to permit re-enrollment for completion of course objectives.

U (Unsatisfactory) shall be assigned to a student not making satisfactory progress. Develop- mental Studies academic advisors, with the concurrence of the Dean, will determine the subsequent sequence of courses for the student receiving a "U" grade.

A student may enroll no more than twice in any single developmental course. Appeal for a third and final enrollment must be addressed to the academic division.

Grade Appeals

Students may appeal final course grades for the following reasons:

- Grade miscalculation
- Inconsistency between what is written in the syllabus and what is practiced
- Errors in the final exam, if a change in the final exam grade would cause a change in the course grade

Students may not appeal disagreements with teaching methodologies, attendance policies, or grade weighting methods.

The grade appeal must be made and resolved before the end of the semester following the semester in which the grade was awarded using the following procedures:

1. The student submits a written appeal to the instructor who assigned the grade stating the basis on which the appeal is made. After submitting the written appeal, the student will schedule an appointment to meet with the instructor to discuss the appeal and any supporting documentation. If the discrepancy is resolved, the instructor will initiate grade change action as appropriate.

2. If the discrepancy is not resolved, the student may appeal the decision of the instructor to the appropriate division administrator. The appeal should be written and include the basis for the appeal and any supporting documentation. After submitting the written appeal, the student will

schedule an appointment to discuss the appeal with the division adminstrator. The administrator may include the instructor in the meeting. The administrator will respond in writing to the student.

3. If the discrepancy is not resolved at the division level, the student may submit a written appeal to the Vice President for Academic and Student Services, Dr. Debra Holley (**dholley@dcc.vccs.edu**), along with any supporting documentation. After review, the Vice President will make a written response to the student, the instructor, and the division administrator from step 2. All decisions at this level are final.

Course Credit

The credit for each course is indicated after the title in the course description. One credit is equivalent to one collegiate semester-hour credit. Each semester hour of credit given for a course is based on the "academic hour," which is 50 minutes of formalized, structured instructional time in a particular course weekly for 15 weeks. This is a total of 750 minutes of instruction. In addition to instructional time, appropriate evaluation will be required. If this evaluation is a final examination, a minimum of one hour will be scheduled for each semester hour of credit generated by the course, not to exceed three academic hours (150 minutes). Credits may be assigned to course activities as follows:

1. **Lecture** – One academic hour of lecture (including lecture, seminar, discussion, or other similar activities) per week, generally for 15 weeks, plus the evaluation or examination period, equals one collegiate semester-hour credit.

2. **Laboratory** – Two to five academic hours, depending on the discipline, of laboratory, clinical training, supervised work experience, coordinated internship, or other similar activities per week, generally for 15 weeks, plus the evaluation or examination period, equals one collegiate semester-hour credit.

3. **Asynchronous Distance Learning Courses** – In the case of asynchronous distance learning course offerings or hybrid courses that employ a mix of traditional contact hours and learning activities with students and faculty separated by time and place, colleges must demonstrate through faculty peer review that content and competency coverage and student outcomes are equivalent to those of traditional sections of the same class. In the event that the only section of the course being taught in the VCCS is an asynchronous or hybrid course, faculty peer review will be employed to confirm that content and competency coverage and student outcomes are appropriate for the course credits awarded.

4. **General Usage Courses** – Variable academic hours from one to five credits.

5. **Variable Credits** – A college may request that a course vary from the existing credit value, but by no more than one credit. Existing variable credit ranges may not be extended. Credit variability will not be approved for purposes of deleting laboratory hours or of making laboratory hours optional. General usage courses and courses numbered 1-99 are exempt from this policy.

Repeating a Course

A student is normally limited to two enrollments in the same credit course. If special circumstances warrant consideration of a third enrollment, the student must submit the Third Enrollment Form to the appropriate academic division. All such requests must be submitted and acted upon before the first day of classes for the term of enrollment. The student will be notified in writing of the decision.

GPA for Repeat Courses

A student's GPA will reflect only the last grade received for repeat courses initially taken since summer 1994. "General Usage" courses, such as 099, 199, etc., are not counted. Repeat courses not figured in the GPA will be designated on the transcript with the words "repeated course" under the class.

Withdrawal & Tuition Refunds

Withdrawal from a course may negatively affect your financial aid award. Students should check with the Financial Aid Office to determine the impact of course withdrawal on their financial aid.

Note: This policy only relates to tuition, so the student may be responsible for bookstore charges.

Withdrawals can be completed by telephone, online, or in person. If a student withdraws from a class prior to the refund date of the term, the student is removed from the class roll and no grade is awarded. After the add/drop period, but prior to the completion of 60% of a session (nine weeks for regular session), a student who withdraws or is withdrawn from a course will be assigned a grade of "W." A student who withdraws after the last day to receive a tuition refund will receive a "W" grade and will not receive a tuition refund.

If the student is receiving Financial Aid, a Return to Title IV calculation will be completed in the PeopleSoft SIS system, to determine the percent of aid earned by the student based on the withdraw or last date of attendance. The unearned portion of aid will be returned to the Department of Education, and the student will be responsible for any remaining tuition and/or bookstore charges.

After the 60% point, if a student withdraws or is withdrawn from a course(s) or the college, a grade of "F" will be assigned. Exceptions may be made under mitigating circumstances, which must be documented. If mitigating circumstances cause the withdrawal, and the student is making satisfactory progress at the time of withdrawal, the grade of "W" will be given at the determination of the division administrator.

Students withdrawn by the college for disciplinary reasons are not eligible for a refund. A student expelled from the college after the designated refund date forfeits all payments for tuition/fees incurred for the semester the incident occurred.

Effective May 21, 2015, the State Board of Community Colleges approved a revision to the VCCS Tuition Refund Policy listed in the VCCS *Policy Manual* Section 4.3.2. It directs that course registrations shall not be deleted for students who receive a tuition refund for extenuating circumstances after the end of the add/drop period, but a grade of "W" would be assigned instead.

Students are eligible for a pro-rated tuition refund if they drop classes or withdraw from college **on or before the published refund date** as indicated in the academic calendar. Classes of shorter duration may have a different withdrawal deadline. DCC will not consider tuition refunds after that date except under one of the following circumstances:

- A medical issue that prevents the student from continuing his/her studies,
- The student's death or the death of an immediate family member,
- National emergency declared by the President of the United States,
- An administrative error made by the college, or
- Extreme financial hardship on the part of the student.

Students who request to be withdrawn with a tuition refund after the stated deadline must submit a request to the Vice President of Academic & Student Services, Dr. Debra Holley (Wyatt Building 211, dholley@dcc.vccs.edu) with supporting documentation. Requests must be submitted within 30 days following the official drop date for the class(es). The student must document extenuating circumstances as follows:

- Medical Emergency, such as:

- An extended illness or major medical issue affecting the student or members of student's immediate family (mother, father, sister, brother, wife, child or grandparent) occurring during the semester in which the student is registered, which requires hospitalization, is life-threatening, or is contagious and a danger to the remainder of the college community. Written

verification on letterhead by the attending physician is required and must include the initial date of the problem, a statement that the student is required not to attend class, and the duration of the problem.

- A psychiatric/psychological emergency or severe, extended illness occurring during the semester the student is registered, which requires hospitalization or that prevents the student from attending classes. Written verification on letterhead by the attending mental health therapist is required and must include the initial date of the problem, a statement that the student is not required to attend class, and the duration of the problem.

- Death of the student or a member of the student's immediate family (mother, father, sister, brother, husband, wife, child or grandparent). A copy of the death certificate or obituary should accompany the request.

- National emergency or mobilization declared by the President of the United States and in accordance with Section 23-9.6.2 of the Code of Virginia. Attach a copy of military activation orders. Please see policy on Military Service.

- Administrative error by the college*. The request should explain the circumstances of the error, including dates, names of employees, and publications, if applicable.

- Extreme financial hardship on the student. The request should explain the circumstances, outlining the financial issues and provide documentation as appropriate. Certain information, such as tax returns, bill copies, foreclosure documents and/or employment termination documentation may be required prior to determination.

*Disagreements with faculty, teaching methods or style, treatment, or grading procedures are not considered administrative errors and must be resolved by contacting the division administrator or through the college's student complaint and grievance procedures.

Mitigating Circumstance Tuition Refund Process

1. Student withdraws from class with mitigating circumstances after the last day to receive a tuition refund as stated in the college calendar.

2. Student submits partial tuition request to the **Vice President of Academic & Student Services, Dr. Debra Holley (dholley@dcc.vccs.edu),** within 30 days after the official withdrawal date. This request should include a typed letter and supporting documentation.

3. The VP will notify the student of the decision.

4. The VP will notify Admissions via the Withdrawal with Tuition Refund form. Admissions will notify the Business Office if the partial refund is approved.

5. For students receiving Federal Financial Aid, the Return to Title IV process is completed and adjustments are submitted to the Business Office. A write-off entry will be made on the account for the approved tuition refund based on the calculated days of award earned. If a tuition or bookstore balance remains, the student will be notified and billed.

6. For students who have paid out-of-pocket, the withdrawal code will be changed by Admissions upon receipt of the approved Withdrawal with Tuition Refund form. Partial tuition of 25, 50, or 75% will be refunded based on the amount of time the student has remained in the class.

Policy on Refunds, Credits & Reinstatement due to Military Service

This policy concerns military students in the event that military service requires sudden withdrawal or prolonged absence from their enrollment. Military service is defined as service on active duty in the Armed Forces, including by a member of the National Guard or Reserve, when mobilized or deployed for a period of more than 30 days. Dependents of military members may also be given consideration under this policy. Dependents are defined as any civilian qualifying as a military dependent under 37 USC 401 currently or as otherwise amended. DCC shall provide for:

A. Tuition and Required Fees: Should a student (as defined above) request to be withdrawn from the college after the census date, the student may elect either to be deleted from the registration file and be awarded a full refund, or to be administratively withdrawn with no refund and assigned a grade of "W". DCC shall also have a policy regarding the granting of refunds of Misc. Education, General program, Auxiliary Services and Student Activity fees to students. DCC shall provide, at the option of the student, for such refunds to be retained and be applied to tuition and fees charged in the semester/term in which the student returns to DCC.

B. Deposits: DCC shall have a policy regarding the granting of refunds of deposits to students.

C. Textbooks: DCC shall process refunds for textbooks according to contractual arrangement with local vendors.

D. Academic Credits and Grades: Students as defined above should have the opportunity to receive an incomplete grade ("I"). All course requirements shall be completed within one year from the date of release from active duty or mobilization. Students may be given the option of taking their exams prior to regularly scheduled times. Careful consideration should be given and special options are advised for students who receive student financial aid or Veterans Administration benefits.

E. Reinstatement: Students as defined above shall be assured a reasonable opportunity to be reinstated in the same programs of study without having to re-apply for admission if they return to DCC after a cumulative absence of not more than five years, so long as the student provides notice of intent to return to the college not later than three years after the completion of the period of service.

F. Dissemination of Information: DCC officials shall make every effort to ensure that the afore-mentioned VCCS policies are well disseminated and carefully explained in accordance with the Code of Virginia, Section 23-9.6:2, and the Virginia Tuition Relief, Refund, and Reinstatement Guidelines in the appropriate college publications. DCC's Student Support Services office ensures that these policies are properly disseminated and administered.

Notification of Student Rights

DCC shall establish and publish information release policies that respect the rights of individual privacy, confidentiality of records, and the best interests of the student and institution. As provided by the Family Educational Rights and Privacy Act (FERPA), colleges may disclose the following VCCS directory information without the student's prior consent:

1. Student's name
2. Participation in officially recognized activities and sports
3. Weight and height of members of athletic teams
4. Degrees, honors, and awards received
5. Major field of study
6. Dates of attendance
7. Grade level
8. Most recent educational institution attended
9. Number of credit hours enrolled
10. Photos

Students must provide official written notification to the Admissions Office to prevent the disclosure of directory information. **Questions pertaining to FERPA may be directed to the Dean of Student Support Services, Cheryl Terry, at 434.797.6435 or cterry@dcc.vccs.edu.**

Updated 7/1/18 in accordance with Virginia HB1.

Workforce Services

DCC's Workforce Services division provides a wide variety of educational opportunities to meet the region's occupational, professional, and personal interests and needs. Programs begin at various times throughout the year and vary in length.

Services include custom training programs; short workshops and seminars; high-tech training; management and supervisory development; basic career skills; teleconferencing; and use of college facilities for company-sponsored training. The college's Regional Center for Advanced Technology and Training (RCATT) facility on Slayton Ave. houses many of these programs.

Financial aid and grant funding may be available for certain workforce programs. For more information, contact 434.797.8430.

Apprenticeship

Apprenticeship training is coordinated through DCC in partnership with the Virginia Department of Labor and Industry. Apprenticeship is a training system that assists businesses and employees with skills development. Apprentices learn the "how" of their occupation on the job and learn the "why" in related technical instruction taught in the classroom. For more information, contact 434.797.8565.

Graduation
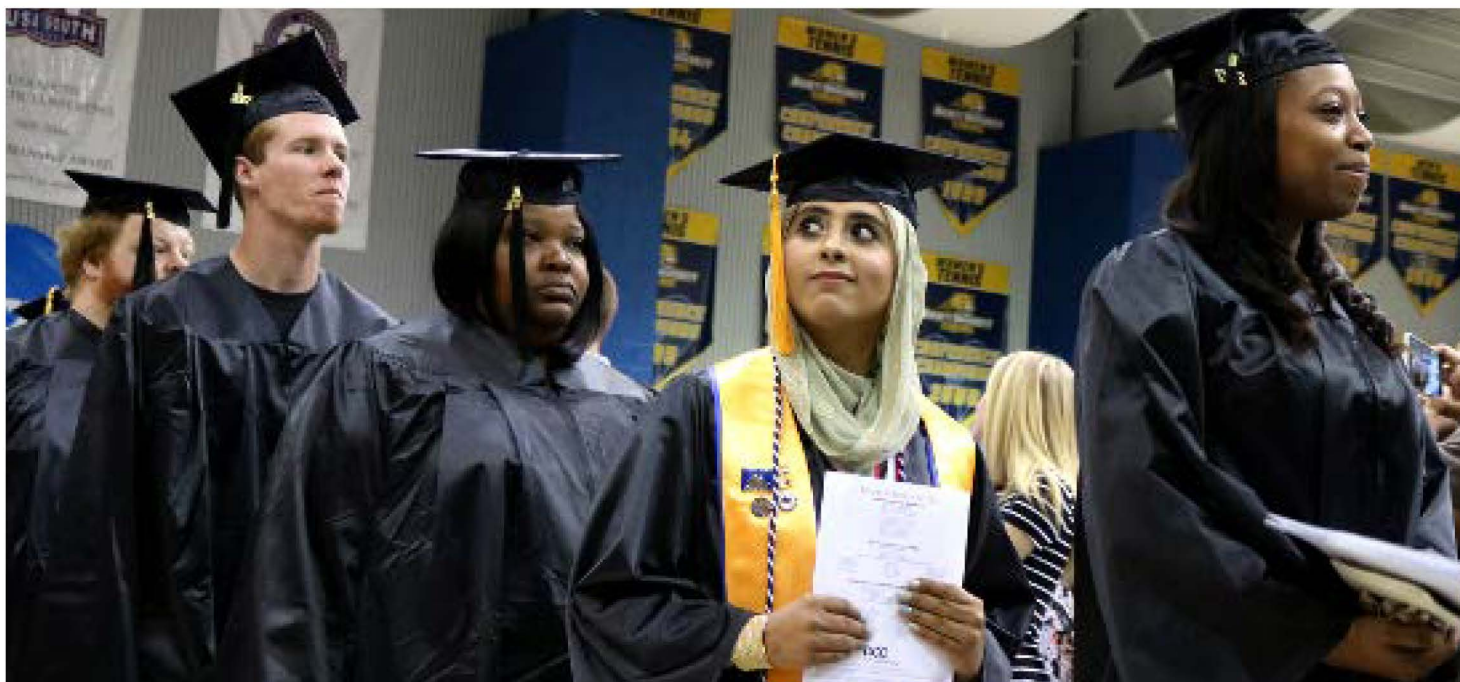
Degrees, Diplomas, and Certificates

DCC offers the following credentials for students who successfully complete approved programs:

1. An Associate of Arts and Science Degree (A.A.& S.) is awarded to students majoring in Business Administration, Liberal Arts, or Science, who plan to transfer to four-year colleges or universities after completing their DCC program.

2. An Associate of Applied Science Degree (A.A.S.) is awarded to students majoring in the occupational-technical programs and who plan to obtain employment immediately upon graduation.

3. An Associate of Science Degree (A.S.) is awarded to students majoring in Engineering who plan to transfer to a baccalaureate program at a university.

4. A Diploma is awarded to students who complete a two-year non-degree occupational curricula.

5. A Certificate is awarded to students who complete one of the approved non-degree curricula, usually less than two years in length. DCC also offers Career Studies Certificates for programs that can be completed in less than one year.

See the Programs of Study section of this catalog for more information.

Catalog Year Determination

All students are placed in a catalog year at the same time that they are initially placed in a program (including Developmental Studies). The catalog year determines program requirements.

- A student who is accepted for Summer 2018, Fall 2018, or Spring 2019 will be placed in the 2018-2019 catalog year.
- Students who attended in a non-curricular status will be placed in the catalog year corresponding to their program placement, not the year they became a non-curricular student.
- Students previously in a program who dropped out of DCC for one year or more, or changed programs and then asked to be readmitted to the original program after one year, will be placed in the program as it exists at the time of their readmittance. Students who drop out for less than one year or request readmittance to a program within a year after dropping out of it will be readmitted under the original catalog year unless there have been significant changes to program requirements as determined by the counselor and division administrator.

Double Majors

Students who wish to declare more than one major (outside of a pathway) must meet one of the following criteria:

1. Entering students must be placed in college-level courses (no developmental requirements) or complete at least 12 credit hours earning a GPA of 2.5 or higher; or

2. Returning students must meet and maintain satisfactory academic progress (GPA of 2.5 or higher) in order to be placed in a second major.

Requirements for Graduation

In order to graduate from DCC, students must:

a) Fulfill all of the course and credit-hour requirements of the curriculum with at least 25% of credit hours acquired at DCC;

b) Be certified by an appropriate college official for graduation;

c) Earn a GPA of at least 2.0 in all studies attempted which apply toward graduation in their curricula;

d) Meet any other competency requirements established by DCC;

e) Meet any DCC graduation application requirements; and

f) Resolve all financial obligations to the college and return all library and college materials.

Graduation Honors and Awards

GPA	Honor
3.2	Cum Laude (with honors)
3.5	Magna Cum Laude (with higher honors)
3.8	Summa Cum Laude (with highest honors)

Academic Information

Academic Load

The normal course load during a regular semester is 15-18 credit hours. A student must register for at least 12 credits to be considered full-time. A student seeking to enroll in 19 or 20 semester hours must have a 3.0 or higher GPA and/or the approval of the division administrator.

During the summer session, a student is restricted to two regular courses each summer term, or 12-14 semester hours for the entire summer session. Students wishing to enroll in 15 semester hours must have a 3.0 or higher GPA and/or the approval of the appropriate division administrator.

Under exceptional circumstances, a student may be allowed to enroll in more than 20 credit hours during a regular (fall/spring) semester or more than 15 hours during the summer. A written request, supported by written statements from the student's advisor and division administrator, should be submitted to the Vice President of Academic & Student Services, Dr. Debra Holley, at **dholley@dcc.vccs.edu**.

Academic Honors

President's Honors List: Students must be enrolled for six or more credit hours for the semester during which the honor is extended, have achieved a cumulative GPA of at least 3.0, a semester GPA of 3.75 or higher, and have completed 24 semester hours or more at DCC.

Vice President's Honors List: Students must be enrolled for six or more credit hours for the semester during which the honor is extended, have achieved a cumulative GPA of at least 3.0, a semester GPA of 3.0 to 3.74, and have completed 24 semester hours or more at DCC.

Honors Institute

DCC invites motivated students to enroll in its Honors Institute. Students may earn "Honors Scholar" designation on their diplomas and transcripts by completing a minimum of 12 credit hours of honors work and achieving an overall GPA of 3.0 or higher. Honors work must be completed one week before the end of the semester.

Honors Institute, continued from previous page...
Students are eligible for honors work if they meet all of the following criteria:

1. Completed all developmental coursework (if required)
2. 3.25 or higher high school GPA
3. 3.0 or higher overall GPA in non-honors courses
4. Satisfied prerequisites of each Honors Community course
5. Endorsement of two DCC faculty members

Honors projects are negotiated with faculty and the Honors Institute Chair. These projects can be done in any non-honors course and typically focus on topics of special interest to the student and require appropriate additional or alternative assignments which go beyond regular coursework. For more information, contact the Honors Institute Chair, 434.797.8497.

Academic Standing

Students are considered to be "in good academic standing" if they maintain a semester minimum GPA of 2.00; are eligible to re-enroll at DCC; and are not on academic suspension or dismissal status.

Academic Warning

Students who fail to attain a minimum GPA of 2.0 for any semester shall be placed on academic warning. Students should see their advisor/counselor and take advantage of academic support services provided by the college.

Academic Probation

Students who fail to maintain a cumulative GPA of 1.50 shall be on academic probation until such time as their cumulative average is 1.75 or better. The statement "Academic Probation" shall be placed on their permanent records. Students on probation are ineligible for appointive or elective office in student organizations unless special permission is granted by the Vice President of Academic and Student Services. Students may be required to carry less than a normal load for the following semester and are required to consult with their advisor/counselor. Students shall be placed on probation only after they have attempted 12 semester credits.

Academic Suspension

Students on academic probation who fail to attain a semester GPA of 1.50 or better shall be placed on suspension for one semester only after they have attempted 24 semester credits. The statement "Academic Suspension" shall be placed on the student's permanent records. Students who wish to appeal should follow the DCC appeal process. Suspended students may be reinstated at the conclusion of the suspension period. Students who have been reinstated from academic suspension must achieve a 2.0 GPA or better for the semester of their reinstatement and must earn at least a 1.75 GPA in each subsequent semester of attendance. The statement "Subject to Dismissal" shall be placed on the student's permanent records. Students who have been reinstated from academic suspension will remain subject to dismissal until their cumulative GPA is raised to a minimum of 1.75. Reinstated students may be required to carry less than a normal course load the following semester and are required to consult with their advisor/counselor.

Academic Dismissal

Students who do not attain at least a 2.0 GPA for the semester of reinstatement following academic suspension shall be dismissed. Students who achieve at least a 2.0 GPA for the semester of their reinstatement must earn at least a 1.75 GPA in each subsequent semester of enrollment. Failure to attain a 1.75 GPA in each subsequent semester until the cumulative GPA reaches 1.75 shall result in academic dismissal. The statement "Academic Dismissal" shall be placed on the student's permanent records. Academic dismissal is normally permanent. In exceptional circumstances, students may appeal and be reinstated. Students who have been reinstated after academic dismissal will remain subject to dismissal until their cumulative GPA is raised to a minimum of 1.75. Reinstated students may be required to carry less than a normal course load and are required to consult with their advisor/counselor.

Academic Renewal

Students who return to DCC after a separation of five years or more may petition for academic renewal. The request must be in writing on the Academic Renewal Selection Form available in the Admissions Office. The purpose of this policy shall be to adjust the cumulative GPA of eligible students with enrollments from 1984 onward. If a student is deemed eligible for academic renewal, "D" and "F" grades earned prior to re-enrollment will be deleted from the cumulative and curriculum GPA, subject to the following conditions:

1. Prior to petitioning for academic renewal, the student must demonstrate renewed academic interest and effort by earning at least a 2.5 GPA in the first 12 semester hours completed after re-enrollment.

2. All grades received at DCC will be part of the student's official transcript.

3. Students will receive degree credit only for courses in which grades of "C" or better were earned prior to academic renewal, provided that the courses meet current curriculum requirements.

4. Total hours for graduation will be based on all coursework taken at DCC after readmission, as well as former coursework for which a grade of "C" or better was earned, and credits transferred from other colleges or universities.

5. Academic renewal may be used only once and cannot be revoked once approved. All students should be warned about the pitfalls of this process. (Example: A student may have a "D" in a course that is needed for graduation, but cannot get credit for the course if it is part of Academic Renewal. The course will have to be repeated.)

A student denied Academic Renewal may appeal the decision to a committee chaired by the Dean of Student Support Services, with the other two committee members appointed annually. A written appeal should be sent to the Dean within seven days of denial.

APPEALS CONTACT:
Ms. Cheryl Terry
Dean of Student Support Services
Wyatt Building 111, 434.797.6435
cterry@dcc.vccs.edu

Prerequisites and Corequisites

Many courses at DCC require prerequisites and corequisites; meaning that in order to be successful in a certain course, the student must have acquired (or be in the process of acquiring) certain other skills or knowledge. Any such requirements are listed in the course description section.

A **prerequisite** is a course that a student must take **before enrolling in a particular course**. Example: BIO 101 is a prerequisite for BIO 102. Students must successfully complete 101 before taking 102.

A **corequisite** is a course which a student must take **while they are taking another course** if they have not already completed it. Example: MTE 3, MTE 4, and MTE 5 are corequisites for Biology 101, meaning they must be taken while taking Biology 101 if one has not completed them already.

Attendance

Student/faculty interactions are critical to the learning process. Regular class attendance is thus expected of students. Students missing 25% or more of the total time allocated for classes and/or labs may be administratively withdrawn from the course upon recommendation of the instructor. Students administratively withdrawn prior to the completion of 60% of the classes and/or labs will be issued a grade of "W." After that point, students who are administratively withdrawn will be issued a grade of "F." Faculty have the discretion to establish more restrictive policies published in the course outline. Faculty also may excuse a student when documented, mitigating circumstances prevent the student from attending a class or lab session. *Failure to attend classes will negatively affect one's financial aid award.*

Examinations

Students are expected to take all examinations, including final examinations, at the regularly scheduled time. Exceptions cannot be made without permission of the instructor.

Academic Honesty

Students are expected to maintain complete honesty and integrity in their experiences in the classroom. Any student found guilty of dishonesty in academic work is subject to disciplinary action, as stated in the Student Handbook

1. DCC may initiate disciplinary proceedings against a student accused of any form of academic dishonesty, including but not limited to the following:

- Copying from another student's test paper or other academic work.
- Using materials not authorized by the person giving the test.
- Collaborating without authorization with another student during an exam or in preparing academic work.
- Knowingly using, buying, selling, stealing, transporting, or soliciting, in whole or part, the contents of an unadministered test.
- Substitution for another student, or permitting another student to substitute for oneself, to take a test or prepare other academic work.
- Bribing another person to obtain an un-administered test or information about an unadministered test.
- The appropriation of another's work without acknowledging the incorporation of another's work in one's own written work (plagiarism).

2. A student who receives a failing grade ("F") in a course as a result of academic dishonesty may not withdraw from that course with a "W" or receive a refund. This policy applies to any student in a particular course deemed to have committed an act of academic dishonesty during any part of a semester, regardless of whether he/she has turned in any graded work. Mitigating circumstances do not apply in such cases. A student may follow the appeal process outlined in the DCC Student Handbook to appeal the failing grade.

Financial Aid

DCC is committed to the belief that qualified students should have an opportunity to pursue higher education, regardless of their financial situation. All students should complete the Free Application for Federal Student Aid (FAFSA) at **www.fafsa.ed.gov** and submit it to DCC by entering **003758** for the federal school code. Computers are available for completing the FAFSA in the Financial Aid Office in the Wyatt 101 during business hours. To be eligible for financial aid, the student must enroll in an eligible curriculum and make satisfactory academic progress.

For more information, visit the Financial Aid website: **http://dcc.vccs.edu/studentservices/FinancialAid/financial_aid.htm**

DCC Financial Aid offers an online self-help portal with articles, frequently asked questions, online chat with a member of the support team, and a login to check the status of your financial aid. **https://mysupport.dcc.vccs.edu**

> ### Have questions about financial aid or your student account? DCC's Financial Aid hotline is available 24 hours a day, 7 days a week to help you!
> # 855-844-3634
> *Did you know?* In a student survey, **96% of users** reported that calling the hotline answered their questions, and **90%** were satisfied with the experience.

Types of Financial Aid

Federal Work-Study Program

Students who show sufficient financial need may be employed as work-study employees on campus while attending college. Students who are enrolled at least half time and not working outside of campus may work an average of 12-15 hours per week. For information or to apply, visit the Financial Aid office in Wyatt 101.

Federal Pell Grant Program

Full- and part-time students who show sufficient financial need and are enrolled in eligible curricula may receive non-repayable aid under this program.

Federal Supplemental Educational Opportunity Grant Program

Students who show sufficient financial need may qualify for this non-repayable grant.

Direct Federal Student Loan Program

Students who do not receive sufficient grant aid to attend college may request a student loan. Forms are available in the Financial Aid Office or online.

State Grants

The Commonwealth Award (COMA) Grant: Preference is given to students with exceptional need. Recipient must be domiciled in Virginia and enroll for at least six (6) credits.

The Virginia Guaranteed Assistance Program (VGAP) Grant recipient must be: A first-time freshman, a dependent, a high school graduate with a high school GPA of at least 2.5, a Virginia resident, and demonstrate financial need. Recipients must be enrolled as a full-time student, must maintain a minimum of a 2.0 GPA each semester, and must complete a minimum of 24 semester hours each academic year to remain eligible for consideration during the next academic year.

The Part-time Tuition Assistance Program Grant is a VCCS program awarded to eligible students enrolled for 1-6 credits a semester. These grants are need-based and for tuition and fees only.

Return to Title IV Funds Policy For Financial Aid Recipients

Federal regulations require DCC to have a written policy for the return of federal (Title IV) financial aid by students who withdraw during a term for which federal financial aid was awarded. This policy applies to all financial aid recipients who withdraw or are dismissed from DCC, or who stop attending before completing 60% of the enrollment period. Title IV programs subject to this policy are Federal Pell, Federal SEOG, and Direct Federal Student Loans. Financial aid recipients are required to attend all classes in which they enroll. Students who fail to begin attendance are not eligible to receive any portion of the financial aid awarded and may be required to repay all financial aid funds used for tuition, fees, or bookstore charges as well as any cash received for the non-attended course(s). A student's enrollment status at the end of the drop/add period determines the student's financial aid for the term. Students who stop attending should withdraw from DCC following official withdrawal procedures outlined in this catalog. Financial aid students must notify the Financial Aid Office before withdrawing.

DCC Educational Foundation

The DCC Educational Foundation is a tax-exempt, non-profit organization governed by a Board of Directors composed of concerned citizens, donors and alumni. The Foundation was established in 1982 to enhance the academic excellence of DCC and improve the college's ability to serve the citizens of our area. Objectives of the Foundation include: Awarding student scholarships, providing professional development for faculty and staff, ensuring that instructional equipment keeps pace with technological changes, strengthening the academic programs, and encouraging cultural activities.

DCC Educational Foundation Scholarships

More than 100 scholarship funds are administered through the DCC Educational Foundation. **Last year, the Foundation awarded more than $600,000 to DCC students, averaging $2,500 per student!** For more information, contact the Foundation Office at 434.797.8495 or 434.797.8437. The full list of scholarships and the application are available on the Foundation's webpage:

www.dcc.vccs.edu/foundation/foundation.htm

Student Support Services

Counseling

DCC's counselors are committed to helping current and prospective students with academic, personal, and career plans. Academic counselors review placement test scores with students in addition to placing them in a program of study. They can also help students with general concerns such as developing educational plans, lifestyle transitions related to education, and problems that are interfering with progress in college. For more information, please visit the Counseling office on the first floor of the Wyatt Building or call 434.797.8460.

Accessibility Services

DCC believes in creating an inclusive and welcoming community where all qualified students with disabilities have the opportunity to take part in educational programs and services on an equitable basis. The ADA/Accessibility Services office provides students with comprehensive and ongoing support, advocacy efforts, and assistance with the transition to the college environment.

Accommodations available to qualifying students will depend on the nature of their documented disability and will be determined on a case-by-case basis by the ADA counselor. For more information on accessing these services, contact the ADA office at 434.797.8572.

Library & Tutoring Services

The Whittington W. Clement Learning Resources Center (LRC) provides information and instructional support services. Centrally located on campus, the LRC opened to students, faculty, and the community in October 1994. Housing the Library, Learning Assistance Center (LAC), Audio-Visual Services, Tutoring Center, and the Teaching, Learning and Technology Center, the LRC incorporates the latest in educational technology to offer a unique mix of traditional and nontraditional resources for learning and teaching.

For more information, call 434.797.8454 or visit **www.dcc.vccs.edu/LRC/LRC/ LearningResourcesCenter.htm**

The Mary M. Barksdale Library houses a collection of more than 58,000 items in support of DCC instructional programs, including books, non-print media, periodicals, government documents, and more. As a member of VIVA, students and faculty have online access to databases including thousands of digital and print journals, books, and reference sources. Audio-visual equipment is available for previewing audio and video programs. The library offers strong reference support, and the staff is available to instruct individuals or groups in the use of resources. For more information, please call 434.797.8555.

The **Learning Assistance Center (LAC)**, a large multipurpose area located on the upper level of the LRC, provides support and resources for teaching and learning. An open computer lab is available for students, staff, and the public. The LAC also provides placement testing, make-up testing and testing for distance learning courses. Students are encouraged to use the LAC for group study. For more information, please call 434.797.8404.

Audio-Visual Services: Located on the lower level of the LRC, this department provides installation and maintenance of audio-visual equipment as well as faculty and staff training. For more information, call 434.797.8454.

Distance Learning: Coordinated through the LRC, DCC's distance learning program gives students the opportunity to attend accredited college classes in a flexible way. DCC employs sound and acceptable practices for determining the amount and level of credit awarded for courses, regardless of format or mode of delivery. Distance learning students use a variety of learning resources including videos, textbooks, study guides, Interactive Television, and the internet to complete coursework and earn college credit at home or at convenient off-campus locations. Distance learning courses are designed to be comparable to traditional on-campus courses. The primary difference centers on the degree of responsibility the student accepts when taking a distance learning course. For some, this aspect makes distance learning courses an ideal way of continuing their education because it alleviates many time constraints and scheduling conflicts. All distance learning courses have an assigned instructor. In addition, distance learning students have access to campus learning resources and student support services.

The Teaching, Learning & Technology Center provides assistance to faculty who wish to use instructional technologies in their teaching. Located in the lower level of the Mary M. Barksdale Library, the college's librarians work directly with instructors to develop applications and also provide information technology training for faculty and staff. For more information, call 434.797.8598.

DCC's **Tutoring Center,** which is nationally certified by the College Reading and Learning Association, provides free tutoring to currently enrolled DCC students to support their DCC coursework. Tutoring is provided by trained professional and peer tutors. Both one-on-one peer tutoring and small group tutoring are available. The Tutoring Center is located on the upper level of the LRC. For more information on tutoring services, call 434.797.6432. Students may also access **Smarthinking**, on or off-campus, for tutoring assistance through Blackboard. Smarthinking offers online tutoring in various subjects, some available 24/7, with a staff of more than 2000 tutors worldwide.

Veterans

Programs and courses of study (including Career Studies Certificates) at DCC are approved by the Virginia Department of Education and the Veterans Administration for payment of veteran's educational benefits. Programs include the Montgomery GI Bill, Vocational Rehabilitation, and the Educational Benefits for Dependents and Spouses and Active Duty Tuition Assistance. For information about VA educational benefits, contact the DCC Veteran's Affairs Specialist at 434.797.8489 or the Veteran's Administration in Roanoke (1.800.827.1000). Free tuition is available for dependents of certain disabled or deceased (service-related) veterans through the Virginia War Veterans Department.

DCC is a member of the Servicemen's Opportunity College (SOC) Network and recognizes that learning occurs in extra-institutional and non-instructional settings. As an SOC institution, DCC awards credit for CLEP, DSST, ECE and DANTES as appropriate for each veteran student's program of study. All veterans receive a physical education credit for basic training. DCC is dedicated to recognizing the experience, training and education of veterans and will on a case-by-case basis evaluate each individual to ensure that they receive the maximum allowable credits.

Post 9/11 GI Bill (Chapter 33)

The Post-9/11 GI Bill is for individuals with at least 90 days of aggregate service on or after September 11, 2001, or individuals discharged with a service-connected disability after 30 days. Honorable discharge required for eligibility. For more information, visit **www.gibill.va.gov/ GI_Bill_Info/benefits.htm.**

Transfer of Post 9/11 GI Bill Benefits to Dependents (TEB)

Service members enrolled in the Post 9/11 GI Bill program are able to transfer unused educational benefits to their spouses or children effective August 1, 2009. For more information, visit **www.gibill.va.gov/GI_Bill_Info/Ch33/Transfer.htm**.

Academic Residency Requirement for Active Duty Service Members:

DCC limits academic residency to no more than 25% of the degree requirements for all associate degrees for active-duty service members. Academic residency can be completed at any time while active-duty service members are enrolled. Reservists and National Guardsmen on active-duty are covered in the same manner. The following individuals shall be charged a rate of tuition not to exceed the in-state rate for tuition and fees purposes:

• A veteran using educational assistance under either chapter 30 (Montgomery G.I. Bill – Active Duty Program) or chapter 33 (Post-9/11 G.I. Bill), of title 38, United States Code, who lives in Virginia while attending a school located in Virginia (regardless of his/her formal State of residence) and enrolls in the school within three years of discharge or release from a period of active duty service of 90 days or more.

• Anyone using transferred Post-9/11 GI Bill benefits (38 U.S.C. § 3319) who lives in Virginia while attending a school located in Virginia (regardless of his/her formal state of residence) and enrolls in the school within three years of the transferor's discharge or release from a period of active duty service of 90 days or more.

• Anyone described above while he or she remains continuously enrolled (other than during regularly scheduled breaks between courses, semesters, or terms) at the same school. The person so described must have enrolled in the school prior to the expiration of the three year period following discharge or release as described above and must be using educational benefits under either chapter 30 or chapter 33, of title 38, United States Code.

• Anyone using benefits under the Marine Gunnery Sergeant John David Fry Scholarship (38 U.S.C. § 3311(b)(9)) who lives in Virginia while attending a school located in Virginia (regardless of his/her formal state of residence).

• Anyone using transferred Post-9/11 G.I. Bill benefits (38 U.S.C. § 3319) who lives in Virginia while attending a school located in Virginia (regardless of his/her formal state of residence) and the transferor is a member of the uniformed service who is serving on active duty.

• The policy shall be amended as necessary to be compliant with the requirements of 38 U.S.C. 3679 as amended.

Additional Campus Resources

Career Services

The Greater Opportunities for Achievement in Learning (GOAL) Center joins with other campus departments to provide students with a variety of career-focused activities and one-on-one services, including résumé help, job interview techniques, financial coaching, professional clothing donations, and job fairs. For more information, call 434.797.8520 or visit **www.dcc.vccs.edu/CareerCenter/career_center.htm**.

Career Coaches

High school career coaches work within local schools and provide students with individualized career and college planning.

Student Success Coaches

DCC Success Coaches help underserved students in their first year of study. The coaches are assigned a caseload targeting students who have 14 or fewer credits and who meet one or more of three criteria: Race/ethnicity, Pell status, and first generation college students. Coaches work closely with faculty and counselors to ensure that students are progressing and receive any support services needed. Visit the webpage for more information:

www.dcc.vccs.edu/studentservices/student-success-program.htm

Middle College

The Middle College offers individuals aged 18-24 years old who do not have a high school credential the opportunity to obtain a GED and workforce preparation. Middle College also helps students

with the financial aid process; career counseling; selecting a program of study at DCC; and earning a certificate, diploma or associate degree. For information, call 434.797.6433.

Southern Piedmont Educational Opportunity Center (EOC)

The EOC provides services aimed at low-income and first-generation college students throughout southern Virginia. Headquartered at DCC, the EOC offers assistance completing admission and financial aid applications to any college or university, information on GED programs, scholarship information, career counseling and assessments, and academic advising. For more information, call 434.797.8577 or stop by the office on the first floor of the Wyatt Building.

Student Activities

Student activities are designed to provide meaningful educational, cultural, and social experiences. A current list of campus clubs and organizations may be found at **www.danville.edu**. All clubs, organizations and activities have a staff advisor and/or sponsor. Official recognition is given only to those clubs and organizations which have been approved by the Student Government Association and the Dean of Student Support Services. Should a sufficient number of students desire a particular activity, they must petition the Student Government Association for official recognition.

Student Handbook

The student handbook describes student activities, student rights and responsibilities, and college rules and regulations. Students are bound by the policies set forth therein. The handbook is widely distributed across campus and is available in the Admissions Office as well as online. Information includes DCC's Drug and Alcohol Abuse Policy, Campus Security and Crime Awareness, animals (Pets) on campus, IT resources, parking, the Prohibition of Weapons on Campus and the Policy for the Prohibition of Sexual Misconduct, Sexual Violence, Domestic Violence and Stalking (Title IX).

DCC Castle Bookstore

The DCC bookstore offers a variety of products including books, school supplies, clothing, and computer items. Students can access course material information, including ISBN, prices, and the ability to order online, by visiting http://dccbookstore.dcc.vccs.edu/home.aspx.

Return and Refund Policy

Cash register receipts must be submitted for a refund for state audit purposes. All refunds are made by check and will be mailed within 4-6 weeks of the return date. New books and related materials must be in new, resalable condition to obtain a refund. Names should not be written in books. If no receipt, exchanges may be permitted for equal value.

Textbooks may be returned for a refund until the last day of the add/drop period. An official drop form along with the dated bookstore receipt is required.

General books such as trade paperbacks, hardcover fiction, and non-fiction are non-refundable.

Calculators and Electronics: Refunds on calculators are not available. Defective items are not replaced after 30 days of purchase. Merchandise must be returned with its carton, product materials (instructions, warranty, etc.) and the dated sales receipt. For defective merchandise purchased and held for more than 30 days, the manufacturer or local service outlet must be contacted directly.

Computer software in its original shrink-wrap and that is the current version may be returned within five days of the purchase date. There are no refunds on opened software.

General Merchandise

Merchandise other than the above is non-refundable. Defective items may be exchanged for like items.

Used Books

The bookstore buys and resells used books to provide more reasonable prices for students. Buy-back dates are posted around the campus prior to each book-buy. Used book purchases are based on the need for specific books.

Programs of Study
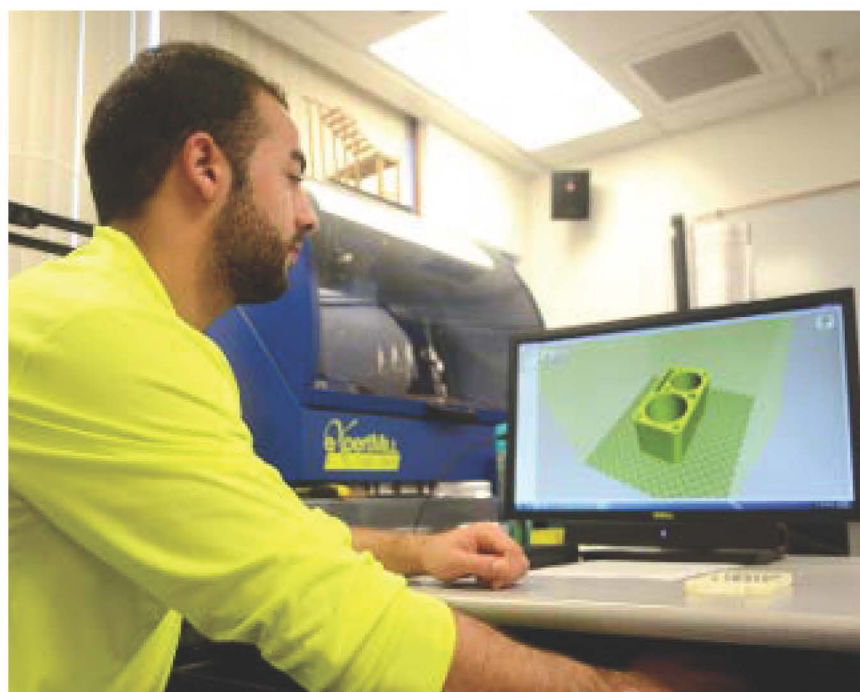
Programs Alphabetical by Credential Type

Associate of Arts & Sciences (A.A.& S.)
Business Administration
Liberal Arts:
- Humanities specialization
- Social Science specialization
Science
Science – Computer Science

Associate of Science
Engineering

Associate of Applied Science (A.A.S.)
Administration of Justice
Administrative Support Technology:
- General Office specialization
- Medical Office Administration specialization
- Medical Office Coding specialization
Business Management:
- Automotive Management specialization
- Graphic Imaging specialization
- Management specialization
- Project Management specialization
Cyber & Network Security
Dental Hygiene* *(Degree awarded by Virginia Western Community College)*
Early Childhood Education
Health Science - Practical Nursing
Integrated Machining Technology
Information Systems Project Management
Information Systems Technology:
- Gaming & Mobile Application Development specialization
- Network Engineer
- Software Development specialization
Marketing:
- Electronic Commerce specialization
- Marketing specialization
- Warehousing & Distribution specialization
Medical Laboratory Technology* *(Degree awarded by J. Sargeant Reynolds CC)*
Nursing
Respiratory Therapy* *(Degree awarded by J. Sargeant Reynolds CC)*

Technical Studies:
- Industrial Maintenance Technician
- Venture Creation & Management ("Build Your Business")

Diplomas
Air Conditioning & Refrigeration
Automotive Analysis & Repair
Electrical/Electronics Engineering Technology
Electrical/Electronic Equipment Servicing
Graphic Imaging Technology
Precision Machining Technology
Welding

Certificates
Air Conditioning & Refrigeration Servicing
Cyber Crime Investigation
Cyber Security
General Education
Industrial Electrical Principles
Industrial Electronic Principles
Law Enforcement
Maintenance Mechanics
Office Information Processing
Welding Technology

Career Studies Certificates
Advanced Database Development
Advanced Product Design & Development
Advanced Welding
American Sign Language
Basic Dental Assisting
Basic Welding
Brewing, Distillation, and Fermentation
Building Construction Trades
CNC Flow Cell Machining
Commercial Art
Cosmetology
Culinary Arts
Cyber Security Technician
Desktop Applications
Digital Art & Design
Digital Imaging & Photography
Dimensional Inspection

Career Studies Certificates, continued...

Early Childhood Development
Electrical Concepts
Electronic Concepts
Emergency Medical Services – Basic
Factory Automation and Robotics
Food Service Management Trainee
General Office Studies
Graphic Communications
Hospitality and Food Service
Information Systems Data Analyst
Information Systems Management
Information Systems Technician
Information Technology Support Specialist
Instrument (Guitar) Building Craft
Logistics Management
Manufacturing Technician
Medical Coding

Medical Office Studies
Metal Arts
Metals Processing
Mobile Application Development
Network Technology
Networking with Cisco/CCNA
Networking Technology Fundamentals
Network Virtualization Technologies
Nurse Aide – Extended Care
Pharmacy Technician
Phlebotomy
Printing Technology
Project Management
Small Business Management
Software Development
Website Design
Website Programming
Welding

Get qualified for hot jobs in weeks or months, not years! DCC's short-term career training options range from 6 weeks to 10 months:

6 weeks
• Truck Driving

10 weeks
• Nurse Aide - Extended Care
• Manufacturing Technician

4 months
• Basic Dental Assisting
• Logistics Management
• Phlebotomy
• Project Management
• Welding

7 months
• CNC Flow Cell Machining

9 months
• Dimensional Inspection (Metrology)

10 months or less
• Cosmetology
• Culinary Arts
• Cyber Security Technician
• Digital Art & Design
• Early Childhood Development
• Electrical/Electronic Concepts

10 months or less, continued...
• Instrument (Guitar) Building
• IT Support Specialist
• Law Enforcement (certificate)
• Metal Arts
• Mobile App Development
• Networking
• Pharmacy Technician
• Printing Technology
• Small Business Management
• Website Design
• Website Programming

and more!

Online/Hybrid Programs -
Learn from anywhere!

Short-term programs:

Cyber Crime Investigation (Certificate)
Cyber Security Technician (CSC)
Cyber Security (Certificate)
Logistics Management (CSC) - *self-paced!*
Networking with Cisco/CCNA (CSC)
Project Management (CSC) - *self-paced!*
Software Development (CSC)

Associate degrees:

Administration of Justice
Business Management
IST - Gaming & Mobile Applications
Liberal Arts

*Note: Some science requirements may not be available online.

Advanced Programs
Take your career to the next level!

These programs may require prior education or work experience relevant to the field. Enrollment eligibility may be determined by the instructor/program coordinator.

Advanced Database Development (CSC)

Advanced Product Design & Development (CSC)

Advanced Welding (CSC)

Automotive Analysis & Repair - Light Diesel Mechanics (CSC)

CNC Flow Cell Machining (CSC)

Cyber Crime Investigation (Certificate)

Cyber Security (Certificate)

Cyber Security Technician (CSC)

Information Technology Support Specialist (CSC)

Logistics Management (CSC)

Network Virtualization Technologies (CSC)

Project Management (CSC)

Programs of Study

How to use this section:

Each program listing contains basic information to help you decide if it's the right fit for you. This may include:

- **Length of program:** The intended length of time to completion, based on whether the program is designed to be full- or part-time. Most program lengths are based upon a full-time courseload as outlined in the catalog course sequence. If this sequence is not followed, the program may take longer.

  Upon applying to DCC, your academic strengths and weaknesses will be evaluated with a counselor; any weaknesses in your academic history may require developmental courses, which are not included in the program credit totals. Developmental courses or additional prerequisites will add length to the program.

- **Industry Credentials or Certifications (if applicable):** Some - not all - programs are intended to prepare graduates to sit for third-party, industry-recognized examinations which may result in national certifications. These certifications may aid in obtaining employment.

- **Career opportunities OR transfer opportunities:** Most programs are meant to either prepare graduates for immediate employment in their field, or else transfer to a four-year college or university to earn further qualifications.

- **Career Information:** Where applicable, programs list potential careers, salaries, and projected growth of the field for graduates of the program. This information is taken from national employment data and projections from the Bureau of Labor Statistics Occupational Outlook Handbook; it is intended as a guide, and is not a guarantee of employment or wages. Wages and available job opportunities will vary based on location, field of study, and qualifications of the applicant.

- **Transfer information:** For programs intended to culminate in a bachelor's degree. DCC has **guaranteed admission** or articulation agreements with **40+ colleges and universities** for graduates who meet certain guidelines. Typically, this means a student who earns an eligible DCC transfer degree with a particular grade-point average will be automatically admitted to the college/university with full third-year status. **NOTE: Admission to a given institution does not guarantee admission to a particular degree program, major, or field of concentration.**

  Transfer students can save **$15,000** or more on tuition and fees by completing an associate degree at DCC and then transferring to an in-state public institution - with even greater cost savings compared to a private or out-of-state school!

Advanced Manufacturing

Advanced Manufacturing in the United States has changed dramatically. Today's workers require high-tech precision machining skills to operate leading-edge technology in clean, well-lit manufacturing environments. DCC graduates enjoy high job placement rates at companies both locally and nationally. Programs range from seven months to two years.

Special scholarship funding is available to students in DCC's advanced manufacturing programs:

- **Gene Haas Foundation**
- **James R. Meissner Memorial Endowed Scholarship**
- **Rosalie C. Mead Women in Manufacturing Scholarship**

For more information, visit www.machiningindanville.com

Precision & Integrated Machining

CNC FLOW CELL MACHINING - Career Studies Certificate

This program prepares students with prior machining experience for higher-level machinist or entry-level manager positions. Topics include advanced-level CNC training, CAD/CAM, and inspection training, as well as dimensional metrology and advanced tooling applications.

Admission Requirements In addition to general college admission requirements, students must:

1. Complete MAC 223 and MAC 127 (or equivalents) with a C or higher.
2. Have completed a two-year precision machining program or have equivalent work experience, as evaluated by program instructors.

Program Outcomes Graduates will be able to:

1. Act as high-performance team members and cultivate knowledge required of mid-level machinists or entry-level managers.
2. Apply the concepts of Lean and Six Sigma.
3. Gain an understanding of basic economic principles as they apply to industry and the impact of those principles to manufacturing.
4. Work with a wide range of high-performance machine tools, including 5-axis mills, 3-axis lathes, CNC inner diameter and outer diameter surface grinders, and electrical discharge machining.
5. Learn the ancillary processes associated with machining in a high-precision environment.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
IND 123	Intro to Lean Manufacturing & Six Sigma	1	0	1	1
IND 138	Industrial Leadership & Career Development	1	0	1	1
MAC 108	Computer Numerically Controlled Grinding	1	3	4	2
MAC 130	Intro to Electric Discharge Machining (EDM)	1	3	4	2
MAC 253	Advanced CMM Operation & Programming	1	6	7	3
MAC 251	Advanced CAM Modeling & Simulation	2	3	5	3
MAC 256	Multi-Axis Machine Tool Set-up, Programming and Operation	1	6	7	3
MAC 224	Advanced Tooling Applications	2	3	5	3
MAC 255	Intro to Supply Chain Strategies for Industry	1	6	7	3
MAC 258	Tool Inspection, Validation, & Presetting	1	3	4	2
MAC 254	Machining Flow Cell IT Integration	1	3	4	2
MAC 257	Capstone: Precision Machining Flow Cell	1	9	10	4
	Total	**14**	**45**	**59**	**29**

PROGRAM INFO

A specialized third-year advanced manufacturing program conducted in a high-precision CNC manufacturing cell. The program is a partnership between DCC and the Institute for Advanced Learning & Research.

Minimum credits: 29

Length: 7 months

Career opportunities:
CNC Programmer: **$48,990**
Job growth: **19%**
from 2014-2024

Machinists, Tool & Die Makers: **$43,160**
Job growth: **6%**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services (Haas Center)

Contact: 434.766.6607

DIMENSIONAL INSPECTION (METROLOGY) - Career Studies Certificate

PROGRAM INFO

This program prepares students for employment as specialized quality inspectors in a high-precision manufacturing environment. Classes take place in well-lit, clean, and climate-controlled labs within the state-of-the-art Gene Haas Center for Integrated Machining.

Minimum credits: 28

Length: 9 months

Career opportunities:
Quality Control Inspector
$45,000

Calibration Technician:
$53,000

Median U.S. salaries as of 2017. Source: ASQ Quality Progress salary survey.

Division: Workforce Services (Haas Center)

Contact: 434.766.6607

Students will acquire skills such as blueprint reading, part inspection, coordinate measuring machine (CMM) operation and programming, and geometrical dimensioning and tolerancing. With the use of precise inspection equipment, students will verify part quality and document results for quality control.

Program Coordination: Six courses (14 credits) are shared between Dimensional Inspection and the Precision Machining Diploma.

Program Outcomes Graduates of this program will be able to:

1. Qualify for careers in a precision inspection environment.
2. Accurately inspect precision components based on geometrical dimensioning and tolerancing principles.
3. Operate and program coordinate measuring machines.
4. Accurately and consistently conduct precision bench inspections.

Industry Certifications: NIMS – Measurement, Materials and Safety; Mitutoyo – MCOSMOS C1; Mitutoyo – MCOSMOS C2; ASQ – CQI – IT.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
CST 100	Principles of Public Speaking	3	0	3	3
SAF 130	Industrial Safety	1	0	1	1
MTH 111	Basic Technical Mathematics	3	0	3	3
DRF 160	Machine Blueprint Reading	3	0	3	3
MAC 134	CMM Operation & Programming	1	2	3	2
MAC 146	Metals & Heat Treatment	1	3	4	2
MAC 211	Dimensional Inspection I	1	6	7	3
MAC 209	Standards, Measurements, & Calculations	3	0	3	3
MAC 125	Intro to Geometrical Dimensioning & Tolerancing in Machining	3	0	3	3
MAC 212	Dimensional Inspection II	1	6	7	3
MAC 218	Intermediate CMM Operation & Programming	1	3	4	2
	Total	**21**	**20**	**41**	**28**

For more info, visit www.machiningindanville.com

INTEGRATED MACHINING TECHNOLOGY - Associate of Applied Science

This advanced-level program, a partnership between DCC and the Institute for Advanced Learning & Research, takes place in a state-of-the-art CNC learning environment. Students work in an advanced machining flow cell so they receive fully integrated training that meets the needs of leading manufacturers. Graduates will be prepared for higher-level machinist or entry-level manager positions.

Program Integration: 25% of courses are shared between the Precision Machining Diploma & IMT program. IMT students will also simultaneously complete the CNC Flow Cell Machining CSC.

Admission Requirements:

1. All students must have completed MAC 223 and MAC 127 (or equivalents) with a C or higher.
2. All students must have completed a two-year precision machining program or have equivalent work experience, which instructors will evaluate on a case-by-case basis.

Program Outcomes   Graduates will be able to:

1. Act as high-performance team members and cultivate the knowledge required of mid-level machinists or entry-level managers.
2. Apply concepts of Lean and Six Sigma.
3. Understand basic economic principles as they apply to industry and their impact on manufacturing.
4. Operate a wide range of high performance machine tools including 5-axis mills, 3-axis lathes, CNC inner diameter and outer diameter surface grinders, and electrical discharge machining.
5. Learn ancillary processes associated with machining in a high-precision environment.

PROGRAM INFO

Minimum credits: 66

Length: 2 years

Career opportunities:
CNC Programmer: **$48,990**
Job growth: **19%**

Machinists, Tool & Die Makers: **$43,160**
Job growth: **6%**
Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services (Haas Center)

Contact: 434.766.6607

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
GENERAL EDUCATION					
ENG 111	College Composition I	3	0	3	3
HUM 165	Controversial Issues	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3
MTH 111	Basic Technical Mathematics	3	0	3	3
HLT 106	First Aid and Safety	2	0	2	2
SDV 100	College Success Skills	1	0	1	1
TECHNICAL FOUNDATION					
CAD 120	Introduction to Graphic Representation	2	3	5	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
MAC 128	CNC Programming	3	0	3	3

INTEGRATED MACHINING TECHNOLOGY - A.A.S.

Course Sequence, continued...

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
MAC 150	Intro to Computer-Aided Manufacturing	2	2	4	3
ENG 131	Technical Report Writing I	3	0	3	3
MAC 134	CMM Operation and Programming	1	2	3	2
MAC 255	Intro to Supply Chain Strategies for Industry	1	6	7	3
IND 123	Intro to Lean and Six Sigma	1	0	1	1
IND 138	Industrial Leadership & Career Development	1	0	1	1
CONTENT SKILLS AND KNOWLEDGE					
MAC 108	CNC Grinding	1	3	4	2
MAC 130	CNC EDM Machining	1	2	3	2
MAC 253	Advanced CMM Operation & Programming	1	6	7	3
MAC 251	Advanced CAM Modeling & Simulation	2	3	5	3
MAC 256	Multi-Axis Machine Tool Set-Up, Programming & Operation	1	6	7	3
MAC 224	Advanced Tooling Applications	2	3	5	3
MAC 258	Tool Inspection, Validation, & Presetting	1	3	4	2
MAC 254	Flow Cell IT Integration	1	3	4	2
BUS 134	Manufacturing Economics	1	0	1	1
MAC 257	Topics in Capstone: Precision Machining Flow Cell	1	9	10	4
INTERNSHIP					6

PRECISION MACHINING TECHNOLOGY - Diploma

This program prepares students for careers as skilled machinists. Graduates may find immediate employment or continue to the advanced-level CNC Flow Cell program at the Gene Haas Center for Integrated Machining in order to qualify for higher-level and management positions.

Program Coordination: Six courses (14 credits) are shared between the Dimensional Inspection CSC and the Precision Machining Diploma.

Industry Certifications: NIMS

Program Outcomes Graduates will demonstrate competency in:

1. Ability to operate machine shop equipment, such as lathes, mills, grinders, and drills.
2. Ability to read and interpret blueprints per industry standards.
3. Ability to process and plan a piece part through the lab until completion.
4. CNC machine tool operation and programming.
5. CAM design and manufacturing.

PRECISION MACHINING TECHNOLOGY - Diploma

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
DRF 160	Machine Blueprint Reading	3	0	3	3
ENG 131	Technical Report Writing I	3	0	3	3
MAC 101	Machine Shop I	5	9	14	8
MTH 111	Basic Technical Mathematics	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**15**	**9**	**24**	**18**
Second Semester					
CAD 120	Intro to Graphic Representation	2	3	5	3
MAC 102	Machine Shop II	4	9	13	7
MAC 121	Numerical Control I	2	3	5	3
MAC 116	Machinist Handbook	2	0	2	2
ITE 116	Survey of Computer Software Appns.	2	0	2	2
SAF 130	Industrial Safety - OSHA 10	1	0	1	1
	Total	**13**	**15**	**27**	**18**
Third Semester (Summer)					
MAC 221	Advanced Machine Tool Operations I	4	9	13	7
MAC 127	Advanced CNC Programming	3	0	3	3
	Total	**7**	**9**	**16**	**10**
Fourth Semester					
ECO 100	Elementary Economics	3	0	3	3
MAC 209	Standards, Measurements & Calculations	3	0	3	3
MAC 122	Numerical Control II	1	2	3	2
MAC 222	Advanced Machine Tool Operations II	4	9	13	7
MAC 123	Numerical Control III	1	2	3	2
	Total	**12**	**13**	**25**	**17**
Fifth Semester					
MAC 128	CNC Programming	2	0	2	2
MAC 134	CMM Operation and Programming	1	2	3	2
MAC 150	Intro to Computer-Aided Manufacturing	2	3	5	3
MAC 223	Advanced Machine Tool Operations III	4	9	13	7
CST 100	Public Speaking *(or approved sub)*	3	0	3	3
	Total	**12**	**14**	**26**	**17**

PROGRAM INFO

Minimum credits: 80

Length: 2 years (5 semesters), if suggested full-time course sequence is followed.

Career opportunities:
CNC Programmer: **$48,990**
Job growth: **19%**
from 2014-2024

Machinists, Tool & Die Makers: **$43,160**
Job growth: **6%**

CNC Operator: **$38,720**
Job growth: **6%**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8430

Industrial Maintenance

MANUFACTURING TECHNICIAN - CSC

PROGRAM INFO

Created in response to local industry demand, this CSC prepares participants for various manufacturing jobs requiring advanced technical and operator skills, plus knowledge of advanced manufacturing practices.

Minimum credits: 28

Length: 1-2 semesters

Career opportunities:
Manufacturing Technician: **$30,930**

Median salary nationwide as of 2015. Source: BLS.gov

Division: Workforce

Contact: 434.797.8430

Industry Certifications: National Career Readiness Certification (NCRC), Bennett Mechanical Score, OSHA 10, Manufacturing Specialist (MS) from Manufacturing Skills Institute.

Program Coordination: Eight courses in this CSC (21 credits) count towards the Industrial Maintenance Technician A.A.S.

Program Outcomes Graduates will demonstrate:

1. How modern manufacturers use people, technologies and materials to make highly engineered products at a competitive cost.
2. Ability to communicate manufacturing concepts and ideas effectively.
3. Knowledge of basic automation and how technology is used by manufacturers in a modern day factory.
4. Use of Lean Manufacturing in a manufacturing environment.
5. Application of skills learned in social, business and work ethics required by modern manufacturing.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BUS 149	Workplace Ethics	1	0	1	1
IND 137	Team Concepts & Problem-Solving	3	0	3	3
IND 181	World Class Manufacturing	3	0	3	3
IND 195	Applications in Factory Automation	2	0	2	2
ITE 116	Survey of Computer Software Applications	3	0	3	3
AST 55	Certification Preparation	1	0	1	1
SAF 130	Industrial Safety – OSHA 10	1	0	1	1
ELE 147	Electrical Power & Control Systems	2	2	4	3
MEC 154	Mechanical Maintenance I	2	1	3	3
ETR 115	DC & AC Circuits	3	0	3	3
MEC 266	Applications of Fluid Mechanics	3	0	3	3
MTH 111	Basic Technical Mathematics	3	0	3	3
	Total	**26**	**3**	**29**	**28**

MAINTENANCE MECHANICS - Certificate

Program Coordination: All courses except ITE 131 count towards the Industrial Maintenance Technician A.A.S. This may be up to 32 credits, depending on whether the Electrical or Mechanical pathway of the A.A.S. is chosen. (ELE 147, ELE 233 fit into the Electrical pathway only; WEL 120 fits into the Mechanical pathway only.)

Program Outcomes: Graduates will demonstrate the following abilities:

1. Competency in reading & basic drawings & symbols.
2. Ability to stick weld & choose & use basic welding tools/ materials.
3. Wire basic electrical circuits & understand basic wiring symbols.
4. Troubleshoot basic control circuits.
5. Troubleshoot & repair basic mechanical & electrical equipment.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ETR 115	DC & AC Circuits	3	0	3	3
ITE 116	Survey of Computer Software Appns	2	0	2	2
MTH 111	Basic Technical Mathematics	3	0	3	3
MEC 154	Mechanical Maintenance I	2	1	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**11**	**1**	**12**	**12**

Second Semester

ELE 147	Electrical Power & Control Systems	2	2	4	3
IND 103	Industrial Methods	2	0	2	2
ITE 131	Survey of Internet Services	1	0	1	1
MEC 162	Applied Hydraulics & Pneumatics	1	2	3	2
SAF 130	OSHA 10	1	0	1	1
WEL 120	Fundamentals of Welding	1	3	4	2
	Total	**8**	**7**	**15**	**12**

Third Semester

ELE 233	Programmable Logic Controller Systems I	2	3	5	3
IND 243	Mechatronics	2	2	4	3
ENG 131	Technical Report Writing I	3	0	3	3
PSY 126	Psychology for Business & Industry	3	0	3	3
	Total	**10**	**5**	**15**	**12**

INDUSTRIAL MAINTENANCE TECHNICIAN - Technical Studies - Associate of Applied Science

PROGRAM INFO

Minimum credits: 67

Length: 2 years

Career opportunities:
Industrial Machinery
Mechanic: **$49,100**

Job growth: **7%**
from 2016 to 2026
*Median salaries nationwide
as of 2016. Source: BLS.gov*

Division: Workforce

Contact: 434.797.8430

This program prepares students for employment as industrial technicians or supervisors. To find employment, applicants generally must be able to physically lift 50 lbs, have good hand dexterity, and the ability to crawl into cramped spaces.

Program Coordination: Up to 32 credits earned in the Maintenance Mechanic CSC and 21 credits Manufacturing Technician CSC may count towards this degree program.

Industry Certifications: OSHA 10

Program Outcomes Graduates will demonstrate the ability to:

1. Read basic drawings & symbols.
2. Stick weld & choose & use basic welding tools/materials.
3. Wire basic electrical circuits & understand basic wiring symbols.
4. Troubleshoot basic control circuits.
5. Troubleshoot & repair basic mechanical & electrical equipment

Note: Students will select a mechanical or electrical pathway.
The courses are the same for the first two semesters.

Course Sequence

First Semester		Lecture Hrs	Lab Hours	Hrs in Class	Credits
MAC 150	Intro to Computer-Aided Drafting	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
IND 137	Team Concepts & Problem-Solving	3	0	3	3
MEC 154	Mechanical Maintenance I	2	1	3	3
SDV 100	College Success Skills	1	0	1	1
HLT 116	Personal Wellness	3	0	3	3
	Total	**14**	**1**	**15**	**15**
Second Semester					
ENG 111	College Composition I	3	0	3	3
PSY 126	Psychology for Business and Industry	3	0	3	3
ETR 115	DC & AC Circuits	3	0	3	3
SAF 130	Industrial Safety - OSHA 10	1	0	1	1
MTH 111	Basic Technical Mathematics	3	0	3	3
IND 103	Industrial Methods	2	0	2	2
	Total	**15**	**0**	**15**	**15**
Third Semester					
HUM 165	Controversial Issues	3	0	3	3
MEC 162	Applied Hydraulics & Pneumatics	2	2	4	3
ENG 131	Technical Report Writing I	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3

INDUSTRIAL MAINTENANCE TECHNICIAN - Technical Studies - A.A.S.

Third Semester continued...

MECHANICAL PATHWAY:

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
MEC 254	Mechanical Maintenance II	2	1	3	2
MEC 169	Steam Systems	1	2	3	2
ELECTRICAL PATHWAY:					
ELE 147	Electrical Power & Control Systems	2	2	4	3
ELE 233 or	Programmable Logic Controller Systems I **OR**				
ELE 239	Programmable Controllers	2	3	5	3
	Total	**14-15**	**5-7**	**19-22**	**16-18**
Fourth Semester					
IND 181	World Class Manufacturing I	3	0	3	3
IND 243	Mechatronics	2	2	4	3
MECHANICAL PATHWAY:					
WEL 120	Introduction to Welding	1	2	3	2
MEC 269	Fluid Power - Pneumatic Systems	1	2	3	2
MEC 268	Fluid Power - Hydraulic Systems	1	2	3	2
MEC 168	Pump Systems	1	2	3	2
MEC 148	Industrial Pipefitting	1	2	3	2
ELECTRICAL PATHWAY:					
ELE 234	Programmable Logic Controller Systems II	2	3	5	3
ELE 246	Industrial Robotics Programming	2	2	4	3
INS 230	Instrumentation I	2	3	5	3
	Total	**10-11**	**10-12**	**21-22**	**15-16**
Both pathways:					
IND 190	Coordinated Internship				3
IND 290	Coordinated Internship				3

FACTORY AUTOMATION & ROBOTICS - CSC

Program Outcomes Graduates will demonstrate:

1. Knowledge of how modern manufacturers use people, technologies and materials to make highly engineered products at a competitive cost.
2. Ability to communicate technical concepts and ideas effectively.
3. Knowledge of basic automation and robotics used by manufacturers in the production of products.
4. Operation or maintenance of at least one type of automated production equipment or component.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
IND 195	Introduction to Automation & Robotics	2	2	4	3
ETR 115	DC & AC Circuits	2	2	4	3
MEC 161	Basic Fluid Mechanics - Hydraulics/Pneumatics	1	3	4	3
INS 121	Intro to Measurement & Control	2	2	4	3
ELE 143	Programmable Controllers I	2	2	4	3
ETR 286	Principles & Applications of Robotics	1	2	3	3
IND 199	Supervised Study	2	0	2	2
	Total	**12**	**13**	**25**	**20**

METALS PROCESSING - CSC

This program is broad enough to allow the graduate to fill a variety of jobs in a company's machine shop maintenance department, yet detailed enough to ensure that the student fully understands different types of metal processing. Layout procedures and processes on the lathe, drill press, grinding machines, and milling machines are covered in both theory and practice.

Program Outcomes Graduates will be able to:

1. Understand the fundamentals of metal fabrication safety.
2. Apply mathematical principles to metal fabrication practices.
3. Read blueprints for metal fabrication.
4. Understand the different types of metals and their properties.
5. Perform the arc, gas, MIG, and/or TIG welder and metal fabrication.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
DRF 160	Machine Blueprint Reading	3	0	3	3
MAC 161	Machine Shop Practices I	2	3	5	3
MAC 162	Machine Shop Practices II	2	3	5	3
MAC 163	Machine Shop Practices III	2	3	5	3
MAC 164	Machine Shop Practices IV	2	3	5	3
WEL 120	Fundamentals of Welding	1	3	4	2
	Total	**12**	**15**	**27**	**17**

PROGRAM INFO

Minimum credits: 17

Length: 1-2 semesters

Career opportunities:
General Maintenance & Repair Worker: **$36,630**
Job growth: **6%**
from 2014 to 2024

Production Worker/Helper**:**
$26,010
Job growth:
6% from 2014 to 2024

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8430

Arts, Design, & Humanities

Arts, Design, & Humanities programs include short-term training to prepare graduates for immediate employment in the visual arts and design fields, as well as two-year associate degree programs that prepare well-rounded students capable of transferring successfully to a four-year college or university. Potential careers in the liberal arts and humanities include communications, education, writing, and social science.

2D Arts, Design, & Printing

COMMERCIAL ART - Career Studies Certificate

Program Coordination: 4 courses (12 credits) count towards the diploma in Graphic Imaging Technology.

Program Outcomes Graduates will demonstrate:

1. Basic drawing skills;
2. Understanding of the various processes of graphics reproduction;
3. Design skills necessary for commercial printing purposes;
4. Design skills using Adobe InDesign software;
5. Design skills using Adobe Photoshop software;
6. Skills necessary to complete lab projects.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
PNT 110	Survey of Processes	2	3	5	3
ART 121	Drawing Techniques I	2	2	4	3
ART 180	Intro. to Computer Graphics	2	3	5	3
ART 283	Computer Graphics	2	4	6	4
PNT 142	Printing Applications	2	2	4	3
	Total	**10**	**14**	**24**	**16**

PROGRAM INFO

Minimum credits: 16

Length: 1-2 semesters

Career opportunities

Graphic Designer: **$46,900**

Median salary nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8440

DIGITAL ART & DESIGN - Career Studies Certificate

Program Outcomes Graduates will demonstrate understanding of:

1. Differences between industry-standard digital file types, e.g. raster images, vector images, HTML, CSS, and digital video files.
2. Digital manipulation with photography and graphic design.
3. How different uses of typography can affect the intended audience of a graphic design project.
4. Vector image creation.
5. The digital video process, including storyboarding, digital video capture, and linear digital video editing.
6. Basic web principles, including image sizing, content management systems, and basic use of FTP software.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
HUM 246	Creative Thinking	3	0	3	3
ART 130	Intro to Multimedia	2	4	6	4
ART 116	Design for the Web	2	2	4	3
ART 180	Intro to Computer Graphics	2	3	5	3
ART 208	Video Techniques	2	4	6	4
	Total	**11**	**13**	**24**	**17**

PROGRAM INFO

Minimum credits: 17

Length: 1-2 semesters

Career opportunities:
Graphic Designer: **$46,900**

Film/video Editor: **$47,060**

Multimedia Artist: **$58,820**
Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce

Contact: 434.797.8440

DIGITAL IMAGING & PHOTOGRAPHY - CSC

PROGRAM INFO

Learn techniques for taking better pictures, editing, enhancing, & posting online.

Minimum credits: 16

Length: 1-2 semesters

Career opportunities:
Photographer: **$40,280**

Art & Design Worker: **$43,950**

Division: Workforce

Contact: 434.797.8440

Program Outcomes Graduates will demonstrate understanding of:

1. The impact of using different types of cameras, flash, and studio lighting and equipment.
2. Basic camera functions, e.g. aperture, shutter speed, ISO, and focus.
3. Concepts of composition including the rule of thirds, vanishing point, and lines perspective.
4. Ability to edit photos using basic digital photo tools to create black and white, crop, straighten, color adjust, burn and dodge.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
PHT 100	Intro to Photography	2	2	4	3
PHT 101	Photography I	1	4	5	3
ART 283	Computer Graphics I	2	4	6	4
ITD 110	Web Design	3	0	3	3
ART 180	Intro to Computer Graphics	2	3	5	3
	Total	**10**	**13**	**22**	**16**

GRAPHIC COMMUNICATIONS - CSC

PROGRAM INFO

This program provides both theory and application in the printing industry.

Minimum credits: 16

Length: 1-2 semesters

Career opportunities:
Printing Press Operators: **$37,460**
Median salary nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8440

Program Coordination: All courses in this CSC (16 credits) count towards the diploma in Graphic Imaging Technology.

Program Outcomes Graduates will demonstrate understanding of:

1. The various processes of graphics reproduction;
2. How to apply skills necessary to utilize text and graphics to produce production-ready copy;
3. Capturing and reproduction of line art, line copy and continuous tone by conventional and electronic methods;
4. Safety and health issues, including the OSHA Hazard Communication Standard.
5. Design skills utilizing Adobe InDesign software.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
PNT 110	Survey of Processes	2	3	5	3
PNT 211	Electronic Publishing I	2	2	4	3
PNT 135	Print Imaging	1	3	4	2
PNT 221	Layout & Design I	2	3	5	3
PNT 298	Seminar & Project	2	0	2	2
ART 180	Intro to Computer Graphics	2	3	5	3
	Total	**11**	**14**	**25**	**16**

PRINTING TECHNOLOGY - CSC

This program provides both theory and application in the technological printing industry. Students will learn safety regulations, lithographic chemistry, and characteristics of printed works.

Program Coordination: All courses in this CSC (16 credits) count towards the diploma in Graphic Imaging Technology.

Program Outcomes Graduates will demonstrate:

1. Design skills utilizing Adobe InDesign software.
2. An understanding of the fundamentals of reproduction processes.
3. Technical and skill competencies in the area of lithography complete laboratory projects.
4. An understanding of safety and health issues and of the OSHA Hazard Communication Standards.
5. An understanding of digital imaging to produce printed images.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ART 180	Intro to Computer Graphics	2	3	5	3
PNT 110	Survey of Processes	2	3	5	3
PNT 131	Principles of Lithography	3	3	6	4
PNT 298	Seminar & Project	2	0	2	2
PNT 265	Digital Imaging Applications	3	3	6	4
	Total	**12**	**12**	**24**	**16**

PROGRAM INFO

Minimum credits: 16

Length: 1-2 semesters

Career opportunities:
Pre-Press Technician:
$40,060

Printing Press Operator:
$37,020

Binding & Finish Worker:
$32,170
Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8440

GRAPHIC IMAGING TECHNOLOGY - Diploma

PROGRAM INFO

Minimum credits: 72

Length: 5 semesters (2 years), if suggested full-time course sequence is followed.

Career opportunities:

Graphic Designer: **$46,900**

Photographer: **$40,200**

Art/Design Worker: **$43,950**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce

Contact: 434.797.8440

The program provides an effective working knowledge of the various processes of graphics and printing. Topics include the basics of drawing and illustration, both by hand and using a computer or tablet; extensive use of a Mac with Adobe Creative Suite software (InDesign, Illustrator, and Photoshop) to prepare original designs and manipulate images; 3D package designs; using digital printing equipment to output posters and banners; textile image design with heat transfer and screen printing; and use of machinery to produce quality printed products on a wide variety of materials.

Program Coordination: Graduates will simultaneously earn the CSCs in Graphic Communications and Printing Technology.

Program Outcomes Graduates will demonstrate understanding of:

1. The various processes of graphics reproduction.
2. Design skills utilizing Adobe software.
3. Applying knowledge of the interaction of ink and paper to complete laboratory projects.
4. Applying skills to prepare and digitally print multicolor designs.
5. Technical and skill competencies in the finishing and bindery operations of printed pieces.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ART 180	Intro to Computer Graphics	2	3	5	3
PNT 110	Survey of Reproductive Processes	2	3	5	3
PNT 130	Applied Math for Graphics	2	2	4	3
PNT 131	Principles of Lithography I	3	3	6	4
PNT 135	Print Imaging	1	3	4	2
PNT 298	Seminar & Project	2	0	2	2
SDV 100	College Success Skills	1	0	1	1
	Total	**13**	**14**	**27**	**18**

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ENG 131	Technical Report Writing (or approved sub.)	3	0	3	3
ART 283	Computer Graphics I	2	4	6	4
PNT 141	Printing Applications I	1	4	5	3
PNT 211	Electronic Publishing	2	2	4	3
PNT 221	Layout & Design I	2	3	5	3
	Total	**10**	**13**	**23**	**16**

GRAPHIC IMAGING TECHNOLOGY - Diploma

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Third Semester (Summer)					
PNT 142	Printing Applications	2	2	4	3
ART 281	Illustration for Designers	2	2	4	3
PNT 222	Layout & Design II	2	3	5	3
PNT 260	Color Separation	2	3	5	3
	Total	**8**	**10**	**18**	**12**
Fourth Semester					
ART 287	Portfolio & Resume Preparation	2	2	4	3
ART 266	Package Design	2	2	4	3
PNT 251	Offset Press Operations I	3	3	6	4
PNT 265	Digital Imaging Applications	3	3	6	4
	Total	**10**	**10**	**20**	**14**
Fifth Semester					
ECO 100	Elementary Economics (or approved sub)	3	0	3	3
PNT 241	Advanced Printing Applications I	1	4	5	3
PNT 231	Lithographic Chemistry	2	0	2	2
PNT 245	Production Planning & Estimating	3	3	6	4
	Total	**9**	**7**	**16**	**12**

BUSINESS MANAGEMENT - GRAPHIC IMAGING
Associate of Applied Science

Program Coordination: This program is similar to other DCC business curricula, with an additional specialization in printing technology.

Program Outcomes Graduates of this program will be able to:

1. Use industry-standard software in business communications, such as word processing (i.e., Microsoft Word) and presentation software (i.e., Microsoft PowerPoint);
2. Perform and interpret basic business math, accounting, and statistical calculations;
3. Understand basic concepts of business ethics and the importance of adhering to a strong set of generally accepted ethical principles;
4. Demonstrate basic principles of relationship skills to successfully interrelate with customers, associates, employees, and superiors in a business setting;
5. Understand how the principles of basic economics (i.e., supply and demand, the American free enterprise system, etc.) apply to successful business management practices;

PROGRAM INFO

Minimum credits: 66

Length: 5 semesters (2 years) if full-time course sequence is followed

Career opportunities: Graduates may become business owners or managers of graphic imaging departments, or work in sales of graphic imaging services and products. Salaries will vary.

Division: Workforce

Contact: 434.797.8440

BUSINESS MGMT - GRAPHIC IMAGING A.A.S.

Program outcomes continued...

6. Understand basic legal and regulatory requirements for business;

7. Evaluate marketing strategies for successful products and services;

8. Understand the basics of electronic publishing;

9. Discuss the concepts of color separation and lithographic chemistry;

10. Perform basic graphic imaging industry production planning and estimating tasks.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 117	Keyboarding for computer usage	1	0	1	1
BUS 100	Introduction to Business	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ENG 111	College Composition I	3	0	3	3
ITE 115	Intro to Computer Applications & Concepts	3	0	3	3
MKT 100	Principles of Marketing	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**17**	**0**	**17**	**17**

Second Semester

BUS 200	Principles of Management	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3
ENG 115	Technical Writing	3	0	3	3
PNT 211	Electronic Publishing I	2	2	4	3
PNT 221	Layout and Design I	2	2	4	3
	Total	**13**	**4**	**17**	**15**

Third Semester (Summer)

PNT 260	Color Separation	**2**	**3**	**5**	**3**

Fourth Semester

ACC 111	Accounting I	3	0	3	3
BUS 240	Business Law	3	0	3	3
ITE 215	Advanced Computer Applications & Integration	4	0	4	4
HLT/PED	Wellness Elective	0	2	2	1
HUM 198	Seminar & Project in Humanities	3	0	3	3
	Total	**13**	**2**	**15**	**14**

Fifth Semester

ACC 110	Introduction to Computerized Accounting	2	0	2	2
BIO 100	Basic Human Biology	3	0	3	3
PNT 231	Lithographic Chemistry	2	0	2	2
PNT 245	Production Planning and Estimating	3	3	6	4
BUS 298	Seminar and Project in Business	3	0	3	3
BUS 149	Workplace Ethics	1	0	1	1
MKT 170	Customer Service	1	0	1	1
BUS 108	Business Etiquette	1	0	1	1
	Total	**16**	**3**	**19**	**17**

ADVANCED PRODUCT DESIGN & DEVELOPMENT - Career Studies Certificate

Program Outcomes Graduates will demonstrate knowledge of:
1. Use and care of hand and power tools used in the industry.
2. Materials used in various forms of manufacturing.
3. CAD/CAM/CNC technology as used in product design and manufacturing.
4. Problem-solving techniques.
5. Functional and aesthetic design skills used in consumer-targeted manufacturing.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
IND 137	Team Concepts & Problem Solving	3	0	3	3
BLD 105	Shop Practices & Procedures	1	2	3	2
IND 161	Product Design & Development I	1	8	9	5
IND 162	Product Design & Development II	1	8	9	5
CAD 233	Computer Aided Drafting III	2	2	4	3
ART 131	Fundamentals of Design	2	4	6	3
	Total	**10**	**24**	**34**	**21**

Note: MTE 1,2,3 prerequisite required for CAD 233.

PROGRAM INFO

This CSC prepares students to design, engineer, and produce a product utilizing wood as a primary medium. Graduates may work in various areas of the design and manufacturing sectors.

Minimum credits: 21

Length: 2 semesters

Division: Arts, Sciences, & Business

Contact: 434.797.8474

INSTRUMENT (GUITAR) BUILDING CRAFT - Career Studies Certificate

Students will learn about fundamental woodworking skills, material choice and handling, creativity and design, form and function, harmonics, CAD design, inlay, laser engraving, and finishing techniques. Build from scratch and using acoustic Dreadnought kits from [Martin Guitar](). Program may supplemented with small business management classes if student desire to operate their own business repairing and selling instruments.

Program Coordination: The CSC is designed to stack into the Build Your Business - Venture Creation Technical Studies degree and will include 3-4 elective credit hours as recommended by the instructor; i.e. students in the acoustic pathway would have the option to build an electric guitar, and vice versa.

PROGRAM INFO

Minimum credits: 19

Length: 2 semesters

Career opportunities: Musical instrument builders/repairers: **$35,000**

Division: Arts, Sciences, & Business

Contact: 434.797.8474

INSTRUMENT (GUITAR) BUILDING CRAFT - CSC

Program Outcomes Graduates will demonstrate knowledge and skills in the following areas:

1. Use and care of hand and power tools used in the industry.
2. Knowledge of materials used in various forms of acoustic and electric guitars.
3. CAD technology as used in guitar design.
4. Aesthetic principles for inlay and design.
5. Various finishing techniques used in guitar production.

6. Instrument construction fundamentals and techniques such as bracing and "voicing" of the top and back, neck angle, bridge placement, fret installation.
7. Understanding of the techniques and requirements to build an instrument from scratch.

Course Sequence

First semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
IND 195	Topics in: Inlay I	0	2	2	1
MUS 195	Topics in: Intro to Lutherie Tools	0	2	2	1
IND 195	Finishing I	0	2	2	1
MUS 195	Topics in: Electric Guitar I **OR** Acoustic Guitar I	1	4	5	3
ART 131	Fundamentals of Design	1	4	5	3
	Total	**2**	**14**	**16**	**9**

Second semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
IND 195	Topics in: Inlay II	0	2	2	1
IND 195	Topics in: Finishing II	0	2	2	1
MUS 195	Topics in: Electric Guitar II **OR** Acoustic Guitar II	1	4	5	3
CAD 233	Computer Aided Drafting III	2	2	4	3
MKT 195	Topics in: Product Photography	1	2	3	2
	Total	**4**	**12**	**16**	**10**

METAL ARTS - Career Studies Certificate

Program Outcomes Graduates will demonstrate knowledge of:

1. Various welding techniques.
2. The history of metal arts.
3. Various metal manipulation techniques, such as casting & forging.
4. 2d and 3d design principles

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
WEL 120	Intro to Welding	1	3	4	2
ART 193	Studies in Sculpture I	1	4	5	3
ART 121	Drawing I	1	4	5	3
ART 295	Topics in: Metal Sculpture I	1	6	7	4
	Total	**4**	**17**	**21**	**12**

Second Semester

ART 295	Topics in: Metal Sculpture II	1	6	6	4
WEL 121	Arc Welding	1	3	4	2
WEL 135	Inert Gas Welding	1	3	4	2
ART 298	Seminar & Project	0	10	10	5
	Total	**3**	**22**	**24**	**13**

PROGRAM INFO

Minimum credits: 25

Length: 2 semesters

Career opportunities: Graduates may work with metals as a self-employed artist or artisan. Classes in small business management are available to students who wish to learn how to sell their work.

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Liberal Arts & Humanities

AMERICAN SIGN LANGUAGE - CSC

Program Outcomes: Graduates will demonstrate:
1. Basic ASL conversational skills.
2. Critical thinking and appropriate responses based on exposure and knowledge from the Deaf community.
3. Knowledge and skills to accommodate people who are Deaf in an accessible school or office using interpreting services and technology.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
SDV 100	College Success Skills	1	0	1	1
ASL 101	American Sign Language I	3	0	3	3
ASL 102	American Sign Language II	3	0	3	3
ASL 201	American Sign Language III	3	0	3	3
ASL 202	American Sign Language IV	3	0	3	3
ASL 125	History of the US Deaf Community	3	0	3	3
ASL 115	Finger-spelling & Number Use in ASL	2	0	2	2
	Total	**18**	**0**	**18**	**18**

PROGRAM INFO

This program trains students to communicate proficiently in ASL as well as to develop understanding of Deaf culture.

Minimum credits: 18

Length: 1-2 semesters

Division: Arts, Sciences, & Business

Contact: 434.797.8462 or 434.797.8402

GENERAL EDUCATION - Certificate

Program Outcomes Graduates of this program will demonstrate:

1. The ability to communicate effectively by means of writing, speaking, listening and reading;
2. Proficiency in conducting experiments, and recording and interpreting data;
3. Awareness and understanding of ethics, cultures, and society;
4. Critical thinking skills of synthesizing and analyzing complex ideas;
5. Awareness of the role of arts of humanities in society.

Course Sequence

First Semester		Lecture Hrs	Lab Hours	Hrs in Class	Credits
SDV 100	College Success Skills	1	0	1	1
ENG 111	College Composition I	3	0	3	3
MTH	MTH 154 or higher	3	0	3	3
	MTH, HUM, or Fine Arts Elective	3	0	3	3
	Transfer-level science	3	3	6	4
	Social Science Elective	3	0	3	3
	Total	**16**	**3**	**19**	**17**

Second Semester					
ENG 112	College Composition II	3	0	3	3
HIS	History elective	3	0	3	3
	Social Science Elective	3	0	3	3
	MTH, HUM, or Fine Arts Elective	3	0	3	3
	Transfer-level science	3	3	6	4
	Total	**15**	**3**	**18**	**16**

History Electives: HIS 101, HIS 121, HIS 102, HIS 122, or HIS 112.

Social Science Electives: PSY 200, PSY 201, SOC 201, PLS 211, PLS 212, ECO 201, or ECO 202

LIBERAL ARTS - Associate in Arts & Science

This program includes a broad range of courses in the humanities, natural sciences, mathematics, social sciences, and health and physical education. Students have sufficient flexibility to select courses appropriate to the requirements of their intended transfer institution. Students should complete a DCC program comparable to the first two years of the program at the transfer institution.

Program Outcomes Graduates will demonstrate:

1. The ability to communicate effectively by means of listening, speaking, reading and writing.
2. Critical thinking skills of synthesizing/analyzing complex ideas.
3. Awareness and understanding of ethics, cultures, and society.
4. Understanding of individual & group development & behavior.
5. Understanding of and competence in research methods and scientific inquiry.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
SDV 100	College Success Skills	1	0	1	1
ENG 111	College Composition I	3	0	3	3
MTH 161	Precalculus I	3	0	3	3
	[1]Focus Course I	3	0	3	3
	Natural Science course with lab	3	3	6	4
	Approved Computer Elective	3	0	3	3
	Total	**16**	**3**	**19**	**17**

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ENG 112	College Composition II	3	0	3	3
MTH	Approved Mathematics Course	3	0	3	3
	[1]Focus Course II	3	0	3	3
	Natural Science course with lab	3	3	6	4
	Humanities or Social Science	3	0	3	3
	Total	**15**	**3**	**18**	**16**

[1]A sequence of four Focus Courses must be selected by the student and approved by the academic advisor. Focus Courses should be related to each other and should also be accepted in transfer to the four-year program of the student's choice. Examples of Focus Course sequences include: *ART 101-102, MUS 121-122, HIS 121-122-266-268, HLT 100-116-200-215, PHI 100, REL 200-210-230, PSY 201-202-215-230, ASL 101-102-201-202, SOC 201-202-235-236, SPA 101-102-203-204*

PROGRAM INFO

Minimum credits: 61

Length: 2 years (4 semesters), if suggested full-time course sequence is followed.

Transfer opportunities: This degree is designed for students planning to transfer to a four-year university for any of the liberal arts. It is also appropriate for students who plan to transfer into a bachelor's degree program with certification to teach English, humanities, or social sciences.

Admission requirements vary by institution. Students are urged to familiarize themselves with the requirements of the college to which they intend to transfer and plan course selections with their DCC advisor. To learn more, visit **dcc.vccs.edu/transfer**

Division: Arts, Sciences, & Business

Contact: 434.797.8402 or 434.797.8462

LIBERAL ARTS - Associate of A. & S.

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Third Semester					
ENG 241/243/253	Literature I	3	0	3	3
HIS	History Elective	3	0	3	3
SOC	²Social Science Requirement	3	0	3	3
	¹Focus Course III	3	0	3	3
	Humanities or Social Science Elective	3	0	3	3
	Total	**15**	**0**	**15**	**15**
Fourth Semester					
ENG 242/244/254	Literature II	3	0	3	3
HIS	History Elective	3	0	3	3
SOC	²Social Science Requirement	3	0	3	3
	¹Focus Course IV	3	0	3	3
HLT/PED	³Approved Wellness Elective	1	0	1	1
	Total	**13**	**10**	**13**	**13**

2 Students must complete a full year of social science courses by taking one of the following sequences: *ECO 201 & ECO 202; PLS 211 & PLS 212; SOC 201 & SOC 202; SOC 200 & one sophomore-level sociology course excluding SOC 201 & 202; PSY 201 & PSY 202; or PSY 200 & one sophomore-level psychology course excluding PSY 201 & 202.* Courses used to complete the social science requirement will not count as Focus Courses. *(PLS 241 & PLS 242 may substitute for PLS 211 & PLS 212).*
3 This credit can be satisfied by a 1 or more credit course in Health, Physical Education, or Recreation.

LIBERAL ARTS - HUMANITIES - Associate of Arts & Science

PROGRAM INFO

Minimum credits: 61

Length: 2 years
(4 semesters) if suggested full-time course sequence is followed.

Division: Arts, Sciences, & Business

Contact: 434.797.8402 or 434.797.8462

This program includes a broad range of courses in math, social science, natural science and humanities. Students have sufficient flexibility to select courses that meet the requirements of their intended transfer institution. Students should complete a DCC program comparable to the first two years of the program at the transfer institution.

Program Outcomes Graduates will demonstrate:

1. The ability to communicate effectively by means of listening, speaking, reading and writing.
2. Critical thinking skills of synthesizing/analyzing complex ideas.
3. Awareness and understanding of ethics, cultures, and society.
4. Understanding of individual and group development and behavior.
5. Understanding of and competence in research methods and scientific inquiry.

LIBERAL ARTS - HUMANITIES - A.A. & S.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
SDV 100	College Success Skills	1	0	1	1
ENG 111	College Composition I	3	0	3	3
MTH 154	Quantitative Reasoning	3	0	3	3
	Natural Science with lab	3	3	6	4
	Approved Computer Elective	3	0	3	3
HLT/PED	Approved Wellness Elective	1	0	1	1
	Total	**14**	**3**	**17**	**15**
Second Semester					
ENG 112	College Composition II	3	0	3	3
MTH	Approved Transfer Math	3	0	3	3
	Natural Science with lab	3	3	6	4
	Social Science Elective	3	0	3	3
HIS	[1]History Requirement I	3	0	3	3
	Total	**15**	**3**	**18**	**16**
Third Semester					
	Humanities Requirement I	3	0	3	3
	Literature Requirement I	3	0	3	3
	Liberal Arts Requirement I	3	0	3	3
	Social Science Elective II	3	0	3	3
HIS	[1]History Requirement II	3	0	3	3
	Total	**15**	**0**	**15**	**15**
Fourth Semester					
	Humanities Requirement II	3	0	3	3
	Literature Requirement II	3	0	3	3
	Liberal Arts Elective II	3	0	3	3
	Fine Arts Elective I	3	0	3	3
	Fine Arts Elective II	3	0	3	3
	Total	**15**	**0**	**15**	**15**

Transfer opportunities: This degree is designed for students planning to transfer to a four-year university in a humanities-related field, such as creative writing, theater, music, communications and journalism, foreign languages, or religion.

Admission requirements for transfer students vary by institution. Students are urged to familiarize themselves with the requirements of the college or university to which they intend to transfer and plan course selections with their DCC advisor.
To learn more, visit
dcc.vccs.edu/transfer

1 History I and II. Students must complete a full-year sequence of U.S. History (HIS 121 & HIS 122), or Western Civilization (HIS 101 & HIS 102), or World Civilizations (HIS 111 & HIS 112).

2. Humanities & Fine Arts Electives: Students must complete at least two humanities courses plus two sophomore literature courses & at least two courses in fine arts. Students may use the liberal arts elective requirement of six credit hours to pursue greater depth in the fine arts or humanities. Again, selection of courses should be based on the student's interest and the demands of their intended transfer institution.

LIBERAL ARTS - SOCIAL SCIENCE - Associate of Arts & Science

This program includes a broad range of courses in math, social science, natural science and humanities. Students have sufficient flexibility to select courses that meet the requirements of their intended transfer institution. Students should complete a DCC program comparable to the first two years of the program at the transfer institution.

Program Outcomes Graduates will demonstrate:

1. The ability to communicate effectively by means of listening, speaking, reading, and writing.
2. Critical thinking skills of synthesizing/analyzing complex ideas.
3. Awareness and understanding of ethics, cultures, and society.
4. Understanding of individual and group development and behavior.
5. Understanding of and competence in research methods and scientific inquiry.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
SDV 100	College Success Skills	1	0	1	1
ENG 111	College Composition I	3	0	3	3
MTH 154	Quantitative Reasoning or higher (excludes MTH 158)	3	0	3	3
BUS 147	Business Information Systems (or approved transfer computer class)	3	0	3	3
	Natural Science with lab	3	3	6	4
HIS	History Elective	3	0	3	3
	Total	**16**	**3**	**19**	**17**
Second Semester					
ENG 112	College Composition II	3	0	3	3
HIS	History Elective II	3	0	3	3
MTH 155	Statistical Reasoning **OR**				
MTH 245	Statistics I	3	0	3	3
	Natural Science with lab II	3	3	6	4
	Humanities or Fine Arts Elective I	3	0	3	3
	Total	**15**	**3**	**18**	**16**

LIBERAL ARTS - SOCIAL SCIENCE - A.A. & S.

Course Sequence, continued...

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Third Semester					
SOC	[1]Sociology Elective I	3	0	3	3
PSY	[2]Psychology Elective I	3	0	3	3
	Liberal Arts Elective I	3	0	3	3
	Social Science Elective I	3	0	3	3
	Humanities or Fine Arts Elective II	3	0	3	3
	Total	**15**	**0**	**15**	**15**
Fourth Semester					
SOC	Sociology Elective II	3	0	3	3
PSY	Psychology Elective II	3	0	3	3
	Liberal Arts Elective II	3	0	3	3
	Social Science Elective II	3	0	3	3
HLT/PED	Approved Wellness Elective	1	0	1	1
	Total	**13**	**0**	**13**	**13**

1 Students must complete a full year of sociology coursework by taking one of the following sequences: SOC 201 and SOC 202, or SOC 200 and one sophomore-level sociology course excluding SOC 201 and 202

2 Students must complete a full year of psychology coursework by taking one of the following sequences: PSY 201 and PSY 202, or PSY 200 and one sophomore-level psychology course excluding PSY 201 and 202.

Note: *Students must complete a year-long sequence in history, sociology, & psychology, plus two electives that may be from those areas or in different social sciences, such as political science or economics. Electives should be used to meet the demands of the transfer institution and to achieve breadth of exposure to other disciplines.*

Business & Marketing

Business and Marketing programs prepare students for a variety of careers working in office environments, starting their own businesses, or transferring to a four-year college or university. Programs range from short-term career studies certificates lasting one to two semesters, to full two-year associate degrees that may lead to additional employment prospects and higher wages.

For the Business Management - Graphic Imaging Specialization A.A.S. degree,
please see the Arts, Design, & Humanities section - pp. 63-64.

GENERAL OFFICE STUDIES - Certificate

Program Coordination: This program provides 26 credits towards the A.A.S. in Administrative Support Technology – General Office specialization.

Program Outcomes Graduates will be able to:

1. Demonstrate knowledge of various administrative support functions to perform satisfactorily in an office environment.
2. Communicate effectively orally and in writing.
3. Key with a level of speed and accuracy acceptable to perform satisfactorily to industry standards.
4. Perform mathematical calculations to accurately complete financial and accounting functions used in an office.
5. Demonstrate knowledge of alphabetic and numeric filing rules to efficiently file and retrieve documents.
6. Demonstrate proficiency in using word processing software to accurately format a variety of business correspondence.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 101/103	Keyboarding I + Lab	2	2	4	3
AST 243	Office Administration I	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ENG 134	Grammar for Writing & Speaking	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
	Total	**13**	**2**	**15**	**14**

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 102/104	Keyboarding II + Lab	2	2	4	3
AST 234	Records & Database Management	3	0	3	3
ENG 135	Applied Grammar	3	0	3	3
AST 244	Office Administration II	3	0	3	3
	Total	**11**	**2**	**13**	**12**

PROGRAM INFO

This program provides training in basic skills needed to work in an office environment.

Minimum credits: 26

Length: 2 semesters

Industry Credentials: Office Proficiency Assessment Certification (OPAC)

Career Opportunities:
Receptionist: **$27,300**
Job Growth: **10%**
from 2014-2024

Office Clerk: **$29,580**

Financial Clerk: **$33,200**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

MEDICAL CODING - Career Studies Certificate

PROGRAM INFO

This program provides opportunities for career advancement in the area of administrative support in the medical field.

Minimum credits: 29

Length: 4 semesters **part-time**. Classes are offered in the evening to accommodate students who work during the day.

Career opportunities:
Medical Coder: **$36,630**
Job Growth: **15%**
from 2014 to 2024

Health Records Technician: **$32,080**
Job Growth: **15%**

Information Clerk: **$31,000**

Billing Clerk: **$34,180**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Program Requirements: Students must receive a grade of "C" or better in HIM classes in order to complete the program. Students who receive a "D" or "F" grade must repeat that course before continuing to the HIM course sequence.

Program Coordination: Students completing this CSC will have 29 credits toward the A.A.S. in Administrative Support Technology – Medical Office Coding specialization.

Program Outcomes Graduates of this program will demonstrate:

1. Knowledge of medical terminology necessary to perform satisfactorily in a medical office environment;
2. Proficiency using industry-standard health care coding systems.
3. Competence with industry-standard software (word processing, spreadsheet, and presentation) used in a medical office.
4. Knowledge of alphabetic and numeric filing rules to efficiently file and retrieve documents.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
BIO 100	Basic Human Biology	3	0	3	3
HLT 143	Medical Terminology I	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
	Total	**8**	**0**	**8**	**8**
Second Semester					
AST 234	Records & Database Management	3	0	3	3
HLT 144	Medical Terminology II	3	0	3	3
HIM 106	International Classification of Diseases I	2	0	2	2
	Total	**8**	**0**	**8**	**8**
Third Semester					
HIM 130	Healthcare Information Systems	3	0	3	3
HIM 107	International Classification of Diseases II	3	0	3	3
	Total	**6**	**0**	**6**	**6**
Fourth Semester					
HIM 105	Current Procedural Terminology	2	0	2	2
HIM 253	Health Records Coding	3	0	3	3
HIM 226	Legal Aspects of Health Record Documentation	2	0	2	2
	Total	**7**	**0**	**7**	**7**

MEDICAL OFFICE STUDIES - CSC

Program Coordination: Students completing this CSC will have 23 credits towards the A.A.S. in Administrative Support Technology – Medical Office specialization.

Program Outcomes Graduates will demonstrate:

1. Knowledge of medical terminology necessary to perform satisfactorily in a medical office.
2. Ability to key with a level of speed and accuracy acceptable to perform satisfactorily to industry standards.
3. Alphabetic and numeric filing rules to efficiently file and retrieve documents.
4. Proficiency in using word processing software to accurately format a variety of business correspondence.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 101/103	Keyboarding I + Lab	2	2	4	3
BIO 100	Basic Human Biology	3	0	3	3
HLT 143	Medical Terminology I	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
	Total	**10**	**2**	**12**	**11**

Second Semester

HIM 143	Managing Electronic Billing in a Medical Practice	3	0	3	3
AST 102/104	Keyboarding II + Lab	2	2	4	3
AST 234	Records & Database Management	3	0	3	3
HLT 144	Medical Terminology II	3	0	3	3
	Total	**11**	**2**	**13**	**12**

OFFICE INFORMATION PROCESSING - Certificate

PROGRAM INFO

This program prepares students for careers in information processing.

Minimum credits: 40

Length: 3 semesters, if full-time suggested course sequence is followed.

Career opportunities:
Customer Service Representative: **$31,720**
Job Growth:
10% from 2014-2024

Human Resources Assistant: **$34,160**
Job Growth: **3%**

Financial Clerk: **$33,200**
Job Growth: **6%**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Program Integration: This certificate provides 40 credits towards the A.A.S. in Administrative Support Technology – General Office.

Program Outcomes Graduates will demonstrate:

1. Ability to communicate effectively orally and in writing.
2. Proficiency in using word processing software to accurately format a variety of business correspondence.
3. Ability to perform mathematical calculations to accurately complete financial and accounting functions used in an office environment.
4. Ability to key with a level of speed and accuracy acceptable to perform satisfactorily to industry standards.
5. Alphabetic and numeric filing rules to efficiently file and retrieve business correspondence.

Course Sequence

First Semester		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 101/103	Keyboarding I + Lab	2	2	4	3
AST 243	Office Administration I	3	0	3	3
ENG 134	Grammar for Writing & Speaking	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
SDV 100	College Success Skills	1	0	1	1
	Total	**14**	**2**	**16**	**16**

Second Semester					
AST 102/104	Keyboarding II + Lab	2	2	4	3
AST 234	Records & Database Management	3	0	3	3
ENG 135	Applied Grammar	3	0	3	3
AST 244	Office Administration II	3	0	3	3
AST 253/255	Advanced Desktop Publishing (Word) + Lab	2	2	4	3
	Total	**13**	**4**	**17**	**15**

Third Semester					
ACC 111	Accounting I	3	0	3	3
AST 238/239	Advanced Word Processing Operations + Lab	2	2	4	3
ITE 140	Spreadsheet Software	3	0	3	3
SDV 106	Preparation for Employment	1	0	1	1
	Total	**9**	**2**	**11**	**10**

ADMINISTRATIVE SUPPORT TECHNOLOGY - GENERAL OFFICE - Associate of Applied Science

Program Coordination: Students will earn the General Office Studies CSC after completion of the second semester. Students who wish to work in a medical office may also pursue the Career Studies Certificate in Medical Coding, which adds an additional semester.

Program Outcomes Graduates will demonstrate:

1. Knowledge of various administrative support functions to perform satisfactorily in an office environment.
2. Ability to communicate effectively orally and in writing.
3. Ability to key with a level of speed and accuracy acceptable to perform satisfactorily to industry standards.
4. Ability to perform mathematical calculations to accurately complete financial and accounting functions used in an office environment.
5. Knowledge of alphabetic and numeric filing rules to efficiently file and retrieve documents.
6. Proficiency in using word processing software to accurately format a variety of business correspondence.

Course Sequence
First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 101/103	Keyboarding I + Lab	2	2	4	3
AST 243	Office Administration I	3	0	3	3
ENG 134	Grammar for Writing and Speaking	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
SDV 100	College Success Skills	1	0	1	1
	Total	**14**	**2**	**16**	**15**

Second Semester

AST 113	Keyboarding for Speed & Accuracy	0	2	2	1
AST 102/104	Keyboarding II + Lab	2	2	4	3
AST 234	Records & Database Management	3	0	3	3
ENG 135	Applied Grammar	3	0	3	3
AST 244	Office Administration II	3	0	3	3
ECO 100	Elementary Economics	3	0	3	3
	Total	**14**	**4**	**18**	**16**

PROGRAM INFO

This program provides broad-based knowledge and skills needed for employment in a variety of business settings.

Minimum credits: 66

Length: 4 semesters (2 years), if full-time suggested course sequence is followed

Industry Credentials: Microsoft Office Specialist (MOS) certification, Office Proficiency Assessment Certification (OPAC)

Career opportunities:
Administrative Assistant: **$36,910**
Job growth: **3%** from 2014-2024

Office Manager/ Clerical Supervisor: **$52,630**
Job growth: **8%**

Executive Assistant: **$53,370**
Job growth: **5%**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Science, & Business

Contact: 434.797.8474

ADMIN. SUPPORT TECHNOLOGY - GENERAL OFFICE - A.A.S.

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Third Semester					
ACC 111	Accounting I	3	0	3	3
AST 238/239	Advanced Word Processing Operations + Lab	2	2	4	3
ITD 115	Web Page Design & Site Management	2	2	4	3
ITE 140	Spreadsheet Software	3	0	3	3
ITE 150	Desktop Database Software	3	2	5	4
HLT/PED	Health/Physical Ed.	0	2	2	1
	Total	**13**	**8**	**21**	**17**
Fourth Semester					
ACC 110	Intro to Computerized Accounting	2	0	2	2
BUS 235	Business Letter Writing	3	0	3	3
AST 205	Business Communications	3	0	3	3
AST 253/255	Advanced Desktop Publishing (Word) + Lab	2	2	4	3
SPA 103	Basic Spoken Spanish I	3	0	3	3
SDV 106	Preparation for Employment	1	0	1	1
BIO/NAS/MTH	Science or Math Elective	3	0	3	3
	Total	**17**	**2**	**19**	**18**

ADMINISTRATIVE SUPPORT TECHNOLOGY - MEDICAL OFFICE ADMINISTRATION - A.A.S.

PROGRAM INFO

Minimum credits: 65

Length: 2 years

Career opportunities:
Medical Secretary: **$34,006**
Job Growth: **21%**
from 2014 to 2024

Office Manager: **$52,630**
Job Growth: **8%**
*Median salaries nationwide
as of 2015. Source: BLS.gov*

Division: Arts, Sciences,
& Business

Contact: 434.797.8474

Program Coordination: Students will earn the CSC in Medical Office Studies after completion of the second semester.

Program Outcomes Graduates will demonstrate:

1. Knowledge of various administrative support functions to perform satisfactorily in an office environment.
2. Ability to communicate effectively orally and in writing.
3. Proficiency in using word processing software to accurately format a variety of business correspondence.
4. Ability to perform mathematical calculations to accurately complete financial & accounting functions used in an office environment.
5. Ability to key with a level of speed & accuracy acceptable to perform satisfactorily to industry standards.
6. Use of alphabetic & numeric filing rules to efficiently file & retrieve documents.
7. Knowledge of medical terminology necessary to perform satisfactorily in a medical office environment.

ADMINISTRATIVE SUPPORT TECHNOLOGY - MEDICAL OFFICE ADMINISTRATION - A.A.S.

Program Requirements: Students must earn a grade of C or better in all HIM courses in order to complete the program. Students who receive a grade of D or F must repeat the course before continuing to the HIM course sequence.

Industry Credentials: Microsoft Office Specialist (MOS) certification, Office Proficiency Assessment Certification (OPAC).

Course Sequence

First Semester		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 101/103	Keyboarding I + Lab	2	2	4	3
BIO 100	Basic Human Biology	3	0	3	3
ENG 134	Grammar for Writing and Speaking	3	0	3	3
HLT 143	Medical Terminology I	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
SDV 100	College Success Skills	1	0	1	1
	Total	**14**	**2**	**16**	**15**

Second Semester					
HIM 143	Managing Electronic Billing in a Medical Practice	3	0	3	3
AST 102/104	Keyboarding II + Lab	2	2	4	3
AST 234	Records & Database Management	3	0	3	3
ENG 135	Applied Grammar	3	0	3	3
HLT 144	Medical Terminology II	3	0	3	3
	Total	**14**	**2**	**16**	**15**

Third Semester (Summer)					
HIM 130	Health Information Systems	3	0	3	3
AST 238/239	Advanced Word Processing Operations + Lab	2	2	4	3
	Total	**5**	**2**	**7**	**6**

Fourth Semester					
ITD 115	Web Page Design & Site Management	2	2	4	3
AST 243	Office Administration I	3	0	3	3
ITE 150	Desktop Database Software	3	2	5	4
BUS 121	Business Mathematics I	3	0	3	3
HIM 226	Legal Aspects of Health Record Documentation	2	0	2	2
	Total	**13**	**4**	**17**	**15**

Fifth Semester					
AST 244	Office Administration II	3	0	3	3
HLT/PED	Approved Wellness Elective	0	2	2	1
ECO 100	Elementary Economics	3	0	3	3
ITE 140	Spreadsheet Software	3	0	3	3
SPA 103	Basic Spoken Spanish I	3	0	3	3
SDV 106	Preparation for Employment	1	0	1	1
	Total	**13**	**2**	**15**	**14**

ADMINISTRATIVE SUPPORT TECHNOLOGY - MEDICAL CODING SPECIALIZATION - A.A.S.

PROGRAM INFO

This program provides broad-based skills needed to work in a medical office, with specific training in medical insurance coding.

Minimum credits: 65

Length: 5 semesters (2 years), if full-time suggested course sequence is followed

Industry Credentials: Medical Billing & Coding Certification, Microsoft Office Specialist (MOS) Certification, Office Proficiency Assessment Certification (OPAC)

Career opportunities:
Medical Secretary: **$34,006**
Job Growth: **21%**
from 2014 to 2024

Medical Coder: **$36,630**
Job Growth: **15%**

Office Manager/
Clerical Supervisor:
$52,630
Job Growth: **8%**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Program Coordination: Graduates of the Medical Coding CSC program will have 29 credits towards this A.A.S.

Program Requirements: Students must earn a grade of C or better in all HIM courses in order to complete the program. Student who receive a grade of D or F must repeat that course before continuing to the HIM course sequence.

Program Outcomes Graduates will demonstrate:

1. Knowledge of various administrative support functions to perform satisfactorily in an office environment.
2. Ability to communicate effectively orally and in writing.
3. Proficiency in using word processing software to accurately format a variety of business correspondence.
4. Ability to perform mathematical calculations to accurately complete financial and accounting functions used in an office environment.
5. Ability to key with a level of speed and accuracy acceptable to perform satisfactorily to industry standards.
6. Alphabetic and numeric filing rules to efficiently file and retrieve documents.
7. Knowledge of medical terminology necessary to perform satisfactorily in a medical office environment.
8. Competence in using industry-standard health care coding systems.

Course Sequence First Semester		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 101/103	Keyboarding I + Lab	2	2	4	3
BIO 100	Basic Human Biology	3	0	3	3
ENG 134	Grammar for Writing & Speaking	3	0	3	3
HLT 143	Medical Terminology I	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
SDV 100	College Success Skills	1	0	1	1
	Total	**14**	**2**	**16**	**15**

ADMINISTRATIVE SUPPORT TECH. - MEDICAL CODING - A.A.S.

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Second Semester					
HIM 143	Managing Electronic Billing in a Medical Practice	3	0	3	3
AST 102/104	Keyboarding II + Lab	2	2	4	3
AST 234	Records & Database Management	3	0	3	3
ENG 135	Applied Grammar	3	0	3	3
HLT 144	Medical Terminology II	3	0	3	3
HIM 106	International Classification of Diseases I	2	0	2	2
	Total	**16**	**2**	**18**	**17**
Third Semester (Summer)					
HIM 130	Healthcare Information Systems	3	0	3	3
AST 238/239	Advanced Word Processing Operations + Lab	2	2	4	3
HIM 107	International Classification of Diseases II	3	0	3	3
	Total	**8**	**2**	**10**	**9**
Fourth Semester					
AST 243	Office Administration I	3	0	3	3
HIM 105	Current Procedural Terminology	2	0	2	2
HIM 253	Health Records Coding	3	0	3	3
HIM 226	Legal Aspects of Health Record Documentation	2	0	2	2
	Total	**1**	**4**	**10**	**10**
Fifth Semester					
AST 244	Office Administration II	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
HLT/PED	Approved Wellness Elective	0	2	2	1
ECO 100	Elementary Economics	3	0	3	3
SPA 103	Basic Spoken Spanish	3	0	3	3
SDV 106	Preparation for Employment	1	0	1	1
	Total	**13**	**2**	**15**	**14**

Business Management

PROJECT MANAGEMENT - Career Studies Certificate

Project Management is a rapidly growing field relevant to many business areas, including information technology, engineering, medicine, contracting, and the nonprofit sector. This CSC is a **completely online, self-paced program** for individuals who have already obtained a degree and wish to add to their credentials, or students who are concurrently pursuing an associate degree.

Program Coordination: This CSC provides 16 credits towards the A.A.S. in Business Management - Project Management specialization.

Program Outcomes Graduates will be able to:

1. Utilize industry-standard computer software in business communication media, e.g. written reports and business plans using word processing software and presentations using presentation software;
2. Perform and interpret business math, accounting, and business statistical calculations;
3. Understand the basic concepts associated with business ethics and the importance of developing and adhering to a strong set of generally-accepted ethical principles;
4. Demonstrate principles of human relationship skills used to successfully interrelate with customers, associates, employees, and superiors in a project management setting;
5. Understand standard methods for training, motivating, and managing people in a team-based environment;
6. Plan, execute, and control projects according to the Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK) processes, tools, and techniques.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BUS 204	Project Management	3	0	3	3
ITP 170	Project Management (IT)	3	0	3	3
BUS 298	Seminar & Project	4	0	4	4
BUS 206	Advanced Project Management	3	0	3	3
BUS 295	Topics in CAPM Exam Preparation **OR**				
	Topics in PMP Exam Preparation	3	0	3	3
	Total	**16**	**0**	**16**	**16**

BUSINESS MANAGEMENT - PROJECT MANAGEMENT SPECIALIZATION - Associate of Applied Science

Program Coordination: The first two semesters of this program are similar to other business curricula, with the exception of four courses specifically associated with Project Management. Graduates will also be awarded the Career Studies Certificate in Project Management.

DCC is accredited by Alpha Beta Gamma International Business Honor Society to initiate members into the honor society for business and related disciplines. For more information, visit http://www.abg.org.

Program Outcomes Graduates will be able to:

1. Utilize industry-standard computer software in business communication, e.g. word processing & presentation software.
2. Perform and interpret business math, accounting, and business statistical calculations.
3. Understand basic concepts associated with business ethics and the importance of developing and adhering to a strong set of generally accepted ethical principles.
4. Demonstrate basic principles of human relationship skills used to successfully interrelate with customers, associates, employees, and superiors in a project management setting.
5. Understand how the principles of basic economics (e.g. supply and demand, the American free enterprise system, etc.) apply to successful business management practices.
6. Understand basic legal and regulatory requirements for business and industry.
7. Recognize the features, advantages, and disadvantages of business ownership categories (proprietorship, partnership, corporation, etc.).
8. Understand standard methods for interviewing, hiring, training, motivating, and supervising employees in a team-based environment.
9. Plan, execute, and control projects according to Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK) processes, tools, and techniques.
10. Evaluate marketing strategies for successful products and services.

PROGRAM INFO

Project Management is a rapidly growing field relevant to many business areas, including information technology, medicine, engineering, and the nonprofit sector.

Minimum credits: 66

Length: 4 semesters (2 years), if full-time suggested course sequence is followed.

Courses in project management (BUS 204, 206, 295, and ITP 170) are open-entry/open-exit, meaning students may complete courses at an accelerated pace and move on to the next course upon satisfactory completion of the preceding course.

Career opportunities: Project Manager: **$75,280** Job Growth: **12%** through 2020 *(National median salary. Source: Project Management Institute)*

Division: Arts, Sciences, & Business

Contact: 434.797.8474

BUSINESS MANAGEMENT - PROJECT MANAGEMENT - A.A.S.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 117	Keyboarding for computer usage	1	0	1	1
BUS 100	Introduction to Business	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ENG 111	College Composition I	3	0	3	3
ITE 115	Intro to Computer Applications & Concepts	3	0	3	3
MKT 100	Principles of Marketing	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**17**	**0**	**17**	**17**

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BUS 200	Principles of Management	3	0	3	3
BUS 122	Business Mathematics II	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3
BUS 236	Communications in Management	3	0	3	3
BUS 204	Project Management	3	0	3	3
	Total	**15**	**0**	**15**	**15**

Third Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ACC 111	Accounting I	3	0	3	3
ITP 170	Project Management (IT)	3	0	3	3
BUS 206	Advanced Project Management	4	0	4	4
BUS 220	Introduction to Business Statistics	3	0	3	3
HLT/PED	Wellness Elective	0	2	2	1
HUM 198	Seminar & Project in Humanities *(or approved elective)*	3	0	3	3
	Total	**16**	**2**	**18**	**17**

Fourth Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ACC 110	Introduction to Computerized Accounting	2	0	2	2
BIO 100	Basic Human Biology *(or approved math/science)*	3	0	3	3
BUS 298	Seminar and Project in Business	3	0	3	3
BUS 295	Topics in CAPM Exam Preparation **OR** Topics in PMP Exam Preparation	3	0	3	3
BUS 149	Workplace Ethics	1	0	1	1
MKT 170	Customer Service	1	0	1	1
BUS 209	Continuous Quality Improvement	3	0	3	3
BUS 108	Business Etiquette	1	0	1	1
	Total	**17**	**0**	**17**	**17**

BUSINESS MANAGEMENT - MANAGEMENT SPECIALIZATION - Associate of Applied Science

Program Coordination: The first two semesters of this program are similar to other DCC business curricula, with the second year focusing on the Business Management specialization.

DCC is accredited by Alpha Beta Gamma International Business Honor Society to initiate members into the honor society for business and related disciplines. For more information, visit http://www.abg.org.

Program Outcomes   Graduates of this program will be able to:

1. Use industry-standard software in business communications, e.g. word processing and presentation software.
2. Perform and interpret basic business math, accounting, and business statistical calculations.
3. Understand basic concepts associated with business ethics and the importance of developing and adhering to a strong set of generally accepted ethical principles.
4. Demonstrate basic principles of human relationship skills to successfully interrelate with customers, associates, employees, and superiors in a business setting.
5. Understand how the principles of basic economics (e.g. supply and demand, the American free enterprise system, etc.) apply to successful business management practices
6. Understand basic legal and regulatory requirements for business and industry.
7. Recognize the features, advantages, and disadvantages of business ownership categories (proprietorship, partnership, corporation, etc.).
8. Understand standard methods for interviewing, hiring, training, motivating, and supervising employees.
9. Recognize basic business strategy and philosophy development techniques (SWOT analysis, vision, mission, values, goals, etc.).
10. Evaluate marketing strategies for successful products and services.

Course Sequence
First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 117	Keyboarding for computer usage	1	0	1	1
BUS 100	Introduction to Business	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ENG 111	College Composition I	3	0	3	3
ITE 115	Intro to Computer Applications & Concepts	3	0	3	3
MKT 100	Principles of Marketing	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**17**	**0**	**17**	**17**

BUSINESS MANAGEMENT - MANAGEMENT SPECIALIZATION - A.A.S.

Course sequence continued...

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BUS 200	Principles of Management	3	0	3	3
BUS 122	Business Mathematics II	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3
BUS 236	Business Communications	3	0	3	3
ITE 215	Advanced Computer Applications and Integration	4	0	4	4
	Total	**16**	**0**	**16**	**16**

Third Semester

ACC 111	Accounting I	3	0	3	3
BUS 240	Business Law	3	0	3	3
BUS 165	Small Business Management	3	0	3	3
BUS 220	Introduction to Business Statistics	3	0	3	3
HLT/PED	Approved Wellness Elective	1	0	1	1
HUM 198	Seminar & Project in Humanities	3	0	3	3
	Total	**15**	**0**	**16**	**16**

Fourth Semester

ACC 110	Introduction to Computerized Accounting	2	0	2	2
BIO 100	Basic Human Biology	3	0	3	3
BUS 205	Human Resource Management	3	0	3	3
BUS 298	Seminar and Project in Business	3	0	3	3
BUS 149	Workplace Ethics	1	0	1	1
MKT 170	Customer Service	1	0	1	1
BUS 209	Continuous Quality Improvement	3	0	3	3
BUS 108	Business Etiquette	1	0	1	1
	Total	**17**	**0**	**17**	**17**

BUSINESS MANAGEMENT - AUTOMOTIVE MANAGEMENT - Associate of Applied Science

This program prepares students to manage or own businesses in the fields of automotive sales, repair, parts, or manufacturing.

Program Outcomes Graduates will be able to:

1. Use industry-standard software in business communications, e.g. word processing & presentation software.
2. Perform and interpret basic business math, accounting, and business statistical calculations.
3. Understand basic concepts associated with business ethics and the importance of developing and adhering to a strong set of generally accepted ethical principles.
4. Demonstrate basic principles of human relationship skills to successfully interrelate with customers, associates, employees, and superiors in a business setting.
5. Understand how the principles of basic economics (e.g. supply and demand, the American free enterprise system, etc.) apply to successful business management practices.
6. Understand basic legal and regulatory requirements for business and industry.
7. Evaluate marketing strategies for successful products and services.
8. Discuss principles of alternative fuels and hybrid vehicle design.
9. Understand elementary principles of automotive electrical, fuel, and braking systems.
10. Apply customer service skills in an automotive business setting.

PROGRAM INFO

Minimum credits: 65

Length: 5 semesters (2 years), if full-time suggested course sequence is followed

Career opportunities: Automotive Insurance Claims Adjuster: **$63,060**

Automotive Sales: **$41,640**

Small Business Owner: Salaries will vary.

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8440

Course Sequence
First Semester

AST 117	Keyboarding for computer usage	1	0	1	1
BIO 100	Basic Human Biology	3	0	3	3
BUS 100	Introduction to Business	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ENG 111	College Composition I	3	0	3	3
ITE 115	Intro to Computer Applications & Concepts	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**17**	**0**	**17**	**17**

BUSINESS MANAGEMENT - AUTOMOTIVE MANAGEMENT - A.A.S.

Course sequence continued...

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Second Semester					
AUT 241	Automotive Electricity I	3	3	6	4
AUT 265	Automotive Braking Systems	2	3	5	3
ECO 120	Survey of Economics	3	0	3	3
ENG 115	Technical Writing	3	0	3	3
ITE 215	Advanced Computer Applications and Integration	4	0	4	4
	Total	**15**	**6**	**21**	**17**
Third Semester (Summer)					
AUT 230	Intro to Alternative Fuels & Hybrid Vehicles	**3**	**0**	**3**	**3**
Fourth Semester					
ACC 111	Accounting I	3	0	3	3
BUS 240	Business Law	3	0	3	3
MKT 100	Principles of Marketing	3	0	3	3
HLT/PED	Approved Wellness Elective	0	2	2	1
HUM 198	Seminar & Project in Humanities	3	0	3	3
	Total	**12**	**2**	**14**	**13**
Fifth Semester					
ACC 110	Introduction to Computerized Accounting	2	0	2	2
AUT 121	Fuel Systems I	3	3	6	4
BUS 205	Human Resource Management	3	0	3	3
BUS 149	Workplace Ethics	1	0	1	1
MKT 170	Customer Service	1	0	1	1
BUS 108	Business Etiquette	1	0	1	1
BUS 200	Principles of Management	3	0	3	3
	Total	**14**	**3**	**17**	**15**
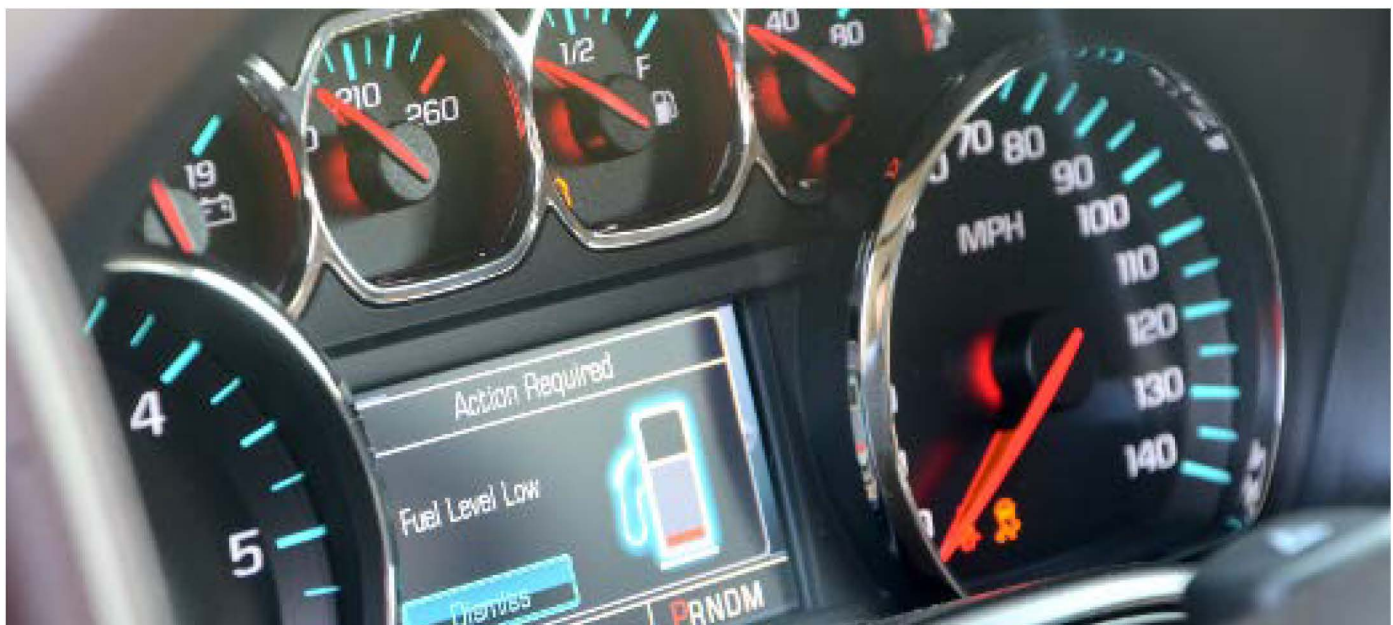
BUSINESS ADMINISTRATION -
Associate of Arts & Science

DCC is accredited by Alpha Beta Gamma International Business Honor Society to initiate members into the honor society for business and related disciplines. For more information, visit http://www.abg.org.

Program Outcomes Graduates will be able to:

1. Demonstrate understanding of the ethical, legal, & regulatory parameters of business.
2. Calculate, compile & analyze business data for problem-solving.
3. Demonstrate awareness of appropriate current & emerging technologies to support business functions.
4. Use verbal, non-verbal, and written communication skills effectively.
5. Use critical thinking skills in problem analysis.
6. Demonstrate awareness of economic and social issues and their impact on the business environment.

Course Sequence
First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BIO 101/	General Biology I **OR**				
CHM 101/	General Chemistry I **OR**				
CHM 111/	College Chemistry I **OR**				
GOL 105	Physical Geology	3	3	6	4
ENG 111	College Composition I	3	0	3	3
HIS 101/	History of Western Civilization I **OR**				
HIS 121	U.S. History I	3	0	3	3
MTH 161	Precalculus I	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**13**	**3**	**16**	**14**

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BIO 102/	General Biology II **OR**				
CHM 102/	General Chemistry II **OR**				
CHM 112/	College Chemistry II **OR**				
GOL 106	Historical Geology	3	3	6	4
ENG 112	College Composition II	3	0	3	3
HIS 102	History of Western Civ. II **OR**				
HIS 122	U.S. History II *(or approved sub)*	3	0	3	3
MTH 261	Applied Calculus I	3	0	3	3
BUS 147	Intro. to Business Info. Systems	2	2	4	3
	Total	**14**	**5**	**19**	**16**

PROGRAM INFO

Minimum credits: 61

Length: 4 semesters (2 years) if suggested full-time course sequence is followed

Transfer Opportunities: This degree is designed for students planning to transfer to a four-year college or university to study fields such as Business Administration, Accounting, Business Information Systems, Economics, Finance, Marketing, & Management.

Admission requirements vary by institution. Students are urged to familiarize themselves with the requirements of the college to which they intend to transfer and plan course selections with their DCC advisor. To learn more, visit **dcc.vccs.edu/transfer**

Division: Arts, Sciences, & Business

Contact: 434.797.8474

BUSINESS ADMINISTRATION - A.A. & S.

Course sequence continued...

Third Semester

		Lecture	Lab Hours	Hrs in Class	Credits
ACC 211	Principles of Accounting I	3	0	3	3
BUS 221	Business Statistics I	3	0	3	3
ECO 201	Principles of Macroeconomics	3	0	3	3
	Humanities Elective	3	0	3	3
	Social Science Elective	3	0	3	3
PED/HLT	Approved Wellness Elective	0	2	2	1
	Total	**15**	**2**	**17**	**16**

Fourth Semester

		Lecture	Lab Hours	Hrs in Class	Credits
ACC 212	Principles of Accounting II	3	0	3	3
BUS 227	Quantitative Methods	3	0	3	3
ECO 202	Principles of Microeconomics	3	0	3	3
	Humanities Elective	3	0	3	3
	Elective	3	0	3	3
	Total	**15**	**0**	**15**	**15**

Entrepreneurship

SMALL BUSINESS MANAGEMENT - CSC

PROGRAM INFO

Minimum credits: 20

Length: 1-2 semesters

Career opportunities: Small Business Owner/Manager: Earnings will vary based on location, type of business, etc. Since the recession of 2009-11, small businesses have accounted for **67% of net new jobs**. *(Source: US Small Business Administration)*

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Learn the skills to be your own boss! Course topics include accounting; management skills for hiring, motivating, and supervising employees; business planning and financial forecasting; obtaining start-up funding; laws and regulations; customer service; and marketing techniques with a possible emphasis on internet marketing, including social networking and basic web design. When seeking to launch a business venture, the more expertise and skill one can obtain in a marketable profession (such as air conditioning, photography, web design, etc.), the odds of success increase.

Program Coordination: This CSC provides 20 credits towards the A.A.S. degree in Technical Studies - Venture Creation & Management.

Program Outcomes Graduates will be able to:

1. Create a business plan that can be used to start and fund a small business start-up or expansion.
2. Perform small business accounting tasks and understand the forms and documents associated with managing a small business accounting system.

Program Outcomes, continued...

3. Demonstrate human relationship skills used to successfully interrelate with customers, associates, employees, and superiors in a business setting.
4. Understand essential legal and regulatory requirements for small business.
5. Recognize the features, advantages, and disadvantages of business ownership categories (e.g., proprietorship, partnership, corporation, etc.).
6. Develop marketing strategies for successful products and services.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BUS 165	Small Business Management	3	0	3	3
Choose one of the following:					
ACC 220/	Accounting for Small Business				
ACC 111/	Accounting I				
FIN 215	Financial Management	3	0	3	3
Choose one of the following:					
MKT 110/	Principles of Selling				
MKT 216/	Retail Organization & Management				
MKT 228/	Promotion				
MKT 281	Principles of Internet Marketing	3	0	3	3
Choose one:					
ITE 115/	Intro to Computer Applications & Concepts				
ITD 115	Web Page Design & Site Management	2	2	4	3
Choose one:					
BUS 236/	Communications in Management				
CST 100	Principles of Public Speaking	3	0	3	3
Choose one:					
BUS 298/	Seminar & Project				
BUS 297	[1]Cooperative Education	3	0	3-15	3
BUS 199	[2]Supervised Study	1	0	1	1
BUS 299	[3]Supervised Study	1	0	1	1
	Total	**19**	**2**	**21-33[1]**	**20**

1 *If a student participates in BUS 297, Cooperative Education, contact hours would equate to 15 hours of internship-style work per week for the duration of the semester.*

2 *Create thorough business plan in BUS 165; participate in the Barkhouser Free Enterprise Center Small Business Idea Fair; work with mentors already in a similar business.*

3 *Enhance business plan initially developed in BUS 165; participate in business counseling with the Launch Place and/or the Longwood SBDC; visit with funding sources; and possibly launch business venture.*

*VENTURE CREATION & MANAGEMENT ("BUILD YOUR BUSINESS") - Technical Studies A.A.S.

*Pending approval for Fall 2018 startup

The Venture Creation program teaches students the skills to launch and manage their own viable small business venture. The curriculum consists of a 20-credit core of financial, marketing, management, and IT courses, paired with 18 credits of general education and 31 credits of courses in a specialty skill area of the student's choice. Examples of specialty skill area Career Studies Certificates include Air Conditioning, Auto Body, Cosmetology, Child Care, Digital Art & Design, Digital Photography, Instrument (Guitar) Building, Hospitality, Precision Machining, Website Design, Welding, and many others.

Students with prior relevant DCC coursework may be eligible to receive advanced standing credit for some requirements.

Additional electives may include courses to enhance the student's entrepreneurial skills, such as Buying, Retailing, Internet Marketing, Professional Selling, Supervision, Business Law, Web Design, etc. Students must select courses with approval of the program advisor to develop a true skill set associated with operating an independent business venture.

Program Coordination: In addition to earning the A.A.S. degree, program graduates will have earned the Small Business Management CSC and one to two additional CSCs in their chosen specialty area.

Program Outcomes Graduates will be able to:

1. Perform a service or generate a product that can feasibly be marketed as the foundation of a business venture.
2. Create a business plan that can be used to start and fund a small business start-up or expansion.
3. Perform small business accounting tasks and understand the forms & documents associated with managing a small business accounting system.
4. Demonstrate human relationship skills used to successfully interrelate with customers, associates, employees, and superiors in a business setting.
5. Understand essential legal and regulatory requirements for small business.
6. Recognize the features, advantages, and disadvantages of business ownership categories (e.g., proprietorship, partnership, corporation, etc.).
7. Develop marketing strategies for products and services.

*VENTURE CREATION & MANAGEMENT - Technical Studies A.A.S.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
ITE 115	Intro to Computer Applications & Concepts	3	0	3	3
ENG 111	College Composition	3	0	3	3
HLT/PED	Wellness Elective(s)	0	4	4	2
SDV 100	College Success Skills	1	0	1	1
	3 - Approved skill or entrepreneurship electives *(3 credits each)*	9	0	9	9
	Total	**16**	**4**	**20**	**18**
Second Semester					
ACC 220/ ACC 111/	Accounting for Small Business **OR** Accounting I **OR**				
FIN 215	Financial Management	3	0	3	3
ECO 120	Survey of Economics *(or approved social science)*	3	0	3	3
PSY 126	Psychology for Business & Industry *(or approved social science)*	3	0	3	3
ITD 115	Web Page Design & Site Management	2	2	4	3
ENG 115 / 131	Technical Writing **OR** Technical Report Writing	3	0	3	3
	1 - Approved skill or entrepreneurship elective	3	0	3	3
	Total	**17**	**0**	**19**	**18**
Third Semester					
BUS 165	Small Business Management	3	0	3	3
MKT 110 / MKT 216/	Principles of Selling **OR** Retail Organization & Mgmt.				
MKT 228 / MKT 281	**OR** Promotion **OR** Principles of Internet Marketing	3	0	3	3
BUS 199	Supervised Study *	1	0	1	1
CST 100	Principles of Public Speaking *(or approved sub)*	3	0	3	3
BIO 100	Basic Human Biology *(or approved sub)*	3	0	3	3
	1 - Approved skill or entrepreneurship elective	3	0	3	3
	Total	**16**	**0**	**16**	**16**
Fourth Semester					
BUS 299	Supervised Study *	2	0	2	2
BUS 298 / BUS 200	Seminar & Project **OR** Principles of Management	3	0	3	3
BUS 297	Cooperative Education**	3	0	3-15**	3
BUS 204 /	Project Management **OR**				
BUS 209	Continuous Quality Improvement	3	0	3	3
	2 - Approved skill or entrepreneurship electives *(3 credits each)*	6	0	6	6
	Total	**17**	**0**	**17-29**	**17**

* Supervised study courses will include one-on-one business counseling and assistance from professors and partner organizations such as the Launch Place and Longwood University Small Business Development Center.

**If a student participates in BUS 297, Cooperative Education, hours in class would equate to 15 hours of internship-style work per week for the duration of the semester.

Marketing

LOGISTICS MANAGEMENT - CSC

Admission Requirements: In addition to general college admission requirements, as an online program, it is expected that applicants will be proficient in internet navigation, e-mail, Microsoft Word and Excel.

Program Coordination: Courses in this CSC transfer into the Marketing – Warehousing & Distribution Specialization A.A.S. degree.

Program Outcomes Graduates will be able to:

1. Demonstrate competency in presentation skills, including organization, eye contact, volume, pacing, and visual aids, using a wide variety of software tools to enhance business communication, including written reports and business plans.
2. Perform and interpret basic business math calculations (e.g., mark-ups, interest rates, ratios, etc.), business accounting principles, basic financial reports and bookkeeping.
3. Understand the basic concepts associated with business ethics and the importance of developing and adhering to a strong set of generally accepted ethical principles.
4. Demonstrate basic principles of human relationship skills to successfully interrelate with customers, associates, employees, and superiors in a business setting.
5. Think logically and analytically in proposing plans and creating strategies including layout, material handling, communications, shipping utilities, and building design that may be considered in complex warehousing and logistics issues facing organizations.
6. Understand the concepts necessary to address warehouse and logistics trade-offs between space and time in optimizing a modern warehousing and logistics organization while recognizing the social and ethical responsibilities within an organization to function effectively.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BUS 223	Distribution & Transportation	3	0	3	3
MKT 216	Retail Organization & Management	3	0	3	3
BUS 200	Principles of Management	3	0	3	3
BUS 255	Inventory & Warehouse Management	3	0	3	3
BUS 204	Project Management	3	0	3	3
	Total	**15**	**0**	**15**	**15**

MARKETING - WAREHOUSING & DISTRIBUTION - Associate of Applied Science

Program Coordination: This degree closely mirrors other Marketing A.A.S. specializations and the Business Management - Management Specialization A.A.S. As such, a student may earn a second A.A.S. degree by taking 15 additional credits (five 3-credit courses). Also, courses in the **Logistics Management CSC** transfer directly into this degree program.

Program Outcomes Graduates will be able to:

1. Demonstrate competency in presentation skills, including organization, eye-contact, volume, pacing, and visual aids, utilizing a wide variety of computer software tools to enhance business communication media, including written reports and business plans.
2. Perform and interpret basic business math calculations (mark-ups, interest rates, ratios, etc.), business accounting, basic financial reports, and bookkeeping.
3. Understand basic concepts associated with business ethics and the importance of developing and adhering to a strong set of generally accepted ethical principles.
4. Demonstrate basic principles of human relationship skills to successfully interrelate with customers, associates, employees, and superiors in a business setting.
5. Understand basic economics, various economic systems, legal and regulatory requirements for business, and their impact on business.
6. Think logically and analytically in proposing plans and creating strategies including layout, material handling, shipping utilities, communications, and building design that may be considered in complex warehousing and logistics issues.
7. Understand concepts necessary to address warehouse and logistics trade-offs between space and time in optimizing a modern warehousing and logistics organization, while recognizing the social and ethical responsibilities within an organization to function effectively in the environment.

PROGRAM INFO

This program prepares students for careers involving the care and control of stock, dispatching goods and materials, and assembling bulk orders for distribution.

Minimum credits: 66

Length: 4 semesters (2 years), if full-time suggested course sequence is followed

Career opportunities:
Shipping, Receiving, & Traffic Clerks:
$18,450-33,150

Transportation & Material Moving Occupations:
$17,180-30,090

First-Line Supervisors of Transportation:
$29,650-52,727

Production, Planning, & Expediting Clerks:
$32,510-46,760

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

MARKETING - WAREHOUSING & DISTRIBUTION - A.A.S.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First semester					
AST 117	Keyboarding for computer usage	1	0	1	1
BUS 100	Introduction to Business	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ENG 111	College Composition I	3	0	3	3
ITE 115	Intro to Computer Applications & Concepts	3	0	3	3
MKT 100	Principles in Marketing	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**17**	**0**	**17**	**17**
Second semester					
BUS 200	Principles of Management	3	0	3	3
BUS 122	Business Mathematics II	3	0	3	3
MKT 110	Principles of Selling	3	0	3	3
BUS 236	Communications in Management	3	0	3	3
ITE 215	Advanced Computer Applications & Integration	4	0	4	4
	Total	**16**	**0**	**16**	**16**
Third Semester					
ACC 111	Accounting I	3	0	3	3
BIO 100	Basic Human Biology	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3
HLT/PED	Approved Wellness Elective	0	2	2	1
MKT 216	Retail Organization & Management	3	0	3	3
BUS 223	Distribution & Transportation	3	0	3	3
	Total	**15**	**2**	**17**	**16**
Fourth Semester					
ACC 110	Introduction to Computerized Accounting	2	0	2	2
BUS 108	Business Etiquette	1	0	1	1
BUS 149	Workplace Ethics	1	0	1	1
HUM 198	Seminar and Project in Humanities	3	0	3	3
MKT 170	Customer Service	1	0	1	1
MKT 227	Merchandise Buying and Control	3	0	3	3
MKT 298	Seminar and Project in Marketing **OR**				
MKT 297	Cooperative Education	3	0	3	3
BUS 255	Inventory & Warehouse Management	3	0	3	3
	Total	**17**	**0**	**17**	**17**

MARKETING - ELECTRONIC COMMERCE SPECIALIZATION - Associate of Applied Science

Program Coordination: Students may earn a second Marketing A.A.S. by taking 15 additional credits (five 3-credit courses).

Program Outcomes Graduates will be able to:

1. Demonstrate competency in presentation skills, including organization, eye-contact, volume, pacing, & visual aids, utilizing a wide variety of computer software tools to enhance business communication media, including written reports & business plans.
2. Perform & interpret basic business math calculations (e.g., mark-ups, interest rates, ratios, etc.), business accounting principles, basic financial reports, and bookkeeping fundamentals.
3. Understand basic concepts associated with business ethics & the importance of developing and adhering to a strong set of generally-accepted ethical principles.
4. Demonstrate basic principles of human relationship skills used to successfully interrelate with customers, associates, employees, & superiors in a business setting.
5. Understand basic economics, various economic systems, legal & regulatory requirements for business & their impact on business.
6. Create, develop, and update attractive, fully-functional web pages using a variety of industry-standard web editing software products.
7. Understand how e-commerce strategies and web design techniques fit into an organization's overall marketing plan including basic web programming (i.e. Java), electronic payment systems, and back-end applications (i.e. Microsoft Access).

PROGRAM INFO

This program prepares graduates for careers in internet marketing.

Minimum credits: 66

Length: 4 semesters (2 years) if full-time suggested course sequence is followed

Career opportunities: E-commerce Specialists: **$47,000**

Web Developers: **$34,770-64,970**

Arts, Design, & Media workers: **$17,210-43,950**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

E-Commerce Elective Options With advisor approval, students will select from the following:

- ENG 123 - Writing for the Web *(Prereq: ENG 111 or 115)*
- ITD 112 - Designing Web Page Graphics *(Prereq: ITD 110)*
- ITD 210 - Web Page Design II *(Prereq: ITD 110)*
- ITD 212 - Interactive Web Design *(Prereq: ITD 110)*
- ITE 130 - Intro to Internet Services
- ITE 150 - Desktop Database Software *(Prereq: ITE 115)*
- ITE 182 - User Support / Help Desk Principles *(Prereq: ITE 115)*
- ITP 100 - Software Design *(Prereq: ITE 115)*
- ITP 140 - Client Side Scripting *(Prereq: ITP 100)*
- MKT 284 - Social Media Marketing *(Prereq: MKT 100)*
- ITP 120 - Java Programming *(Prereq: ITP 100)*
- ITP 100 - Software Design *(Prereq: ITD 115)*
- ITD 115 - Web Page Design & Site Mgmt
- PHT 100 - Intro to Photography
- PHT 101 - Photography I

MARKETING - E-COMMERCE SPECIALIZATION - A.A.S.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First semester					
AST 117	Keyboarding for computer usage	1	0	1	1
BUS 100	Introduction to Business	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ENG 111	College Composition I	3	0	3	3
ITE 115	Intro to Computer Applications & Concepts	3	0	3	3
MKT 100	Principles in Marketing	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**17**	**0**	**17**	**17**
Second semester					
BUS 200	Principles of Management	3	0	3	3
ITD 110	Web Design I	3	0	3	3
MKT 281	Principles of Internet Marketing	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3
HLT/PED	Elective	0	2	2	1
	E-commerce Elective	3	0	3	3
	Total	**15**	**2**	**17**	**16**
Third Semester					
ACC 111	Accounting I	3	0	3	3
BIO 100	Basic Human Biology	3	0	3	3
	2 - E-commerce Electives (3 credits each)	6	0	6	6
MKT 216	Retail Organization & Management	3	0	3	3
MKT 228	Promotion	3	0	3	3
	Total	**18**	**0**	**18**	**18**
Fourth Semester					
BUS 108	Business Etiquette	1	0	1	1
BUS 149	Workplace Ethics	1	0	1	1
	E-commerce Elective	3	0	3	3
HUM 198	Seminar and Project in Humanities	3	0	3	3
MKT 170	Customer Service	1	0	1	1
MKT 298	Seminar & Project in Marketing **OR**				
MKT 297	Cooperative Education	3	0	3	3
MKT 110	Principles of Selling	3	0	3	3
	Total	**15**	**0**	**15**	**15**

MARKETING - MARKETING SPECIALIZATION - Associate of Applied Science

Program Coordination: The program closely mirrors other Marketing A.A.S. specializations (Electronic Commerce, Warehousing & Distribution) and the A.A.S. in Business Management - Management Specialization. As such, a student may earn a second A.A.S. degree by taking 15 additional credits (five 3-credit courses).

DCC is accredited by Alpha Beta Gamma International Business Honor Society to initiate members into the honor society for business and related disciplines. For more information, visit **http://www.abg.org**.

Program Outcomes Graduates will be able to:

1. Demonstrate competency in presentation skills (organization, eye-contact, volume, pacing, & visual aids), using a wide variety of computer software tools to enhance communication media (written reports, business plans).
2. Perform and interpret basic business math calculations (mark-ups, interest rates, ratios, etc.), business accounting principles, basic financial reports, and bookkeeping.
3. Understand basic concepts associated with business ethics and the importance of developing and adhering to a strong set of generally accepted ethical principles.
4. Demonstrate basic principles of human relationship skills to successfully interrelate with customers, associates, employees, and superiors in a business setting.
5. Understand basic economics, various economic systems, legal and regulatory requirements for business, and their impact on business.
6. Understand the role and practice of marketing, including theoretical and applied aspects, and its basic legal and regulatory standards within an organization.
7. Analyze marketing problems and issues facing companies/organizations in order to conceptualize possible alternative solution action plans.

PROGRAM INFO

This program prepares students for employment in merchandising, retailing, and related careers.

Minimum credits: 66

Length: 4 semesters (2 years), if full-time suggested course sequence is followed.

Career opportunities:
Merchandise Displayers: **$17,900-25,000**

Marketing Specialists: **$19,000-43,250**

Sales Representatives: **$21,970-41,650**

Procurement Clerks: **$26,980-41,280**

Sales Rep. Wholesale & Manufacturing: **$26,500-53,580**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

MARKETING - MARKETING SPECIALIZATION - A.A.S.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First semester					
AST 117	Keyboarding for computer usage	1	0	1	1
BUS 100	Introduction to Business	3	0	3	3
BUS 121	Business Mathematics I	3	0	3	3
ENG 111	College Composition I	3	0	3	3
ITE 115	Intro to Computer Applications & Concepts	3	0	3	3
MKT 100	Principles in Marketing	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**17**	**0**	**17**	**17**
Second semester					
BUS 200	Principles of Management	3	0	3	3
BUS 122	Business Mathematics II	3	0	3	3
MKT 110	Principles of Selling	3	0	3	3
BUS 236	Communications in Management	3	0	3	3
ITE 215	Advanced Computer Applications & Integration	4	0	4	4
	Total	**16**	**0**	**16**	**16**
Third Semester					
ACC 111	Accounting I	3	0	3	3
BIO 100	Basic Human Biology	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3
HLT/PED	Approved Wellness Elective	0	2	2	1
MKT 216	Retail Organization & Management	3	0	3	3
MKT 228	Promotion	3	0	3	3
	Total	**15**	**2**	**17**	**16**
Fourth Semester					
ACC 110	Introduction to Computerized Accounting	2	0	2	2
BUS 108	Business Etiquette	1	0	1	1
BUS 149	Workplace Ethics	1	0	1	1
HUM 198	Seminar and Project in Humanities	3	0	3	3
MKT 170	Customer Service	1	0	1	1
MKT 227	Merchandise Buying and Control	3	0	3	3
MKT 298 /	Seminar and Project in Marketing **OR**				
MKT 297	Cooperative Education	3	0	3	3
MKT 281	Principles of Internet Marketing	1	0	1	1
	Total	**15**	**0**	**15**	**15**

Computer Science & Information Technology

DCC Computer Science and IT programs prepare graduates for well-paying and in-demand careers in cyber security, database administration, software and mobile app development, network architecture, computer support, and more. DCC offers pathways suitable for high school students, first-time college students, or existing IT employees seeking to upgrade their skills for professional advancement.

Note: *For the Cyber Crime Investigation Certificate, please see the Criminal Justice & Public Safety section, pp. 135-136.*

Computer Science & Information Technology

College Transfer

SCIENCE - COMPUTER SCIENCE
Associate of Arts & Science

This degree is designed for students planning to transfer to a four-year college or university to study computer science, information technology, or computer security. The program is similar to the A.A.S. in Science in its core course sequence. Students should complete a DCC program comparable to the first two years of the program at the transfer institution.

Program Outcomes Graduates will be able to:

1. Understand how the disciplines of science and math differ from other disciplines.
2. Conduct experiments, record and interpret data.
3. Understand the significance of math to all areas of science.
4. Communicate appropriately within the respective disciplines of math and science.
5. Work independently and collaboratively in the acquisition of scientific knowledge.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ENG 111	College Composition I	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
MTH 167	Precalculus with Trigonometry	5	0	5	5
CSC 205	Computer Organization	4	0	4	4
	[1] Natural Lab Science	3	3	6	4
	Total	**15**	**3**	**19**	**16**

Second semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ENG 112	College Composition II	3	0	3	3
HIS	History Elective I	3	0	3	3
	[1] Natural Lab Science II	3	3	6	4
	[2] Literature Elective I	3	0	3	3
	[3] Social Science Elective I	3	0	3	3
	Total	**15**	**3**	**19**	**16**

SCIENCE - COMPUTER SCIENCE - A.A. & S.

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Third Semester					
CSC 201	Computer Science I	4	0	4	4
MTH 263	Calculus I	4	0	4	4
	[1]Natural Lab Science III	3	3	6	4
HIS	History Elective II	3	0	3	3
	Total	**14**	**3**	**17**	**15**
Fourth Semester					
CSC 202	Computer Science II	4	0	4	4
MTH 264	Calculus II	4	0	4	4
	[2] Literature II	3	0	3	3
	[3] Social Science Elective II	3	0	3	3
	Total	**14**	**0**	**14**	**14**

1 Students must complete 12 credit hours of lab science coursework. Acceptable science courses are: CHM 111-112 College Chemistry I-II; BIO 101-102 General Biology I-II; BIO 141-142 Human Anatomy and Physiology I-II; GOL 105 Physical Geology & GOL106 Historical Geology. Acceptable 200-level laboratory science sequences are: BIO 231-232 Human Anatomy and Physiology I-II; CHM 241-242 Organic Chemistry I-II with lab; PHY 201-202 General College Physics I-II; PHY 241-242 University Physics I-II.

2. Acceptable literature sequences are: ENG 241-242 Survey of American Literature I-II; ENG 243-244 Survey of English Literature I-II; ENG 251-252 Survey of World Literature I-II; ENG 253-254 Survey of African-American Literature I-II.

3. Students must complete a full year of social science coursework by taking one of the following: ECO 201 or ECO 202, or PLS 211 and PLS 212, or SOC 201 and SOC 202, or SOC 200 and 1 sophomore-level sociology course excluding SOC 201 and SOC 202, or PSY 200 and 1 sophomore-level psychology course excluding PSY 201 and PSY 202

Cyber Security

CYBER SECURITY TECHNICIAN - CSC

The Cyber Security Technician CSC is a condensed version of the Cyber Security Certificate. The program is designed for those with prior work and/or educational experience relevant to the cyber security field. Applicants may be required to demonstrate required skills or provide evidence of completion of relevant industry certifications. Enrollment eligibility will be at the discretion of the Cyber Center Director.

Those with a criminal history will not be able to find employment in the cyber security field. Students must complete a background check prior to entering the program.

Program Coordination: Five courses (18 credits) of this CSC count towards the Cyber Security Certificate. Four courses (15 credits) count towards the A.A.S. in Information Systems Technology - Network Engineer. Credits earned in this CSC also overlap with Networking with Cisco/CCNA (CSC), Networking Technology Fundamentals (CSC), Networking Technologies (CSC).

Program Outcomes Graduates will demonstrate knowledge and skills in the following areas:

1. Cisco Systems Academy Program, including basic knowledge of routers, switches, and other networking devices; and their uses and applications.
2. Microsoft desktop and server operating systems, including installation, configuration, and management.
3. Linux desktop operating systems, and their basic management and configuration.
4. VMware Virtualization environments, including installation, configuration and management of the application.
5. Security basics, including network attacks, computer crime, and hacking fundamentals.
6. Introductory computer forensics techniques and skills.

PROGRAM INFO

This program is offered part-time and *completely online*.

Minimum credits: 25

Length: 2 semesters

Career opportunities:
Information Security Analyst: **$51,280-143,770**
Job growth: **18%**
from 2014 to 2024

Computer Systems Analyst: **$51,910-135,450**
Job growth: **21%**
Median salaries & job growth nationwide as of 2015. BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITN 154	Networking Fundamentals, Router Basics, & Configuration (ICNDI) - Cisco	3	2	5	4
ITE 221	PC Hardware and OS Architecture	3	0	3	3
ITN 103	Administration of Networked Servers	3	2	5	4
ITN 254	Virtual Infrastructure: Installation & Configuration	3	2	5	4
ITN 260	Networking Security Basics	3	0	3	3
ITN 261	Network Attacks, Computer Crime, & Hacking	3	0	3	3
ITN 276	Computer Forensics I	4	0	4	4
	Total	**22**	**6**	**28**	**25**

CYBER SECURITY - Certificate

PROGRAM INFO

This program is offered part-time and *completely online*.

Minimum credits: 41

Length: 4 semesters

Industry Certifications:
• CompTIA Security+
• Certified Ethical Hacker
• Cisco Certified Network Associate – Security

Career opportunities:
Information Security Analyst: **$51,280-143,770**
Job growth: **18%**
from 2014 to 2024

Computer Systems Analyst: **$51,910-135,450**
Job growth: **21%**
Median salaries & job growth nationwide as of 2015. BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Admission Requirements: The Cyber Security program is designed for individuals with prior work and/or educational experience relevant to the field. Candidates must meet one or more of the following criteria, as determined by the Cyber Center Director, before entering the program:

1. Professional background in IT Networking. Individual may be required to demonstrate required skills.
2. Industry Certifications in the field of Networking and/or Security. Candidates will be required to provide evidence of successful completion of each certification being considered.
3. Completion of courses in Cisco CCNA Networking and Microsoft Server Operating Systems.

Those with a criminal history will not be able to find employment in cyber security. Students must complete a background check prior to entering the program.

Program Coordination: This certificate shares five courses (18 credits) with the Cyber Security Technician CSC and four courses (11 credits) with the Information Systems Technology Network Engineer A.A.S.

Program Outcomes Graduates of this program will be able to:

1. Identify security risks to computing resources.
2. Assess potential threats to computing resources.
3. Develop effective countermeasures aimed at protecting data and computer assets.
4. Develop solutions for networking and security problems, balancing business concerns, technical issues and security.
5. Identify infrastructure components and the roles they serve, and design infrastructures including devices, topologies, protocols, systems software, management and security.
6. Explain the concepts of confidentiality, availability and integrity in information assurance, including physical, software, devices, policies and people.

CYBER SECURITY - Certificate

Course Sequence
First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ADJ 161	Introduction to Computer Crime	3	0	3	3
ITE 221	PC Hardware and OS Architecture	3	0	3	3
ITN 260	Network Security Basics	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**10**	**0**	**10**	**10**

Second Semester

	Humanities Elective	3	0	3	3
ITN 261	Network Attacks, Computer Crime& Hacking	3	0	3	3
ITN 262	Network Communication, Security & Authentication	4	0	4	4
	Total	**10**	**0**	**10**	**10**

Third Semester

ENG 111	College Composition I	3	0	3	3
ITN 263	Internet/Intranet Firewalls & E-Commerce Security	4	0	4	4
ITN 276	Computer Forensics I	4	0	4	4
	Total	**11**	**0**	**11**	**11**

Fourth Semester

ITN 254	Virtual Infrastructure: Installation & Configuration	4	0	4	4
ITN 267	Legal Topics in Network Security	3	0	3	3
ITN 277	Computer Forensics II	3	0	3	3
	Total	**10**	**0**	**10**	**10**

DCC is the first rural community college in Virginia to be recognized by the Department of Homeland Security and National Security Agency as a National Center of Academic Excellence in Cyber Defense Two-Year Education. Courses are aligned with DHS and NSA curriculum standards.

CYBER & NETWORK SECURITY -
Associate of Applied Science

This program meets entry-level needs for networking, internet, and cyber security related professions, with no prior experience needed to enter. Many courses in the program are offered online in synchronous classes.

Note: A student with a criminal history will not be able to find employment in cyber security. Students must complete a background check prior to entering the program.

Program Coordination: Credits earned in the Cyber Security Technician CSC and Cyber Security Certificate apply towards the requirements of this degree. This program also shares coursework with the IST Network Engineer A.A.S.

Industry Certifications
Students will have the opportunity to earn the following:

- Cisco CCENT (Cisco Certified Entry Network Technician)
- Cisco CCNA (Cisco Certified Network Associate)
- CompTIA A+
- CompTIA Security+
- CompTIA Linux+
- Microsoft MTA (Microsoft Technology Associate): Server Infrastructure, Network, IT Infrastructure
- Cisco CCNA - Security
- VMware Certified Associate
- CEH (Certified Ethical Hacker) - Upon graduation and additional study

Program Outcomes Graduates of this program will be able to:

1. Use and apply a basic knowledge of Cisco Systems routers, switches, VLANs, and device security, including network devices.
2. Install, configure, and apply security management principles to Microsoft desktop and server operating systems.
3. Install, configure, and apply security management principles to Linux desktop and server operating systems.
4. Install, configure, and manage VMware Virtualization environments.
5. Demonstrate knowledge of security basics, including network attacks, computer crime, and hacking fundamentals.
6. Understand introductory digital forensics techniques and skills.

CYBER & NETWORK SECURITY - A.A.S.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
ENG 111	College Composition I	3	0	3	3
ITN 107	Personal Computer Hardware & Troubleshooting	3	0	3	3
ITN 154	Network Fundamentals, Router Basics, & Configuration (ICND1) - Cisco	3	2	5	4
ITN 106	Microcomputer Operating Systems	3	0	3	3
MTH 151	Mathematics for Liberal Arts I **OR**				
MTH 163	Pre-Calculus I	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**16**	**2**	**18**	**17**
Second Semester					
ITP 100	Software Design	3	0	3	3
ITN 200	Administration of Network Resources	4	0	4	4
CST	Approved Elective	3	0	3	3
ITN 260	Network Security Basics	4	0	4	4
ITN 155	Switching, Wireless, and WAN Technologies (ICND2) - Cisco	3	2	5	4
	Total	**17**	**2**	**19**	**18**
Third Semester					
ITN 156	Advanced Switching and Routing - Cisco	4	0	4	4
ITN 170	Linux System Administration	3	0	3	3
ITN 254	Virtual Infrastructure: Installation & Configuration	3	2	5	4
ITN 276	Computer Forensics I	4	0	4	4
ITN 261	Network Attacks, Computer Crime, & Hacking	3	0	3	3
	Total	**17**	**2**	**19**	**18**
Fourth Semester					
ITN 262	Network Communication, Security, & Authentication	4	0	4	4
ITN 263	Internet/Intranet Firewalls & E-Commerce Security	4	0	4	4
SOC	Social Science Elective	3	0	3	3
ITN 277	Computer Forensics II	3	0	3	3
HLT/PED	Approved Wellness Elective	1	0	1	1
	Total	**15**	**0**	**15**	**15**

Database Administration

ADVANCED DATABASE DEVELOPMENT - CSC

Program Outcomes Graduates of this program will be able to:

1. Implement Information Technology skills required by software applications.
2. Apply methodologies to stay current in IT offerings, trends, and certifications.
3. Apply analytical and problem-solving skills for computer system designs, planning, and support.
4. Design, code, test, debug, and document software needed for computer system implementation and maintenance.
5. Apply current IT industry standards, protocols, and techniques.
6. Use instructional applications and material which could lead to industry certifications.

Course Sequence

First Semester

ITP 200 Data Structure & Algorithms	3	0	3	3
ITD 256 Advanced Database Management	3	0	3	3
ITD 260 Data Modeling & Design	3	0	3	3
Total	**9**	**0**	**9**	**9**

Second Semester

ITD 258 Database Performance & Tuning	3	0	3	3
ITD 250 Database Architecture & Administration	3	0	3	3
ITP 258 Systems Development Project	3	0	3	3
Total	**9**	**0**	**9**	**9**

INFORMATION SYSTEMS DATA ANALYST - CSC

Program Coordination: Four courses (14 credits) of this CSC are counted towards the A.A.S. in Software Development.

Program Outcomes Graduates of this program will be able to:

1. Apply analytical and problem solving skills for computer system designs, planning, and support.
2. Apply current IT industry standards, protocols, and techniques.

Industry Certifications: MTA - Database; MTA - Software Development; MOS certification in Word, Excel & Powerpoint.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITE 120	Principles of Information Systems	3	0	3	3
ITE 140	Spreadsheet Software	3	0	3	3
ITD 132	Structured Query Language	3	0	3	3
ITP 136	C# Programming I	4	0	4	4
ITP 244	ASP.NET - Server Side Programming	4	0	4	4
	Total	**17**	**0**	**17**	**17**

Desktop Software
DESKTOP APPLICATIONS - CSC

Program Outcomes Graduates of this program will be able to:

1. Demonstrate proficiency in the fundamental information technology skills required to provide user support in business.
2. Apply current industry standards, protocols and techniques; and keep up with evolving technology to maintain professional proficiency.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 253/255	Advanced Desktop Publishing I w/lab	2	2	4	3
AST 238/239	Word Processing Advanced Operations with lab	2	2	4	3
ITD 115	Webpage Design & Site Mgmt.	3	0	3	3
ITE 115	Intro to Computer Applications & Concepts **OR**				
BUS 147	Intro to Business Info. Systems	3	0	3	3
ITE 140	Spreadsheet Software	3	0	3	3
ITE 150	Desktop Database Software	4	0	4	4
	Total	**17**	**4**	**21**	**19**

Drones

*SMALL UNMANNED AERIAL SYSTEMS OPERATIONS TECHNICIAN - CSC

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PROGRAM INFO

Small unmanned aerial systems, or drones, as they are commonly known, have a variety of uses in diverse fields such as precision agriculture, real estate, search and rescue, photography, and more!

Minimum credits: 17

Length: 1-2 semesters

Career opportunities: This program is designed for individuals who are interested in becoming a professional drone pilot or those employed in fields relating to drone use who wish to upgrade their skills.

Division: Arts, Sciences, & Business

Contact: 434.797.8474

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*Pending approval for Fall 2018 start-up.

This program includes training in the operation, maintenance, navigation and programming of drones. The skills obtained in this program can lead to entry level positions in the field of drone applications and flight control or provide a pathway to promotion. Included in the training will be (1) RC software Manipulations; (2) Repair, Maintenance and Modifications; (3) GPS, GIS and Map Point Drafting; (4) Drone Programming and Data Management; (5) Preparation for the 107 industry certification exam.

Industry Certifications: This program includes training leading to the preparation and setting for the 107 Industry Certification Exam.

Program Outcomes Graduates of this program will demonstrate:

1. Knowledge of drone technologies and terminologies and their uses and applications.
2. Knowledge to use remote control (RC) software to manipulate drones.
3. Ability to repair, maintain and modify drones.
4. Ability to navigate drones through GPS, GIS and Map Point Drafting
5. Identify and utilize drone programming, data management, archiving and manipulations of data, data mining and report generation.
6. Employment skills in the field of Drone technologies.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
UMS 111	Small Unmanned Aircraft Systems (SUAS) I: Intro to Drone Technologies	3	0	3	3
UMS 211	Small Unmanned Aircraft Systems (SUAS) II: Advanced Drone Technologies	2	2	4	3
UMS 177	SUAS Components & Maintenance	2	2	4	3
GIS 293	SUAS Navigation & Deployment	2	2	4	3
UMS 112	SUAS Program & Flight Data Management	3	0	3	3
UMS 107	SUAS Remote Pilot Ground School	2	0	2	2
	Total	**14**	**6**	**20**	**17**

IT Support

INFORMATION TECHNOLOGY SUPPORT SPECIALIST - CSC

NOTE: This program requires previous computing systems-related education or experience, as determined by the instructor.

Program Coordination: This program shares six credits (ITN 106 and 107) with the CSC in Networking Technology Fundamentals.

Program Outcomes Graduates will demonstrate competency in:

1. Fundamentals of PC hardware & peripherals, mobile device hardware, networking & troubleshooting hardware & network connectivity issues.
2. How to install & configure operating systems including Windows, iOS, Android, Apple OS X & Linux; security; the fundamentals of cloud computing; & operational procedures.

Industry Certifications: CompTIA A+, Network+, Server+, Cloud+, Security+.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITN 106	Microcomputer Operating Systems	3	0	3	3
ITN 107	PC Hardware & Troubleshooting	3	0	3	3
ITN 201	Administration & Management of Network Infrastructures	3	0	3	3
ITN 245	Network Troubleshooting	3	0	3	3
ITN 257	Cloud Computing: Infrastructure & Services	3	0	3	3
ITN 260	Network Security Basics	3	0	3	3
	Total	**18**	**0**	**18**	**18**

PROGRAM INFO

Minimum credits: 18

Length: 2 semesters

Career opportunities:
Computer Support Specialist: **$28,990-81,260**
Job growth: **12%**

Data Communications Specialist: **$31,700-81,430**
Job growth: **8%**

Network Administrator: **$46,280-62,450**
Job growth: **8%**

Division: Arts, Sciences, & Business

Contact: 434.797.8474

INFORMATION SYSTEMS MANAGEMENT - CSC

PROGRAM INFO

Minimum credits: 16

Length: 1-2 semesters

Career opportunities:
Information Systems
Manager: **$37,000-47,100**
(Nationwide with associate degree. Source: Monster.com)

With a bachelor's degree:
$82,360-135,800
Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

This program prepares graduates to provide robust IT Support services to and/or fill IT Management positions.

Program Coordination: This CSC completes 16 of the credits required for the Information Systems Project Management A.A.S.

Industry Certifications: MOS in Word, Excel, & Powerpoint.

Program Outcomes Graduates of this program will demonstrate:

1. Proficiency in the fundamental information technology skills required to provide user support in a business setting;
2. Ability to design and plan the deployment of new technology systems; and
3. Ability to design, plan, and manage updates to technology systems.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BUS 204	Project Management	3	0	3	3
ITE 120	Principles of Information Systems	3	0	3	3
ITE 182	User Support/Helpdesk Principles	3	0	3	3
ITP 170	Project Management (IT)	3	0	3	3
ITP 251	Systems Analysis and Design	4	0	4	4
	Total	**16**	**0**	**16**	**16**

INFORMATION SYSTEMS TECHNICIAN - CSC

PROGRAM INFO

Minimum credits: 18

Length: 2 semesters

Career opportunities:
Computer Support
Specialist: **$52,160**

Job growth: **12%**
from 2014 to 2024
Median salary nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Program Coordination: Completing this CSC provides 18 credits towards the Information Systems Project Management A.A.S.

Industry Certifications: CompTIA A+ in software; MOS in Word, Excel, & Powerpoint.

Program Outcomes Graduates of this program will demonstrate:

1. Problem-solving skills implementing and troubleshooting computer systems.
2. Proficiency in the fundamental information technology skills required to provide user support in a business setting.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ETR 149	PC Repair	3	0	3	3
ETR 295	Topics in Advanced PC Repair	3	0	3	3
ITE 120	Principles of Information Systems	3	0	3	3
ITE 182	User Support/Helpdesk Principles	3	0	3	3
ITE 225	Mobile Computing Support	3	0	3	3
ITN 109	Internet and Network Foundation	3	0	3	3
	Total	**18**	**0**	**18**	**18**

INFORMATION SYSTEMS PROJECT MANAGEMENT - Associate of Applied Science

Project Management is a fast-growing, emerging career field. The DCC Project Management A.A.S. is comprised of three Career Studies Certificates, electives, and general education courses. With an emphasis on information systems technology, CSCs expose the student to all aspects of the Project Management Institute (PMI) Process Groups of Project Initiating, Project Planning, Project Execution, Project Monitoring & Controlling, and Project Closing as outlined in the Project Management Body of Knowledge (PMBOK). Students will complete a significant project plan and engage in a comprehensive review that will prepare them to sit for PMI's Certified Associate in Project Management (CAPM) national industry certification exam.

Courses are offered as **online, competency-based, open-entry/ open-exit courses**, which allow students to progress through the program as quickly as they master the skills and competencies.

Program Coordination: Graduates will earn the Project Managmenet CSC and may also receive the CSCs in Information Systems Technician and Information Systems Management.

Program Outcomes Graduates will be able to:

1. Manage people in a team-based environment.
2. Plan, execute, and control IT projects in a wide variety of industry settings.
3. Manage projects according to the Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK) processes and techniques.
4. Sit for the Certified Associate in Project Management (CAPM) exam.
5. Qualify for careers as a project manager or project team member.

PROGRAM INFO

Minimum credits: 68

Length: A full-time student can complete this program in five semesters. Eleven of the courses (or 48% of the degree program) are designed as **open-entry/ open-exit, online courses** that can be finished as rapidly as the student is able to master the course competencies.

Career opportunities: Project Manager: **$75,280** *(National median salary, according to Project Management Institute)* **Job Growth: 12%** through 2020

Division: Arts, Sciences, & Business

Contact: 434.797.8474

INFORMATION SYSTEMS PROJECT MANAGEMENT - A.A.S.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
AST 117	Keyboarding for Computer Usage	1	0	1	1
*ENG 131	Technical Report Writing	3	0	3	3
ETR 149	PC Repair	3	0	3	3
ITE 120	Principles of Info Systems	3	1	4	3
ITN 109	Internet & Network Foundation	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**14**	**0**	**14**	**14**
Second Semester					
ETR 295	Topics in Advanced PC Repair	3	0	3	3
ITE 182	User Support/Helpdesk	3	0	3	3
ITE 225	Mobile Computing	3	0	3	3
BUS 204	Project Management	3	0	3	3
MTH 121	Fundamentals of Math 1	3	0	3	3
	Total	**15**	**0**	**15**	**15**
Third Semester (Summer)					
BUS 209	Advanced Project Management	3	0	3	3
ECO 120	Survey of Economics **OR**				
PSY 126	Psychology for Business & Industry	3	0	3	3
HLT/PED	Elective	0	2	2	1
	Total	**6**	**2**	**9**	**7**
Fourth Semester					
ITP 251	Systems Analysis and Design	4	0	4	4
ITP 170	Project Management	3	0	3	3
ITX or BUS	3 - IT electives (3 credits each)	9	0	9	9
	Total	**16**	**0**	**16**	**16**
Fifth Semester					
BUS 295	Topics in Exam Preparation	3	0	3	3
BUS 298	Seminar and Projects	4	0	4	4
HUM	Elective	3	0	3	3
ITX	2 - IT electives (3 credits each)	3	0	3	3
	Total	**16**	**0**	**16**	**16**

Students planning to transfer to a 4-year university should take ENG 111.

Networking
NETWORK TECHNOLOGY - CSC

Program Integration: This program shares 2 courses/8 credits (ITN 154 and 155) with the Networking Technology Fundamentals and Networking with Cisco/CCNA CSCs. Courses directly transfer into the IST Network Engineer A.A.S.

Program Outcomes Graduates of this program will be able to:

1. Implement Information Technology skills required by software applications.
2. Apply methodologies to stay current in IT offerings, trends, and certifications.
3. Apply analytical and problem-solving skills for computer system designs, planning, and support.
4. Design, code, test, debug, and document software needed for computer system implementation and maintenance.
5. Apply current IT industry standards, protocols, and techniques.
6. Use instructional applications and material which could lead to industry certifications.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITN 154	Network Fundamentals, Router Basics, & Configuration (ICND1) - Cisco	3	2	5	4
ITN 155	Switching, Wireless, & WAN Technologies (ICND2) - Cisco	3	2	5	4
ETR 149	PC Repair	3	0	3	3
ITN 102	Intro to Networked Client OS (LAN)	3	2	5	4
ITN 103	Administration of Networked Servers	3	2	5	4
ITN 104	Maintaining Servers in the Networked Infrastructure	3	2	5	4
	Total	**18**	**10**	**28**	**23**

Advanced standing credit may be awarded to students who demonstrate proficiency or prior certification in Microsoft Windows or Linux Desktop Operating Systems.

PROGRAM INFO

Minimum credits: 23

Length: 2 semesters

Career opportunities:
Computer Support Specialist: **$28,990-81,260**
Job growth: **12%**

Data Communications Specialist: **$31,700-81,430**
Job growth: **8%**

Network Administrator: **$46,280-62,450**
Job growth: **8%**
Median salaries nationwide as of 2015. Source: BLS.gov

Industry Certifications:
Cisco Certified Entry Networking Technician (CCENT); Microsoft Technology Associate (MTA) - Networking & Server; Microsoft Certified Professional (MCP); Microsoft Certified Solutions Associate (MCSA) Windows Server.

Division: Arts, Sciences, & Business

Contact: 434.797.8474

NETWORK VIRTUALIZATION TECHNOLOGIES - Career Studies Certificate

Program is designed for employees in the information systems field. Due to the level of knowledge needed, students must have completed ITN-103 or provide industry certification relevant to the course material, as determined by the program instructor.

Industry Certifications: VMware VCA and VCP; NetApp Storage

Program Outcomes Graduates of this program will demonstrate:

1. Preparation to earn the VMware VCA and VCP certifications
2. Preparation to earn the NetApp Storage certification
3. An understanding of IT certifications and their role in a successful career
4. Preparation for employment in the IT field

Course Sequence

First Semester	Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITN 254 Virtual Infrastructure: Installation & Configuration	4	0	4	4
ITN 213 Information Storage & Management	4	0	4	4
Total	**8**	**0**	**8**	**8**

Second Semester				
ITN 255 Virtual Infrastructure: Deployment, Security, & Analysis	4	0	4	4
ITN 231 Desktop Virtualization	4	0	4	4
Total	**8**	**0**	**8**	**8**

NETWORKING TECHNOLOGY FUNDAMENTALS - CSC

This program allows for the development of basic skills in routing, switching, basic PC software installation and hardware repair.

Program Coordination: This program shares 2 courses/6 credits (ITN 106 and 107) with the IT Support Specialist CSC; 2 courses/8 credits (ITN 154 and 155) with the CSCs in Network Technology and Networking with Cisco/CCNA; and provides 8 credits towards the IST Network Engineer A.A.S.

Industry Certifications: Cisco Certified Entry Networking Technician (CCENT), CompTIA A+

Program Outcomes Graduates of this program will demonstrate:

1. Preparation to earn the Cisco Certified Entry Networking Technician Certification.
2. Preparation to earn the CompTIA A+ Certification.
3. Understanding of IT Certifications and their role in careers.
4. Preparation for entry-level employment in the field of IT.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITN 106	Microcomputer Operating Systems	3	0	3	3
ITN 154	Network Fundamentals, Router Basics, & Configuration (ICND1) - Cisco	3	2	5	4
ITN	Approved IT Elective	2	0	2	2
ITN 155	Switching, Wireless, & WAN Technologies (ICND2) - Cisco	3	2	5	4
ITN 107	PC Hardware & Troubleshooting	3	0	3	3
	Total	**14**	**4**	**18**	**16**

NETWORKING WITH CISCO/CCNA - CSC

Program Outcomes Graduates of this program will be able to:

1. Implement Information Technology skills required by software applications.
2. Apply methodologies to stay current in IT offerings, trends, and certifications.
3. Apply analytical and problem-solving skills for computer system designs, planning, and support.
4. Design, code, test, debug, and document software needed for computer system implementation and maintenance.
5. Apply current IT industry standards, protocols, and techniques.
6. Use instructional applications and material which could lead to industry certifications.

Industry Certifications: Cisco Certified Entry Networking Technician; Cisco Certified Network Associate; CompTIA Network+.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITN 154	Network Fundamentals, Router Basics, & Configuration (ICND1) - Cisco	3	2	5	4
ITN 155	Switching, Wireless, & WAN Technologies (ICND2) - Cisco	3	2	5	4
ITN 156	Basic Switching & Routing - Cisco	3	2	5	4
ITN 157	WAN Technologies - Cisco	3	2	5	4
	Total	**12**	**8**	**20**	**16**

INFORMATION SYSTEMS TECHNOLOGY NETWORK ENGINEER - A.A.S.

Program emphasizes designing, creating, and maintaining local area networks and wide area networks, including software management, voice telephony services, switches, firewalls, routers, servers, workstations, and virtualization technologies. Virtualization courses include VMware ICM, O&S, Virtual Desktop Infrastructure, Hyper-V, and SAN and NAS Storage Technologies.

Program Coordination: Credits earned in the Network Technology and Networking Technology Fundamentals CSC may count towards the requirements of this degree.

Industry Certifications:

- Cisco Certified Entry Technician (CCENT)
- Cisco Certified Network Associate (CCNA)
- Microsoft Technology Associate (MTA) Networking & Server
- CompTIA A+ Hardware & Software
- Microsoft Certified Professional (MCP)
- Microsoft Certified Solutions Associate (MCSA) Windows Server
- VMware Certified Associate (VCA)

Program Outcomes Graduates will be able to:

1. Implement Information Technology skills required by software applications.
2. Apply methodologies to stay current in IT offerings, trends, and certifications.
3. Apply analytical and problem solving skills for computer system designs, planning, and support.
4. Design, code, test, debug, and document software needed for computer system implementation and maintenance.
5. Apply current IT industry standards, protocols, and techniques.
6. Use instructional applications and material which could lead to industry certifications.

PROGRAM INFO

Minimum credits: 66

Length: 2 years

Career opportunities:
Computer Support Specialist: **$28,990-81,260**
Job growth: **12%**

Data Communications Specialist: **$31,700-81,430**
Job growth: **8%**

Network Administrator: **$46,280-62,450**
Job growth: **8%**
Median salaries & job growth nationwide as of 2015. BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

INFORMATION SYSTEMS TECHNOLOGY NETWORK ENGINEER - A.A.S.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 114	[1]Keyboarding for Information Processing	2	0	2	2
BUS 100	Introduction to Business	3	0	3	3
ITE 221	PC Hardware & OS Architecture	3	0	3	3
ITN 154	Network Fundamentals, Router Basics, & Configuration (ICND1) - Cisco	3	2	5	4
MTH 130	Fundamentals of Reasoning *(or approved sub)*	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**15**	**2**	**17**	**16**

1 *Students having prior keyboarding experience may request testing out.*

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ACC 111	Accounting I	3	0	3	3
BUS 236	Communications in Management	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3
ITN 102	Intro to Networked Client Operating Systems (LAN)	3	2	5	4
ITN 155	Switching, Wireless, & WAN Technologies (ICND2) - Cisco	3	2	5	4
	Total	**15**	**4**	**19**	**17**

Third Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ENG 131	Technical Report Writing I	3	0	3	3
ETR 149	PC Repair	3	0	3	3
HLT/PED	Wellness Elective	0	2	2	1
HUM	Humanities Elective	3	0	3	3
ITN 103	Administration of Networked Servers	3	2	5	4
ITN 156	Basic Switching & Routing - Cisco	3	2	5	4
	Total	**15**	**6**	**21**	**18**

Fourth Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITN 254	Virtual Infrastructure: Installation & Configuration	4	0	4	4
ITN 104	Maintaining Servers in the Networked Infrastructure	3	2	5	4
ITN 157	WAN Technologies - Cisco	3	2	5	4
ITN 209	Voice Over Internet Protocol	3	0	3	3
	Total	**13**	**4**	**17**	**15**

Software & App Development
MOBILE APPLICATION DEVELOPMENT - CSC

Program Coordination: 2 courses/7 credits (ITP 100, ITP 120 or ITP 136) count towards the A.A.S. degree in IST - Software Development. 3 courses/11 credits (ITP 100, ITP 120 or ITP 136, and ITD 120 or ITP 214) count towards the A.A.S. degree in IST - Gaming & Mobile Applications.

Program Outcomes Graduates of this program will be able to:

1. Apply analytical and problem-solving skills for mobile system design, planning, and support.
2. Design, code, test, debug, and document software needed for mobile system implementation and maintenance.

Students will choose a pathway in either Java or C# programming:

- **Java sequence:** ITP 100, ITP 120, lTD 120, and ITP 226.
  Industry certifications: Java SE7 Programmer (1Z0-803), Android Application Development.
- **C# sequence:** ITP 100, ITP136, ITP 214, and ITP 236.
  Industry certification: C# Microsoft Technology Associate

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITP 100	Software Design	3	0	3	3
ITP 120/136	Java Programming I **OR** C# Programming I	4	0	4	4
ITD 120/	Design Concepts for Mobile Apps **OR**				
ITP 214	Windows Mobile Development	4	0	4	4
ITP 215	XML Web Services	4	0	4	4
ITP 226/	Mobile Java Android Development **OR**				
ITP 236	C# Programming II	4	0	4	4
	Total	**19**	**0**	**19**	**19**

SOFTWARE DEVELOPMENT - CSC

Program Coordination: Credits earned in this CSC may be counted towards the IST Software Development A.A.S. degree.

Program Outcomes Graduates of this program will be able to:
1. Implement information technology skills required by software applications.
2. Apply methodologies to stay current in IT offerings, trends, & certifications.
3. Apply analytical & problem-solving skills for computer system designs, planning, & support.
4. Design, code, test, debug, & document software needed for computer system implementation & maintenance.
5. Apply current IT industry standards, protocols, & techniques.
6. Use instructional applications & material which could lead to industry certifications.

Industry Certifications: Java Foundations, Java SE7 Programmer (1Z0-803)

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITP 100	Software Design	3	0	3	3
ITP 120	Java Programming I	4	0	4	4
ITP 220	Java Programming II	4	0	4	4
ITD 132	Structured Query Language	3	0	3	3
ITP 246	Java Server Side Programming	3	0	3	3
	Total	**17**	**0**	**17**	**17**

SOFTWARE DEVELOPMENT FUNDAMENTALS - CSC

Program Outcomes Graduates of this program will be able to:
1. Apply analytical & problem-solving skills for computer system designs, planning, & support.
2. Design, code, test, debug, & document software for computer system implementation & maintenance.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITD 110	Web Page Design I	3	0	3	3
ITP 100	Software Design	3	0	3	3
ITP 120/134/112	Java Programming I **OR** C++ Programming I **OR** Visual Basic.NET I	4	0	4	4
ITE 115	Intro to Computer Appns. & Concepts	3	0	3	3
ITE 215	Adv. Computer Appns. & Integration	4	0	4	4
	Total	**17**	**0**	**17**	**17**

INFORMATION SYSTEMS TECHNOLOGY – GAMING & MOBILE APPLICATIONS - A.A.S.

Program focuses on designing, creating, and maintaining video game software and computer simulations, in addition to apps for popular mobile devices. Courses include approaches to game and simulation design, developing and building mobile applications for the Google market, writing code, testing solutions/programs, project management, production aspects, and level design.

Program Coordination: Some courses in the CSCs for Mobile Application Development and Software Development count towards the requirements of this degree.

Program Outcomes Graduates of this program will be able to:

1. Implement Information Technology skills required by software applications.
2. Apply methodologies to stay current in IT offerings, trends, and certifications.
3. Apply analytical and problem-solving skills for computer system designs, planning, and support.
4. Design, code, test, debug, and document software needed for computer system implementation and maintenance.
5. Apply current IT industry standards, protocols, and techniques.
6. Use instructional applications and material which could lead to industry certifications.

PROGRAM INFO

Minimum credits: 65

Length: 4 semesters (2 years), if suggested full-time course sequence is followed.

Career opportunities: Graduates may enter the job market immediately or increase their earning potential by transferring to a four-year university to earn a bachelor's in information technology.

Software Developer: **$52,000-63,204** Job growth: **17%** from 2014 to 2024

Multimedia Artist or Animator: **$38,520-65,300** Job growth: **6%** *Median salaries & job growth nationwide as of 2015. BLS.gov*

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 114	[1]Keyboarding for Information Processing	2	0	2	2
ITE 115	Intro to Computer Applications & Concepts	3	0	3	3
ITP 100	Software Design	3	0	3	3
ITP 160	Intro to Game Design & Development	3	0	3	3
MTH 130	Fundamentals of Reasoning *(or approved sub)*	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**15**	**0**	**15**	**15**

1 *Students having prior keyboarding experience may request testing out.*

Second Semester

ART 180	Intro to Computer Graphics *(or approved sub)*	3	0	3	3
ECO 120	Survey of Economics	3	0	3	3
ITP 136	C# Programming I	4	0	4	4
ITN 102	Intro to Networked Client OS (LAN)	3	2	5	4
ITP 165	Gaming and Simulation	3	0	3	3
	Total	**16**	**2**	**18**	**17**

INFORMATION SYSTEMS TECHNOLOGY – GAMING & MOBILE APPLICATIONS - A.A.S.

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Third Semester					
ENG 131	Technical Report Writing I	3	0	3	3
ITP 120	Java Programming I	4	0	4	4
ITE 150	Desktop Database Software	4	0	4	4
HLT/PED	Approved Wellness Elective	0	2	2	1
HUM	Humanities Elective	3	0	3	3
	Total	**14**	**2**	**16**	**15**
Fourth Semester					
BUS 100	Introduction to Business	3	0	3	3
BUS 236	Communication in Management	3	0	3	3
ITD 120	Design Concepts for Mobile Apps	4	0	4	4
ITP 214	Windows Mobile Development	4	0	4	4
ITP 265	Application of Modeling & Simulation	4	0	4	4
	Total	**18**	**0**	**18**	**18**

INFORMATION SYSTEMS TECHNOLOGY – SOFTWARE DEVELOPMENT - A.A.S.

This program focuses on designing, creating, and maintaining desktop software. Coursework includes analyzing problems, creating solutions, writing code, testing solutions/programs, project management, production aspects, and updating projects. Students will learn core problem-solving skills, known as the "six steps to program problem-solving," and how to use integrated development environments in today's market.

Program Coordination: Some credits earned in the CSCs for Mobile Application Development and Software Development fulfill course requirements of this degree.

Program Outcomes Graduates will be able to:

1. Implement Information Technology skills required by software applications.
2. Apply methodologies to stay current in IT offerings, trends, and certifications.
3. Apply analytical and problem-solving skills for computer system designs, planning, and support.
4. Design, code, test, debug, and document software needed for computer system implementation and maintenance.
5. Apply current IT industry standards, protocols, and techniques.
6. Use instructional applications and material which could lead to industry certifications.

INFORMATION SYSTEMS TECHNOLOGY – SOFTWARE DEVELOPMENT - A.A.S.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AST 114	[1]Keyboarding for Information Processing	2	0	2	2
ENG 131	Technical Report Writing I	3	0	3	3
HLT/PED	Wellness Elective	0	2	2	1
ITE 120	Principles of Information Systems	3	0	3	3
ITP 100	Software Design	3	0	3	3
ITP 120	Java Programming I	4	0	4	4
SDV 100	College Success Skills	1	0	1	1
	Total	**16**	**2**	**18**	**17**

1 Students having prior keyboarding experience may request testing out.

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ECO 120	Survey of Economics	3	0	3	3
BUS 100	Introduction to Business	3	0	3	3
ITP 220	Java Programming II	4	0	4	4
ITP 258	Systems Development Project	3	0	3	3
MTH 130	Fundamentals of Reasoning	3	0	3	3
	(or approved sub)				
	Total	**16**	**0**	**16**	**16**

Third Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITP 136	C# Programming I	4	0	4	4
ITD 132	Structured Query Language	3	0	3	3
ITE 150	Desktop Database Software	4	0	4	4
ITP 246	Server Side Java Programming	4	0	4	4
BUS 204	Project Management	3	0	3	3
	Total	**17**	**0**	**17**	**17**

Fourth Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BUS 236	Communications in Management	3	0	3	3
ITP 244	ASP.NET Server Side Programming	4	0	4	4
ITN 109	Internet and Network Foundations	3	0	3	3
ITP 170	Project Management (IT)	3	0	3	3
HUM	Humanities Elective	3	0	3	3
	Total	**16**	**0**	**16**	**16**

PROGRAM INFO

Minimum credits: 66

Length: 4 semesters (2 years) full-time

Career opportunities: Graduates may enter the job market immediately or increase their earning potential by transferring to a four-year university to earn a bachelor's in information technology.

Software Developer: **$52,000-63,204**
Job growth: **17%** from 2014 to 2024

Computer Programmer: **$39,798-79,840**
Median salaries & job growth nationwide as of 2015. BLS.gov

Industry Certifications: Java Foundations; Java SE 7 Programmer (1Z0-803); MTA - Database Fundamentals (98-364), Software Fundamentals (98-379); MOS - Word, Excel, Powerpoint, Access.

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Web Development
WEBSITE DESIGN - CSC

Program Outcomes Graduates of this program will be able to:

1. Design, code, test, debug, & document software needed for computer system implementation & maintenance.
2. Use instructional applications & material which could lead to industry certifications.

Industry Certifications: CIW Site Development Associate; CIW Advanced HTML5; CSS3 Specialist.

Course Sequence

First Semester		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITD 110	Web Page Design I	3	0	3	3
ITP 112	Designing Web Page Graphics	3	0	3	3
MKT 281	Principles of Internet Marketing	3	0	3	3
	Total	**9**	**0**	**9**	**9**
Second Semester					
ITD 115	Web Page Design & Site Management	3	0	3	3
ITD 210	Web Page Design II	3	0	3	3
ITD 198	Seminar and Project	1	0	1	1
	Total	**7**	**0**	**7**	**7**

WEBSITE PROGRAMMING - CSC

Program Outcomes Graduates of this program will be able to:

1. Design, code, test, debug, & document software needed for computer system implementation & maintenance.
2. Use instructional applications & material which could lead to industry certifications.

Industry Certifications: CIW Site Development Associate; CIW Database and CIW Javascript Spec.

Course Sequence

First Semester		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ITD 110	Web Page Design I	3	0	3	3
ITP 100	Software Design	3	0	3	3
ITD 132	Structured Query Language	3	0	3	3
	Total	**9**	**0**	**9**	**9**
Second Semester					
ITP 140	Client Side Scripting	3	0	3	3
ITP 225	Web Scripting Languages	3	0	3	3
ITD 198	Seminar and Project	1	0	1	1
	Total	**7**	**0**	**7**	**7**

Criminal Justice & Public Safety

These programs prepare graduates to work in law enforcement, corrections, public safety, or in private security/investigations firms.

DCC's Cyber Crime Investigation program has been recognized by the **Department of Homeland Security** and **National Security Agency.** DCC was designated as a **National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE2Y)** in 2016, **the first rural community college in Virginia** to achieve this honor!

ADMINISTRATION OF JUSTICE - Associate of Applied Science

Administration of Justice (ADJ) programs are designed to prepare individuals for careers in public safety. The A.A.S. degree does not substitute for attendance at a basic police academy required by Virginia's local and state law enforcement agencies.

Students who plan to transfer DCC courses into a four-year program in criminal justice/administration of justice are strongly urged to consult with their faculty advisor and the counseling office for course selection. Transferability of ADJ coursework to four-year colleges or universities is contingent on the academic credit transfer policies of those institutions.

Admission Requirements: In addition to general college admission requirements, requirements for employment at criminal justice agencies may include:

- Excellent physical and mental health;
- Normal hearing and color vision. Eye functions must be normal (visual acuity must not be less than 20/40 in either eye without correction);
- Weight should be in proportion to height;
- Excellent moral character;
- No conviction of any crime involving moral turpitude or conviction of any felony;
- An excessive number of traffic citations would be cause to exclude an applicant from consideration by most agencies;
- U.S. citizenship.

NOTE: An extensive background investigation will be conducted by criminal justice agencies before hiring. Anyone who has been convicted of a felony or any offense involving moral turpitude or violence should consult with the faculty advisor.

Program Outcomes Graduates will demonstrate knowledge of the following:

1. Various sources of crime data (e.g. FBI-based Uniform Crime Reporting system) and analytical skills necessary to evaluate strengths and weaknesses of crime data reporting;

2. Assessment skills applied to community-police programs and evaluative measures to be applied to the merits of police-sponsored community crime prevention efforts;

3. Functions of the different components of the criminal justice system—police, judiciary, corrections and protective services;

4. The role diversity plays in decision-making at all levels of the criminal justice system;

5. The global nature of crime, to include the impact of crime and the prosecution of criminal offenders operating in the U.S. and internationally to further a terrorist goal, commit cyber crime, or reap profits associated with criminal enterprises;

Program outcomes, continued...

6. Stress reduction techniques, including a consistent physical fitness conditioning program;

7. The importance of volunteering one's talents for the overall improvement of one's community;

8. The need for uncompromising ethical and moral standards;

9. Exemplary written and oral communication skills;

10. Excellent information literacy skills.

Instructional delivery: Certain courses may be taken online, e.g. ADJ 100 Survey of Criminal Justice, ADJ 130 Criminal Law, ADJ 145 Corrections & the Community, ADJ 161 Intro to Computer Crime, ADJ 215 Report Writing, ADJ 227 Constitutional Law, and ADJ 234 Terrorism and Counter-Terrorism.

College Credit for Academy Training: After an ADJ student completes 35 or more required credits, 21 and 15 credits respectively will be awarded as follows:

Virginia State Police Academy
3 credits - ADJ 100, Survey of Criminal Justice
3 credits - ADJ 130, Criminal Law
3 credits - ADJ 236, Criminal Investigation
9 credits - ADJ coursework*
3 credits - Wellness Elective   **Total: 21 credits**

Virginia Department of Criminal Justice Services Regional Academies
3 credits - ADJ 100, Survey of Criminal Justice
3 credits - ADJ 130, Criminal Law
3 credits - ADJ 236, Criminal Investigation
3 credits - ADJ coursework*
3 credits - Wellness Elective   **Total: 15 credits**

*e.g. ADJ 227 - Constitutional Law,
or ADJ 215 - Report Writing.

Course Sequence
First semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
SDV 100	College Success Skills	1	0	1	1
ENG 111	English Composition I	3	0	3	3
SOC 200/201	Principles of Sociology **OR** [1]Intro to Sociology I	3	0	3	3
ADJ 100	Survey of Criminal Justice	3	0	3	3
ADJ 130	Introduction to Criminal Law	3	0	3	3
ADJ 145	Corrections and Community	3	0	3	3
	Total	**16**	**0**	**16**	**16**

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
NAS 105	[2]Natural Science Topics for Modern Society **OR** Other Approved Lab or Math Course	3-4	0-3	3-7	3-4
ENG 112	College Composition II	3	0	3	3
SOC 202	[1]Intro to Sociology II **OR** Approved Sophomore Sociology	3	0	3	3
ADJ 131	Legal Evidence	3	0	3	3
ADJ 227	Constitutional Law for Justice Personnel	3	0	3	3
ADJ 236	Principles of Criminal Investigation	3	0	3	3
	Total	**18-19**	**0-3**	**18-22**	**18-19**

1 SOC 200 includes material covered in both SOC 201 and SOC 202. The student must enroll in either SOC 201/202 as a series, or enroll in SOC 200. SOC 200 will fulfill the general sociology requirement at the four-year college/university level. **2** Students intending to transfer should take a lab science and MTH 154 (Quantitative Reasoning) or higher.

ADMIN. OF JUSTICE - A.A.S.

Third Semester		Lecture Hrs	Lab Hours	Hours in Class	Credits
PSY 200/201	Principles of Psychology **OR** Intro to Psychology I	3	0	3	3
	Non-ADJ Elective	3	0	3	3
SPA 103	Basic Spoken Spanish **OR** [3]Approved Spanish Course	3-4	0	3-4	3-4
SOC 235	Juvenile Delinquency	3	0	3	3
ADJ 234	Terrorism and Counter-Terrorism	3	0	3	3
	Total	**15-16**	**3**	**18-19**	**16-17**
Fourth Semester					
HUM 165/CST 100	Controversial Issues **OR** [4]Principles of Public Speaking	3	0	3	3
	[5]Approved Computer Elective	3	0	3	3
PSY 215	Abnormal Psychology	3	0	3	3
SOC 236	Criminology	3	0	3	3
ADJ 215	Report Writing	3	0	3	3
PED/HLT	Approved Wellness Elective	3	0	3	3
	Total	**18**	**0**	**18**	**18**

[3] e.g. SPA 150, Spanish for Law Enforcement [4] Students may substitute CST 100 if required by the transfer school.
[5] BUS 147 (Intro to Business Information Systems) is recommended for students intending to transfer.

LAW ENFORCEMENT - Certificate

PROGRAM INFO

Minimum credits: 34

Length: 2 semesters

Career Opportunities:
Corrections Officer: **$34,610**
Job growth: **4%**

Patrol Officer: **$40,600**
Job growth: **4%**

Division: Arts, Sciences, & Business

Contact: 434.797.8402 or 434.797.8462

This certificate is designed to meet the short-term training needs of existing law enforcement employees. Graduates of law enforcement training programs may receive advanced standing credit for some requirements.

Program Outcomes

Graduates will demonstrate knowledge of the following:

1. Various sources of crime data (e.g. FBI-based Uniform Crime Reporting system) and analytical skills necessary to evaluate strengths and weaknesses of crime data reporting;
2. Functions of the different components of the criminal justice system—police, judiciary, corrections and protective services;
3. Stress reduction techniques, including a consistent physical fitness conditioning program;
4. Uncompromising ethical and moral standards;
5. Exemplary written and oral communication skills; and
6. Excellent information literacy skills.

LAW ENFORCEMENT - Certificate

Course Sequence
First semester

		Lecture Hrs	Lab Hours	Hours in Class	Credits
ENG 111	College Composition I	3	0	3	3
ADJ 130	Introduction to Criminal Law	3	0	3	3
ADJ 100	Survey of Criminal Justice	3	0	3	3
SOC 200	Principles of Sociology	3	0	3	3
PSY 200	Principles of Psychology	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**16**	**0**	**16**	**16**
Second Semester					
SOC 235	Juvenile Delinquency	3	0	3	3
ADJ 215	Report Writing	3	0	3	3
ADJ 227	Constitutional Law	3	0	3	3
SOC 236	Criminology	3	0	3	3
SOC 215/268	Sociology of the Family **OR** Social Problems	3	0	3	3
HLT 116	Personal Wellness	3	0	3	3
	Total	**18**	**0**	**18**	**18**

CYBER CRIME INVESTIGATION - Certificate

Program Outcomes Graduates will demonstrate the ability to:

1. Investigate computer crimes and incidents and accurately analyze and report findings;
2. Prepare written computer forensics investigation reports that are admissible in court;
3. Describe network components, protocols, architectures, and the application of current communication and networking technologies;
4. Acquire, recover, document and analyze information contained within and created by computer systems, including different operating systems and networks, computer devices, and digital devices, including cellular telephones and digital cameras;
5. Identify the specifics of computer and network security exposures and vulnerabilities and the countermeasures available to prevent breaches and other system intrusions;
6. Help organizations increase awareness of security policies and procedures;

Program outcomes continued on next page...

PROGRAM INFO

This certificate is designed for current law enforcement and security employees to enhance their skills. Graduates of relevant law enforcement training programs may receive advanced standing credit for some requirements.

Minimum credits: 38

Length: 4 semesters part-time

Division: Arts, Sciences, & Business

Contact: 434.797.8402 or 434.797.8462

CYBER CRIME INVESTIGATION - Certificate

...Program outcomes continued from previous page

7. Collect, analyze and evaluate evidence data using industry-standard computer forensic software and hardware;

8. Collaborate with others to conduct a proper computer-forensics investigation;

9. Discuss and apply the rules of evidence and court procedures and apply the legal and ethical issues related to the acquisition and analysis of digital evidence.

Course Sequence		Lecture Hrs	Lab Hours	Hours in Class	Credits
First semester					
SDV 100	College Success Skills	1	0	1	1
ENG 111	College Composition I	3	0	3	3
PSY 200	Principles of Psychology	3	0	3	3
ADJ 100	Survey of Criminal Justice	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
	Total	**12**	**0**	**12**	**12**
Second Semester					
ADJ 130	Introduction to Criminal Law	3	0	3	3
SOC 200	Principles of Sociology	3	0	3	3
ITN 276	Computer Forensics I	3	2	5	4
	Total	**9**	**2**	**11**	**10**
Third Semester (Summer)					
ADJ 161	Introduction to Computer Crime	3	0	3	3
ITN 277	Computer Forensics II	3	0	3	3
	Total	**6**	**0**	**6**	**6**
Fourth Semester					
ADJ 227	Constitutional Law	3	0	3	3
SOC 236	Criminology	3	0	3	3
ITN 260	Network Security Basics	3	2	5	4
	Total	**9**	**2**	**11**	**10**

Education programs

DCC's education programs span a wide range of age groups and careers. Graduates of the Associate in Applied Science and the Career Studies Certificate may seek immediate employment in daycare or elementary school settings as a teacher's aide after graduation. Associate degree students may also choose to transfer to a four-year university to become a K-12 school teacher. Special scholarship funds are available to childcare providers who wish to further their education at DCC, thanks to a generous donation from Ben & Betty Davenport.

EARLY CHILDHOOD DEVELOPMENT - Career Studies Certificate

Admission Requirements: In addition to regular college admission requirements, program entry requires a personal interview with the Early Childhood Education Department, as well as meeting the following criteria:

1. Excellent moral character is generally considered prerequisite for employment. Background investigations will be conducted by DCC to confirm that students have not been convicted of a crime involving moral turpitude or any felony.
2. Upon program entrance, the student will be responsible for obtaining **and paying for** the criminal background check, fingerprinting, and show a negative TB test.
3. Students must possess sufficient physical strength, flexibility and dexterity to perform education and care for children.

Scholarships are available for this program, including the Virginia Child Care Providers scholarship, and the Project Pathfinders Scholarship and Davenport Institute, both of which are available for current child care employees.

Program Outcomes Graduates will be able to:

1. Plan, implement, and evaluate curriculum plans and learning environments for children based on developmental appropriateness and a thorough knowledge of child development.
2. Adhere to Virginia's Standards for Licensed Child Day Centers in the planning & evaluation of classroom & learning environments to ensure the health, safety, & nutrition of children.
3. Use appropriate positive guidance strategies with children in their care.
4. Choose project & elective courses, with the help of the program advisor, to tailor learning towards possible career options.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
SDV 100	College Success Skills	1	0	1	1
CHD 120	Intro to Early Childhood Education	3	0	3	3
CHD 145	Teaching Art, Music & Movement to Children	2	2	4	3
CHD 205	Guiding Behavior of Young Children	3	0	3	3
EDU 235	Health, Safety, & Nutrition for Children	3	0	3	3
CHD 165	Observation & Participation in Early Childhood Settings	1	6	7	3
	Total	**13**	**8**	**21**	**16**

EARLY CHILDHOOD EDUCATION - Associate of Applied Science

Coursework includes child education, behavior management, and methods of teaching children. Instruction will include both theoretical concepts and practical applications needed to provide high-quality services for children. The degree is designed to prepare graduates either for immediate employment after graduation from DCC or to enable seamless transfer to a four-year bachelor's degree program in Early Childhood Education and teacher licensure PK-3. Please see the program coordinator for a list of Virginia Public Institutions that accept this degree for licensure and their criteria.

Scholarships are available for this program, including the Virginia Child Care Providers scholarship, Project Pathfinders scholarship, and the Davenport Institute program.

Admission Requirements: In addition to regular college admission requirements, program entry requires a personal interview with the program coordinator, as well as meeting the following criteria:

1. Excellent moral character is generally considered prerequisite for employment. Background investigations will be conducted by DCC to confirm that students have not been convicted of a crime involving moral turpitude or any felony.
2. Upon program entrance, the student will be responsible for obtaining **and paying for** a criminal background check, fingerprinting, and show a negative TB test.
3. Students must possess sufficient physical strength, flexibility and dexterity to perform education and care for children.

Program Outcomes: Graduates will be able to:

1. Communicate effectively and appropriately with children and families from all backgrounds to build respectful, reciprocal relationships and use appropriate positive guidance strategies with children in their care.
2. Complete a plan for the educational, physical, fiscal and human resources needed to operate a program for children.
3. Adhere to Virginia's Standards for Licensed Child Day Centers in planning & evaluation of classroom and learning environments to ensure the health, safety, and nutrition of children.
4. Assess children's progress using formal and informal observation and assessment tools and methods.
5. Plan, implement and evaluate curriculum plans and learning environments for children based on developmental appropriateness and a thorough knowledge of child development.

PROGRAM INFO
This program prepares students to work with children from birth to age 8 using developmentally appropriate practices documented by Virginia Competencies for Early Childhood Professionals. It may result in immediate employment, or provide the foundation for transfer to a four-year institution.

Minimum credits: 62

Length: 2 years (4 semesters), if suggested full-time course sequence is followed

Career opportunities:
Child Care Center Director: **$24,960-41,600**
Job growth: **7%** from 2014 to 2024

Teacher Assistant: **$24,900**
Job growth: **7%**

Preschool Teacher: **$16,640-27,040**
Job growth: **6%**
Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8402 or 434.797.8462

EARLY CHILDHOOD EDUCATION - A.A.S.

Instructional delivery: About 2/3 of program courses are offered online or as hybrid courses to accommodate working professionals.

Course Sequence

First Semester		Lecture Hrs	Lab Hours	Hrs in Class	Credits
SDV 100	College Success Skills	1	0	1	1
CHD 120	Intro to Early Childhood Education	3	0	3	3
CHD 145	Teaching Art, Music, & Movement to Children	2	2	4	3
CHD 165	Observation & Participation in Early Childhood Settings	1	6	7	3
CHD 205	Guiding Behavior of Young Children	3	0	3	3
EDU 235	Health, Safety, & Nutrition for Children	3	0	3	3
	Total	**13**	**8**	**21**	**16**
Second semester					
CHD 118	Language Arts for Young Children	2	2	4	3
CHD 146	Math, Science, & Social Studies for Young Children	2	2	4	3
CHD 270	Administration of Early Childhood Programs	3	0	3	3
ENG 111	College Composition I	3	0	3	3
PSY 230	Developmental Psychology	3	0	3	3
	Total	**13**	**4**	**17**	**15**
Third Semester					
CHD 166	Infant and Toddler Programs	3	0	3	3
CHD 210	Introduction to Exceptional Children	3	0	3	3
CHD 216	Early Childhood Programs, Schools, & Social Change	3	0	3	3
ENG 112	College Composition II	3	0	3	3
MTH 154	Quantitative Reasoning	3	0	3	3
	Total	**15**	**0**	**15**	**15**
Fourth Semester					
CHD 265	Advanced Observation & Participation in Early Childhood Settings	1	6	7	3
EDU 200	Introduction to Teaching as a Profession	3	0	3	3
ENG 250	Children's Literature or Approved LIT Elective	3	0	3	3
HIS 121	United States History I	3	0	3	3
BIO 101	General Biology I	3	3	6	4
	Total	**13**	**9**	**22**	**16**

Science, Engineering, & Allied Health

These programs, which range in length from 10 weeks to two years, prepare graduates to fill health care or science-related jobs that continue to see high growth across the country. Different programs are designed for immediate employment after graduation, or transfer to a four-year college or university.

Allied Health - Short-Term programs

BASIC DENTAL ASSISTING - CSC

PROGRAM INFO

This program prepares students for employment in dentists' offices performing a variety of tasks related to patient care.

Minimum credits: 19

Length: 3 semesters part-time, including a summer internship

Career opportunities:
Dental assistant:
$26,390-35,980
Job growth: **18%**
from 2014-2024.

Median salary nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8462 or 434.797.8402

Program Requirements: Students must earn grades of "C" or higher in all basic dental assisting courses to remain active in the program. Students must possess the physical strength and dexterity to perform necessary job duties. There are no exclusions for a criminal record.

Admission Requirements In addition to general college admission requirements, students must meet the following:

1. Satisfactory completion of ENF 1 and/or ENF 2 (if a need for developmental English is indicated by VPT scores. Students whose VPT scores indicate placement in ENF 3/ENG111 are not required to complete the ENF 3 developmental English course.

2. Satisfactory completion of MTE 1, 2, and 3 if a need for developmental math units is indicated by VPT scores.

Industry Certifications: Graduates are eligible to take the Dental Assisting National Board exams for Infection Control & Radiation Safety certification. However, students are not required to seek certification.

Program Coordination: Dental assisting courses do not transfer into any of DCC's other programs. However, students who plan on applying to DCC's **dental hygiene** program frequently elect to complete the dental assisting program first. While completion of the dental assisting program has no direct effect on a student's chances of being accepted into dental hygiene, students who have completed dental assisting typically have more knowledge and experience in the dental field. Thus, former dental assisting students may be seen as more knowledgeable and experienced candidates when applying.

Program Outcomes Graduates will be able to:

1. Assist with the delivery of dental care as an integral team member.
2. Provide basic and expanded function skills with a variety of dental materials.
3. Expose, process, and mount dental radiographs including safety and digital applications.
4. Meet industry standards for asepsis, disinfection and sterilization to ensure a safe working environment.
5. Show communication skills demonstrating knowledge of dental ethics and jurisprudence.
6. Use clinical externships to integrate classroom and laboratory skills in an office setting.
7. Perform basic office procedures to manage the business operation of a dental practice.
8. Have the opportunity to pass the Dental Assisting National Board in Infection Control and Radiation Safety for graduates who choose to take the boards.

BASIC DENTAL ASSISTING - CSC

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Fall Semester					
DNA 100	Intro to Oral Health Professions	1	0	1	1
DNA 103	Intro to Oral Health	1	0	1	1
DNA 109	Practical Infection Control	2	3	5	3
	Total	**4**	**3**	**7**	**5**
Spring Semester					
DNA 110	Dental Materials	2	3	5	3
DNA 113	Chairside Assisting 1	2	3	5	3
DNA 134	Dental Radiology & Practicum	2	3	5	3
	Total	**6**	**9**	**15**	**9**
Summer Semester					
DNA 190	Coordination Internship	1	9	10	4
HLT 105	Cardiopulmonary Resuscitation	1	0	1	1
	Total	**2**	**9**	**11**	**5**

EMERGENCY MEDICAL SERVICES - BASIC
Career Studies Certificate

Industry Certification: Graduates may sit for the Emergency Medical Technician exam for state (Virginia) certification.

Program Outcomes   Graduates will be able to:

1. Be familiar with Emergency Medical Care, the well-being of the EMT-B, medico-legal and ethical issues, the human body, vital signs and patient history, and lifting and moving patients.
2. Know the provisions for initial care for an illness or injury until definitive medical treatment can be accessed, which may include life-saving techniques.
3. Recognize cardiac arrest and provide basic life support.
4. Describe unique needs for assessing a patient.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
EMS 100	CPR for Health Care Providers	1	0	1	1
EMS 112	Emergency Medical Technician - Basic I	3	2	5	4
EMS 113	Emergency Medical Technician - Basic II	2	2	4	3
EMS 120	EMT – Basic Clinical	0	2	2	1
	Total	**6**	**6**	**12**	**9**

PROGRAM INFO

This program prepares graduates to provide basic emergency life support for sick or injured persons.

Minimum credits: 9

Length: 2 semesters

Career opportunities:
Emergency Medical Technician: **$32,670**
Job growth: **24%**
from 2014 to 2024

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8430

NURSE AIDE & NURSE AIDE EXTENDED CARE
Career Studies Certificates

Industry Certifications: Both programs prepare students to take the Virginia State Board of Nursing Certified Nurse Aide (CNA) test.

Program Outcomes Graduates will demonstrate:

1. Knowledge and skills to become a certified nurse aide.
2. Understanding of commonly used medical terminology.
3. Knowledge and skills to become certified to perform first aid and CPR.
4. Ability to describe how nutrition and diet therapy play a role in an individual's overall health.
5. Ability to describe the use of basic health care principles in a variety of situations.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Nurse Aide & Nurse Aide Extended Care CSCs:					
NUR 25	Nursing Assistant	2	4	6	3
NUR 27	Nurse Aide I	2	4	6	3
NUR 98	Seminar & Project	2	2	4	3
Additional courses in Nurse Aide Extended Care CSC:					
HLT 105	Cardiopulmonary Resuscitation	1	0	1	1
HTL 106	First Aid & Safety	2	0	2	2
NUR 193	Studies in Medication Aide	4	2	6	4
	Total	**13**	**12**	**25**	**16**

PHARMACY TECHNICIAN -
Career Studies Certificate

This program is academically rigorous, with more applicants than available seats in the program. Therefore, admission is on a **selective basis**, not first-come, first-served, based upon the student's academic background as well as the timely and successful completion of Developmental Studies requirements. Approximately one-half of the class will be selected by August of each year from applicants meeting the second admissions requirement before January 1 and interviewed during February or March. The remaining spots in the class will be filled during June from those applicants meeting the second requirement before May 16.

Admission Requirements: In addition to general college admission requirements, entry into this program requires:

- A drug test (6 panel) screening and background check must be obtained prior to the HLT 290 Clinical Practice/Internship class.

PHARMACY TECHNICIAN - CSC

Admission Requirements, continued...

- A physician's report of good physical and mental health. (The required health certificate form will be provided by DCC and may be completed by a physician of the student's choice.)

Re-admission Requirements: Students wishing to be re-admitted to the program will follow the same procedures outlined above, with additional requirements regarding repetition of previous coursework that may be obtained from the Workforce Services Office.

Program Outcomes Graduates will be able to:

1. Act ethically and maintain the confidentiality of patient records;
2. Demonstrate knowledge and skills of the sciences as applied to pharmaceutical principles;
3. Perform mathematical calculations essential to the duties of a pharmacy technician;
4. Receive and screen prescriptions and medication orders for completeness, accuracy, and authenticity;
5. Assist pharmacists in preparing, storing, and distributing medication products requiring special handing and documentation;
6. Prepare medications requiring compounding for sterile and non-sterile products and chemotherapy/hazardous products; and
7. Pass either state or national certification exams on the first attempt.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
MTH 133	Mathematics for Health Professions	3	0	3	3
HLT 143	Medical Terminology I	3	0	3	3
HLT 250	General Pharmacology	3	0	3	3
HLT 261/263	Basic Pharmacy I with Lab	3	3	6	4
	Total	**12**	**3**	**15**	**13**

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
HLT 144	Medical Terminology II	3	0	3	3
CST 100	Principles of Public Speaking	3	0	3	3
HLT 290	Coordinated Internship	1	15	16	4
AST 114/115	Keyboarding for Information Processing with Lab	1	2	3	2
	Total	**8**	**17**	**25**	**12**

PHLEBOTOMY - Career Studies Certificate

The art of drawing blood will be taught through intensive supervised hands-on practice using artificial arms and volunteers. Students will collect venous and capillary specimens. The skill level of the student will be assessed using competency standards utilized by certification agencies such as CLSI and ASCP. Clinical hours (MDL 106) will begin ONLY after the student has acquired the appropriate skill level and has satisfactorily passed the didactic portion of the program (MDL 105).

Industry Certification: To be eligible to sit for national certification exams, the student must complete 120-150 hours of clinical time with 100-150 successful collections. The CSC denotes successful completion of the program and does not guarantee that the student will pass the national exams.

Program Outcomes: Graduates will be able to:

1. Perform duties safely and effectively within their scope of practice as a phlebotomy technician.
2. Perform within the ethical and legal boundaries of the phlebotomy technician's scope of practice.

Course Sequence

Course		Lecture Hrs	Lab Hours	Hrs in Class	Credits
HLT 141	Intro to Medical Terminology	2	0	2	2
BIO 100	Basic Human Biology	3	0	3	3
MDL 105	Phlebotomy	2	6	8	4
MDL 106	Clinical Phlebotomy	2	6	8	4
HLT 100	First Aid and CPR	3	0	3	3
	Total	**12**	**12**	**24**	**16**

Allied Health - Associate Degree programs

DENTAL HYGIENE - Associate of Applied Science

This program prepares graduates to work as primary preventive oral health professionals licensed to practice dental hygiene. Dental hygienists clean teeth, examine patients for signs of oral diseases such as gingivitis, and provide other preventive dental care. They also educate patients on ways to improve and maintain good oral health. Upon successful completion of the program, graduates will be eligible to take national, regional, and state board examinations leading to licensure as a registered dental hygienist (RDH).

The program is accredited by the Commission on Dental Accreditation of the American Dental Association, a specialized accrediting body recognized by the U.S. Department of Education.

Admission Requirements: In addition to general college admission requirements, applicants must complete the prerequisites listed below with a grade of "C" or higher by the end of the spring semester prior to beginning the program:

1. One unit of high school or college biology

2. One unit of high school or college chemistry

3. Completion of BIO 141-142, Anatomy and Physiology I-II (Must be completed before applying to program)

4. Completion of Algebra I-II or MTE 1-9 (Must be completed before applying to program)

PROGRAM INFO
Degree is awarded by Virginia Western Community College. Courses are held at DCC.
Minimum credits: 72
Length: 5 semesters, including 10 weeks of summer school in year 1.
Career opportunities: Dental Hygienist: **$72,330** Job growth: **19%** from 2014-2024. *Median salary nationwide as of 2015. Source: BLS.gov*
Division: Arts, Sciences, & Business
Contact: 434.797.8462 or 434.797.8402

The applicant's high school or college (if applicable) cumulative grade point average (GPA) must be at least 2.5. College GPA is based on at least 12 credit hours in a 12-month time frame. The GPA is determined at the end of the fall semester prior to admission. Priority consideration will be given to applicants with a cumulative high school and/or college grade point average of 3.0 or above. All qualified applicants must take the HOBET Test.

Note: Individuals with a felony or misdemeanor conviction may not be allowed to take the licensing exam. This decision is made by the Virginia Board of Dentistry. For questions regarding this issue, call the VBD at 804.367.4538. *Clinical agencies may require that students have periodic background checks and drug screenings completed at the student's expense before beginning enrichment rotations. VWCC requires a clear background and drug test prior to admission.*

DENTAL HYGIENE - Associate of Applied Science

Admission Procedures: Admission to the VWCC-DCC joint venture distance program site in Danville is offered to qualified applicants on a biennial basis during odd-numbered years. Deadline for submitting complete application materials is **February 15** for the upcoming academic year. If the number of qualified applicants falls below the maximum enrollment, the application deadline may be extended. Applicants should be aware that meeting the curriculum admission standards does not guarantee program admission. Applicants will be notified in writing of the action taken by the Dental Hygiene Admissions Committee in May.

Students interested in this program should consult the VWCC catalog for additional information on admissions, VWCC policy on Infectious Disease Status, Essential Dental Hygiene Functions, Clinical Environment, Student Responsibilities, Student Retention and Readmission Policy, which can be accessed at www.virginiawestern.edu.

Students who have begun a dental hygiene program at an accredited institution other than Virginia Western may be considered for admission by transfer if there is class availability and if certain conditions are met. Students interested in transfer should consult the VWCC Dental Hygiene program page for transfer criteria.

Retention Policy: Satisfactory progress is demonstrated by achieving a grade of C or better in required Dental Hygiene and Natural Science courses. Students must satisfactorily complete BIO 205 with a grade of C or above before progressing to the second year of the program. Because curricular components build upon each other over the five semesters, students must complete required Dental Hygiene courses in sequence.

Program Outcomes (from VWCC). Students will demonstrate the following:

1. A thorough understanding of infection control.
2. Ability to gather the appropriate medical history information from clients.
3. Ability to use dental hygiene skills to provide patient care to treat complex dental issues.

DENTAL HYGIENE - A.A.S.

Course sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Prior to First Year:					
BIO 141	Human Anatomy and Physiology I	3	3	6	4
BIO 142	Human Anatomy and Physiology II	3	3	6	4

NOTE: Support courses (non-DNH courses) may be taken prior to entry. BIO 141, BIO 142, and BIO 205/NAS 185 must be repeated if they were completed more than five years prior to the date of admission into the program.

Fall Semester I					
DNH 111	Oral Anatomy	2	0	2	2
DNH 115	Histology/Head and Neck Anatomy	3	0	3	3
DNH 120	Management of Emergencies	2	0	2	2
DNH 130	Oral Radiography for the Dental Hygienist	2	3	5	3
DNH 141	Dental Hygiene I	3	6	9	5
SDV 100	College Success Skills (or SDV 108)	1	0	1	1
SDV 101	Orientation to Health Professions	1	0	1	1
	Total	**14**	**9**	**23**	**17**

Spring Semester I					
DNH 142*	Dental Hygiene II	2	9	11	5
DNH 145*	General and Oral Pathology	2	0	2	2
DNH 146	Periodontics for the Dental Hygienist	2	0	2	2
DNH 216	Pharmacology	2	0	2	2
BIO 205*	General Microbiology	3	3	6	4
	Total	**11**	**12**	**23**	**15**

Summer Semester					
DNH 150	[1]Nutrition	2	0	2	2
DNH 143	Dental Hygiene III	2	6	8	3
DNH 235*	Management of Dental Pain and Anxiety	1	2	3	2
ENG 111	College Composition	3	0	3	3
	Total	**8**	**8**	**16**	**10**

Fall Semester II					
DNH 214	Practical Materials for Dental Hygiene	1	2	3	2
DNH 226	Public Health Dental Hygiene I	2	0	2	2
DNH 244	Dental Hygiene IV	1	12	13	5
PSY 230*	Developmental Psychology	3	0	3	3
	Total	**7**	**14**	**21**	**12**

Spring Semester II					
DNH 227*	Public Health Dental Hygiene II	0	3	3	1
DNH 230	Office Practice and Ethics	1	0	1	1
DNH 245*	Dental Hygiene V	1	12	13	5
PHI 226	[2]Social Ethics	3	0	3	3
	Total	**5**	**15**	**20**	**10**

1 *Health and Wellness are emphasized throughout the Dental Hygiene Program, but specifically in DNH 150 Nutrition.*
2 *DCC students should complete PHI 226 for this requirement. PHI 220 may be substituted for this course.*
***** *These courses have a requisite. Requisites for all courses are listed in the course descriptions section.*

HEALTH SCIENCE - PRACTICAL NURSING
Associate of Applied Science

This degree is for students who wish to develop professionally in the areas of health care education, community health, or more advanced nursing training and supervision. DCC's program requires students to develop a firmer foundation in positive practices, anatomy and physiology, and applied mathematics than is required in typical practical nursing programs. Upon completion, graduates are eligible to apply to take the National Council Licensure Examination for Practical Nursing (NCLEX-PN).

Admission Requirements: DCC's practical nursing program is academically rigorous, with more applicants than available seats. Admission is on a **selective** (not first-come, first-served) basis, focusing on the student's past academic performance and results of the entrance exam.

Required for full admission:

1. High School diploma or GED, or homeschool equivalency.
2. Minimum GPA of 2.0.
3. Non-developmental placement in English (writing and reading) and demonstrated proficiency in mathematics at MTE 1-3 or its equivalent.
4. Successful completion of the Nursing Entrance exam with minimum overall score of 55%.
5. Current C.P.R. certification at the American Heart Association BLS provider level.
6. Priority consideration will be given to students who have completed a sequence of preparatory college-level courses with grades of B or better in 3 attempts or less.
7. ENG 111 successfully completed with a grade of C or better.
8. NUR 135 successfully completed with a grade of C or better.
9. BIO 141 and BIO 142 completed with a grade of C or better. (Completion must be within 10 years.)
10. If accepted into the program, the student will be responsible for obtaining **and paying for** a physical exam, malpractice insurance and a criminal background check.

Note: Certain criminal convictions may prevent licensure as a nurse in Virginia and may prohibit employment in certain health care settings. ***Students convicted of any felony or any misdemeanor involving moral turpitude/barrier crimes do not qualify for DCC Nursing programs***. Clinical facilities will not allow such students to complete clinical hours, meaning that students will not be able to meet Virginia Board of Nursing requirements, nor meet the credit requirement for graduation. Any student who has committed illegal offenses other than minor traffic violations should discuss with the program head.

HEALTH SCIENCE - PRACTICAL NURSING
Associate of Applied Science

Readmission Requirements: Students seeking readmission to the program will follow the same procedures and submit a readmission application. Once a student is readmitted, there are additional requirements regarding repetition of previous coursework, which may be obtained from the Nursing Department following readmission.

Individuals currently licensed as practical nurses may register for this program without applying by contacting the Nursing Department. Transcripts from the institution where the student graduated in a practical nursing program are required.

Program Outcomes Graduates will be able to:

1. Assist in assessing the client's physical and mental health.
2. Contribute to the development and implementation of the health care plan.
3. Record and report the nursing care rendered and the client's response to care.
4. Communicate with patients, families, and other members of the health care team.
5. Identify legal-ethical issues and self-limitations in the provision of patient care.
6. Serve as contributing members in the community.
7. Engage in additional educational opportunities that will enhance growth.

Program Requirements: In order to advance to the next semester, students must earn a grade of "C" or better in all course work. Students must also demonstrate satisfactory attendance and performance in nursing clinical areas.

DCC's LPN graduates have maintained a perfect 100% passing rate on the NCLEX since 2012 - the only school in Virginia to do so!

HEALTH SCIENCE - PRACTICAL NURSING - A.A.S.

Course sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Prior to First Semester					
ENG 111	College Composition	3	0	3	3
BIO 141	Human Anatomy & Physiology I	3	3	6	4
BIO 142	Human Anatomy & Physiology II	3	3	6	4
NUR 135[1]	Drug Dosage Calculations	2	0	2	2
	Total	**11**	**6**	**17**	**13**

1. MTH 126 is an approved substitute for NUR 135 until Fall 2019.

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester (Fall)					
NUR 100	Introduction to Nursing	2	0	2	2
PNE 161	Nursing in Health Changes I	4	6	10	6
HLT 141	Terminology	2	0	2	2
PNE 173	Pharmacology for PN	2	0	2	2
	Total	**10**	**6**	**16**	**12**
Second Semester (Spring)					
PNE 162	Nursing in Health Changes II	5	15	20	10
PNE 174	Applied Pharmacology	0	2	2	2
PNE 135	Maternal & Child Health Nursing	4	3	7	5
	Total	**9**	**20**	**29**	**17**
Third Semester (Fall)					
PNE 163	Nursing in Health Changes III	4	15	19	9
PNE 145	Trends in Practical Nursing	1	0	1	1
PNE 158	Mental Health & Psychiatric Nursing	1	0	1	1
	Approved Elective	3	0	3	3
	Total	**9**	**15**	**24**	**14**
Fourth Semester (Spring)					
HUM	Humanities Elective	3	0	3	3
PSY 230	Developmental Psychology	3	0	3	3
HLT 230	Principles of Nutrition & Human Development	3	0	3	3
	Total	**9**	**0**	**9**	**9**

Visit the DCC Nursing website for program details, FAQs, and more!

http://www.dcc.vccs.edu/departments/A&S/Nursing/RN&LPN.html

MEDICAL LABORATORY TECHNOLOGY - Associate of Applied Science

Admission Requirements: J. Sargeant Reynolds maintains a list of prerequisites for this program at **www.reynolds.edu** on the Pre-Nursing and Allied Health Certificate page. Students must submit an application to the program director for consideration prior to the deadline for acceptance in the corresponding semester. Students should first enroll in the Pre-Medical Laboratory Technology (MDL) Career Studies Certificate (CSC) to complete the prerequisite courses. Admission to the MDL program is competitive, and only a limited number of students will be accepted. Fully-qualified students will be ranked according to GPA, prior degrees achieved, and a completed application packet. (See the program application packet for full explanation.) A minimum GPA of 2.5 is required for consideration. Completion of the Pre-Medical Laboratory Technology CSC does not guarantee admission to the A.A.S. degree.

Industry Credentials: Graduates are eligible to sit for the American Society for Clinical Pathology Board of Certification Exam.

Program Notes: The program is open to qualified students who provide evidence of interest, aptitude, and motivation in the areas of both medical laboratory science and direct patient contact. Students admitted to this program will be approved for entry into major/clinical courses (MDL 101 and higher) when they have satisfied the following:

- Students must meet all Essential Skills Requirements.
- Completion (or near completion) of the Pre-Medical Laboratory Technology CSC is required. Transfer students must declare the Pre-Medical Laboratory Technology CSC as their major.
- A criminal background check, drug screen, and documentation of immunizations are required prior to placement for clinical rotations.
- Official transcripts from all previously attended colleges must be submitted to Central Admissions and Records.
- The program application form must be submitted.

PROGRAM INFO

This degree is awarded by J. Sargeant Reynolds Community College. Courses are held at DCC.

Minimum credits: 70

Length: 5 semesters (2 years) once accepted into the program.

Career opportunities: Medical Laboratory Technician: **$50,500**

Job growth: **16%** from 2014-2024
Median salary nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8462 or 434.797.8402

Program Outcomes Graduates will be able to:

1. Comply with all standard safety regulations and monitor changes in safety regulations.
2. Perform and evaluate pre-analytical, analytical, and post-analytical procedures to ensure the quality of laboratory results.
3. Perform laboratory tests, analyze and verify results, and resolve common problems in all the major areas of the clinical laboratories.
4. Obtain acceptable blood and body fluid samples for laboratory tests using standard phlebotomy and collection procedures.
5. Use quality assurance principles and practices to ensure the accuracy and reliability of laboratory information.
6. Perform preventative and corrective maintenance of equipment & instruments.

Program outcomes continued, next page...

Program outcomes, continued...

7. Communicate effectively, both orally and in writing, with laboratory personnel, other health care professionals, patients and the public.

8. Demonstrate professional conduct and interpersonal skills with patients, laboratory personnel, other health care professionals, and the public.

Course sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First semester					
SDV 100*	College Success Skills	1	0	1	1
MTH 133/163*	[1]Math for Health Professions **OR** [1]Precalculus	3	0	3	3
CHM 101/111*	[2]Gen. Chemistry I **OR** [2]College Chemistry I	3	3	6	4
BIO 101*	General Biology I	3	3	6	4
ENG 111*	College Composition I	3	0	3	3
MDL 101	Intro to Medical Laboratory Techniques	2	3	5	3
	Total	**15**	**9**	**24**	**18**
Second Semester					
ITE 115*	Intro to Computer Applications & Concepts	3	0	3	3
ENG 112*	College Composition II	3	0	3	3
	[3]Social/Behavioral Science Elective	3	0	3	3
MDL 125	[4]Clinical Hematology I	2	3	5	3
MDL 251	[4]Clinical Microbiology I	2	4	6	3
	[3]Personal Wellness Elective	0-2	0-4	0-6	2
	Total	**13-15**	**7-11**	**20-26**	**17**
Third Semester					
MDL 190	[5]Coordinated Internship in Phlebotomy	0	8	8	2
MDL 210	Immunology and Serology	2	3	5	3
	[3]*Humanities or Fine Arts Elective	3	0	3	3
MDL 110	Urinalysis and Body Fluids	2	3	5	3
	Total	**7**	**14**	**21**	**11**

* Course is included in the Pre-Medical Laboratory Technology Career Studies Certificate.
1. MTH 126 meets the graduation requirement for the AAS. Students planning to pursue a four-year degree should take MTH 163.
2. CHM 101 meets the graduation requirement for the AAS. Students planning to pursue a four-year degree should take CHM 111.
3. A list of approved general education electives (humanities/fine arts, social/behavioral science, math, science and personal wellness) is provided in the General Education section of the J. Sargeant Reynolds catalog under Curriculum Planning and Design.
4 This course is offered only in the spring term.

MEDICAL LABORATORY TECHNOLOGY - A.A.S.

	Lecture Hrs	Lab Hours	Hrs in Class	Credits
Fourth Semester				
MDL 216 [6]Blood Banking	2	5	7	4
MDL 225 [7]Clinical Hematology II	2	3	5	3
MDL 252 [7]Clinical Microbiology II	2	3	5	3
MDL 262 [8]Clinical Chemistry & Instrumentation II	3	3	6	4
Total	**9**	**14**	**23**	**14**
Fifth Semester				
MDL 281 [8]Clinical Correlations (online)	1	0	1	1
MDL 290 [5,9]Coordinated Internship in Blood Bank/ Transfusion Medicine	0	8	8	2
MDL 290 [5,9]Coord. Internship in Clinical Chemistry	0	8	8	2
MDL 290 [5,9]Coord. Internship in Hematology	0	8	8	2
MDL 290 [5,9]Coord. Internship in Microbiology	0	8	8	2
MDL 290 [5,9]Coord. Internship in Urinalysis/Serology/Coagulation	0	3	3	1
Total	**1**	**35**	**37**	**10**

5 *For actual student contact laboratory hours per week for MDL 190 and MDL 290 courses, please refer to the course descriptions.*
6 *MDL 210 is a prerequisite or co-requisite for MDL 216.*
7 *This course is offered only in the fall term.*
8 *CHM 101 or CHM 111 is a prerequisite or co-requisite for MDL 262.*
9 *The final semester consists of clinical rotations with area hospitals or clinics.*

Medical Laboratory Technology Application packet:
reynolds.edu/_onlinecatalog/documents/MDL-Application-Packet.pdf

Medical Laboratory Technology Student Handbook:
reynolds.edu/_onlinecatalog/documents/MLT-Student-Handbook-2015-2016.pdf

NURSING - Associate of Applied Science

PROGRAM INFO

Minimum credits: 66

Length: 4 semesters (2 years) once accepted into the program.

The Registered Nursing program is **full-time**.

Career opportunities: Registered nurses are in high demand across the country. They may find employment as clinicians, supervisors or educators in a variety of settings, such as hospitals, clinics, industry, adult homes, day care centers/schools, doctor's offices, and home health care companies.

Registered Nurse: **$59,360 – 73,980**

Job growth: **15%** from 2016-2026

Median salary nationwide as of 2016. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8512

Note: This program has transitioned to the Virginia Community College System common nursing curriculum beginning fall 2018. The revised curriculum includes changes to general education course requirements and the application process and criteria.

The DCC Nursing program **does not accept credits** for nursing courses from colleges outside the VCCS.

Admission Requirements: DCC's nursing program is academically rigorous, with more applicants than available seats. Admission is on a **selective** (not first-come, first-served) basis, focusing on the student's past academic performance and results of the entrance exam.

Requirements for full admission:

1. High school diploma, GED, or home school equivalency.
2. Students must have a minimum prerequisite curricular GPA of 2.5. If a student has repeated one or more of the prerequisite curricular courses, only the higher grade will be used in the prerequisite curricular GPA calculation.
3. Demonstrated proficiency in mathematics at MTE 1-5 or its equivalence
4. Minimum nursing entrance test score at 45th national percentile (a minimum overall score of 65.5%).
5. Successful completion of SDV 100 or 101
6. ENG 111 successfully completed with a grade of C or better
7. PSY 230 successfully completed with a grade of C or better
8. NUR 135 successfully completed with a grade of C or better
9. BIO 141 successfully completed with a grade of C or better. It is strongly recommended that BIO 142 and BIO 150 be completed prior to beginning the nursing program.
10. Current C.P.R. certification at the American Heart Association BLS provider level
11. Priority consideration will be given to students who have completed a sequence of preparatory college-level courses with a grade of B or better in three (3) attempts or less.
12. If accepted into the program, the student will be responsible for obtaining **and paying for** a physical exam, malpractice insurance, and a criminal background check.

Note: Certain criminal convictions may prevent licensure as a nurse in Virginia and may prohibit employment in certain health care settings. ***Students convicted of any felony or any misdemeanor involving moral turpitude/barrier crimes do not qualify for DCC Nursing programs.*** Clinical facilities will not allow such students to complete clinical hours, meaning that students will not be able to meet Virginia Board of Nursing requirements, nor meet the credit requirement for graduation. Any student who has committed illegal offenses other than minor traffic violations should discuss with the program head.

NURSING - A.A.S.

Readmission Process: Students seeking readmission will follow the same procedures and submit a readmission application. Contact Cathy Barrett, Program Coordinator for Nursing, at 434.797.8422 or 8512.

Program Outcomes Graduates will be able to:

1. Provide patient-centered care promoting therapeutic relationships, caring behaviors, and self-determination across the lifespan for diverse populations.
2. Practice safe nursing care that minimizes risk of harm across systems and client populations.
3. Demonstrate nursing judgment through the use of clinical reasoning, the nursing process, and evidence-based practice in the provision of safe, quality care.
4. Practice professional behaviors that encompass the legal/ethical framework while incorporating self-reflection, leader-

ship and a commitment to recognize the value of life-long learning.
5. Manage client care through performance improvement processes, information technology, and fiscal responsibility to meet client needs and support organizational outcomes.
6. Demonstrate principles of collaborative practice within the nursing and interdisciplinary teams fostering mutual respect and shared decision-making to achieve stated outcomes of care.

Program Requirements: Students must complete 66 credits with a 2.0 GPA or better and must pass all courses with at least a C. Attendance and satisfactory performance in clinical portions of each class are mandatory.

Course sequence

Prior to first year

NUR 135[1]	Drug Dosage Calculations	2	0	2	2
BIO 141	Human Anatomy & Physiology I	3	3	6	4
ENG 111	College Composition I	3	0	3	3
PSY 230	Developmental Psychology	3	0	3	3
SDV 100/101	College Success Skills	1	0	1	1
	Total	**12**	**3**	**15**	**13**

First Semester (Fall)

BIO 142	Human Anatomy & Physiology II	3	3	6	4
NSG 100	Introduction to Nursing Concepts	3	3	6	4
NSG 106	Competencies for Nursing Practice	1	3	4	2
NSG 130	Professional Concepts	1	0	1	1
NSG 200	Health Promotion & Assessment	2	3	5	3
	Total	**10**	**12**	**22**	**14**

Second Semester (Spring)

BIO 150	Introductory Microbiology	3	3	6	4
NSG 152	Health Care Participant	2	3	5	3
NSG 170	Health/Illness Concepts	4	6	10	6
	Total	**9**	**12**	**21**	**13**

NURSING - A. A.S.

Course sequence, continued...

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Third Semester (Fall)					
SOC 200	Principles of Sociology	3	0	3	3
NSG 210	Health Care Concepts I	3	6	9	5
NSG 211	Health Care Concepts II	3	6	9	5
	Total	**9**	**12**	**21**	**13**
Fourth Semester (Spring)					
NSG 230	Advanced Professional Nursing Concepts	2	0	2	2
NSG 252	Complex Health Care Concepts	4	0	4	4
NSG 270	Nursing Capstone	0	12	12	4
HUM	Humanities Elective	3	0	3	3
	Total	**9**	**12**	**21**	**13**

1. NAS 161 and BIO 231 are approved substitutes for BIO 141. 2. NAS 162 and BIO 232 are approved substitutes for BIO 142. 3. BIO 205 is an approved substitute for BIO 150. 4. MTH 126 is an approved substitute for NUR 135 (until Fall 2019)

> **Did you know?** DCC's RN program graduates have maintained a perfect pass rate on the NCLEX state boards since 2014! For more information on nursing programs, photos of the hospital simulation lab classroom, and application info, visit:
> **http://www.dcc.vccs.edu/departments/A&S/Nursing/RN&LPN.html**

RESPIRATORY THERAPY -
Associate of Applied Science

Degree is awarded by J. Sargeant Reynolds Community College. Approximately 21 credits in specified DCC courses must be completed prior to acceptance into the program. After a student is accepted, core courses in RTH are offered in Danville via distance learning, while clinical experiences are coordinated through area hospitals.

Functional Skills Requirements Students must possess the following functional skills:

1. Sufficient eyesight, including color vision, to observe patients, perform & visualize patient assessments, manipulate equipment, & visually read patient records, graphs, and test results.

2. Sufficient hearing to communicate with patients & members of the health care delivery team, monitor patients using electronic equipment, & hear necessary sounds during operation of equipment.

3. Satisfactory speaking, reading, & writing skills to effectively communicate in English in a timely manner.

4. Sufficient gross & fine motor coordination to exhibit excellent eye-hand coordination and dexterity to manipulate equipment, lift, stoop, & bend in the delivery of safe patient care.

RESPIRATORY THERAPY - A.A.S.

Functional skill requirements, continued...

5. Satisfactory physical strength & endurance to be on one's feet for extended periods & move heavy equipment, patients, and supplies. Sitting, walking, bending, & reaching motions are job requirements.

6. Satisfactory intellectual, emotional, & psychological health & functioning to ensure patient safety & to exercise independent judgment & discretion in performing assigned tasks.

7. Time management of multiple priorities, multiple stimuli, & fast-paced environments.

8. Analysis and critical-thinking skills.

Admission Requirements: In addition to general college admission requirements, entry into the RT program requires students to:

1. Fulfill all prerequisite courses included in the J. Sargeant Reynolds Pre-Respiratory Therapy CSC by the end of the spring semester in the year the student is applying for acceptance into the associate degree.
2. Submit a portfolio by February 1 to include a completed Respiratory Therapy program application and official transcript.
3. Complete the HESI Admissions Assessment by April 1.
4. Meet with the program director or director of clinical education.

Acceptance Process: Students are accepted into the RT A.A.S. degree program based on completion of the prerequisite courses with a minimum GPA of 2.5 or higher (not to include SDV 100, ITE 115, or math as part of the GPA calculation), competitive ranking of their prerequisite courses GPAs, and minimum score of 65% on the HESI admissions assessment. The program director will notify students by the middle of June regarding acceptance.

Acceptance into Clinical Courses: Students who have been accepted into the program must secure transportation to and from facilities used for clinical experiences. Students enrolled in programmatic clinical rotations shall not receive any form of remuneration in exchange for their work. In addition, students shall not be substituted for paid staff and/or used simply as back-ups in the absence of appropriate paid staff during clinical rotations. Students will be placed in clinical courses (RTH 190 or higher) when they have submitted the following (at the student's expense):

- Completed physical examination form provided by the program, which includes a yearly PPD and flu vaccination, as well as an immunization schedule.
- Documentation of a current CPR Basic Life Support Certification (American Heart Association), with biennial recertification.
- Certified background check and drug screening.

PROGRAM INFO

Degree is awarded by J. Sargeant Reynolds Community College. Courses are held at DCC.

Minimum credits: 72

Length: 6 semesters (2 years), including summers, once accepted into program

Career opportunities: Respiratory therapy practitioners work in hospitals, clinics, research facilities, home health care agencies, etc. under the supervision of a physician.

Respiratory Therapist: **$58,670**
Job growth: **23%** from 2016-2026.

Median salary nationwide as of 2016. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8462 or 434.797.8402

RESPIRATORY THERAPY - A.A.S.

Note: Applicants who do not pass the background check and/or drug screening will not be allowed to enroll in any Respiratory Therapy clinical course. Without completing the clinical component of the program, students will not be eligible for employment as a student or RCP, or for curriculum completion.

Program Outcomes Graduates will be able to:

1. Demonstrate competence in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains of respiratory care practice as performed by registered respiratory therapists (RRTs) through the NBRC Self-Assessment Exams and program clinical evaluations;
2. Apply critical thinking to the practice of respiratory care as measured by the NBRC Therapist Multiple-Choice Self-Assessment Exam with a score of 94 or higher;
3. Synthesize theory and clinical practice as measured by the NBRC Clinical Simulation Self-Assessment Exam with a combined score of 274 or higher on decision-making and information gathering; and
4. Demonstrate awareness of credentialing, job placement, interviewing, licensure, and professionalism within the field of respiratory care by completing RTH 227-Integrated Respiratory Therapy Skills II.

Industry Credentials: Students will have the opportunity to sit for the National Board for Respiratory Care's CRT credential.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
RTH 102	Integrated Sciences for Respiratory Care	3	0	3	3
RTH 110	Fundamental Theory & Procedures for Respiratory Care	2	6	8	4
RTH 121	Cardiopulmonary Science I	3	0	3	3
RTH 135	Diagnostic & Therapeutic Procedures I	1	3	4	2
RTH 145	Pharmacology for Respiratory Care I	1	0	1	1
ENG 111	College Composition I	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**14**	**9**	**23**	**17**

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
RTH 112	Pathology of the Cardiopulmonary System	3	0	3	3
RTH 131	Respiratory Care Theory & Procedures I	3	3	6	4
RTH 190	Coord. Internship in Respiratory Therapy - NCC I	0	10	10	2
RTH 190	Coord. Internship in Respiratory Therapy - NCC II	0	10	10	2
BIO 141	Human Anatomy and Physiology I	3	3	6	4
	Total	**9**	**26**	**35**	**15**

Third Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
RTH 132	Respiratory Care Theory & Procedures II	3	3	6	4
RTH 222	Cardiopulmonary Science II	3	0	3	3
RTH 190	Coord. Internship in Resp. Therapy - NCC Internship	0	10	10	2
RTH 215	Pulmonary Rehabilitation	1	0	1	1
BIO 142	Human Anatomy and Physiology II	3	3	6	4
	Total	**10**	**16**	**26**	**14**

RESPIRATORY THERAPY - A.A.S.

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Fourth Semester					
RTH 265	Current Issues in Respiratory Care	2	0	2	2
RTH 290	Coord. Internship in Resp. Therapy- ACC/NPCC I	0	10	10	2
RTH 290	Coord. Internship in Resp. Therapy- ACC/NPCC II	0	10	10	2
RTH 223	Cardiopulmonary Science III	2	0	2	2
RTH 226	Theory of Neonatal & Pediatric Respiratory Care	2	0	2	2
	Social Science Elective	3	0	3	3
	Humanities or Fine Arts Elective	3	0	3	3
	Total	**12**	**20**	**32**	**16**
Fifth Semester					
RTH 236	Critical Care Monitoring	2	3	5	3
RTH 290	Coord. Internship in Resp. Therapy - ACC/NPCC III	0	10	10	2
RTH 290	Coord. Internship in Resp. Therapy- ACC/NPCC IV	0	5	5	1
	Total	**2**	**18**	**20**	**6**
Sixth Semester					
RTH 227	Integrated Respiratory Therapy Skills II	2	0	2	2
RTH 290	Coord. Internship in Resp. Therapy - ACC/NPCC Internship	0	10	10	2
	Total	**2**	**10**	**12**	**4**

College Transfer

ENGINEERING - Associate of Science

This transfer degree is designed to prepare students for upper-level engineering courses at a four-year college or university. It is part of the University of Virginia's "Produced in Virginia" initiative, which aims to increase the number of engineers graduated in the Commonwealth.

Transfer opportunities: The Virginia Community College System has guaranteed admission agreements with the University of Virginia and Virginia Tech for successful program graduates. Courses are also accepted by other Virginia institutions. Admission requirements vary by institution. Students are urged to familiarize themselves with the requirements of the college to which they intend to transfer and plan course selections with their DCC advisor. To learn more, visit **dcc.vccs.edu/transfer**

The program is rigorous. Students must feel comfortable doing high-level math and science, regardless of area of specialization. *Students who are not prepared in math are encouraged to take preparatory courses first and proceed at a slower pace to increase their likelihood of success.*

PROGRAM INFO

Minimum credits: 65

Length: 2 years (4 semesters) if suggested full-time course sequence is followed.

Division: Arts, Sciences, & Business

Contact: 434.797.8474

ENGINEERING - Associate of Science

Program Outcomes: Graduates will demonstrate the ability to:

1. Apply engineering problem-solving methodology.
2. Apply knowledge of math, sciences and engineering principles to engineering problems.
3. Conduct experiments, & analyze & interpret data.
4. Function in a team and to communicate effectively & professionally.
5. Understand professional & ethical responsibility.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
ENG 111	College Composition I	3	0	3	3
MTH 263*	Calculus I	4	0	4	4
EGR 120	Introduction to Engineering	1	3	4	2
CHM 111	College Chemistry I	3	3	6	4
EGR 126	Computer Programming for Engineers	3	0	3	3
SDV 101	Orientation to Engineering	1	0	1	1
	Total	**15**	**6**	**21**	**17**
Second Semester					
PHY 241	General University Physics I	3	3	6	4
ENG 112	College Composition II	3	0	3	3
MTH 264	Calculus II	4	0	4	4
CHM 112	College Chemistry II	3	3	6	4
PED/HLT	Approved Wellness Elective	1	0	1	1
	Total	**14**	**6**	**20**	**16**
Third Semester					
MTH 265	Calculus III	4	0	4	4
PHY 242	General University Physics II	3	3	6	4
EGR 140	Engineering Mechanics – Statics	3	0	3	3
	Social Science Elective I	3	0	3	3
	Humanities Elective I	3	0	3	3
	Total	**16**	**3**	**19**	**17**
Fourth Semester					
MTH 267	Differential Equations	3	0	3	3
EGR 245**	Engineering Mechanics – Dynamics	3	0	3	3
EGR 246**	Mechanics of Materials	3	0	3	3
	Social Science Elective II	3	0	3	3
	Humanities Elective II	3	0	3	3
	Total	**15**	**0**	**15**	**15**

Students who are not prepared for Calculus should begin with Precalculus with Trigonometry (MTH 166) and should also consider following a three- or four-year sequence to complete this program.

**Students may substitute college-level engineering or supportive discipline courses for engineering disciplines, such as electrical engineering. Substitutions must be approved by the division dean and engineering faculty.*

SCIENCE - Associate of Arts & Science

This curriculum emphasizes mathematics and the biological and physical sciences. It also includes a range of courses in humanities and social sciences. Students have sufficient flexibility to select courses appropriate to the requirements of their intended transfer institution. Students should complete a DCC program comparable to the first two years of the program at the transfer institution.

Program Outcomes Graduates will demonstrate:

1. An understanding of scientific and mathematical principles in everyday life.
2. Proficiency in conducting experiments, and recording and interpreting data.
3. Understanding of the significance of mathematics to all areas of science.
4. Ability to communicate appropriately within the respective disciplines of mathematics and science.
5. Ability to work independently and collaboratively in the acquisition of scientific knowledge.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
ENG 111	College Composition I	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
HIS	History elective	3	0	3	3
MTH	[1]Math requirement (MTH 161/167 or higher)	3-4	0	3-4	3-4
	[2]Natural Lab Science	3	3	6	4
HLT/PED	[3]Approved Wellness Elective	1	1-2	2-3	1
	Total	**14-15**	**4-5**	**18-19**	**15-16**

1 Students can take MTH 245, MTH 261, or MTH 263 to meet the second semester math requirement. In addition, students may elect to finish the Calculus sequence by completing MTH 264. As with all transfer degrees, students should select the math sequence which will be most helpful in transferring to their intended four-year college.

2 Students must complete 20 credits of lab science, including 4 credits taken at the sophomore level and at least one full-year lab sequence. Acceptable 100-level sequences are: CHM 111-112 General Chemistry I-II; BIO 101-102 General Biology I-II; BIO 141-142 Human Anatomy and Physiology I-II; GOL 105 Physical Geology & GOL 106 Historical Geology. Acceptable 200-level lab sequences are: CHM 241-242 Organic Chemistry I-II with lab; PHY 201-202 General College Physics I-II; or PHY 241-242 University Physics I-II. Other non-sequential options are: BIO 150 Introductory Microbiology, and BIO 256 General Genetics.

SCIENCE - Associate of A. & S.

			Lecture Hrs	Lab Hours	Hrs in Class	Credits
Second semester						
ENG 112	College Composition II		3	0	3	3
HIS	History Elective		3	0	3	3
MTH	[1] Math Requirement (200-level)		3	0	3	3
	[2] Natural Lab Science		3	3	6	4
	Approved Elective		3	0	3	3
		Total	**15**	**3**	**18**	**16**
Third Semester						
ENG	[4] Literature I		3	0	3	3
	[5] Social Science Requirement		3	0	3	3
	[2] Natural Lab Science		3	3	6	4
	Approved Elective		3	0	3	3
	[2] Natural Lab Science		3	3	6	4
		Total	**15**	**6**	**21**	**17**
Fourth Semester						
ENG	[4] Literature II		3	0	3	3
	[5] Social Science Requirement II		3	0	3	3
	[2] Natural Lab Science		3	3	6	4
	Approved Elective		2-4	0	2-4	2-4
		Total	**11-13**	**3**	**14-16**	**12-14**

3 *This can be satisfied by a single 1 or more credit course in Health or Physical Education.*

4 *Acceptable literature sequences are: ENG 241-242 Survey of American Literature I-II; ENG 243-244 Survey of English Literature I-II; or ENG 251-252 Survey of World Literature I-II.*

5 *Students must complete a full year of social science coursework by taking one of the following sequences: ECO 201 and ECO 202; PLS 211 and PLS 212; SOC 201 and SOC 202; or SOC 200 and one sophomore level sociology course excluding SOC 201 and 202, or PSY 201 and PSY 202, or PSY 200 and one sophomore-level psychology course excluding PSY 201 and 202.*

Technical & Workforce

Technical & Workforce programs are designed to prepare graduates fro immediate employment. These areas of study are a good fit for students who enjoy working with their hands, problem-solving, and applying practical techniques. Many certificate programs are short-term and provide the opportunity to earn valuable industry credentials to make graduates more competitive in the workplace.

Air Conditioning

AIR CONDITIONING & REFRIGERATION SERVICING - Certificate

This program prepares graduates for employment as a service technician in air conditioning and refrigeration. Topics include basic electricity, circuits and controls (electric and electronic), combustion devices (oil burners and gas burners), refrigeration and air conditioning (residential and commercial).

Career Requirements: Upon completion, the graduate will need to work 4 years in the field and have the ability to take their HVAC Journeyman licensure through the state of Virginia. Once the journeyman license is obtained, the individual must hold this license for one year and then has the ability to take the Master licensure through the state of Virginia. To own your own business, a Master license must be obtained or held by someone within the company.

Program Coordination: 40 of the 42 credits in the certificate (except for MKT 170) count towards the AC & Refrigeration Diploma.

Industry Certifications: Students will have the opportunity to sit for the OSHA 10 and EPA certifications.

Program Outcomes Graduates will be able to:

1. Demonstrate mathematical skills to solve problems in electrical, refrigeration, and air conditioning systems, gas heating systems, and oil heating systems.
2. Apply troubleshooting skills to diagnose and repair refrigeration, heating, & electrical systems.
3. Apply knowledge to install heating, air conditioning, and refrigeration systems.
4. Sit for the EPA Certification.

Course Sequence
First semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AIR 134	AC & Refrigeration Controls	3	2	5	3
AIR 121	Refrigeration I	2	2	4	3
AIR 161	Heating, AC & Refrigeration Calculations I *(or approved sub)*	3	0	3	3
AIR 154	Heating Systems I	2	2	4	3
SAF 130	Industrial Safety: OSHA 10	1	0	1	1
SDV 100	College Success Skills	1	0	1	1
	Total	**12**	**6**	**18**	**14**

Course sequence continued, next page...

AIR CONDITIONING & REFRIGERATION SERVICING - Certificate

Course sequence, continued...

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Second semester					
AIR 135	Circuits II	2	3	5	3
AIR 122	Refrigeration II	2	2	4	3
AIR 155	Heating Systems II	2	2	4	3
AIR 276	EPA Certification	1	0	1	1
ENG 131	Technical Report Writing *(or approved substitute)*	3	0	3	3
HUM 165	Controversial Issues	3	0	3	3
	Total	**12**	**10**	**22**	**16**
Third semester					
AIR 273	Refrigeration III	2	3	5	3
AIR 156	Heating Systems III	2	2	4	3
AIR 136	Circuits III	2	3	5	3
MKT 170	Customer Relations	1	0	1	1
ITE 116	Survey of Computer Software Applications	2	0	2	2
	Total	**9**	**7**	**16**	**12**

AIR CONDITIONING & REFRIGERATION - Diploma

Career Requirements: Upon completion, the graduate will need to work 2 years in the field and have the ability to take their HVAC Journeyman licensure through the state of Virginia. The journeyman license must be held for one year in order to take the Virginia Master licensure. To own one's own business, a Master license must be obtained or held by someone within the company.

Program Coordination: The AC & Refrigeration Servicing Certificate provides 40 credits towards the diploma.

Program Outcomes Graduates will be able to:

1. Demonstrate mathematical skills to solve problems in electrical, refrigeration, and air conditioning systems.
2. Apply troubleshooting skills to diagnose and repair air flow, electrical, heating systems, and refrigeration systems.
3. Apply theory and knowledge learned to design and fabricate projects dealing with HVAC.
4. Sit for the EPA Certification.

PROGRAM INFO

This program prepares graduates for careers as technicians in the air conditioning industry.

Minimum credits: 73

Length: 5 semesters (2 years), including summer, if suggested full-time course sequence is followed

Industry Certifications: Students will have the opportunity to sit for the OSHA 10 and EPA certifications.

AIR CONDITIONING & REFRIGERATION - Diploma

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
AIR 117	Metal Layout I	1	6	7	3
AIR 134	Circuits I	2	3	5	3
AIR 154	Heating Systems I	2	2	4	3
AIR 161	Heating, AC & Refrigeration Calculations I	3	0	3	3
ENG 131	Technical Report Writing I	3	0	3	3
SDV 100	Student Success Skills	1	0	1	1
SAF 130	Industrial Safety: OSHA 10	1	0	1	1
	Total	**13**	**11**	**24**	**17**
Second Semester					
AIR 118	Metal Layout II	1	4	5	3
AIR 121	Refrigeration I	2	2	4	3
AIR 135	Circuits II	2	3	5	3
AIR 155	Heating Systems II	2	2	4	3
AIR 165	A.C. Systems I	2	3	5	3
	Total	**9**	**14**	**24**	**15**
Third Semester					
AIR 122	Refrigeration II	2	2	4	3
AIR 136	Circuits III	2	3	5	3
AIR 156	Heating Systems III	2	2	4	3
AIR 254	A.C. Systems IV	2	3	5	3
	Total	**9**	**10**	**18**	**12**
Fourth Semester					
AIR 137	Electronic Survey	1	3	4	2
AIR 167	A.C. Systems III	3	3	6	4
AIR 231	Circuits IV	3	3	6	4
ITE 116	Survey of Computer Software Applns.	2	0	2	2
AIR 273	Refrigeration III	2	3	5	3
	Total	**11**	**12**	**23**	**15**
Fifth Semester					
ECO 100	Economics	3	0	3	3
AIR 276	EPA Certification	1	0	1	1
AIR 232	Circuits V	2	3	5	3
AIR 255	A.C. Systems V	2	3	5	3
AIR 295	Green Technology	1	1	2	1
HUM 165	Controversial Issues	3	0	3	3
	Total	**12**	**8**	**20**	**14**

Automotive

AUTOMOTIVE ANALYSIS & REPAIR - DIPLOMA

Students will learn the theory of repair & perform projects in the areas of automotive powertrain, including engines, transmissions, final drive systems, fuel & electrical systems, suspension repair & alignment, climate control systems, & computerized engine control diagnostics & repair. Students work in a well-equipped 10-bay shop with industry-standard equipment, including vehicle lifts, wheel alignment machines, powertrain hoists & jacks, parts & assembly cleaning equipment, electrical theory simulators & testing equipment, air conditioning refrigerant machines, computer controlled diagnostic testing & repair equipment for all types of electrical, safety & fuel control systems.

The program is accredited by the National Automotive Training Education Foundation (NATEF) at the Master Level.

Admission Requirements: Students should have an interest in automobiles and a good mechanical aptitude to be successful. Applicants should also be aware of the following:

1. A basic automotive tool kit is required. Instructor will provide a tool list. Estimated cost: $300-600.
2. Books and online access cost an estimated $500.
3. A clean, valid driver's license is normally required for careers in the automotive repair industry.

Program Outcomes Graduates will be able to:

1. Use an automotive scan tool and a multi-meter to retrieve information and diagnose a modern automobile.
2. Work in teams to complete disassembly & reassembly of an automatic transmission.
3. Use precision measurement tools such as an outside micrometer & a torque wrench.
4. Complete a four-wheel brake job on a modern auto.
5. Successfully complete a Shop Safety Course.

PROGRAM INFO

Minimum credits: 72

Length: 5 semesters

Industry Certifications: ASE/NATEF, Mobile Air Conditioning, Virginia Vehicle Safety Inspection License, Snap-On Meter Training, S/P2 Safety Training.

Career opportunities: Automotive Technician: **$37,900- 40,000** Job growth: **5-8%** from 2014-2024

Automotive Machinist: **$43,600** Job growth: **10%**

Farm Equipment Mechanic & Service Tech: **$37,050** Job growth: **2.5%**

Parts salesperson: **$30,500** Job growth: **7%**

Median salaries nationwide as of 2015. BLS.gov

Division: Workforce Services

Contact: 434.797.8440

AUTOMOTIVE ANALYSIS & REPAIR - DIPLOMA

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Fall Semester					
AUT 111	Automotive Engines I	2	3	5	3
AUT 112	Automotive Engines II	2	3	5	3
AUT 127	Auto Lubrication & Cooling Systems	2	3	5	3
AUT 130	Intro to Auto Mechanics	2	3	5	3
ENG 131	Technical Report Writing I	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**12**	**12**	**24**	**16**
Second Semester					
AUT 121	Automotive Fuel Systems	3	3	6	4
AUT 241	Automotive Electricity I	3	3	6	4
AUT 242	Automotive Electricity II	3	3	6	4
AUT 265	Automotive Braking Systems	2	3	5	3
	Total	**11**	**12**	**23**	**15**
Third Semester (Summer)					
AUT 230	Intro to Alternative Fuels	3	0	3	3
AUT 236	Auto Climate Control	3	3	6	4
AUT 266	Auto Alignment, Suspension & Steering	3	3	6	4
	Total	**9**	**6**	**15**	**11**
Fourth Semester					
AUT 122	Auto Fuel Systems II	3	3	6	4
AUT 136	Auto Vehicle Inspection	1	2	3	2
AUT 211	Automotive Systems III	3	3	6	4
AUT 237	Automotive Accessories	2	0	2	2
HUM 165	Controversial Issues	3	0	3	3
	Total	**13**	**8**	**21**	**15**
Fifth Semester					
AUT 178	Automotive Final Drive and Manual Transmission Systems	3	3	6	4
AUT 212	Automotive Systems IV	3	3	6	4
AUT 251	Automatic Transmissions I	2	6	8	4
ECO 100	Elementary Economics	3	0	3	3
	Total	**11**	**12**	**23**	**15**

AUTOMOTIVE ANALYSIS & REPAIR - LIGHT DIESEL MECHANICS - Career Studies Certificate

This program prepares students to apply technical knowledge and skills to diagnose, adjust, repair, or overhaul light duty diesel vehicles under one-ton classification. Topics include instruction in electrical systems, diesel-electric drive, engine performance, engine repair, emission systems, and all types of diesel engines related to the light-duty diesel vehicle.

Admission Requirements: Students must have completed DCC's Automotive Analysis & Repair diploma program or have equivalent relevant experience. A clean, valid driver's license is normally required for careers in the automotive repair industry.

Industry Certifications: Students will have the opportunity to earn NATEF ASE certifications in Automobile & Light Truck.

Program Outcomes Graduates will be able to:

1. Demonstrate knowledge, understanding and demonstration of automotive light diesel mechanics theory, skills and applications.
2. Properly demonstrate the use of hand and power tools in the automotive light diesel mechanics program.
3. Practice fundamental automotive skills in the upkeep of light diesel vehicles.
4. Know and practice skills in the automotive light diesel mechanics occupation to obtain industry credentials.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
DSL 121	Diesel Engines I	2	6	8	5
DSL 133	Diesel Fuel & Injection Systems	2	6	8	5
DSL 135	Intro to Diesel Technology	2	2	4	3
DSL 122	Diesel Engines II	2	6	8	5
DSL 150	Mobile Hydraulics & Pneumatics	2	2	4	3
DSL 143	Diesel Truck Electrical Systems	2	4	6	4
	Total	**12**	**26**	**38**	**25**

Beverage, Food, & Hospitality

BREWING, DISTILLATION, & FERMENTATION - Career Studies Certificate

PROGRAM INFO

Minimum credits: 16

Length: 2 semesters part-time

Career opportunities: Graduates may find employment in distilling and brewing operations, or by starting their own craft brewing business when this program is combined with DCC's Small Business Management CSC or the Venture Creation & Management A.A.S. degree. Salaries and job growth for business owners will vary.

Division: Arts, Sciences, & Business

Contact: 434.797.8474

Learn from local craft brewers while earning college credit! Classes are offered part-time to accommodate working professionals. The craft brewing industry is growing locally and across the U.S.

- Sales of domestic craft beer **grew 6.2% in 2016.**
- The craft beer industry contributed **$55.7 billion** to the U.S. economy in 2014 and **more than 424,000 jobs**.
- In 2014, **more than 10 million people** toured small craft breweries in the U.S. *(Source: The Brewers Association)*

Admission Requirements In addition to general college admission requirements, students must:

- Be at least 21 years old by the start of classes.
- Be able to work in a physically demanding environment, including but not limited to standing in a hot and wet work area for extended lengths of time; climbing stairs; repeatedly lifting equipment and product weighing up to 55 lbs., and safely maneuvering by hand equipment that weighs up to 170 lbs.
- Brewing and distillation facilities may require a criminal background check and/or drug testing prior to employment.

Program Outcomes Graduates will be able to:

1. Describe & implement proper sanitation, handling, & safety procedures with fermentation products & facilities.
2. Create a craft beverage using their knowledge of microbiology, recipe development, sensory fundamentals, lab techniques, & equipment operations.
3. Demonstrate an understanding of the processes associated with filtration, carbonation, & finishing, & their impact on the end product.

Course Sequence
First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
HRI 195	Topics in: Sanitation & Safety in Brewing, Distillation, & Fermentation	1	2	3	2
HRI 195	Topics in: Applied Craft Beverage Microbiology	2	3	5	4
HRI 195	Topics in: Beverage Technology & Calculations	3	1	4	2
	Total	**6**	**6**	**12**	**8**

BREWING, DISTILLATION, & FERMENTATION - CSC

Second Semester

			Lecture Hrs	Lab Hours	Hrs in Class	Credits
HRI 195	Topics in: Craft Beer Brewing		1	3	4	2
HRI 195	Topics in: Sensory Evaluation		1	3	4	3
HRI 195	Topics in: Filtration and Finishing		0	4	4	3
		Total	**2**	**10**	**12**	**8**

CULINARY ARTS - Career Studies Certificate

This program provides a foundation in food production to prepare graduates for ownership or employment in a restaurant, bakery, hospital, or other food preparation-related businesses.

Program Outcomes Graduates will be able to:

1. Apply fundamental cooking techniques to a wide variety of fruits, vegetables, meats, and seafood;
2. Identify the fundamentals of flavor profiles and apply them to the creation of classic and modern cuisines;
3. Demonstrate *ServSafe* standards for proper food safety and sanitation procedures and personal hygiene;
4. Apply sustainability principles relating to energy conservation and restaurant operations; and
5. Demonstrate basic measuring, conversion, food costing and yield management practices.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
HRI 106	Principles of Culinary Arts I	2	3	5	3
HRI 119	Applied Nutrition for Food Service	3	0	3	3
HRI 128	Principles of Baking	2	3	5	3
HRI 158	Sanitation and Safety	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**11**	**6**	**17**	**13**

Second Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
HRI 190	Coordinated Internship	0	2	2	2
HRI 218	Fruit, Vegetable, & Starch Preparation	2	3	5	3
HRI 219	Stock, Soup & Sauce Preparation	2	3	5	3
HRI 220	Meat, Seafood, & Poultry Preparation	2	3	5	3
HRI 298	Seminar and Project	3	0	3	3
	Total	**9**	**11**	**20**	**14**

PROGRAM INFO

Minimum credits: 27

Length: 2 semesters

Industry Certifications: Serv-Safe

Career opportunities:
Food Service Managers:
$28,780-50,820
Job growth: **5%**
from 2014 to 2024

Line Supervisors:
$21,740-29,720
Job growth: **5%**

Chefs/Head Cooks:
$**23,150-41,500**
Job growth: **9%**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Arts, Sciences, & Business

Contact: 434.797.8474

FOOD SERVICE MANAGEMENT TRAINEE-
Career Studies Certificate

This program provides a foundation for kitchen line employees with the concepts to cross-train for a career in hotel and/or restaurant management. Course topics include food service management; food and beverage cost; recipe and menu management; catering; hospitality; and an internship.

Industry Certifications: Serv-Safe

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
HRI 119/	Applied Nutrition for Food Service **OR**				
HRI 257	Catering Management	3	0	3	3
HRI 215	Food Purchasing	3	0	3	3
HRI 241	Supervision of Hospitality Industry	3	0	3	3
SDV 100	College Success Skills	1	0	1	1
	Total	**10**	**0**	**10**	**10**
Second Semester					
HRI 224	Recipe & Menu Management	3	0	3	3
HRI 251	Food & Beverage Cost Control I	3	0	3	3
HRI 290	Internship in Hospitality Management	0	3	3	3
	Total	**6**	**3**	**9**	**9**

HOSPITALITY & FOOD SERVICE - Career Studies Certificate

This program provides training needed for employment in a variety of tourism, lodging, food, and guest services careers.

Industry Certifications: ServSafe

Program Outcomes
Graduates will demonstrate understanding and skills in:

1. Hotel/restaurant organization and management.
2. Fundamentals of quality for the industry;
3. Food safety/sanitation; and
4. Workplace ethics.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
SDV 100	College Success Skills	1	0	1	1
HRI 101	Hotel/Restaurant Organization and Management	3	0	3	3
HRI 140	Fundamentals of Quality for the Hospitality Industry	3	0	3	3
HRI 154	Principles of Hospitality Management	3	0	3	3
HRI 158	Sanitation & Safety	3	0	3	3
MKT 170	Customer Service	1	0	1	1
HRI 190	Coordinated Internship	2	0	2	2
	Total	**16**	**0**	**16**	**16**

BUILDING CONSTRUCTION TRADES -
Career Studies Certificate

Program Outcomes Graduates will be able to:

1. Understand construction terminology within a specific trade.
2. Practice construction safety.
3. Demonstrate the proper use of hand and power tools.
4. Interpret construction drawings within a specific trade.
5. Demonstrate the correct use and understanding of measurement tools.

Course Sequence

All students must complete the three required core courses listed below in addition to the courses in their chosen trade:

Required Core Courses

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
MTH 111	Basic Technical Mathematics	3	0	3	3
BLD 111	Blueprint Reading	2	2	4	3
SAF 120	Safety & Health Standard Regulations & Codes	3	0	3	3

Course Sequences based on specialization area:

Carpentry

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
BLD 131	Carpentry Framing I	3	4	7	5
BLD 132	Carpentry Framing II	3	4	7	5
BLD 133	Carpentry Framing III	3	4	7	5
BLD 134	Carpentry Framing IV	3	4	7	5
	Total	**20**	**18**	**38**	**29**

Electrical

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ELE 110	Home Electric Power	2	2	4	3
ELE 133	Practical Electricity I	2	2	4	3
ELE 134	Practical Electricity II	2	2	4	3
ELE 131	National Electric Code	3	0	3	3
ELE 216	Industrial Electricity	2	2	4	3
ELE 156	Electrical Control System	2	2	4	3
	Total	**21**	**12**	**33**	**27**

HVAC

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
AIR 121	A/C & Refrigeration I	2	2	4	3
AIR 122	A/C & Refrigeration II	2	2	4	3
AIR 123	A/C & Refrigeration III	2	2	4	3
AIR 154	Heating System	2	2	4	3
AIR 158	Mechanical Codes	2	0	2	2
AIR 117	Metal Layout	1	6	7	3
	Total	**19**	**16**	**35**	**26**

BUILDING CONSTRUCTION TRADES - CSC

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
Plumbing					
BLD 20	Introduction to Plumbing	1	2	3	2
BLD 295	Analysis/Troubleshooting in Plumbing	2	2	4	3
BLD 195	Plumbing I, II, III, IV, & V (3 credits each)	15	0	15	15
	Total	**26**	**6**	**32**	**29**
Masonry					
BLD 126	Basic Carpentry Principles	2	2	4	3
BLD 146	Form Work & Concrete Theory	2	2	4	3
BLD 147	Principles of Block and Bricklaying	1	2	3	2
BLD 181	Intro to Concrete Construction	2	2	4	3
BLD 295	Reinforcing Concrete & Patented Forms	3	0	3	3
	Total	**18**	**10**	**28**	**24**

COSMETOLOGY - Career Studies Certificate

This program prepares students for entry-level work in the personal services industry. Graduates are prepared to sit for the state board exam in cosmetology, after which they may work as a hairstylist, beautician, or nail technician in a salon setting, or start their own businesses.

Program Outcomes Graduates will be able to:

1. Demonstrate knowledge of hair & skin care.
2. Understand manicuring and pedicuring.
3. Be prepared to gain a cosmetology license.
4. Understand salon management.

Course Sequence

First Semester

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
COS 081	Cosmetology Theory I	4	0	4	4
COS 190	Coordinated Internship	4	10	14	4
COS 196	On-Site Training	4	20	24	4
	Total	**12**	**30**	**42**	**12**
Second Semester					
COS 082	Cosmetology Theory II	5	0	5	5
COS 290	Coordinated Internship	4	15	19	4
COS 198	Seminar and Project	3	10	13	3
	Total	**12**	**25**	**37**	**12**
Third/Summer Session					
COS 296	On-Site Training	5	15	20	5

PROGRAM INFO

Minimum credits: 29

Length: 3 semesters, including a summer term

Career opportunities:
Hairstylist/Cosmetologist:
$23,710 - 36,060
Job growth:
10% from 2014 to 2024

Manicurist/Pedicurist:
$22,980 - 27,110

Skincare Specialist:
$30,090

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8430

ELECTRICAL/ELECTRONICS

Programs in this area range from 2 semesters to 2 years in length. Graduates will be prepared for a variety of careers in the electrical/electronics field, ranging from entry-level electrician's helper positions to electrical/electronics engineering technicians working in an industrial setting or for a utility company. The short-term programs (career studies certificates and certificates) feed directly into the diploma programs, meaning that graduates of the EEE Tech Diploma and EEE Servicing Diploma will earn multiple credentials at the same time that may increase employment prospects.
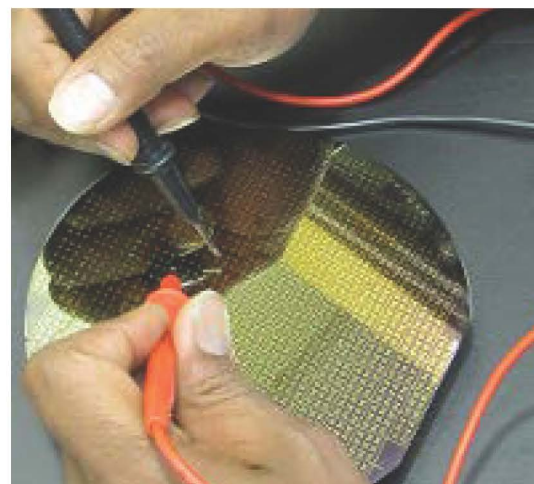
ELECTRICAL CONCEPTS - Career Studies Certificate

PROGRAM INFO

Minimum credits: 19

Length: 2 semesters

Career opportunities:
Electrician's Helper: **$30,980**

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8430

Program provides basic skills needed for a career change, upgrading occupational skills and/or to provide entry-level skills in the electrical field. Additional career opportunities exist in electrical equipment sales and installation.

Program Coordination: This career studies certificate provides 19 credits towards the Industrial Electrical Principles certificate, the Electrical/Electronics Engineering Technology diploma, and the Electrical/Electronics Equipment Servicing diploma.

Program Outcomes Graduates will be able to:

1. Understand the fundamentals, devices and components in both DC and AC circuits.
2. Apply knowledge of electrical principles in a laboratory setting with an emphasis on measurement and evaluation.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ELE 152	E/E Calculations I	3	0	3	3
ELE 113	Basic Electricity I	3	0	3	3
ELE 123	Electrical Applications I	1	2	3	2
ELE 153	E/E Calculations II	3	0	3	3
ELE 114	Basic Electricity II	3	0	3	3
ELE 124	Electrical Applications II	1	2	3	2
ELE	Approved Tech. Elective				3
	Total	**14-17**	**4-7**	**21-25**	**19**

ELECTRONIC CONCEPTS - CSC

Program Coordination: This career studies certificate provides 19 credits towards the Industrial Electrical Principles certificate, the Electrical/Electronics Engineering Technology diploma, and the Electrical/Electronics Equipment Servicing diploma.

Program Outcomes Graduates will demonstrate:

1. Knowledge of electronic devices as applied to basic circuits and systems.
2. Applied knowledge of electronics and circuits in a shop experience with an emphasis on measurements.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ETR 141	Electronics I	3	0	3	3
ETR 123	Electronic Applications I	1	2	3	2
ETR 142	Electronics II	3	0	3	3
ETR 124	Electronic Applications II	1	2	3	2
ELE/ETR	3 - Approved Tech. Electives (3 credits each)				9
Total		**8-11**	**4-7**	**12-18**	**19**

INDUSTRIAL ELECTRICAL & INDUSTRIAL ELECTRONICS PRINCIPLES - Certificates

Program Coordination: These two certificate programs are generally not taken alone, but are usually pursued concurrently with either the EEE Technology Diploma or EEE Servicing Diploma, with several overlapping courses and requirements.

Program Outcomes Graduates will be able to:

1. Design, draw, construct, analyze, & troubleshoot basic series & parallel AC & DC electrical circuits, including all typical circuit elements, & explain the function of each.
2. Design, draw, construct, analyze, & troubleshoot basic analog electronic circuits.
3. Identify, select, set up & operate basic electronic test and measuring equipment including ammeters, ohmmeters, voltmeters, clamp-on ammeters, multi-meters, power supplies, function generators, & oscilloscopes & explain the application of each.
4. Demonstrate an understanding of commercial 3-phase electric power generation.

INDUSTRIAL ELECTRICAL & ELECTRONICS PRINCIPLES - Certificates

Course Sequences

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
INDUSTRIAL ELECTRICAL PRINCIPLES					
First Semester					
SDV 100	College Success Skills	1	0	1	1
ENG 131	Technical Report Writing	3	0	3	3
ELE 113	Basic Electricity I	3	0	3	3
ELE 123	Electrical Applications I	1	2	3	2
ELE 152	Calculations I	3	0	3	3
ELE/ETR	Approved Elective				3
	Total	11-14	2-4	13-18	15
Second Semester					
ELE 114	Basic Electricity II	3	0	3	3
ELE 124	Electrical Applications II	1	2	3	2
ELE 153	Calculations II	3	0	3	3
ELE 190	Coordinated Internship				3
ELE/ETR	Approved Elective				3
	Total	7	2	9	14
Third Semester					
ELE 156	Electrical Control Systems	2	2	4	3
ECO 100	Elementary Economics	3	0	3	3
ELE/ETR	Approved Elective				3
ITE 116	Survey of Computer Software Applications	2	0	2	2
ELE 217	Power Utilities	1	2	3	2
	Total	8	4	12	13

Industrial Electronics Principles course sequence, next page...

INDUSTRIAL ELECTRICAL & ELECTRONICS PRINCIPLES - Certificates

Course Sequences

INDUSTRIAL ELECTRONICS PRINCIPLES

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First Semester					
SDV 100	College Success Skills	1	0	1	1
ETR 141	Electronics I	3	0	3	3
ETR 190	Coordinated Internship				2-4
ENG 131	Technical Report Writing	3	0	3	3
ELE 152	E/E Calculations I	3	0	3	3
	Total	**10**	**0**	**10**	**10-12**
Second Semester					
ETR 142	Electronics II	3	0	3	3
ELE/ETR	Approved Elective (4-6)	4-6	0	4-6	4-6
ETR 190	Coordinated Internship (2-4)	-			2-4
ELE 153	E/E Calculations II	3	0	3	3
ETR 151	Electronic Circuits & Troubleshooting I	2	0	2	2
	Total	**15-16**	**0**	**14-18**	**14-18**
Third Semester					
ETR 136	Industrial Electronics Systems	2	3	5	3
ETR 190	Coordinated Internship	3	0	3	3
ETR 152	Electronic Circuits & Troubleshooting II	2	0	2	2
ECO 100	Elementary Economics	3	0	3	3
ELE/ETR	Approved Elective	3	0	3	3
	Total	**13**	**3**	**17**	**14**

ELECTRICAL/ELECTRONICS EQUIPMENT SERVICING - DIPLOMA

The diploma's first year includes core courses that provide a general foundation in electrical/electronic concepts, devices, networks and fundamental circuits and systems. Technical electives reinforce career objectives and must be approved by the student's faculty advisor.

Program Coordination: Graduates of the Electrical/Electronics Equipment Servicing (EEE Servicing) diploma program will simultaneously earn the career studies certificates in Electrical and Electronic Concepts and the certificates in Industrial Electric and Industrial Electronic Principles. Much of the coursework overlaps with the the Electrical Electronics Engineering Technology (EEE Tech) diploma program; EEE Tech students may choose to complete the additional 20 credits and coordinated internship to earn the EEE Servicing diploma as well.

EEE SERVICING - DIPLOMA

PROGRAM INFO

This is a specialized, concentrated work-study program designed for the full- or part-time student, with maximum flexibility for the worker. Those already employed in the field may receive advanced standing credit for the internship requirement.

Minimum credits: 72

Length: 6 semesters (2 years), including two summers.

Career opportunities:
Electrician: **$55,590**

Electrical/Electronics Installer and Repairer: **$55,160**

Electrical/Electronics Repairers, Power House, Substation, & Relay Technicians: **$72,450**
Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce

Contact: 434.797.8430

Program Outcomes Graduates will be able to:

1. Design, draw, construct, analyze, & troubleshoot basic series and parallel AC and DC electrical circuits, including all typical circuit elements, & explain the function of each.
2. Design, draw, construct, analyze, & troubleshoot basic analog & digital electronic circuits.
3. Understand electronic digital & analog stages, devices, systems & equipment.
4. Identify, select, set up & operate basic electronic test and measuring equipment including ammeters, ohmmeters, voltmeters, clamp-on ammeters, multi-meters, power supplies, function generators, RF generators, logic probes, curve tracers and oscilloscopes, & explain the application of each.
5. Connect, configure, install, program and modify Programmable Logic Controllers.
6. Build, configure, analyze, maintain, upgrade & troubleshoot personal computers.
7. Plan, construct, repair, operate & test custom-designed basic robotic devices.
8. Program microcontrollers, explain the function of each command, & demonstrate understanding of program flow.
9. Construct & analyze the function of microcontroller interface circuits.
10. Connect, configure, install & commission process control devices and systems.
11. Identify, explain, & utilize safety measures & equipment in the lab & workplace required by NFPA, NEC and OSHA.
12. Explain the characteristics & theories of operation of DC & AC single & multi-phase electric motors & motor control devices and circuits.
13. Identify, select, and properly use tools used in the electrical/electronics industry.
14. Demonstrate an understanding of commercial 3-phase electric power generation, transmission, distribution, and control, including 3-phase power generation, delta and wye connections, transformers and all associated calculations.
15. Demonstrate an understanding of alternative energy sources and how they relate to the generation, distribution, and control of residential, commercial, and industrial power.
16. Demonstrate a basic familiarity with fluid mechanics concepts and equipment.
17. Identify, select, and install residential, commercial and industrial electrical devices and equipment.
18. Demonstrate experience in the field of Electrical Electronic Equipment Servicing or equivalent coursework.

EEE SERVICING - DIPLOMA

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
First semester (Fall)					
SDV 100	College Success Skills	1	0	1	1
ELE 113	Basic Electricity I	3	0	3	3
ELE 123	Electrical Applications I	1	2	3	2
ELE 152	Calculations I	3	0	3	3
ENG 131	Technical Report Writing I	3	0	3	3
	Total	**11**	**2**	**13**	**12**
Second Semester (Spring)					
ELE 114	Basic Electricity II	3	0	3	3
ELE 124	Electrical Applications II	1	2	3	2
ETR 141	Electronics I	3	0	3	3
ETR 123	Electronics Applications I	1	2	3	2
ETR 151	Electronic Circuits & Troubleshooting	2	0	2	2
ECO 100	Elementary Economics	3	0	3	3
	Total	**13**	**4**	**17**	**15**
Third Semester (Summer)					
ELE 156	Electrical Control Systems	2	2	4	3
ETR 142	Electronics II	3	0	3	3
ETR 152	Electronic Circuits & Troubleshooting II	2	0	2	2
ETR 124	Electronics Applications II	1	2	3	2
	Total	**8**	**4**	**12**	**10**
Fourth Semester (Fall)					
ELE 216	Industrial Electricity	2	3	5	3
ETR 282	Digital Systems I	2	3	5	3
ELE 131	National Electric Code I	3	0	3	3
ETR 149	PC Upgrade and Repair	3	0	3	3
	Total	**10**	**6**	**16**	**12**
Fifth Semester (Spring)					
ELE 239	Programmable Logic Controllers	2	3	5	3
ELE 132	National Electric Code II	3	0	3	3
ELE 190	Coordinated Internship	3	0	3	3
HUM 165	Controversial Issues	3	0	3	3
ETR 295	Topics in E/E (Schematic Reading)	1	0	1	1
	Total	**12**	**3**	**15**	**13**
Sixth Semester (Summer)					
ETR 136	Industrial Electronic Systems	2	3	5	3
ELE 240	Advanced PLCs	2	3	5	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
PSY 126	Psychology for Business & Industry	3	0	3	3
	Total	**9**	**6**	**15**	**11**

ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY - DIPLOMA

Program Coordination: Typically, Electrical Electronics Engineering Technology Diploma (EEE Tech) students concurrently enroll in the Industrial Electrical Principles & Industrial Electronics Principles certificate programs, graduating with the diploma and two certificates. Graduates of the EEE Tech diploma program may take additional coursework (20 credits) and the coordinated internship to satisfy the requirements of the Electrical Electronics Equipment Servicing (EEE Servicing) diploma program.

Program Outcomes Graduates will be able to:

1. Design, draw, construct, analyze, and troubleshoot basic series and parallel AC and DC electrical circuits, including all typical circuit elements, e.g. switches, fuses, resistors, lamps, and other loads, and explain the function of each component.
2. Design, draw, construct, analyze, and troubleshoot basic analog and digital electronic circuits.
3. Demonstrate understanding of digital and analog RF communications techniques, stages, devices, systems and equipment.
4. Identify, select, set up, and operate basic electronic test and measuring equipment, including ammeters, ohmmeters, voltmeters, clamp-on ammeters, multimeters, power supplies, function generators, RF generators, logic probes, curve tracers, and oscilloscopes, and explain the application of each.
5. Connect, configure, install, program and modify Programmable Logic Controllers.
6. Build, configure, analyze, maintain, upgrade and troubleshoot personal computers.
7. Install, solder, inspect, and test circuit components, including conventional and surface-mounted devices.
8. Plan, construct, repair, operate and test custom-designed basic robotic devices.
9. Program microcontrollers, explain the function of each command, and demonstrate understanding of program flow.
10. Construct and analyze the function of microcontroller interface circuits.
11. Connect, configure, install and commission process control devices and systems.
12. Identify, explain, and utilize safety measures and equipment in the lab and workplace required by NFPA, NEC and OSHA.
13. Explain the characteristics and theories of operation of DC & AC single and multi-phase electric motors and motor control devices and circuits.
14. Identify, select, and properly use tools used in the electrical/electronics industry.

Program outcomes continued on next page...

ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY - DIPLOMA

Program outcomes continued from previous page...

15. Research and learn unfamiliar devices, circuits, and systems, and explain these to others unfamiliar with them using oral and written presentations.

16. Demonstrate an understanding of commercial 3-phase electric power generation, transmission, distribution, and control, including 3-phase power generation, delta and wye connections, transformers and all associated calculations.

17. Demonstrate an understanding of alternative energy sources and how they relate to the generation, distribution, and control of residential, commercial, & industrial power.

18. Identify, select and install residential, commercial and industrial electrical devices and equipment.

Course Sequence

First semester (Fall)

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
SDV 100	College Success Skills	1	0	1	1
ELE 113	Basic Electricity I	3	0	3	3
ELE 123	Electrical Applications I	1	2	3	2
ELE 152	Calculations I	3	0	3	3
ITE 116	Survey of Computer Software Applications	2	0	2	2
	Health/Physical Education Elective	0	1-2	1-2	1
	Total	**10**	**3-4**	**13-14**	**12**

Second Semester (Spring)

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ELE 114	Basic Electricity II	3	0	3	3
ELE 124	Electrical Applications II	1	2	3	2
ETR 141	Electronics I	3	0	3	3
ETR 123	Electronics Applications I	1	2	3	2
ETR 151	Electronic Circuits Troubleshooting I	2	0	2	2
ELE 153	Calculations II	3	0	3	3
ENG 131	Technical Report Writing I	3	0	3	3
	Total	**16**	**4**	**20**	**18**

Third Semester (Summer)

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ELE 156	Electrical Control Systems	2	2	4	3
ETR 142	Electronics II	3	0	3	3
ETR 152	Electronic Circuits Troubleshooting II	2	0	2	2
ETR 124	Electronic Applications II	1	2	3	2
	Total	**8**	**4**	**12**	**10**

Fourth Semester (Fall)

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
ECO 100	Elementary Economics	3	0	3	3
ETR 255	Active Devices & Circuits	2	3	5	3
ELE 216	Industrial Electricity	2	3	5	3
ETR 282	Digital Systems I	2	3	5	3
ELE 158	Surface Mount Soldering	0	3	3	1
	Total	**9**	**12**	**21**	**13**

ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY - DIPLOMA

	Lecture Hrs	Lab Hours	Hrs in Class	Credits
Fifth Semester (Spring)				
ETR 243 Digital, Analog & Data Communications	3	3	6	4
CST 100 Principles of Public Speaking	3	0	3	3
ELE 239 Programmable Logic Controllers	2	3	5	3
ELE 217 Electric Power Utilities	1	2	3	2
ETR 295 Topics in E/E (Schematic Reading)	1	0	1	1
Total	**10**	**8**	**18**	**13**
Sixth Semester (Summer)				
ETR 136 Industrial Electronic Systems	2	3	5	3
ETR 241 Electronics Communications I	2	3	5	3
Total	**4**	**6**	**10**	**6**

Welding

DCC Welding programs range from career studies certificates designed for immediate employment after one or two semesters, to the two-year Welding Diploma that prepares graduates for advanced-level careers and higher wages. Those already employed as welders may seek certification to advance their skills and expand career options.

Career Requirements: Good motor skills are critical in welding careers. Employers look for good hand-eye coordination and vision, as well as strength and stamina. Welders must lift as much as 100 pounds and carry 50 pounds, and may spend hours stooping, kneeling, crawling, walking, and standing. In addition, welding may require work outside, in bad weather, or in confined spaces.

BASIC WELDING - CSC

Program Coordination: 5 courses/11 credits (excluding WEL 199 and 124) count towards the Welding Technology Certificate and Welding Diploma.

Program Outcomes Graduates of this program will:

1. Have the opportunity to earn AWS certification.
2. Demonstrate basic knowledge of welding terms and definitions.
3. Demonstrate basic Shielded Metal Arc skills.
4. Demonstrate layout and fabrication skills.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
SAF 130	Industrial Safety OSHA 10	1	0	1	1
WEL 120	Introduction to Welding	1	3	4	2
WEL 160	Gas Metal Arc Welding I	2	3	5	3
MTH 111	Basic Technical Mathematics	3	0	3	3
WEL 247	Welding Layout & Fabrication I	1	3	4	2
WEL 124	Shielded Metal Arc Welding (Advanced)	2	4	6	4
WEL 199	Supervised Study – AWS Certification	0	6	6	3
	Total	**8**	**23**	**31**	**18**

PROGRAM INFO

Minimum credits: 18

Length: 2 semesters

Career opportunities: Entry-level Welder's Helper: **$20,800-24,960** Job growth: **4%** from 2014 to 2024

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8430

WELDING - CSC

Program Coordination: 5 courses/12 credits (excluding MAC 161, WEL 135 & 136) count towards the Welding Technology Certificate and Welding Diploma.

Program Outcomes Graduates will be able to:

1. Understand and follow industry practices.
2. Successfully complete projects in a given time.
3. Weld in flat vertical and horizontal positions using basic welding processes.
4. Cut metals using the oxyfuel and plasma arc cutting process.

Course Sequence

		Lecture Hrs	Lab Hours	Hrs in Class	Credits
MAC 161	Machine Shop Practices I	2	3	5	3
WEL 145	Welding Metallurgy	2	3	5	3
WEL 120	Introduction to Welding	1	3	4	2
WEL 121	Arc Welding	1	3	4	2
WEL 122	Welding II (Electric Arc)	1	3	4	2
WEL 135	Inert Gas Welding	1	3	4	2
WEL 136	Welding III (Inert Gas)	1	3	4	2
WEL 150	Welding Drawing & Interpretation	3	0	3	3
	Total	**12**	**21**	**33**	**19**

PROGRAM INFO

Minimum credits: 19

Length: 1-2 semesters

Career opportunities: Entry-level Welder: **$31,200-37,400** Job growth: **4%** from 2014 to 2024

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce Services

Contact: 434.797.8430

ADVANCED WELDING - Career Studies Certificate

PROGRAM INFO

This CSC offers those with prior welding education and/or experience to advance their skills and expand career options. Enrollment eligibility will be determined by the instructor.

Minimum credits: 14

Length: 1-2 semesters

Career opportunities:
Advanced welder: **$43,980**
Job growth: **4%**
from 2014-2024

Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce

Contact: 434.797.8430

Program Coordination: 5 courses/11 credits (excluding WEL 235) count towards the Welding Diploma.

Program Outcomes Graduates will be able to:

1. Sit for 4 American Welding society welding certifications.
2. Understand the different types and benefits of welding certifications.
3. Better prepare welding coupons for more successful testing
4. Apply welding procedures and fabricating skills to building projects similar to industry.

Course Sequence		Lecture Hrs	Lab Hours	Hrs in Class	Credits
WEL 138	Pipe and Tube Welding (TIG)	1	3	4	2
WEL 233	Gas Metal Arc Welding (GMAW) - Aluminum	1	3	4	2
WEL 238	Gas Tungsten Arc Welding (GTAW) - Aluminum	1	3	4	2
WEL 237	Applied Welding Processes	1	4	5	3
WEL 244	Weld Testing and Codes	1	3	4	2
WEL 235	Advanced Gas Metal Arc Welding	1	6	7	3
	Total	**6**	**22**	**28**	**14**

WELDING TECHNOLOGY - Certificate

PROGRAM INFO

Minimum credits: 39

Length: 3 semesters

Career opportunities:
Welder: **$39,390-45,260**
Job growth: **6%**
from 2016 to 2026

Median salary nationwide as of 2016. Source: BLS.gov

Division: Workforce

Contact: 434.797.8430

Program Coordination: 5 courses of the Basic Welding and Welding CSCs feed into the certificate. Graduates of the certificate program may complete the Welding Diploma with an additional two semesters.

Program Outcomes Graduates will be able to:

1. Understand and follow industry safety practices.
2. Display manipulative skills with various welding processes to assure adequate weld integrity and appearance.
3. Weld in flat vertical and horizontal positions using the SMAW, GMAW, GTAW processes.
4. Cut metals using the oxyfuel and plasma arc cutting process.
5. Be capable of entering an entry-level welding position with possibility of advancement.

WELDING TECHNOLOGY - Certificate

Course Sequence

First semester		Lecture Hrs	Lab Hours	Hrs in Class	Credits
MTH 111	Basic Technical Mathematics	3	0	3	3
SAF 130	Industrial Safety: OSHA 10	1	0	1	1
SDV 100	College Success Skills	1	0	1	1
ITE 116	Survey of Computer Software Applications	2	0	2	2
WEL 120	Introduction to Welding	1	3	4	2
WEL 31	Introduction to GTAW (TIG)	2	3	5	3
WEL 32	Introduction to GMAW (MIG)	2	3	5	3
WEL 150	Welding Drawing & Interpretation	3	0	3	3
	Total	**15**	**9**	**24**	**18**
Second semester					
ENG 131	Technical Report Writing I	3	0	3	3
WEL 121	Arc Welding I	1	3	4	2
WEL 122	Welding II (Electric Arc)	1	3	4	2
WEL 160	GMAW I	2	3	5	3
WEL 164	GTAW TIG	2	3	5	3
	Total	**9**	**12**	**21**	**13**
Third semester					
WEL 126	Pipe Welding I	2	3	5	3
WEL 145	Welding Metallurgy	2	2	4	3
WEL 247	Welding Layout & Fabrication I	1	3	4	2
	Total	**5**	**8**	**13**	**8**

WELDING - Diploma

This program builds directly on the welding certificate, providing additional skills in advanced welding, robotic welding, NC plasma cutting, weld testing procedures and codes, and layout and fabrication skills intended to prepare graduates for better job opportunities and wages.

Program Coordination: Students will earn the Welding Technology Certificate after the first 3 semesters of the diploma program. Also, 5 courses each from the Basic Welding, Welding, and Advanced Welding CSCs feed into this program.

Industry Certifications: Students will have the opportunity to earn American Welding Society certifications in GTAW & GMAW mild steel, aluminum, & stainless steel; & forklift operations.

PROGRAM INFO

Minimum credits: 64

Length: 4 semesters (2 years) full-time

Career opportunities:
Advanced Welder: **$43,980**
Job growth: **4%**
from 2014 to 2024
Median salaries nationwide as of 2015. Source: BLS.gov

Division: Workforce

Contact: 434.797.8430

WELDING - Diploma

Program Outcomes Graduates will be able to:
1. Be prepared to obtain AWS certifications.
2. Program and complete welds using robotic welding processes.
3. Complete welding projects using available hydraulic metal shaping equipment.
4. Use industry purchasing & billing practices.
5. Prepare welded coupons and visual and destructive test for quality.
6. Examine basic welding codes and their effect on quality control.

Course Sequence

		Lecture	Lab	Hrs in Class	Credits
First semester					
MTH 111	Basic Technical Mathematics	3	0	3	3
SAF 130	Industrial Safety: OSHA 10	1	0	1	1
SDV 100	College Success Skills	1	0	1	1
ITE 116	Survey of Computer Software Applications	2	0	2	2
WEL 120	Introduction to Welding	1	3	4	2
WEL 31	Introduction to GTAW (TIG)	2	3	5	3
WEL 32	Introduction to GMAW (MIG)	2	3	5	3
WEL 150	Welding Drawing & Interpretation	3	0	3	3
	Total	**15**	**9**	**24**	**18**
Second semester					
ENG 131	Technical Report Writing I	3	0	3	3
WEL 121	Arc Welding I	1	3	4	2
WEL 122	Welding II (Electric Arc)	1	3	4	2
WEL 160	GMAW I	2	3	5	3
WEL 164	GTAW TIG	2	3	5	3
	Total	**9**	**12**	**21**	**13**
Third semester					
WEL 126	Pipe Welding I	2	3	5	3
WEL 145	Welding Metallurgy	2	2	4	3
WEL 247	Welding Layout & Fabrication I	1	3	4	2
	Total	**5**	**8**	**13**	**8**
Fourth Semester					
CAD 120	Intro to Graphic Representation	1	3	4	3
WEL 138	Pipe and Tube Welding (TIG)	1	3	4	2
WEL 241	Robotic Welding 1	1	3	4	2
WEL 233	Gas Metal Arc Welding- Aluminum	1	3	4	2
WEL 237	Applied Welding Processes	2	3	5	3
WEL 244	Weld Testing and Codes	1	3	4	2
	Total	**7**	**18**	**25**	**15**
Fifth Semester					
WEL 248	Welding Layout and Fabrication II	1	3	4	2
WEL 242	Robotic Welding II	1	3	4	2
WEL 238	Gas Tungsten Arc Welding - Aluminum	1	3	4	2
BUS 215	Purchasing and Materials	3	0	3	3
ECO 100	Elementary Economics	3	0	3	3
	Total	**9**	**9**	**18**	**12**

Course Descriptions

(ACC) ACCOUNTING

ACC 105 - Office Accounting (3 cr.) Presents practical accounting. Covers the accounting cycle—journals, ledgers, working papers, closing of books—payrolls, financial statements, accounting forms and practical procedures.

ACC 110 - Introduction to Computerized Accounting (2 cr.) Introduces the computer in solving accounting problems. Focuses on the operation of computers. Presents the accounting cycle and financial statement preparation in a computerized system and other applications for financial and managerial accounting.

ACC 111 - Accounting I (3 cr.) Presents fundamental accounting concepts and principles governing the accounting cycle, journals, ledgers, working papers, and preparation of financial statements for sole proprietorships. A laboratory co-requisite (ACC 113) may be required.

ACC 112 - Accounting II (3 cr.) Covers fundamental accounting concepts and principles governing the accounting cycle, journals, ledgers, working papers, and preparation of financial statements for sole proprietorships. A laboratory co-requisite (ACC 114) may be required.

ACC 211 - Principles of Accounting I (3 cr.) Introduces accounting principles with respect to financial reporting. Demonstrates how decision makers use accounting information for reporting purposes. Focuses on the preparation of accounting information and its use in the operation of organizations, as well as methods of analysis and interpretation of accounting information. A laboratory co-requisite (ACC 213) may be required.

ACC 212 - Principles of Accounting II (3 cr.) Introduces accounting principles with respect to cost and managerial accounting. Focuses on the application of accounting information with respect to product costing, as well as its use within the organization to provide direction and to judge performance. Pre-requisite: ACC 211; A laboratory co-requisite (ACC 214) may be required.

ACC 220 - Accounting for Small Business (3 cr.) Presents practical accounting procedures for small business operations including service occupations, retail stores, and manufacturing operations. Covers the accounting cycle, journals, ledgers, preparation of financial statements and payrolls, and checking account management. Includes regulations applicable to payroll, self-employment, social security and other taxes.

ACC 221 - Intermediate Accounting I (4 cr.) Covers accounting principles and theory, including a review of the accounting cycle and accounting for current assets, current liabilities and investments. Introduces various accounting approaches and demonstrates the effect of these approaches on the financial statement users. Prerequisite ACC 212 or equivalent.

ACC 222 - Intermediate Accounting II (4 cr.) Continues accounting principles and theory with emphasis on accounting for fixed assets, intangibles, corporate capital structure, long-term liabilities, and investments. Prerequisite ACC 221 or equivalent.

ACC 231 - Cost Accounting I (3 cr.) Studies cost accounting methods and reporting as applied to job order, process, and standard cost accounting systems. Includes cost control and other topics. Prerequisite ACC 212 or equivalent.

ACC 241 - Auditing I (3 cr.) Presents techniques of investigating, interpreting, and appraising accounting records and assertions. Studies internal control design and evaluation, evidence-gathering techniques and other topics. Prerequisite or co-requisite ACC 212 or equivalent.

ACC 261 - Principles of Federal Taxation I (3 cr.) Presents the study of federal taxation as it relates to individuals and related entities. Includes tax planning, compliance, and reporting.

ACC 262 - Principles of Federal Taxation II (3 cr.) Presents the study of federal taxation as it relates to partnerships, corporations, and other tax entities. Includes tax planning, compliance, and reporting.

(ADJ) ADMINISTRATION OF JUSTICE

ADJ 100 - Survey of Criminal Justice (3 cr.) Presents an overview of the United States criminal justice system; introduces the major system components —law enforcement, judiciary, and corrections.

ADJ 116 - Special Enforcement Topics (3 cr.) Considers contemporary issues, problems, and controversies in modern law enforcement.

ADJ 118 - Crisis Intervention and Critical Issues (3 cr.) Addresses basic problems involved in crisis intervention and current critical issues in law enforcement and the administration of justice; emphasizes practical approaches to discover and implement solutions.

ADJ 130 - Introduction to Criminal Law (3 cr.) Surveys the general principles of American criminal law, the elements of major crimes, and the basic steps of prosecution procedure.

ADJ 131 - Legal Evidence (3 cr.) Surveys the identification, degrees, and admissibility of evidence for criminal prosecution; examines pre-trial and trial procedures as they pertain to the rules of evidence.

ADJ 140 - Introduction to Corrections (3 cr.) Focuses on societal responses to the offender. Traces the evolution of practices based on philosophies of retribution, deterrence, and rehabilitation. Reviews contemporary correctional activities and their relationships to other aspects of the criminal justice system.

ADJ 145 - Corrections and the Community (3 cr.) Studies and evaluates the relationships and interactions between correctional organizations and free society. Focuses on the shared responsibility of the community and corrections agencies to develop effective programs for management and treatment of criminal offenders.

ADJ 150 - Introduction to Security Administration (3 cr.) Introduces the student to the field of private security -- its history, structures, functions, and personnel; surveys the principles and practices of security administration.

ADJ 161 - Introduction to Computer Crime (3 cr.) Provides a basic introduction to the nature of computer crimes, computer criminals, relevant law, investigative techniques, and emerging trends.

ADJ 171 - Forensic Science I (4 cr.) Introduces student to crime scene technology, procedures for sketching, diagramming and using casting materials. Surveys the concepts of forensic chemistry, fingerprint classification/identification and latent techniques, drug identification, hair and fiber evidence, death investigation techniques, thin-layer chromatographic methods, and arson materials examination.

ADJ 215 - Report Writing (3 cr.) Introduces the basic mechanics and procedures of report writing; emphasizes clear, concise and accurate writing of communications as they relate to law enforcement records, investigations, and research.

ADJ 227 - Constitutional Law for Justice Personnel (3 cr.) Surveys the basic guarantees of liberty described in the U. S. Constitution and the historical development of these restrictions on government power, primarily through U. S. Supreme Court decisions. Reviews rights of free speech, press, assembly, as well as criminal procedure guarantees (to counsel, jury trial, habeas corpus, etc.) as they apply to the activities of those in the criminal justice system.

ADJ 234 - Terrorism and Counter-Terrorism (3 cr.) Surveys the historical and current practices of terrorism that are national, transnational, or domestic in origin. Includes biological, chemical, nuclear, and cyber-terrorism. Teaches the identification and classification of terrorist organizations, violent political groups and issue-oriented militant movements. Examines investigative methods and procedures utilized in counter terrorist efforts domestically and internationally.

ADJ 236 - Principles of Criminal Investigation (3 cr.) Surveys the fundamentals of criminal investigation procedures and techniques. Examines crime scene search, collecting, handling and preserving of evidence.

ADJ 257 - Loss Prevention (3 cr.) Studies internal and external theft that affects all private and public operations, with focus on retail businesses. Examines and evaluates major loss prevention programs used by security operations, again with focus on retail security.

ADJ 296 - On-Site Training (1-5 cr.) Specializes in career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the college. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(AIR) Air Conditioning and Refrigeration

AIR 111-112 - Air Conditioning and Refrigeration Controls I-II (3 cr. each) Presents electron theory, magnetism, Ohm's Law, resistance, current flow, instruments for electrical measurement, A.C. motors, power distribution controls and their application. Part I and II of II.

AIR 117 - Metal Layout I (3 cr.) Presents measuring and gauging of sheet metal, types of metal, handling sheet metal, cutting and bending, layout. Teaches fundamentals of drafting, basic drawing instruments, lettering practices.

AIR 118 - Metal Layout II (3 cr.) Presents practice in the laying out of various sheet metal pieces on paper and transposing to metal.

AIR 121 - Air Conditioning and Refrigeration I (3 cr.) Studies refrigeration theory, characteristics of refrigerants, temperature, and pressure, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, metering devices. Presents charging and evaluation of systems and leak detection. Explores servicing the basic system. Explains use and care of oils and additives and troubleshooting of small commercial systems. Part I of II.

AIR 122 - Air Conditioning and Refrigeration II (3 cr.) Studies refrigeration theory, characteristics of refrigerants, temperature, and pressure, tools and equipment, soldering, brazing, refrigeration systems, system components, compressors, evaporators, metering devices. Presents charging and evaluation of systems and leak detection. Explores servicing the basic system. Explains use and care of oils and additives and troubleshooting of small commercial systems. Part II of II.

AIR 123-124 - Air Conditioning and Refrigeration III-IV (3 cr. each) Psychometric properties of air, heat load and gain calculation, heated and chilled water systems, duct, design, air distribution and air comfort requirements. Part I and II of II.

AIR 134 - Circuits and Controls I (3 cr.) Presents circuit diagrams for air conditioning units, reading and drawing of circuit diagrams, types of electrical controls. Includes analysis of air conditioning circuits, components, analysis and characteristics of circuits and controls, testing and servicing. Introduces electricity for air conditioning which includes circuit elements, direct current circuits and motors, single and three-phase circuits and motors, power distribution systems, and protective devices. Studies the electron and its behavior in passive and active circuits and components. Demonstrates electronic components and circuits as applied to air conditioning system. Part I of II.

AIR 135 - Circuits and Controls II (3 cr.) Presents circuit diagrams for air conditioning units, reading and drawing of circuit diagrams, types of electrical controls. Includes analysis

of air conditioning circuits, components, analysis and characteristics of circuits and controls, testing and servicing. Introduces electricity for air conditioning which includes circuit elements, direct current circuits and motors, single and three-phase circuits and motors, power distribution systems, and protective devices. Studies the electron and its behavior in passive and active circuits and components. Demonstrates electronic components and circuits as applied to air conditioning system. Part II of II.

AIR 136 - Circuits and Controls III (3 cr.) Introduces types of circuits and controls used in home, commercial and industrial air conditioning systems. Includes servicing and installation procedures for electrical unloading of compressors, single- and two-stage thermostats, and electrical regulation of fan speed for air volume control. Explains operational and safety control and how schematic and pictorial diagrams are used in these systems.

AIR 137 - Air Conditioning Electronics Survey (2 cr.) Studies electronics and its applications in the HVAC field. Covers computers, programmable controllers, and microprocessors in the HVAC industry. Prerequisite: AIR 134 or approval.

AIR 154 - Heating Systems I (3 cr.) Introduces types of fuels and their characteristics of combustion; types, components and characteristics of burners, and burner efficiency analyzers. Studies forced air heating systems including troubleshooting, preventive maintenance and servicing. Part I of II.

AIR 155 - Heating Systems II (3 cr.) Introduces types of fuels and their characteristics of combustion; types, components and characteristics of burners, and burner efficiency analyzers. Studies forced air heating systems including troubleshooting, preventive maintenance and servicing. Part II of II.

AIR 156 - Heating Systems III (3 cr.) Introduces types of boilers, sizing boilers, sizing radiators and convectors, designing piping systems for steam, hot water and vacuum systems. Includes testing and servicing wet heat systems.

AIR 158 - Mechanical Codes (2 cr.) Presents mechanical code requirements for installation, service, and inspection procedures. Uses the BOCA code in preparation for the master's card.

AIR 161 - Heating, Air Conditioning and Refrigeration Calculations I (3 cr.) Introduces fractions, decimals, sign of operations, equations, Ohm's Law, subtraction, multiplication and division of signed numbers. Teaches fundamentals of algebra, expression of stated problems in mathematical form, and solutions of equations.

AIR 165 - Air Conditioning Systems I (3 cr.) Introduces comfort survey, house construction, load calculations, types of distribution systems, and equipment selection. Introduces designing, layout, installing and adjusting of duct systems, job costs, and bidding of job. Part I of II.

AIR 166 - Air Conditioning Systems II (3 cr.) Introduces designing, layout, installation, and adjusting of duct systems, job costs, and bidding of job. Prerequisite: AIR 165 or approval. Part II of II.

AIR 167 - Air Conditioning Systems III (4 cr.) Introduces building survey, commercial load calculations, design conditions, solar heat gain, ventilation, internal heat gains, cooling, heating and humidification with water psychometrics distribution systems, ice and water for air conditioning

AIR 231 - Circuits and Controls IV (4 cr.) Applies controls and control circuits to air conditioning and refrigeration, including components, pilot devices and controls, and circuit diagrams.

AIR 232 - Circuits and Controls V (3 cr.) Presents application and design of wiring and schematic diagrams of commercial refrigeration systems. Teaches fundamentals of operation and applications of pneumatic controls including basic pneumatic control circuits.

AIR 254 - Air Conditioning Systems IV (3 cr.) Presents air balancing including taking duct pressure readings, finding register and grille CFM's, fans, laws and their applications. Explores instruments used for air balancing and proper procedures. Studies water- cooled and air-cooled condensers, refrigerant piping design, capacity control, air washers, water and steam piping arrangements.

AIR 255 - Air Conditioning Systems V (3 cr.) Studies water-cooled and air-cooled condensers, refrigerant piping design, capacity control, air washers, water and steam piping arrangements.

AIR 273 - Refrigeration III (3 cr.) Studies heat pumps, sizing, installation, and servicing, reciprocating screw and centrifugal chillers air conditioners.

AIR 276 - Refrigerant Usage EPA Certification (1 cr.) Prepares HVAC technicians for a refrigerant certification test mandated by the Environmental Protection Agency (EPA). Reviews refrigerant recovery, recycle, and reclamation procedures for service work associated with air conditioning and refrigeration. Examines environmental impact including ozone depletion resulting from refrigeration utilization. Students should have previous training and/or working knowledge of vapor-compression, common service equipment and procedures in HVAC/R.

AIR 295 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

(ARC) Architecture

ARC 121 - Architectural Drafting I (3 cr.) Introduces techniques of architectural drafting, including lettering, dimensioning, and symbols. Requires production of plans, sections, and elevations of a simple building. Studies use of common reference material and the organization of architectural working drawings. Requires development of a limited set of working drawings, including a site plan, related details, and pictorial drawings. Part I of II. Credit will not be

awarded for both ARC 121 and ARC 123.

(ART) Arts

ART 95 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

ART 101-102 - History and Appreciation of Art I-II (3 cr. each) Presents the history and interpretation of architecture, sculpture, and painting. Begins with prehistoric art and follows the development of western civilization to the present. Part I and II of II.

ART 105 - Art in World Culture (3 cr.) Approaches the visual arts conceptually rather than historically. Develops a non-technical understanding of spatial arts such as architecture and industrial design. Includes painting, sculpture, and graphics.

ART 116 - Design for the Web I (3 cr.) Introduces the basic elements of web page design: typography, imagery, and color, and examines how they are combined to create effective layouts. Teaches organization of materials, sketching and concept development, site planning and various methods of construction.

ART 121 - Drawing I (3 cr.) Develops basic drawing skills and understanding of visual language through studio instruction/lecture. Introduces concepts such as proportion, space, perspective, tone and composition as applied to still life, landscape and the figure. Uses drawing media such as pencil, charcoal, ink wash and color media. Includes field trips and gallery assignments as appropriate. Part I of II.

ART 122 - Drawing II (3 cr.) Develops basic drawing skills and understanding of visual language through studio instruction/lecture. Introduces concepts such as proportion, space, perspective, tone and composition as applied to still life, landscape and the figure. Uses drawing media such as pencil, charcoal, ink wash and color media. Includes field trips and gallery assignments as appropriate. Part II of II.

ART 130 - Introduction to Multimedia (4 cr.) Introduces the student to the basic components of multimedia: text, graphics, animation, sound, and video, and explores how they combine to create a multimedia product. Emphasizes the design aspects of multimedia projects and teaches the techniques required to develop a presentation. Computer literacy is suggested.

ART 131-132 - Fundamentals of Design I-II (3 cr. each) Explores the concepts of two- and three-dimensional design and color. May include field trips as required. Part I and II of II.

ART 153 - Ceramics I (3 cr.) Presents problems in the design and production of functional and non-functional ceramic works. Includes handbuilding the potter's wheel and clays and glazes.

ART 180 - Introduction to Computer Graphics (3 cr.) Provides a working introduction to computer-based electronic

technology used by visual artists and designers. Presents the basics of operating platforms and standard industry software. Introduces problems in which students can explore creative potential of the new electronic media environment.

ART 193 - Studies In (1-5 cr.) Covers new content not covered in existing courses in the discipline. Allows instructor to explore content and instructional methods to assess the course's viability as a permanent offering. Variable hours per week.

ART 201 - History of Art I (3 cr.) Studies the historical context of art of the ancient, medieval, Renaissance and modern worlds. Includes research project. Part I of II.

ART 202 - History of Art II (3 cr.) Studies the historical context of art of the ancient, medieval, Renaissance and modern worlds. Includes research project. Part II of II.

ART 208 - Video Techniques (4 cr.) Addresses the fundamentals of video technology and non-linear video editing. Focuses on the aesthetics of time-code editing using current industry software. Teaches a student to shoot and capture video and record and edit sound, and combine artwork, animation, video, and sound in the creation of professional-quality original video projects. Prerequisite is ART 130 Multimedia I.

ART 231 - Sculpture I (3 cr.) Introduces sculptural concepts and methods of production in traditional and contemporary media. Includes clay, plaster, wood, stone, metal, plastics and terra cotta. May include field trips. Prerequisite ART 131. Part I of II.

ART 241 - Painting I (3 cr.) Introduces abstract and representational painting in acrylic and/or oil with emphasis on color composition and value. Part I of II.

ART 242 - Painting II (3 cr.) Introduces abstract and representational painting in acrylic and/or oil with emphasis on color composition and value. Prerequisites ART 122 or divisional approval. Part II of II.

ART 243 - Watercolor I (3 cr.) Presents abstract and representational painting in watercolor with emphasis on design, color, composition, technique and value. Prerequisite ART 131, or divisional approval. Part I of II.

ART 244 - Watercolor II (3 cr.) Presents abstract and representational painting in watercolor with emphasis on design, color, composition, technique and value. Prerequisite ART 131, or divisional approval. Part II of II.

ART 248 - Painting III (3 cr.) Introduces advanced concepts and techniques of representational and abstract painting as applied to the head/figure, still-life, landscape and other subject matter including non-objective painting. Gives additional instruction in color, composition, modeling, space and perspective. Encourages individual approaches to painting. Prerequisite: ART 242 to ART 248.

ART 266 - Package Design (3 cr.) Studies the role of packaging in product identification, presentation, and production.

Investigates the unique challenges of typography, illustration and design from 2D to 3D forms. Researches business goals, marketing objectives, packaging structure, and display aesthetics. Applies the principles of design and foundations of typography in final production of products.

ART 281 - Illustration for Designers (3 cr.) Explores the professional field of illustration, along with the different ways of producing illustrations for editorial, commercial, and technical clients using traditional and digital techniques. Build skills and knowledge through discussions, projects and exercises for positioning as an illustrator.

ART 283 - Computer Graphics I (4 cr.) Utilizes microcomputers and software to produce computer graphics. Employs techniques learned to solve studio projects which reinforce instruction and are appropriate for portfolio use.

ART 287 - Portfolio and Resume Preparation (3 cr.) Focuses on portfolio preparation, resume writing, and job interviewing for students. Recommended for final semester program students. Requires instructor's approval.

ART 295 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

ART 298 - Seminar and Project (1-5 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(ASL) American Sign Language

ASL 101-102 - American Sign Language I-II (3 cr. each) Introduces the fundamentals of American Sign Language (ASL) used by the Deaf Community, including basic vocabulary, syntax, fingerspelling, and grammatical non-manual signals. Focuses on communicative competence. Develops gestural skills as a foundation for ASL enhancement. Introduces cultural knowledge and increases understanding of the Deaf Community. Part I and II of II.

ASL 115 - Fingerspelling and Number Use in ASL (2 cr.) Provides intensive practice in comprehension and production of fingerspelled words and numbers with emphasis on clarity and accuracy. Focuses on lexicalized fingerspelling and numeral incorporation as used by native users of American Sign Language. Prerequisite ASL 101 or permission of instructor.

ASL 125 - History & Culture of the Deaf Community I (3 cr.) Presents an overview of various aspects of Deaf Culture, including educational and legal issues.

ASL 201-202 - American Sign Language III-IV (3 cr. each) Develops vocabulary, conversational competence, and grammatical knowledge with a total immersion approach. Introduces increasingly complex grammatical aspects including those unique to ASL. Discusses culture and literature. Contact with the Deaf Community is encouraged to enhance linguistic and cultural knowledge. Part I and II of II.

(AST) Administrative Support Technology

AST 55 - Certification Preparation (1 cr.) Serves as a review of objectives for a specific Certification. Uses certification test preparation software, when available, in conjunction with a faculty resource person. May be repeated for credit.

AST 101 - Keyboarding I (2 cr.) Teaches the alpha/numeric keyboard with emphasis on correct techniques, speed, and accuracy. Teaches formatting of basic personal and business correspondence, reports and tabulation. A laboratory co-requisite (AST 103) may be required.

AST 102 - Keyboarding II (2 cr.) Develops keyboarding and document production skills with emphasis on preparation of specialized business documents. Continues skill-building for speed and accuracy. Prerequisite AST 101. A laboratory co-requisite (AST 104) may be required.

AST 103 - Keyboarding I Laboratory (1 cr.) Provides supplemental instruction in AST 101. Should be taken concurrently with AST 101, in appropriate curricula.

AST 104 - Keyboarding II Laboratory (1 cr.) Provides supplemental instruction in AST 102. Should be taken concurrently with AST 102, in appropriate curricula.

AST 113 - Keyboarding for Speed and Accuracy (1 cr.) Focuses on improving keyboarding speed and accuracy through assigned exercises that diagnose problem areas. Emphasizes increased productivity through improved speed and accuracy. Prerequisite AST 101 or equivalent.

AST 114 - Keyboarding for Information Processing (2 cr.) Teaches the alphabetic and numeric keys: develops correct techniques and competency in the use of computer keyboards. May include basic correspondence and report formats. A laboratory co-requisite (AST115) may be required.

AST 115 - Keyboarding for Information Processing Laboratory (1 cr.) Provides supplemental instruction in AST 114. Should be taken concurrently with AST 114, in appropriate curricula.

AST 117 - Keyboarding for Computer Usage (1 cr.) Teaches the alphabetic keyboard and 10-key pad. Develops correct keying techniques.

AST 201 - Keyboarding III (2 cr.) Develops decision-making skills, speed, and accuracy in production keying. Applies word processing skills in creating specialized business documents. Prerequisite AST 102. A laboratory co-requisite (AST 202) may be required.

AST 202 - Keyboarding III Laboratory (1 cr.) Provides supplemental instruction in AST 201. Should be taken concurrently with AST 201, in appropriate curricula.

AST 205 - Business Communications (3 cr.) Teaches techniques of oral and written communications. Emphasizes

writing and presenting business-related materials.

AST 234 - Records and Database Management (3 cr.) Teaches filing and records management procedures using microcomputer database software. Incorporates both manual and electronic methods for managing information. A laboratory co-requisite (AST 235) may be required.

AST 238 - Word Processing Advanced Operations (2 cr.) Teaches advanced word processing features including working with merge files, macros, and graphics; develops competence in the production of complex documents. A laboratory co-requisite (AST 239) may be required.

AST 239 - Word Processing Advanced Operations Laboratory (1 cr.) Provides supplemental instruction in AST 238. Should be taken concurrently with AST 238, in appropriate curricula, as identified by the college.

AST 243 - Office Administration I (3 cr.) Develops an understanding of the administrative support role and the skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes the development of critical-thinking, problem-solving, and job performance skills in a business office environment. Prerequisite AST 101.

AST 244 - Office Administration II (3 cr.) Enhances skills necessary to provide organizational and technical support in a contemporary office setting. Emphasizes administrative and supervisory role of the office professional. Includes travel and meeting planning, office budgeting and financial procedures, international issues, and career development. Prerequisite AST 243 or equivalent.

AST 253 - Advanced Desktop Publishing I (2 cr.) Introduces specific desktop publishing software. Teaches document layout and design, fonts, type styles, style sheets, and graphics. Prerequisite AST 101 or equivalent and experience in using a word processing package. A laboratory co-requisite (AST 255) may be required.

AST 255 - Desktop Publishing I Lab (1 cr.) Provides supplemental instruction in AST 253. Should be taken concurrently with AST 253, in appropriate curricula, as identified by the college.

(AUB) Auto Body

AUB 111-112 - Automobile Body Theory and Shop Practices I-II (8 cr. each) Teaches and applies the fundamentals and use of body tools and materials. Emphasizes shop safety, metal working, welding, cooling systems. Teaches bodies and frames design and construction, wheel suspensions, steering systems, wheel alignment and balancing, shock absorbers, glass, hardware and upholstery. Part I and II of II.

AUB 113 - Automobile Body Theory and Shop Practices III (6 cr.) Presents the fundamentals of refinishing and painting automobiles including the techniques of masking, blending and spraying. Covers paint shop layout, management, equipment, and damage estimating.

AUB 115 - Damage Repair Estimating (2 cr.) Teaches inspection and estimation of cost to repair collision damage. Emphasizes writing acceptable estimates for insurance companies. Studies practices used by repair shops and insurance adjusters.

AUB 116 - Automotive Body Repair (4 cr.) Teaches collision straightening procedures and use of equipment, planning repair procedures, disassembly techniques, body fastening systems, glass removal and replacement and panel repair and alignment..

AUB 130 - Automotive Customizing (3 cr.) Demonstrates stereo installation, custom wheels, headliners, upholstery, lighting, pin striping, carpet, window tinting and other systems modified with aftermarket parts. Introduces electrical system modifications and upgrades.

AUB 190 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

AUB 198 - Seminar and Project (1-5 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

AUB 206 - Automotive Body Component Service (2 cr.) Teaches operating principles, adjustment and service of selected automotive body components.

AUB 290 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

AUB 298 - Seminar and Project (1-5 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(AUT) Automotive

AUT 111-112 - Automotive Engines I-II (4 cr. each) Presents analysis of power, cylinder condition, valves and bearings in the automotive engine to establish the present condition, repairs or adjustments. Part I and II of II.

AUT 121-122 - Automotive Fuel Systems I-II (4 cr. each) Analyses major domestic and foreign automotive fuel systems to include carburetors and fuel injection systems. Includes detailed inspection and discussion of fuel tanks, connecting lines, instruments, filters, fuel pumps, superchargers, and turbo charger. Also includes complete diagnosis, trouble-shooting, overhaul and factory adjustment procedures of all major carbureted and fuel injection systems. Part I and II of II.

AUT 127 - Automotive Lubrication and Cooling Systems (3 cr.) Analyzes lubrication systems to include lubricants, pumps,

lines, filters, and vents. Also analyzes cooling systems, coolants, pumps, fans, lines and connections. Teaches estimating repairs, adjustments needed and their costs.

AUT 130 - Introduction to Auto Mechanics (3 cr.) Introduces auto mechanics, covering auto shop safety, tool identification and use. Explains automobile system theory and function. Stresses quality work practices and job opportunities.

AUT 136 - Automotive Vehicle Inspection (2 cr.) Presents information on methods for performing automotive vehicle safety inspection.

AUT 178 - Automotive Final Drive and Manual Transmission Systems (4 cr.) Presents the operation, design, construction and repair of manual transmissions and final drive systems, for both front and rear drive vehicles, including clutches, synchronizers, torque multiplication/gear reduction, along with differentials, transmission/transaxles, drive axels, U-joints, CV joints, 4-wheel drive and all-wheel drive systems.

AUT 211-212 - Automotive Systems III-IV (4 cr. each) Presents advanced theory and detailed study of automobile systems. Provides laboratory periods for actual field practice in troubleshooting. Part I and II of II.

AUT 230 - Introduction to Alternative Fuels and Hybrid Vehicles (3 cr.) Introduces current trends in alternative fueled vehicles including current alternative fueled vehicles and the implication and safety precautions necessary for working on hybrid vehicles systems.

AUT 236 - Automotive Climate Control (4 cr.) Introduces principles of refrigeration, air conditioning controls, and adjustment and general servicing of automotive air conditioning systems.

AUT 237 - Automotive Accessories (2 cr.) Introduces the principles, design, construction, adjustment, and maintenance of all automotive equipment classed as an accessory which is not studied in other automotive courses.

AUT 241-242 - Automotive Electricity I-II (4 cr. each) Introduces electricity and magnetism, symbols and circuitry as applied to the alternators, regulators, starters, lighting systems, instruments and gauges and accessories. Part I and II of II.

AUT 251 - Automatic Transmissions I (4 cr.) Studies several types of automatic transmissions, torque converters, and their principles of operation. Includes adjustment, maintenance, and rebuilding.

AUT 265 - Automotive Braking Systems (3 cr.) Presents operation, design, construction, repair, and servicing of braking system, including Anti-Lock Brake Systems (ABS). Explains uses of tools and test equipment, evaluation of test results, estimation of repair cost for power, standard and disc brakes.

AUT 266 - Auto Alignment, Suspension and Steering (4 cr.) Introduces use of alignment equipment in diagnosing,

adjusting, and repairing front and rear suspensions. Deals with repair and servicing of power and standard steering systems.

(BIO) Biology

BIO 1 - Foundations of Biology (1-4 cr.) Develops a basic understanding of plant and animal form, function, and relationships. Prepares students who have a deficiency in high school biology May be repeated for credit.

BIO 100 - Basic Human Biology (3 cr.) Presents basic principles of human anatomy and physiology. Discusses cells, tissues, and selected human systems.

BIO 101 - General Biology I (4 cr.) Focuses on foundations in cellular structure, metabolism, and genetics in an evolutionary context. Explores the core concepts of evolution; structure and function; information flow, storage and exchange; pathways and transformations of energy and matter; and systems biology. Emphasizes process of science, interdisciplinary approach, and relevance of biology to society. Part I of a two-course sequence. Readiness to enroll in ENG 111 plus completion of developmental math unit 3 required or placement in unit 4 or above.

BIO 102 - General Biology II (4 cr.) Focuses on diversity of life, anatomy and physiology of organisms, and ecosystem organization and processes in an evolutionary context. Explores the core concepts of evolution; structure and function; information flow, storage and exchange; pathways and transformations of energy and matter; and systems biology. Emphasizes process of science, interdisciplinary approach, and relevance of biology to society. Part II of a two-course sequence. Prerequisite is BIO 101.

BIO 107 - Biology of the Environment (4 cr.) Presents the basic concepts of environmental science through a topical approach. Includes the scientific method, population growth and migration, use of natural resources and waste management, ecosystem simplification recovery, evolution, bio-geochemical cycles, photosynthesis and global warming, geological formations, atmosphere and climate, and ozone depletion and acid deposition.

BIO 141-142 - Human Anatomy and Physiology I-II (4 cr. each) Integrates anatomy and physiology of cells, tissues, organs, and systems of the human body. Integrates concepts of chemistry, physics, and pathology. Part I and II of II.

BIO 150 - Introductory Microbiology (4 cr.) Studies the general characteristics of microorganisms. Emphasizes their relationships to individual and community health.

BIO 205 - General Microbiology (4 cr.) Examines morphology, genetics, physiology, ecology, and control of microorganisms. Emphasizes application of microbiological techniques to selected fields. Prerequisites one year of college biology and one year of college chemistry or divisional approval.

BIO 231-232 - Human Anatomy and Physiology I-II (4 cr. each) Integrates the study of gross and microscopic anatomy

with physiology, emphasizing the analysis and interpretation of physiological data. Prerequisites one year of college biology and one year of college chemistry or divisional approval. Part I and II of II

BIO 256 - General Genetics (4 cr.) Explores the principles of genetics ranging from classical Mendelian inheritance to the most recent advances in the biochemical nature and function of the gene. Includes experimental design and statistical analysis. Prerequisite BIO 101-102 or equivalent.

BIO 270 - General Ecology (4 cr.) Studies interrelationships between organisms and their natural and cultural environments with emphasis on populations, communities, and ecosystems. Prerequisite BIO 101-102 or divisional approval.

(BLD) Building

BLD 20 - Introduction to Plumbing (2 cr.) Presents an introduction to the principles and practices of plumbing as related to light construction. Enables students to plan, prepare for, and install supply and waste lines, and install kitchen and bath fixtures.

BLD 103 - Principles of Residential Building Construction Inspection (3 cr.) Introduces general principles of residential building inspection including materials, foundations, framing, finishing, and building codes. Use local pre/co-requisites.

BLD 105 - Shop Practices and Procedures (2 cr.) Introduces basic hand and power tools with emphasis on proper care and safety practices. Introduces materials used in building trades including metals, plastics, and woods with stress placed on the processing techniques of each. Emphasizes fasteners such as screws, rivets, and glues as well as brazed, soldered, and welded joints.

BLD 110 - Introduction to Construction (3 cr.) Covers basic knowledge and requirements needed in the construction trades. Introduces use of tools and equipment, with emphasis on construction safety, including personal and tool safety. Provides a working introduction to basic blueprint reading and fundamentals of construction mathematics.

BLD 111 - Blueprint Reading and the Building Code (3 cr.) Introduces reading and interpreting various kinds of blueprints and working drawings with reference to local, state, and national building codes.

BLD 120 - Applied Construction Mathematics (3 cr.) Presents a review of mathematic principles and concepts necessary for typical construction applications. Includes: whole numbers, order of operations, fractions, decimals, weights, measures and conversions, ratio and proportions, percentages, angles and perimeters, volume and surface area solids, board measure, lumber pricing, computations for preparing footing, foundations and slabs, beams and framing roofs systems and stairs. Covers basic estimation and working from construction plans. This course is not intended to satisfy general education requirements. Prerequisite: MTE 2.

BLD 126 - Basic Carpentry Principles (3 cr.) Introduces students to basic floor and wall construction. Prerequisite: BLD 125.

BLD 131-132 - Carpentry Framing I-II (5 cr. each) Presents an introduction to carpentry with emphasis on residential construction. Covers safety on the job, appropriate use of power tools, basic construction techniques, an introduction to working drawings, and the team approach to residential buildings. Presents an introduction to selection and use of ladders and scaffolds, basic form removal and demolition, and use of basic first aid. Includes the concepts of carpentry framing for floors, walls, ceilings, porches and decks. Includes theoretical and practical application as well as the concepts of carpentry framing for roof, truss installation and door and window installation. Part I and II of II.

BLD 133-134 - Carpentry Framing III-IV (5 cr. each) Continues the study of carpentry with emphasis on residential construction. Covers safety on the job, appropriate use of power tools, basic construction techniques, an introduction to working drawings, and the team approach to residential buildings. Continues the study of selection and use of ladders and scaffolds, basic form removal and demolition, and use of basic first aid. Includes the concepts of carpentry framing for floors, walls, ceilings, porches and decks. Includes theoretical and practical application as well as the concepts of carpentry framing for roof, truss installation and door and window installation. Part I and II of II.

BLD 146 - Form Work and Concrete Theory (3 cr.) Introduces the proper terminology and jargon of form construction, the installation of reinforcement material, and the make-up and placement of concrete. Prerequisite: BLD 126.

BLD 147 - Principles of Block and Bricklaying (3 cr.) Presents fundamentals of masonry practices. Includes foundations, block laying skills, mortar mixing, measuring, and introduction to bricklaying techniques. Emphasizes hands-on applications of block and brick techniques.

BLD 181 - Introduction to Concrete Construction (3 cr.) Introduces basic form building, special floor systems, and tilt-up wall systems.

BLD 184 - Interior and Exterior Finishes (3 cr.) Introduces the student to interior wall framing with wood and/or metal studs, layout of walls, and the steps required to successfully complete interior framing. Also covers the steps used for exterior finishes, such as siding, cornice work, and gutters.

BLD 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

BLD 196 - On-Site Training (1-5 cr.) Specializes in career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the college. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

BLD 295 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

(BUS) Business Management and Administration

BUS 100 - Introduction to Business (3 cr.) Presents a broad introduction to the functioning of business enterprise within the U.S. economic framework. Introduces economic systems, essential elements of business organization, production, human resource management, marketing, finance, and risk management. Develops business vocabulary.

BUS 108 - Business Etiquette (1 cr.) Presents basic etiquette for individuals desiring to succeed in a business environment. Topics include manners, business attire, networking, socializing, and meeting protocol. Includes tips on how to handle basic issues associated with diversity, plurality, and cultural and family values. Discusses how contemporary displays of personal expressions may impact business relationships.

BUS 121 - Business Mathematics I (3 cr.) Applies mathematical operations to business processes and problems. Reviews operations, equations, percents, sales and property taxes, insurance, checkbook and cash records, wage and payroll computations, depreciation, overhead, inventory turnover and valuation, financial statements, ratio analysis, commercial discounts, markup, and markdown.

BUS 122 - Business Mathematics II (3 cr.) Applies mathematical operations to business processes and problems. Reviews basic statistics, distribution of profit and loss in partnerships, distribution of corporate dividends, simple interest, present value, bank discount notes, multiple payment plans, compound interest, annuities, sinking funds, and amortization.

BUS 134 - Manufacturing Economics (1 cr.) Presents concepts of manufacturing economics and industrial accounting. Covers the major economic topics that pertain to precision machining manufacturing such as product costing, fixed/variable cost, allocation methods, and working capital management. Explains the impact of cash, inventory, and relative range.

BUS 147 - Introduction to Business Information Systems (3 cr.) Provides an overview of business information systems. Introduces computer hardware, software, procedures, systems, and human resources, and explores their integration and application in business. Discusses fundamentals and applications of computer problem-solving and programming.

BUS 149 - Workplace Ethics (1 cr.) Provides a broad overview of ethics in the modern day business world including workforce skill building and self awareness through group discussions. Discusses workplace topics such as diversity, substance abuse, hiring and firing and workplace practices, appropriate dress, communication, business ethics, and interviewing.

BUS 165 - Small Business Management (3 cr.) Identifies management concerns unique to small businesses. Introduces the requirements necessary to initiate a small business, and identifies the elements comprising a business plan. Presents information establishing financial and administrative controls, developing a marketing strategy, managing business operations, and the legal and government relationships specific to small businesses.

BUS 199 - Supervised Study (1-3 cr.) Assigns problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

BUS 200 - Principles of Management (3 cr.) Teaches management and the management functions of planning, organizing, leading, and controlling. Focuses on application of management principles to realistic situations managers encounter as they attempt to achieve organizational objectives.

BUS 204 - Project Management (3 cr.) Provides students with knowledge of essential skills and techniques necessary to lead or participate in projects assigned to managerial personnel. Covers time and task scheduling, resource management, problem solving strategies and other areas related to managing a project.

BUS 205 - Human Resource Management (3 cr.) Introduces employment, selection, and placement of personnel, forecasting, job analysis, job descriptions, training methods and programs, employee evaluation systems, compensation, benefits, and labor relations.

BUS 206 - Advanced Project Management (4 cr.) Provides students with in-depth knowledge and advanced skills and techniques necessary to lead projects assigned to project managers. Covers project initiating, project planning, project executing, project monitoring and controlling, and project closing.

BUS 209 - Continuous Quality Improvement (3 cr.) Presents the different philosophies in Quality Control. Introduces students to Process Improvement, Team Development, Consensus Building, and Problem-Solving strategies. Identifies methods for Process Improvement in manufacturing and service organizations which includes Statistical Process Control when used in the quality control function of business and industry.

BUS 220 - Introduction to Business Statistics (3 cr.) Introduces statistics as a tool in decision-making. Emphasizes ability to collect, present, and analyze data. Employs measures of central tendency and dispersion, statistical inference, index numbers, probability theory, and time series analysis.

BUS 221 - Business Statistics I (3 cr.) Focuses on statistical methodology in the collection, organization, presentation, and analysis of data; concentrates on measures of central tendency, dispersion, probability concepts and distribution, sampling, statistical estimation, normal and T distribution and

hypotheses for means and proportions. Prerequisite MTH 163 or division approval.

BUS 223 - Distribution and Transportation (3 cr.) Examines the background and history of transportation, emphasizing the fundamental role and importance the industry plays in companies, society, and the environment in which transportation service is provided. Provides an overview of carrier operations, management, technology, and strategies including transportation regulations and public policy.

BUS 227 - Quantitative Methods (3 cr.) Includes overview of quantitative methods in business decision-making, simple and multiple regression and correlation analysis, time series analysis and business forecasting, decision analysis, linear programming, transportation and assignment methods, and network models. May include computer applications. Prerequisite MTH 163 or division approval.

BUS 235 - Business Letter Writing (3 cr.) Applies composition principles to business correspondence, employment documents, and reports (including presentation of data in various chart formats). Focuses on preparing effective communications with customers, suppliers, employees, the public, and other business contacts.

BUS 236 - Communication in Management (3 cr.) Introduces the functions of communication in management with emphasis on gathering, organizing, and transmitting facts and ideas. Teaches the basic techniques of effective oral and written communication.

BUS 240 - Introduction to Business Law (3 cr.) Presents an introduction to the American legal system, including an overview of the courts, civil and criminal law. Develops an in-depth understanding of contracts, agency law, and business organizations. Also includes an overview of property, UCC Sales, and Commercial Paper.

BUS 255 - Inventory and Warehouse Management (3 cr.) Emphasizes the relationships of inventory and warehouse management to customer service and profitability of the wholesale distributor. Focuses on the role of computerized systems and resulting information for effective management of inventory and the warehouse under various conditions.

BUS 295 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

BUS 297 - Cooperative Education (1-6 cr.) Supervises in on-the-job training for pay in approved business, industrial and service firms, coordinated by the college's cooperative education office. Is applicable to all occupational- technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

BUS 298 - Seminar and Project (3 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

BUS 299 - Supervised Study (1-5 cr.) Assigns problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours

(CAD) Computer Aided Drafting and Design

CAD 116 - Drafting III (3 cr.) Teaches auxiliaries, basic concepts, terms of reference, choice of views, axis, proportioning distances and perspective drawings. (Credit will not be awarded for both CAD 116 and DRF 116.)

CAD 120 - Introduction to Graphic Representation (3 cr.) Teaches use of instruments, lettering, sketching, and drawing conventions. Emphasizes legible drawings and the value of presentation. (Credit will not be awarded for both CAD 120 and DRF 120.)

CAD 199 - Supervised Study In (discipline) (1-5 cr.) Assigns problems for independent study outside the normal classroom setting under the guidance and direction of an instructor. Incorporates prior experience and instruction in the discipline. Variable hours per week.

CAD 201 - Computer Aided Drafting and Design I (3 cr.) Teaches computer-aided drafting concepts and equipment designed to develop a general understanding of components of a typical CAD system and its operation. (Credit will not be awarded for both CAD 201 and DRF 201.)

CAD 202 - Computer Aided Drafting and Design II (3 cr.) Teaches production drawings and advanced operations in computer aided drafting. (Credit will not be awarded for both CAD 202 and DRF 202.)

CAD 210 - Advanced Technical Drafting (4 cr.) Presents intersections of plane surfaces, lines and planes, skew lines and surfaces. Covers intersections of prisms, pyramids and other shapes, developments, sheet metal drafting, screw threads and fasteners, and keys and springs. (Credit will not be awarded for both CAD 210 and DRF 210.)

CAD 233 - Computer Aided Drafting III (3 cr.) Exposes students to 3-D and modeling. Focuses on proficiency in Production drawing using a CAD system. (Credit will not be awarded for both CAD 233 and DRF 233)

CAD 298 - Seminar and Project in (discipline) (2 cr.) Requires completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field.

(CHD) Childhood Development

CHD 118 - Language Arts for Young Children (3 cr.) Emphasizes the early development of children's language and literacy skills. Presents techniques and methods for supporting all aspects of early literacy. Surveys children's literature, and

examines elements of promoting oral literacy, print awareness, phonological awareness, alphabetic principle, quality storytelling and story reading. Addresses strategies for intervention and support for exceptional children and English Language Learners.

CHD 119 - Introduction to Reading Methods (3 cr.) Focuses on promoting language and literacy skills as the foundation for emergent reading. Emphasizes phonetic awareness and alphabetic principles, print awareness and concepts, comprehension and early reading and writing. Addresses strategies for intervention and support for exceptional children and English Language Learners.

CHD 120 - Introduction to Early Childhood Education (3 cr.) Introduces early childhood development through activities and experiences in early childhood, pre- kindergarten, kindergarten, and primary programs. Investigates classroom organization and procedures, and use of classroom time and materials, approaches to education for young children, professionalism, and curricular procedures.

CHD 145 - Teaching Art, Music, and Movement to Children (3 cr.) Focuses on children's exploration, play, and creative expression in the areas of art, music, and movement. Emphasis will be on developing strategies for using various open-ended media representing a range of approaches in creative thinking. Addresses strategies for intervention and support for exceptional children and English Language Learners.

CHD 146 - Math, Science, and Social Studies for Children (3 cr.) Provides experiences in content, methods, and materials for the development of math, science, and social studies skills in children. Emphasis will be on developing strategies for using various resources to facilitate children's construction of knowledge. Addresses strategies for intervention and support for children with special needs and English Language Learners.

CHD 165 - Observation and Participation in Early Childhood/Primary Settings (3 cr.) Focuses on observation as the primary method for gathering information about children in early childhood settings. Emphasizes development of skills in the implementation of a range of observation techniques. May be taken again for credit.

CHD 166 - Infant and Toddler Programs (3 cr.) Examines child growth and development from birth to 36 months. Focuses on development in the physical, cognitive, social, emotional, and language domains. Emphasizes the importance of the environment and relationships for healthy brain development during the child's first three years of life. Investigates regulatory standards for infant/toddler care giving.

CHD 167 - CDA Theories and Applications: Resource File (3 cr.) Supports the student/CDA candidate in completing the Professional Resource File and all documentation required for the national CDA credential. This course is designed for students pursuing the Child Development Associate credential.

CHD 205 - Guiding the Behavior of Children (3 cr.) Explores the role of the early childhood educator in supporting emotional and social development of children, and in fostering a sense of community. Presents practical strategies for encouraging prosocial behavior, conflict resolution and problem solving. Emphasizes basic skills and techniques in child guidance.

CHD 210 - Introduction to Exceptional Children (3 cr.) Reviews the history of and legal requirements for providing intervention and educational services for young children with special needs. Studies the characteristics of children with a diverse array of needs and developmental abilities. Explores concepts of early intervention, inclusion, guiding behavior and adapting environments to meet children's needs.

CHD 215 - Models of Early Childhood Education Programs (3 cr.) Studies and discusses the various models and theories of early childhood education programs including current trends and issues. Presents state licensing and staff requirements.

CHD 216 - Early Childhood Programs, School, and Social Change (3 cr.) Explores methods of developing positive, effective relations with families to enhance their developmental goals for children. Considers culture and other diverse needs, perspectives, and abilities of families and educators. Emphasizes advocacy and public policy awareness as an important role of early childhood educators. Describes risk factors and identifies community resources.

CHD 265 - Advanced Observation and Participation in Early Childhood/Primary Settings (3 cr.) Focuses on implementation of activity planning and observation of children through participation in early childhood settings. Emphasizes responsive teaching practices and assessment of children's development. Reviews legal and ethical implications of working with children.

CHD 270 - Administration of Childcare Programs (3 cr.) Examines the skills needed for establishing and managing early childhood programs. Emphasizes professionalism and interpersonal skills, program planning, staff selection and development, creating policies, budgeting, and developing forms for recordkeeping.

CHD 298 - Seminar and Project (1 - 5 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(CHM) Chemistry

CHM 101-102 - General Chemistry I-II (4 cr. each) Emphasizes experimental and theoretical aspects of inorganic, organic, and biological chemistry. Discusses general chemistry concepts as they apply to issues within our society and environment. Designed for the non-science major. Part I and II of II.

CHM 111-112 - College Chemistry I-II (4 cr. each) Explores the fundamental laws, theories, and mathematical concepts of chemistry. Designed primarily for science and engineering majors. Requires a strong background in mathematics. Part I and II of II.

CHM 241 - Organic Chemistry I (3 cr.) Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Part I of II.

CHM 242 - Organic Chemistry II (3 cr.) Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Part II of II.

CHM 243 - Organic Chemistry Laboratory I (1 cr.) Taken concurrently with CHM 241 and CHM 242. Part I of II.

CHM 244 - Organic Chemistry Laboratory II (1 cr.) Taken concurrently with CHM 241 and CHM 242. Part II of II.

(CIV) Civil Engineering Technology

CIV 171 - Surveying I (3 cr.) Introduces surveying equipment, procedures and computations including adjustment of instruments, distance measurement, leveling, angle measurement, traversing, traverse adjustments, area computations and introduction to topography. Prerequisite: Engineering Technical Math or divisional approval.

(COS) Cosmetology

COS 81 - Cosmetology Theory I (4 cr.) Covers bacteriology, finger waving, sterilization and sanitation, wet hair styling, draping, shampooing and rinsing, permanent waving, haircutting, and properties of the scalp and hair.

COS 82 - Cosmetology Theory II (5 cr.) Covers hair coloring, theory of massage, the salon business, chemical hair relaxing and soft curl permanent, facial and facial make-up, hair pressing, skin and its disorders, artistry and artificial nails, cells, anatomy and physiology, manicuring and pedicure, electricity and light therapy, nail and its disorders, chemistry and the State Board Review. Prerequisite: COS 81 or permission of the instructor.

COS 190 - Coordinated Internship (4 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit.

COS 196 - On-Site Training (4 cr.) Specializes in career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the college. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit.

COS 198 - Seminar and Project (3 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May

be repeated for credit.

COS 290 - Coordinated Internship (4 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit.

COS 296 - On-Site Training (1-5 cr.) Specializes in career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the college. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(CSC) Computer Science

CSC 200 - Introduction to Computer Science (4 cr.) Provides broad introduction to computer science. Discusses architecture and function of computer hardware, including networks and operating systems, data and instruction representation and data organization. Covers software, algorithms, programming languages and software engineering. Discusses artificial intelligence and theory of computation. Includes a hand-on component.

CSC 201 - Computer Science I (4 cr.) Introduces algorithm and problem solving methods. Emphasizes structured programming concepts, elementary data structures and the study and use of a high level programming language. Corequisite MTH 173 or equivalent or divisional approval.

CSC 202 - Computer Science II (4 cr.) Examines data structures and algorithm analysis. Covers data structures (including sets, strings, stacks, queues, arrays, records, files, linked lists, and trees), abstract data types, algorithm analysis (including searching and sorting methods), and file structures. Prerequisite CSC 201. Corequisite MTH 174.

CSC 205 - Computer Organization (4 cr.) Examines the hierarchical structure of computer architecture. Focuses on multi-level machine organization. Uses a simple assembler language to complete programming projects. Includes processors, instruction, execution, addressing techniques, data representation and digital logic.

(CST) Communications Studies and Theatre

CST 100 - Principles of Public Speaking (3 cr.) Applies theory and principles of public address with emphasis on preparation and delivery.

CST 110 - Introduction to Communication (3 cr.) Examines the elements affecting speech communication at the individual, small group, and public communication levels with emphasis on practice of communication at each level.

CST 126 - Interpersonal Communication (3 cr.) Teaches interpersonal communication skills for both daily living and the world of work. Includes perception, self-concept, self-disclosure, listening and feedback, nonverbal communication, attitudes, assertiveness and other interpersonal skills.

CST 130 - Introduction to the Theatre (3 cr.) Surveys the principles of drama, the development of theatre production, and selected plays to acquaint the student with various types of theatrical presentations.

CST 131 - Acting I (3 cr.) Develops personal resources and explores performance skills through such activities as theatre games, role playing, improvisation, work on basic script units, and performance of scenes. Part I of II.

CST 132 - Acting II (3 cr.) Develops personal resources and explores performance skills through such activities as theatre games, role playing, improvisation, work on basic script units, and performance of scenes. Part II of II.

CST 136 - Theatre/Musical Workshop (1-6 cr.) Enables students to work in various activities of a play production or a musical production including performance, orchestra, set design, stage carpentry, sound, costuming, lighting, stage managing, props, promotion, or stage crew. May be repeated for credit. Variable hours per week. This course is cross-listed with MUS 129. Credit will not be awarded for both. Variable hours per week.

CST 151 - Film Appreciation I (3 cr.) Provides students with a critical understanding of film through the discussion and viewing of motion pictures with emphasis upon the study of film history and the forms and functions of film. Students will develop skills to analyze the shared social, cultural and historical influences of films and their contexts. Part I of II.

CST 152 - Film Appreciation II (3 cr.) Provides students with a critical understanding of film through the discussion and viewing of motion pictures with emphasis upon the study of film history and the forms and functions of film. Students will develop skills to analyze the shared social, cultural and historical influences of films and their contexts. Part II of II.

CST 231 - History of Theatre I (3 cr.) Analyzes and studies theatre history to include architecture, performers and performance, playwrights, stage, production methods, and audience from the Greeks through modern drama. Part I of II.

(DNA) Dental Assisting

DNA 100 - Introduction to Oral Health Professions (1 cr.) Provides an introduction to the oral health profession and covers basic terminology, historical perspective, the credentialing process, accreditation, professional organizations, and legal and ethical considerations.

DNA 103 - Introduction to Oral Health (1 cr.) Teaches anatomy of the head and neck, the oral cavity hard and soft tissues, as well as tooth morphology. Includes dental terminology, deciduous and permanent dentition as well as pathology.

DNA 109 - Practical Infection Control (3 cr.) Studies principles of management of disease producing micro organisms and diseases associated. Emphasis in placed on sterilization, asepsis, and disinfection techniques applicable in the dental office.

DNA 110 - Dental Materials (3 cr.) Studies the materials utilized in the laboratory aspect of dentistry as support in treatment. Emphasis is placed on the characteristics, manipulation, economical control, storage, and delivery of materials.

DNA 113 - Chairside Assisting I (3 cr.) Provides instruction on the principles of clinical chair side dental assisting, dental equipment use and maintenance, safety, instrument identification, tray set-ups by procedures, and patient data collection. Emphasis on patient management during restorative procedures.

DNA 134 - Dental Radiology and Practicum (3 cr.) Teaches the physics of dental radiation and safety, equipment operation, cone placement for the parallel and bisection techniques, panoramic exposures, mounting and film processing.

DNA 190 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(DNH) Dental Hygiene

DNH 111 - Oral Anatomy (2 cr.) Studies the morphology and function of the oral structures with emphasis on the primary and permanent dentition, eruption sequence, occlusion, and intra-arch relationships.

DNH 115 - Histology/Head and Neck Anatomy (3 cr.) Presents a study of the microscopic and macroscopic anatomy and physiology of the head, neck, and oral tissues. Includes embryologic development and histologic components of the head, neck, teeth, and periodontium.

DNH 120 - Management of Emergencies (2 cr.) Studies the various medical emergencies and techniques for managing emergencies in the dental setting. Additional practical applications and simulations of emergencies maybe conducted to enhance basic knowledge from the one hour lecture component.

DNH 130 - Oral Radiography for the Dental Hygienist (3 cr.) Studies radiation physics, biology, safety, and exposure techniques for intra- and extra-oral radiographic surveys. Laboratory provides practice in exposure, processing methods, mounting, and interpretation of normal findings.

DNH 141 - Dental Hygiene I (5 cr.) Introduces clinical knowledge and skills for the performance of dental hygiene services; basic skill components, lab manikins and client practice.

DNH 142 - Dental Hygiene II (5 cr.) Exposes students to instrument sharpening, time management, and client education techniques and methods. Provides supervised clinical practice in the dental hygiene clinic with emphasis on developing client treatment and instrument skills. Prerequisite DNH 141.

DNH 143 - Dental Hygiene III (3 cr.) Introduces dental health care for clients with special needs. Includes introduction to computer concepts and applications. Provides supervised clinical practice in the dental hygiene clinic with emphasis on refining client treatment and instrumentation skills, including oral radiographs.

DNH 145 - General and Oral Pathology (2 cr.) Introduces general pathology with consideration of the common diseases affecting the human body. Particular emphasis is given to the study of pathological conditions of the mouth, teeth and their supporting structures. Prerequisite: DNH 113, 114 or 115.

DNH 146 - Periodontics for the Dental Hygienist (2 cr.) Introduces the theoretical and practical study of various concepts and methods used in describing, preventing, and controlling periodontal disease. Presents etiology, microbiology, diagnosis, treatment and prognosis of diseases.

DNH 150 - Nutrition (2 cr.) Studies nutrition as it relates to dentistry and general health. Emphasizes the principles of nutrition as applied to the clinical practice of dental hygiene.

DNH 190 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

DNH 214 - Practical Materials for Dental Hygiene (2 cr.) Studies the current technologic advances, expanded functions, and clinical/laboratory materials used in dental hygiene practice. Provides laboratory experience for developing skills in the utilization and applications of these technologies and functions.

DNH 216 - Pharmacology (2 cr.) Studies the chemical and therapeutic agents used in dentistry, including their preparation, effectiveness, and specific application.

DNH 226 - Public Health Dental Hygiene I (2 cr.) Studies and compares concepts of delivery of health care, applying the public health delivery model. Utilizes epidemiologic methods, research and biostatistics as applied to oral health program planning, implementation, and evaluation. Incorporates and applies current health issues and trends.

DNH 227 - Public Health Dental Hygiene II (1 cr.) Applies concepts of public health program planning through student directed community projects with an emphasis on preventative oral health education. Includes development of table clinics, bulletin boards, and volunteer service in the community. Prerequisite: DNH 226.

DNH 230 - Office Practice and Ethics (1 cr.) Studies the principles of dental ethics and economics as they relate to the dental hygienist. The course also includes a study of jurisprudence and office procedures.

DNH 235 - Management of Dental Pain and Anxiety in the Dental Office (2 cr.) Provides a study of anxiety and pain management techniques used in dental care. Students will understand the necessary theory to appropriately treat, plan and successfully administer topical anesthesia, local anesthesia, and nitrous oxide/oxygen analgesia. Includes the components of pain, pain control mechanisms, topical anesthesia, local anesthesia and nitrous oxide/oxygen analgesia. Prerequisites: DNH 115, DNH 120 and DNH 216.

DNH 244 - Dental Hygiene IV (5 cr.) Introduces advanced skills and the dental hygienist's role in dental specialties. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasizes treatment of clients demonstrating periodontal involvement, stressing application and correlation of knowledge and skills from previous semesters. Prerequisite DNH 143 or DNH 190.

DNH 245 - Dental Hygiene V (5 cr.) Exposes student to current advances in dentistry. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasis is placed on synthesis of knowledge from previous semesters, treatment of clients with moderate to advanced periodontal involvement and improving clinical speed while maintaining quality in preparation for practice. Prerequisite: DNH 244.

(DRF) Drafting (see also CAD - Computer-Aided Drafting)

DRF 114-115 - Drafting I-II (3 cr. each) Teaches geometric construction, orthographic projection, sections and conventions, pictorial drawings, isometric principles, oblique drawing, and dimensioning. Part I and II of II.

DRF 160 - Machine Blueprint Reading (3 cr.) Introduces interpreting of various blueprints and working drawings. Applies basic principles and techniques such as visualization of an object, orthographic projection, technical sketching and drafting terminology. Requires outside preparation.

(DSL) Light Diesel Mechanics

DSL 121 - Diesel Engines I (5 cr.) Studies the basic principles involved in the construction and operation of diesel engines. Examines fuel, air, cooling, and control system of various designs. Emphasizes engine overhaul and repair, including gauging proper measuring instruments and tools for these tasks. Part I.

DSL 122 - Diesel Engines II (5 cr.) Studies the basic principles involved in the construction and operation of diesel engines. Examines fuel, air, cooling, and control system of various designs. Emphasizes engine overhaul and repair, including gauging proper measuring instruments and tools for these tasks. Part II (Prerequisite DSL 121 Part I)

DSL 133 - Diesel Fuel and Injection System (5 cr.) Studies the design, operation, care, and repair of fuel injection systems used on a variety of diesel engines. Includes testing and reconditioning fuel injectors, nozzles, fuel pumps, and transfer pumps. Teaches use of calibrating.

DSL 135 - Introduction to Diesel Technology (3 cr.) Introduces careers in the diesel repair industry, safety

procedures, tools and equipment used in the industry, and component identification. Teaches preventative maintenance inspections (PMI), precision measuring, and the use of electronic databases for service and repair.

DSL 143 - Diesel Truck Electrical Systems (4 cr.) Studies the theory and operation of various truck and tractor electrical systems. Covers preheating, starting, generating, and lighting systems. Uses modern test equipment for measurement, adjustment, and troubleshooting.

DSL 150 - Mobile Hydraulics and Pneumatics (3 cr.) Introduces the theory, operation and maintenance of hydraulic/pneumatic systems and devices used in mobile applications. Emphasizes the properties of fluid, fluid flow, fluid states and application of Bernoulli's equation.

(ECO) Economics

ECO 100 - Elementary Economics (3 cr.) Introduces students to the most basic elements of economics without detailed study of theory. Presents and interprets current issues and concerns publicized in the media. Allows students to understand and grasp the importance of local, state, and national issues with economic themes and overtones.

ECO 120 - Survey of Economics (3 cr.) Presents a broad overview of economic theory, history, development, and application. Introduces terms, definitions, policies, and philosophies of market economies. Provides some comparison with other economic systems. Includes some degree of exposure to microeconomic and macroeconomic concepts.

ECO 201 - Principles of Macroeconomics (3 cr.) Introduces macroeconomics including the study of Keynesian, classical, monetarist principles and theories, the study of national economic growth, inflation, recession, unemployment, financial markets, money and banking, the role of government spending and taxation, along with international trade and investments.

ECO 202 - Principles of Microeconomics (3 cr.) Introduces the basic concepts of microeconomics. Explores the free market concepts with coverage of economic models and graphs, scarcity and choices, supply and demand, elasticities, marginal benefits and costs, profits, and production and distribution.

(EDU) Education

EDU 200 - Introduction to Teaching as a Profession (3 cr.) Provides an orientation to the teaching profession in Virginia, including historical perspectives, current issues, and future trends in education on the national and state levels. Emphasizes information about teacher licensure examinations, steps to certification, teacher preparation and induction programs, and attention to critical shortage areas in Virginia. Includes supervised field placement (recommended: 40 clock hours) in a K-12 school. Prerequisite: Successful completion of 24 credits of transfer courses.

EDU 235 - Health, Safety, and Nutrition Education (3 cr.) Focuses on the health and developmental needs of children and the methods by which these needs are met. Emphasizes positive health, hygiene, nutrition and feeding routines, childhood diseases, and safety issues. Emphasizes supporting the mental and physical wellbeing of children, as well as procedures for reporting child abuse.

(EGR) Engineering

EGR 115 - Engineering Graphics (2 cr.) Applies principles of orthographic projection, and multi- view drawings. Teaches descriptive geometry including relationships of points, lines, planes and solids. Introduces sectioning, dimensioning and computer graphic techniques. Includes instruction in Computer Aided Drafting.

EGR 120 - Introduction to Engineering (2 cr.) Introduces the engineering profession, professional concepts, ethics, and responsibility. Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer and operating systems. Includes engineering problem solving techniques using computer software.

EGR 126 - Computer Programming for Engineers (3 cr.) Introduces computers, their architecture and software. Teaches program development using flowcharts. Solves engineering problems involving programming in languages such as FORTRAN, PASCAL, or C++.

EGR 140 - Engineering Mechanics - Statics (3 cr.) Introduces mechanics of vector forces and space, scalar mass and time, including S.I. and U.S. customary units. Teaches equilibrium, free-body diagrams, moments, couples, distributed forces, centroids, moments of inertia analysis of two- force and multi-force members and friction and internal forces.

EGR 235 - Material and Energy Balances (3 cr.) Covers fundamental chemical engineering topics including engineering problem solving, stoichiometric and composition relationships, material balances, energy balances, chemical operations and processes, reactive and non-reactive systems (batch, continuous, single-phase and multi-phase). Introduces thermodynamics and physical chemistry. Prereq: MTH 273, CHM 111, EGR 120.

EGR 245 - Engineering Mechanics - Dynamics (3 cr.) Presents approach to kinematics of particles in linear and curvilinear motion. Includes kinematics of rigid bodies in plane motion. Teaches Newton's second law, work-energy and power, impulse and momentum, and problem solving using computers.

EGR 246 - Mechanics of Materials (3 cr.) Teaches concepts of stress, strain, deformation, internal equilibrium, and basic properties of engineering materials. Analyzes axial loads, torsion, bending, shear and combined loading. Studies stress transformation and principle stresses, column analysis and energy principles.

EGR 248 - Thermodynamics for Engineering (3 cr.) Studies formulation of the first and second law of thermodynamics. Presents energy conversion, concepts of energy, temperature,

entropy, and enthalpy, equations of state of fluids. Covers reversibility and irreversibility in processes, closed and open systems, cyclical processes and problem solving using computers.

(ELE) Electrical Technology

ELE 110 - Home Electric Power (3 cr.) Covers the fundamentals of residential power distribution, circuits, panels, fuse boxes, breakers, transformers. Includes study of the national electrical code, purpose and interpretation.

ELE 113-114 - Electricity I-II (3 cr. each) Teaches principles of electricity covering fundamentals, devices and components in both DC and AC circuits. Part I and II of II.

ELE 115 - Basic Electricity (3 cr.) Covers basic circuits and theory of fundamental concepts of electricity. Presents a practical approach to discussion of components and devices.

ELE 123-124 - Electrical Applications I-II (2 cr. each) Provides laboratory and shop assignments/jobs as applied to fundamental principles of electricity with emphasis on measurements and evaluation of electrical components, devices and circuits. Part I and II of II.

ELE 131-132 - National Electrical Code I-II (3 cr. each) Provides comprehensive study of the purpose and interpretations of the National Electric Code as well as familiarization and implementation of various charts, code rulings and wiring methods including state and local regulations. Part I and II of II.

ELE 133-134 - Practical Electricity I-II (3 cr. each) Teaches the fundamentals of electricity, terminology, symbols, and diagrams. Includes the principles essential to understanding of general practices, safety and the practical aspects of residential and non- residential wiring and electrical installation, including fundamentals of motors and controls. Pre/Corequisite MTH 02 or equivalent. Part I and II of II.

ELE 143 - Programmable Controllers I (4 cr.) Studies operating characteristics, programming techniques, interfacing, and networking capabilities of programmable logic controllers. Studies controllers with analog and/or digital interfacing, hand-held and/or software programming. Prerequisites: ETR 156, ELE 158, or equivalent. Part I of II.

ELE 147 - Electrical Power and Control Systems (3 cr.) Reviews basic DC and AC circuits. Covers single-phase and three-phase AC power distribution systems, and protection devices, including types of AC motors. Presents analyzing and troubleshooting electrical control systems and motor protection devices. Prerequisite ELE 134 or equivalent.

ELE 152 - Electrical-Electronic Calculations I (3 cr.) Includes general math, scale readings, conversions between units of measure and algebra with exponents and radicals as it applies to DC circuits. [First of a three-sequence course].

ELE 153 - Electrical-Electronic Calculations II (3 cr.) Includes a review of DC applications, angular measurements, right triangle ratios, vector and vector algebra as it applies to AC circuits. [Second of a three-sequence course]. Prerequisite: ELE 152.

ELE 154 - Electrical-Electronic Calculations III (3 cr.) Includes a review of DC and AC applications and includes experimental equations and logarithms as it applies to electrical-electronic circuits. [Third of a three-course sequence]. Prerequisite: ELE 153.

ELE 156 - Electrical Control Systems (3 cr.) Includes troubleshooting and servicing electrical controls, electric motors, motor controls, motor starters, relays, overloads, instruments and control circuits.

ELE 158 - Surface Mount Soldering (1 cr.) Emphasizes high reliability soldering concepts and soldering standards as applied to surface mount soldering and rework, covering identification, installation and removal of components, using various equipment including hot air and soldering iron. Provides an introduction to IPC-A-610 soldering standards.

ELE 190 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

ELE 199 - Supervised Study (1-5 cr.) Assigns problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

ELE 216 - Industrial Electricity (3 cr.) Studies rotating devices, single phase and polyphase distribution, magnetic devices, circuits and systems for industrial applications.

ELE 217 - Electric Power Utilities (2 cr.) Provides an introduction to the electric power utilities field. Examines the generation, transmission and distribution of electrical energy.

ELE 233 - Programmable Logic Controller Systems I (3 cr.) Teaches operating and programming of programmable logic controllers. Covers analog and digital interfacing and communication schemes as they apply to system. Prerequisite: ETR 156 and ETR 211 or equivalent. Part I of II.

ELE 237 - Human Machine Interface Systems (2 cr.) Introduces operation of human machine interface devices (HMI), hardware configuration, software programming and programmable logic controller network configuration of HMI devices. Offers troubleshooting practices concerning HMI devices used in industrial machine applications. Prerequisite - ELE 233 or equivalent.

ELE 239 - Programmable Controllers (3 cr.) Examines installation, programming, interfacing, and concepts of troubleshooting programmable controllers.

ELE 240 - Advanced Programmable Logic Controllers (3 cr.) Advances further study of Programmable Logic Controllers that was initiated in ELE 239. Students will learn to use more advanced program instructions, including data manipulation,

sequences and program control, and advanced PLC features, including timers, counters. Covers connectivity and use of a variety of real world I/O devices. Prerequisite: ELE 239.

ELE 248 - Microcontroller Interfacing and Programming (3 cr.) Explores issues and concerns related to the programming and interfacing of microcontrollers.

(EMS) Emergency Medical Services

EMS 100 - CPR for Healthcare Providers (1 cr.) Provides instruction in Cardiopulmonary Resuscitation that meets current Emergency Cardiac Care (ECC) guidelines for Cardiopulmonary Resuscitation education for Healthcare Providers. Equivalent to HLT 105.

EMS 112 - Emergency Medical Technician - Basic I (4 cr.) Prepares student for certification as a Virginia and/or National Registry EMT-Basic. Focuses on all aspects of pre-hospital basic life support as defined by the Virginia office of Emergency Medical Services curriculum for Emergency Medicine Technician Basic.

EMS 113 - Emergency Medical Technician- Basic II (3 cr.) Continues preparation of student for certification as a Virginia and/or National Registry EMT-Basic. Includes all aspects of pre-hospital basic life support as defined by the Virginia Office of Emergency Medical Services curriculum for Emergency Medicine Technician Basic.

EMS 120 - Emergency Medical Technician - Basic Clinical (1 cr.) Observes in a program approved clinical/field setting. Includes topics for both EMS 111 and EMS 113, dependent upon the program in which the student is participating and is a co-requisite to both EMS 111 and EMS 113.

(ENE) Energy Technology

ENE - 100 Conventional and Alternate Energy Applications (4 cr.) Provides an overview of hydroelectric, coal, and nuclear energy production methods and renewable solar, geothermal, wind, and fuel cell technology. A complete system breakdown of conventional power production methods, efficiency, and sustainability when compared with solar. Prerequisite: ELE 176 or instructor approval.

ENE 105 - Solar Thermal Active and Passive Technology (4 cr.) Provides a comprehensive study of thermal technology as it applies to collector types and ratings, open- loop versus closed-loop and system sizing. Introduces hydronics, hot water, and pool heating applications. Provides an introduction to fluid dynamics and chemistry as it applies to system installation and maintenance.

ENE 110 - Solar Power Installations (4 cr.) Covers wiring, control, conversion, and ties to established power systems. Studies use of invertors, batteries, and charging systems. Prerequisite: ELE 157 or equivalent.

ENE 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students.

(ENF) English Fundamentals

ENF 1 - Preparing for College English I (8 cr.) Provides integrated reading and writing instruction for students who require extensive preparation to succeed in college-level English courses. Students will place into this course based on placement test score. Upon successful completion and faculty recommendation, students will move into Preparing for College English III (if they require additional preparation) or into college-level English (if they require no additional preparation). Credit is not applicable toward graduation. Qualifying placement test score.

ENF 2 - Preparing for College English II (4 cr.) Provides integrated reading and writing instruction for students who require intermediate preparation to succeed in college-level English courses. Students will place into this course based on placement test score. Upon successful completion and faculty recommendation, students will move into Preparing for College Level III (if they require additional preparation) or into college-level English (if they require no additional preparation). Credit is not applicable toward graduation. Qualifying placement test score.

ENF 3 - Preparing for College English III (2 cr.) Provides integrated reading and writing instruction for students who require minimal preparation for college-level English but still need some preparation to succeed. Students in this course will be co-enrolled in college-level English. Students will place into this course based on placement test score. Credit is not applicable toward graduation. Qualifying placement score. Co-Enrollment in a college-level English course.

(ENG) English

ENG 111 - College Composition 1 (3 cr.) Introduces students to critical thinking and the fundamentals of academic writing. Through the writing process, students refine topics: develop and support ideas; investigate, evaluate, and incorporate appropriate resources; edit for effective style and usage; and determine appropriate approaches for a variety of contexts, audiences, and purposes. Writing activities will include exposition and argumentation with at least one researched essay.

ENG 112 - College Composition II (3 cr.) Continues to develop college writing with increased emphasis on critical essays, argumentation, and research, developing these competencies through the examination of a range of texts about the human experience. Requires students to locate, evaluate, integrate, and document sources and effectively edit for style and usage. Prerequisite: Students must successfully complete ENG 111 or its equivalent, and must be able to use word processing software.

ENG 115 - Technical Writing (3 cr.) Develops ability in technical writing through extensive practice in composing technical reports and other documents. Guides students in achieving voice, tone, style, and content in formatting, editing, and graphics. Introduces students to technical discourse through selected reading.

ENG 123 - Writing for the World Wide Web (3 cr.) Teaches students how to outline, compose, organize, and edit written materials for publication on the World Wide Web. Teaches students how to design basic web pages, compose website content, design web site layout and develop website navigation for a variety of possible audiences. Prerequisite: ENG 111 or approval.

ENG 131 - Technical Report Writing I (3 cr.) Offers a review of organizational skills including paragraph writing and basic forms of technical communications, various forms of business correspondence, and basic procedures for research writing. Includes instruction and practice in oral communication skills.

ENG 134 - Grammar for Writing and Speaking (3 cr.) Studies the various parts of speech with application to both writing and speaking. Includes significant assignments to demonstrate skills in a variety of written and verbal communication, and emphasizes the skills necessary for correct everyday usage of the English language.

ENG 135 - Applied Grammar (3 cr.) Develops ability to edit and proofread correspondence and other documents typically produced in business and industry. Instructs the student in applying conventions of grammar, usage, punctuation, spelling, and mechanics. Prerequisite ENG 134 or divisional approval.

ENG 210 - Advanced Composition (3 cr.) Helps students refine skills in writing non-fiction prose. Guides development of individual voice and style. Introduces procedures for publication. Prerequisite ENG 112 or divisional approval.

ENG 211 - Creative Writing I (3 cr.) Introduces the student to the fundamentals of writing imaginatively. Students write in forms to be selected from poetry, fiction, drama, and essays. Prerequisite ENG 112 or divisional approval. Part I of II.

ENG 212 - Creative Writing II (3 cr.) Introduces the student to the fundamentals of writing imaginatively. Students write in forms to be selected from poetry, fiction, drama, and essays. Prerequisite ENG 112 or divisional approval. Part II of II.

ENG 241, ENG 242 - Survey of American Literature I-II (3 cr. each) Examines American literary works from colonial times to the present, emphasizing the ideas and characteristics of our national literature. Involves critical reading and writing. Prerequisite ENG 112 or divisional approval. Part I and II of II.

ENG 243, ENG 244 - Survey of English Literature I-II (3 cr. each) Studies major English works from the Anglo-Saxon period to the present, emphasizing ideas and characteristics of the British literary tradition. Involves critical reading and writing. Prerequisite ENG 112 or divisional approval. Part I and II of II.

ENG 250 - Children's Literature (3 cr.) Surveys the history, development and genres of children's literature, focusing on analysis of texts for literary qualities and in terms of audience. Prerequisite(s): ENG 112 or 125 (or divisional approval).

ENG 251 - Survey of World Literature I (3 cr.) Examines major works of world literature. Involves critical reading and writing. Prerequisite ENG 112 or divisional approval. Part I of II.

ENG 252 - Survey of World Literature II (3 cr.) Examines major works of world literature. Involves critical reading and writing. Prerequisite ENG 112 or divisional approval. Part II of II.

ENG 253 - Survey of African-American Literature I (3 cr.) Examines selected works by Black American writers from the colonial period to the present. Involves critical reading and writing. Prerequisite ENG 112 or divisional approval. Part I of II.

ENG 254 - Survey of African-American Literature II (3 cr.) Examines selected works by Black American writers from the colonial period to the present. Involves critical reading and writing. Prerequisite ENG 112 or divisional approval. Part II of II.

ENG 256 - Literature of Science Fiction (3 cr.) Examines the literary and social aspects of science fiction, emphasizing development of ideas and techniques through the history of the genre. Involves critical reading and writing. Prerequisite ENG 112 or divisional approval.

ENG 268 - The Modern Drama (3 cr.) Studies the modern drama. Emphasizes the understanding and enjoyment of dramatic literature. Requires critical reading and writing. Prerequisite ENG 112 or divisional approval.

(ENV) Environmental Science

ENV 170 - Fundamentals of Energy Technology (2 cr.) Gives the student an overview of the field of energy conservation and use and provides descriptions of job functions typical to energy technicians.

(ETR) Electronics Technology

ETR 115 - D.C. and A.C. Circuits (3 cr.) Studies current flow in direct and alternating current circuits with emphasis upon practical problems. Reviews mathematics used in circuit calculations. Introduces concepts of resistance, capacitance, inductance and magnetism. Focuses on electronics/circuits application.

ETR 123-124 - Electronic Applications I-II (2 cr. each) Provides laboratory and shop experience as applied to basic electronic devices, circuits and systems with emphasis on practical measurements. Part I and II of II.

ETR 136 - General Industrial Electronic Systems (3 cr.) Studies devices, circuits, power modules, analog and digital, open and closed loop control and servo systems. May include laboratory projects and modular troubleshooting.

ETR 141-142 - Electronics I-II (3 cr. each) Introduces electronic devices as applied to basic electronic circuits and systems. Part I and II of II.

ETR 149 - PC Repair (3 cr.) Teaches the maintenance, troubleshooting and repair of personal computer systems.

Uses IBM or compatible computer systems to provide fault isolation drill and practice.

ETR 150 - Machine Control Using Relay & Programmable Logic (3 cr.) Provides an introduction to hardwired relay logic and the programmable logic controller (PLC) as utilized in a variety of different control tasks. Covers different types of inputs and outputs in control system. Teaches practical troubleshooting strategies.

ETR 151-152 - Electronic Circuits and Troubleshooting I-II (2 cr. each) Studies analog and digital circuits and systems with standard circuit test and troubleshooting procedures. Part I and II of II.

ETR 177 - Industrial Robotics and Robotics Programming (3 cr.) Prepares the student to safely operate and maintain a robot and develop and maintain basic robot programs.

ETR 180 - Industrial Ethernet Networking (2 cr.) Examines the theory and implementation of digital and communications systems. Features OSI model and plant floor networks. May include optical, wireless, satellite and other communications systems.

ETR 190 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

ETR 241-242 - Electronic Communications I-II (3 cr. each) Studies noise, information and bandwidth, modulation and demodulation, transmitters and receivers, wave propagation, antennas and transmission lines. Includes broad band communication systems, microwave, both terrestrial and satellite, fiber optics, multiplexing and associated hardware. Part I and II of II.

ETR 243 - Digital, Analog, and Data Communications Systems I (4 cr.) Teaches theory and implementation of digital and analog circuits in communication systems. Includes PCM, multiplexing, analog modulation, analysis and performance of transmitters and receivers. Includes optical satellite and other communications systems. Prerequisite: Knowledge of D.C./A.C. theory and devices.

ETR 246 - Electronic Motor Drives Systems (3 cr.) Introduces advanced operations, setup, programming and trouble-shooting of electronic motor drives that are used for the control of industrial AC motors.

ETR 255 - Active Devices and Circuits (3 cr.) Teaches theory of active devices and circuits, devices and circuit parameters, semiconductor characteristics and the application of circuits to active systems. Includes testing and analysis of active devices and circuits. Prerequisite: Knowledge of D.C./A.C. theory.

ETR 282-283 - Digital Systems I-II (3 cr. each) Includes programming, circuitry, logic, operation interfacing of computer and micro processing systems. Includes pulse circuits and pulse logic systems as applied to computer and microprocessor technology. Part I and II of II.

ETR 286 - Principles and Applications of Robotics (3 cr.) Provides an overview of terminology, principles, practices, and applications of robotics. Studies development, programming; hydraulic, pneumatic, electronic controls; sensors, and system troubleshooting.

ETR 290 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

ETR 295 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

(FIN) Financial Services

FIN 215 - Financial Management (3 cr.) Introduces basic financial management topics including statement analysis, working capital; capital budgeting, and long-term financing. Focuses on Net Present Value and Internal Rate of Return techniques, lease vs. buy analysis, and Cost of Capital computations. Uses problems and cases to enhance skills in financial planning and decision making.

(GEO) Geography

GEO 210 - People and the Land: Introduction to Cultural Geography (3 cr.) Focuses on the relationship between culture and geography. Presents a survey of modern demographics, landscape modification, material and non-material culture, language, race and ethnicity, religion, politics, and economic activities. Introduces the student to types and uses of maps.

GEO 220 - World Regional Geography (3 cr.) Studies physical and cultural characteristics of selected geographical regions of the world. Focuses upon significant problems within each of the regions, and examines the geographical background of those problems. Introduces the student to types and uses of maps.

(GOL) Geology

GOL 105 - Physical Geology (4 cr.) Introduces the composition and structure of the earth and modifying agents and processes. Investigates the formation of minerals and rocks, weathering, erosion, earthquakes, and crustal deformation.

GOL 106 - Historical Geology (4 cr.) Traces the evolution of the earth and life through time. Presents scientific theories of the origin of the earth and life and interprets rock and fossil record.

(HIM) Health Information Management

HIM 105 - Current Procedural Terminology (2 cr.) Develops skills in coding a diagnosis and/or procedure according to the principles of Current Procedural Terminology (CPT) Coding. Prerequisite: HLT 143.

HIM 106 - International Classification of Diseases I (2 cr.) Introduces International Classification of Diseases Clinical Modification Coding I (ICD-10-CM) coding classification system and provides actual coding exercises. Prerequisite: HLT 143

HIM 107 - International Classification of Diseases II (3 cr.) Stresses advanced International Classification of Diseases Clinical Modification Coding II (ICD-10-CM) coding skills through practical exercises. Prerequisite: HIT 106 or HIM 106.

HIM 130 - Healthcare Information Systems (3 cr.) Teaches basic concepts of microcomputer software (to include operating systems, word processing, spreadsheets, and database applications. Focuses on microcomputer applications and information systems in the Healthcare environment. Provides a working introduction to electronic health information systems for allied health, teaching students how the adoption of electronic health records affects them as future healthcare professionals.

HIM 143 - Managing Electronic Billing in a Medical Practice (3 cr.) Presents practical knowledge on use of computer technology in medical practice management. Develops basic skills in preparation of universal billing claim. Explores insurance claim processing issues.

HIM 226 - Legal Aspects of Health Record Documentation (2 cr.) Presents the legal requirements associated with health record documentation. Emphasizes the policies and procedures concerning the protection of the confidentiality of patient's health records.

HIM 253 - Health Records Coding (3 cr.) Examines the development of coding classification systems. Introduces ICD-9-CM coding classification system, its format and conventions. Stresses basic coding steps and guidelines according to body systems. Provides actual coding exercises in relation to each system covered.

(HIS) History

HIS 101, HIS 102 - History of Western Civilization I-II (3 cr. each) Examines the development of western civilization from ancient times to the present. Part I and II of II.

HIS 111, HIS 112 - History of World Civilizations I-II (3 cr. each) Surveys Asian, African, Latin American, and European civilizations from the ancient period to the present. Part I and II of II.

HIS 121, HIS 122 - United States History I-II (3 cr. each) Surveys United States history from its beginning to the present. Part I and II of II.

HIS 266 - Military History of the Civil War (3 cr.) Analyzes military campaigns of the Civil War, including factors contributing to the defeat of the Confederacy and problems created by the war. May include field trips to Civil War sites in the region.

HIS 268 - The American Constitution (3 cr.) Analyzes the origin and development of the United States Constitution. Includes the evolution of civil liberties, property rights, contracts, due process, judicial review, federal-state relationships, and corporate-government relations.

(HLT) Health

HLT 100 - First Aid and Cardiopulmonary Resuscitation (3 cr.) Focuses on the principles and techniques of safety, first aid, and cardiopulmonary resuscitation.

HLT 105 - Cardiopulmonary Resuscitation (1 cr.) Provides training in coordinated mouth-to-mouth artificial ventilation and chest compression, choking, life- threatening emergencies, and sudden illness. Equivalent to EMS 100.

HLT 106 - First Aid and Safety (2 cr.) Focuses on the principles and techniques of safety and first aid.

HLT 116 - Introduction to Personal Wellness Concepts (3 cr.) Introduces students to the dimensions of wellness including the physical, emotional, environmental, spiritual, occupational, and social components.

HLT 121 - Introduction to Drug Use and Abuse (3 cr.) Explores the use and abuse of drugs in contemporary society with emphasis upon sociological, physiological, and psychological effects of drugs.

HLT 130 - Nutrition and Diet Therapy (2 cr.) Studies nutrients, sources, functions, and requirements with an introduction to diet therapy.

HLT 141 - Intro to Medical Terminology (2 cr.) Focuses on medical terminology for students preparing for careers in the health professions.

HLT 143-144 - Medical Terminology I-II (3 cr. each) Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, word stems, and technical terms with emphasis on proper spelling, pronunciation, and usage. Emphasizes more complex skills and techniques in understanding medical terminology. Part I and II of II.

HLT 200 - Human Sexuality (3 cr.) Provides a basic understanding of human sexuality. Includes anatomy, physiology, pregnancy, family planning, venereal diseases, and sexual variations.

HLT 204 - Women's Health (3 cr.) Explores current issues related to women's health and wellness with an emphasis upon prevention of disease and optimum well being. Takes a multi-ethnic approach to exploring the most up-to-date findings, diagnostic tools, and treatments for breast cancer, reproductive tract illness, heart, and other common diseases faced by women from puberty through menopause.

HLT 215 - Personal Stress and Stress Management (3 cr.) Provides a basic understanding of stress and its physical, psychological, and social effects. Includes the relationships between stress and change, self-evaluation, sources of stress, and current coping skills for handling stress.

HLT 230 - Principles of Nutrition and Human Development (3 cr.) Teaches the relationship between nutrition and human development. Emphasizes nutrients, balanced diet, weight control, and the nutritional needs of an individual.

HLT 250 - General Pharmacology (3 cr.) Emphasizes general pharmacology for the health related professions covering general principles of drug actions/reactions, major drug classes, specific agent within each class, and routine mathematical calculations needed to determine desired dosages.

HLT 261 - Basic Pharmacy I (3 cr.) Explores the basics of general pharmacy, reading prescriptions, symbols, packages, pharmacy calculations. Teaches measuring compounds of drugs, dosage forms, drug laws, and drug classifications. Part I of II.

HLT 263 - Basic Pharmacy I Lab (1 cr.) Provides practical experience to supplement instruction in HLT 261-262. Should be taken concurrently with HLT 261-262, in appropriate curricula. Part I of II.

HLT 290 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(HRI) Hotel-Restaurant-Institutional Management

HRI 101 - Hotel-Restaurant Organization and Management I (3 cr.) Introduces the history, opportunities, problems and trends of the hospitality industry. Covers the organization of the various sectors of the hospitality industry including human resources, general business considerations, and management theory. Part I of II.

HRI 106 - Principles of Culinary Arts I-II (3 cr.) Introduces the fundamental principles of food preparation and basic culinary procedures. Stresses the use of proper culinary procedures combined with food science, proper sanitation, standards of quality for food items that are made, and proper use and care of kitchen equipment. Part I of II.

HRI 119 - Applied Nutrition for Food Service (3 cr.) Studies food composition, nutrition science, and application of nutrition principles by the food service professional. Provides the student with a basic understanding of human nutrition and application of nutrition in the service of commercially prepared meals. A laboratory co-requisite (HRI 122) may be required as identified by the college.

HRI 128 - Principles of Baking (3 cr.) Instructs the student in the preparation of breads, pastries, baked desserts, candies, frozen confections, and sugar work. Applies scientific principles and techniques of baking. Promotes the knowledge/skills required to prepare baked items, pastries and confections.

HRI 140 - Fundamentals of Quality for the Hospitality Industry (3 cr.) Teaches quality in the hospitality industry, including material on the total quality management movement. Emphasizes quality from the customer's perspective.

HRI 154 - Principles of Hospitality Management (3 cr.) Presents basic understanding of the hospitality industry by tracing the industry's growth and development, reviewing the organization and management of lodging, food, and beverage operations, and focusing on industry opportunities and future trends.

HRI 158 - Sanitation and Safety (3 cr.) Covers the moral and legal responsibilities of management to insure a sanitary and safe environment in a food service operation. Emphasizes the causes and prevention of foodborne illnesses in conformity with federal, state and local guidelines. Focuses on OSHA standards in assuring safe working conditions.

HRI 190 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

HRI 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

HRI 215 - Food Purchasing (3 cr.) Presents the method and procedures for purchasing food for hotels, restaurants and institutions. Deals with markets, federal and trade grades, governmental regulations, packaging, comparative versions price buying, yields and quality control.

HRI 218 - Fruit, Vegetable, and Starch Preparation (3 cr.) Instructs the student in the preparation of fruits, vegetables, grains, cereals, legumes and farinaceous products. Promotes the knowledge/skills necessary to prepare menu items from fruits, vegetables, and their byproducts, and to select appropriate uses as meal components.

HRI 219 - Stock, Soup, and Sauce Preparation (3 cr.) Instructs the student in the preparation of stocks, soups, and sauces. Promotes the knowledge/skills to prepare stocks, soups, and sauces, and to select appropriate uses as meal components.

HRI 220 - Meat, Seafood and Poultry Preparation (3 cr.) Provides the study and preparation of meat, poultry, shellfish, fish, and game. Promotes the knowledge/skills required to select appropriate use of these foods as meal components.

HRI 224 - Recipe and Menu Management (3 cr.) Presents a comprehensive framework for creating and evaluating recipes and menus for commercial and non-commercial food service operations. Requires students to use microcomputer software to design recipes, recipe files, and menus. Teaches students menu engineering analysis and methods for optimizing menu contribution margin.

HRI 241 - Supervision in the Hospitality Industry (3 cr.) A comprehensive review of considerations for preparing effective supervisors in restaurants and lodging operations.

HRI 251 - Food and Beverage Cost Control I (3 cr.) Presents methods of pre-cost and pre-control as applied to the menu, purchasing, receiving, storing, issuing, production, sales and service which result in achievement of an operation's profit potential. Emphasizes both manual and computerized approaches. Part I of II.

HRI 257 - Catering Management (3 cr.) Studies special functions in the hospitality industry. Presents lecture and demonstration in banquet layout, menus, services, sales and supervision.

HRI 290 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

HRI 298 - Seminar and Project (1-5 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(HUM) Humanities

HUM 165 - Controversial Issues in Contemporary American Culture (3 cr.) Introduces students to selected issues in contemporary American culture. Includes topic areas ranging from welfare reform, economic development, privacy, environmental protection and conservation, evolution vs. creation, to family values, and special interest lobbying in our state and national governments. Focuses on the development of the student's critical thinking skills by analyzing, evaluating, and reflecting on opposing sides of the same issue as expressed by public leaders, special interest groups and academicians.

HUM 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

HUM 198 - Seminar and Project (1-5 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

HUM 246 - Creative Thinking (3 cr.) Examines and analyzes creative and effective thinking processes with applications in individual and group projects to solve business, scientific, environmental, and other practical problems.

HUM 256 - Mythology in Literature and the Arts (3 cr.) Studies cultural expressions of mythology in literature and the arts. Considers several of the following mythologies, with emphasis on parallels and divergences: Egyptian, Near-Eastern, Greek, Roman, Celtic, Norse, Asian, and African.

HUM 260 - Survey of Twentieth-Century Culture (3 cr.) Explores literature, visual arts, philosophy, music, and history of our time from an interdisciplinary perspective.

(IND) Industrial Engineering Technology

IND 103 - Industrial Methods (3 cr.) Covers theoretical knowledge necessary for familiarization with common hand tools, common power tools, measuring tools and techniques, fastening components and procedures, grinding operations, metal cutting operations, and other miscellaneous tasks.

IND 123 - Introduction to Lean Manufacturing and Six Sigma (1 cr.) Covers basic Lean and Six Sigma concepts. Examines the importance of Lean and Six Sigma as pertaining to the world of manufacturing. Provides students with the opportunity to demonstrate the impact of Lean and Six Sigma manufacturing environment.

IND 137 - Team Concepts and Problem Solving (3 cr.) Studies team concepts and problem solving techniques to assist project teams in improving quality and productivity. Provides knowledge of how to work as a team, plan and conduct good meetings, manage logistics and details, gather useful data, communicate the results and implement changes.

IND 138 - Industrial Leadership and Career Development (1 cr.) Covers the importance of effective and ethical organizational behavior in career development. Provides students with guidance on how to be a high performance team member. Presents the tools necessary to manage and motivate team members in a manufacturing environment. Focuses on communication skills, professionalism, and ethics. Examines conflict resolution skills and the ability to identify behavioral types.

IND 161 - Product Design and Development I (5 cr.) Introduces the student to foundational concepts and tools in the design and development of products utilizing wood as a primary design medium.

IND 162 - Product Design and Development II (5 cr.) Advancement of the foundational concepts and tools in the design and development of products utilizing wood as a primary design medium.

IND 181 - World Class Manufacturing I (3 cr.) Studies the principles and applications of the globalization of industry. Emphasizes the fundamentals of interpersonal/team process, organization skills, total quality tools for continuous improvement, statistical process control, manufacturing resource planning and just- in-time.

IND 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours. Variable hours

IND 199 - Supervised Study (1-5 cr.) Assigns problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

IND 243 - Principles and Applications of Mechatronics (3 cr.) Introduces terminology and principles related to Mechatronic system design and application. Integrates

concepts of electrical/electronic, mechanical and computer technologies in the development, setup, operation and troubleshooting of automated products and systems. Covers breakdown of various automated manufacturing operations with emphasis on system planning, development and troubleshooting processes. Prerequisite: Divisional Approval.

IND 298 - Seminar and Project (1-5 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours

(INS) Instrumentation

INS 121 - Introduction to Measurement and Control (3 cr.) Introduces applications of modern sensors, measurement equipment, and control systems, including operation and functions of components. Includes computer data acquisition and control with programming languages. Prerequisite: Divisional approval.

INS 230 - Instrumentation I (3 cr.) Presents the fundamental scientific principles of process control including temperature, pressure, level, and flow measurements. Topics include transducers, thermometers, and gauges are introduced along with calibration. Course prerequisites/ corequisites ETR 113 and ETR 144.

(ITD) Information Technology Database

ITD 110 - Web Page Design I (3 cr.) Stresses a working knowledge of web site designs, construction, and management using HTML or XHTML. Includes headings, lists, links, images, image maps, tables, forms, and frames.

ITD 112 - Designing Web Page Graphics (3 cr.) Explores the creation of digital graphics for web design. Includes basic design elements such as color and layout will be explored utilizing a computer graphics program(s).

ITD 115 - Web Page Design and Site Management (3 cr.) Explores fundamentals of creating web pages and site management with web editing software. Students will learn techniques of web page design as well as managing the resources required to author and maintain a web site.

ITD 120 - Design Concepts for Mobile Applications (4 cr.) Provides skills for designing both Web-based and stand-alone applications for wireless devices. Details discussions of the needs for applications including mobile phones and a range of rich hand-held devices such as PDA's. Emphasizes the importance of usability, accessibility, optimization and performance to create fast-loading business enterprise applications and games.

ITD 132 - Structured Query Language (3 cr.) Incorporates a working introduction to commands, functions and operators used in SQL for extracting data from standard databases.

ITD 198 - Seminar and Project (1-5 cr.) Requires completion of a project or research report related to the student's

occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

ITD 210 - Web Page Design II (3 cr.) Incorporates advanced techniques in web site planning, design, usability, accessibility, advanced site management, and maintenance utilizing web editor software(s).

ITD 212 - Interactive Web Design (3 cr.) Provides techniques in interactive design concepts to create cross-platform, low-bandwidth animations utilizing a vector based application. Emphasizes the importance of usability, accessibility, optimization and performance.

ITD 250 - Database Architecture and Administration (3 cr.) Involves in-depth instruction about the underlying architecture of databases and the handling of database administration.

ITD 256 - Advanced Database Management (3 cr.) Focuses in-depth instruction in the handling of critical tasks of planning and implementing large databases. Includes an introduction to concepts of advanced data warehousing and database configuration.

ITD 258 - Database Performance and Tuning (3 cr.) Emphasizes instruction to optimize the performance of a database management system. Includes methods for tuning data access and storage and discussions of resolving data performance problems.

ITD 260 - Data Modeling and Design (3 cr.) Introduces life cycle application development methodologies in a systematic approach to developing relational databases and designing applications. Presents content introducing functional and business process modeling, using modeling information to produce application designs, analyzing data requirements as entities, attributes, and relationships and map an entity relationship diagram to an initial database design. Identifies the available automated development tools and utilizes Oracle Developer software to perform practical applications of these concepts. Prerequisite: Oracle or SQL programming including DDL, DML, transaction control & queries with SELECT statement and some exposure to procedural language programming.

(ITE) Information Technology Essentials

ITE 115 - Introduction to Computer Applications and Concepts (3 cr.) Covers computer concepts and internet skills, and uses a software suite which includes word processing, spreadsheet, database, and presentation software to demonstrate skills. Recommended prerequisite keyboarding skills.

ITE 116 - Survey of Computer Software Applications (2 cr.) Review current business software applications for microcomputers emphasizing comparison of a variety of software packages. Provides experience with multiple operating system commands, database, spreadsheet, and word processing programs.

ITE 120 - Principles of Information Systems (3 cr.) Provides an overview of the fundamentals of computer information systems. Focuses on the role of computers in business today including hardware, software, analysis, design, and implementation of information systems. Includes an introduction to computer ethics, and business and personal security. Exposes students to techniques used in programming and system development. Utilizes a hands-on component for spreadsheets, databases, and web design applications.

ITE 130 - Introduction to Internet Services (3 cr.) Provides students with a working knowledge of Internet terminology and services including e-mail, WWW browsing, search engines, ftp, file compression, and other services using a variety of software packages. Provides instruction for basic web page construction.

ITE 131 - Survey of Internet Services (1 cr.) Introduces students to basic Internet terminology and services including e-mail, WWW browsing, search engines, ftp telnet, and other services.

ITE 140 - Spreadsheet Software (3 cr.) Covers the use of spreadsheet software to create spreadsheets with formatted cells and cell ranges, control pages, multiple sheets, charts, and macros. Topics include type and edit text in a cell, enter data on multiple worksheets, work with formulas and functions, create charts, pivot tables, and styles, insert headers and footers, and filter data.

ITE 150 - Desktop Database Software (4 cr.) Incorporates instruction in planning, defining, and using a database; performing queries; producing reports; working with multiple files; and concepts of database programming. Includes database concepts, principles of table design and table relationships, entering data, creating and using forms, using data from different sources, filtering, creating mailing labels.

ITE 182 - User Support/Help Desk Principles (3 cr.) Introduces a variety of tools and techniques that are used to provide user support in help desk operations. Includes help desk concepts, customer service skills, troubleshooting problems, writing for end users, help desk operations, and software, needs analysis, facilities management, and other related topics related to end user support.

ITE 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

ITE 215 - Advanced Computer Applications and Integration (4 cr.) Incorporates advanced computer concepts including the integration of a software suite.

ITE 221 - PC Hardware and OS Architecture (3 cr.) Covers instruction about processors, internal functions, peripheral devices, computer organization, memory management, architecture, instruction format, and basic OS architecture.

ITE 225 - Mobile Computing (3 cr.) Focuses on key technical and business issues related to mobile computing: mobile environments, support services, mobile communication systems, and applications.

(ITN) Information Technology Networking

ITN 102 - Introduction to Networked Client Operating Systems (LAN) (4 cr.) Consists of instruction in the installation, configuration, administration, and troubleshooting of networked client operating systems in a data communications environment. This course can utilize any mixture of available networked client operating systems.

ITN 103 - Administration of Networked Servers (4 cr.) Instruction focuses on the installation, configuration, and management of local area networked servers. Topics covered include support for local area networked devices, system services, and deployment of networked operating systems. This course can include any version of Windows or Linux Server Platforms.

ITN 104 - Maintaining Servers in the Networked Infrastructure (4 cr.) Provides instruction on how to implement, manage, and maintain servers within a communications infrastructure. Topics covered include support for Terminal Services, Remote Access, Group Policy, NAT, IPSec, and specific security configurations.

ITN 106 - Microcomputer Operating Systems (3 cr.) Teaches use of operating system utilities and multiple-level directory structures, creation of batch files, and configuration of microcomputer environments. May include a study of graphical user interfaces.

ITN 107 - Personal Computer Hardware & Troubleshooting (3 cr.) Includes specially designed instruction to give a student a basic knowledge of hardware and software configurations. Includes the installation of various peripheral devices as well as basic system hardware components.

ITN 109 - Internet and Network Foundation (3 cr.) Provides a basic comprehension of Internet and network technologies including IT job roles, connection methods, TCP/IP functionality and DNS. Explores web server technologies with security and project management concepts. Introduces network creation, physical and logical topologies including media properties, server types, IP addressing and network security.

ITN 154 - Network Fundamentals, Router Basics, and Configuration (ICND1) - Cisco (4 cr.) Provides instruction in the fundamentals of networking environments, the basics of router operations, and basic router configuration.

ITN 155 - Switching, Wireless, and WAN Technologies (ICND2) - Cisco (4 cr.) Provides the skills and knowledge to install, operate, and troubleshoot a small-to-medium sized branch office enterprise network, including configuring several switches and routers, configuring wireless devices, configuring VLANS, connecting to a WAN, and implementing network security.

ITN 156 - Basic Switching and Routing - Cisco (4 cr.) Centers instruction in LAN segmentation using bridges, routers, and

switches. Includes fast Ethernet, access lists, routing protocols, spanning tree protocol, virtual LANS, & network management.

ITN 157 - WAN Technologies - Cisco (4 cr.) Introduction to Wide Area Networking (WANs). Includes WAN design, LAPB, Frame Relay, ISDN, HDLC, and PPP.

ITN 170 - Linux System Administration (3 cr.) Focuses on the installation, configuration and administration of the Linux operating system and emphasizes the use of Linux as a network client and workstation.

ITN 200 - Administration of Network Resources (4 cr.) Focuses on the management of local area network servers. Teaches proper structuring of security systems. Explains print queues, disk management, and other local area network (LAN) issues. Presents concerns and issues for the purchase and installation of hardware and software upgrades. Can be taught using any network operating system or a range of operating systems as a delivery tool.

ITN 201 - Administration & Management of Network Infrastructures (3 cr.) Focuses on the administration and management of network infrastructures. Covers network addressing of clients and servers, naming resolution, remote access, security, printing services, and troubleshooting. Uses network operating system as the delivery tools.

ITN 209 - Voice Over Internet Protocol (3 cr.) Discusses in depth the concept, theory and principles of Voice over Internet Protocol technology. Reviews the existing PSTN architecture. Examines VOIP Quality of Service, various speech coding techniques, the H.323 architecture, Session Initiation Protocol, Media Gateway Protocol and the relationship between VOIP and SS7.

ITN 213 - Information Storage and Management (4 cr.) Focuses on advanced storage systems, protocol, and architectures including Storage Area Networks (SAN), Network Attached Storage (NAS), Fiber Channel Networks, Internet Protocol SANs (IPSAN), iSCSI, and Content Addressable Storage (CAS).

ITN 231 - Desktop Virtualization (4 cr.) Explores the concepts and capabilities of desktop and application virtualization with a focus on the installation, configuration, and management of the virtual desktop and application infrastructure.

ITN 245 - Network Troubleshooting (3 cr.) Focuses on servicing and maintaining local area networks (LANS). Teaches network installation, network troubleshooting, installation of file servers and workstations, configuring of network boards and cables, and diagnosing common network problems.

ITN 254 - Virtual Infrastructure: Installation and Configuration (4 cr.) Explores concepts and capabilities of virtual architecture with a focus on installation, configuration, and management of a virtual infrastructure, ESX Server, and Virtual Center. Covers fundamentals of virtual network design and implementation, fundamentals of storage area networks, virtual switching, virtual system management, and engineering for high availability.

ITN 255 - Virtual Infrastructure: Deployment, Security and Analysis (4 cr.) Focuses on the deployment, security, and analysis of the virtual infrastructure, including scripted installations, advanced virtual switching for security, server monitoring for health and resource management, high-availability management, system backups, and fault analysis.

ITN 257 - Cloud Computing: Infrastructure and Services (3 cr.) Focuses on cloud infrastructure, deployment, security models, and the key considerations in migrating to cloud computing. Covers the technologies and processes required to build traditional, virtualized, and cloud data center environments, including computation, storage, networking, desktop and application virtualization, business continuity, security, and management.

ITN 260 - Network Security Basics (3 cr.) Provides instruction in the basics of network security in depth. Includes security objectives, security architecture, security models and security layers; risk management, network security policy, and security training. Includes the five security keys, confidentiality integrity, availability, accountability and auditability.

ITN 261 - Network Attacks, Computer Crime and Hacking (3 cr.) Encompasses in-depth exploration of various methods for attacking and defending a network. Explores network security concepts from the viewpoint hackers and their attack methodologies. Includes topics about hackers, attacks, Intrusion Detection Systems (IDS) malicious code, computer crime and industrial espionage.

ITN 262 - Network Communication, Security and Authentication (4 cr.) Covers an in-depth exploration of various communication protocols with a concentration on TCP/IP. Explores communication protocols from the point of view of the hacker in order to highlight protocol weaknesses. Includes Internet architecture, routing, addressing, topology, fragmentation and protocol analysis, and the use of various utilities to explore TCP/IP.

ITN 263 - Internet/Intranet Firewalls and E-Commerce Security (4 cr.) Gives an in-depth exploration of firewall, Web security, and e-commerce security. Explores firewall concepts, types, topology and the firewall's relationship to the TCP/IP protocol. Includes client/server architecture, the Web server, HTML and HTTP in relation to Web Security, and digital certification, D.509, and public key infrastructure (PKI).

ITN 267 - Legal Topics in Network Security (3 cr.) Conveys an in-depth exploration of the civil and common law issues that apply to network security. Explores statutes, jurisdictional, and constitutional issues related to computer crimes and privacy. Includes rules of evidence, seizure and evidence handling, court presentation and computer privacy in the digital age.

ITN 276 - Computer Forensics I (4 cr.) Teaches computer forensic investigation techniques for collecting computer-related evidence at the physical layer from a variety of digital media (hard drives, compact flash and PDAs) and performing analysis at the file system layer. Prerequisite: ITN 106, ITN 107.

Co-requisite: ITN 260. Credit will be given to ITN 275 or ITN 276 and ITN 277, but not all three courses.

ITN 277 - Computer Forensics II (3 cr.) Develops skills in the forensic extraction of computer evidence at a logical level using a variety of operating systems and applications (i.e., e-mail) and learn techniques for recovering data from virtual memory, temporary Internet files, and intentionally hidden files. Prerequisite: ITN 276, Computer Forensics I. Credit will be given to ITN 275 or ITN 276 and ITN 277, but not all three courses.

(ITP) Information Technology Programming

ITP - 100 Software Design (3 cr.) Introduces principles and practices of software development. Includes instruction in critical thinking, problem solving skills, and essential programming logic in structured and object-oriented design using contemporary tools.

ITP 112 - Visual Basic.NET I (4 cr.) Concentrates instruction in fundamentals of object-oriented programming using Visual Basic.NET and the .NET framework. Emphasizes program construction algorithm development, coding debugging, and documentation of graphical user interface applications.

ITP 120 - Java Programming I (4 cr.) Entails instruction in fundamentals of object-oriented programming using Java. Emphasizes program construction, algorithm development, coding, debugging, and documentation of console and graphical user interface applications.

ITP 134 - Visual C++ Programming I (4 cr.) Provides instruction in fundamentals of object-oriented programming and design using C++ for GUI applications. Emphasizes software design and construction using the concepts of foundation classes.

ITP 136 - C# Programming I (4 cr.) Presents instruction in fundamentals of object-oriented programming and design using C#. Emphasizes program construction, algorithm development, coding, debugging, and documentation of applications within the .NET framework.

ITP 140 - Client Side Scripting (3 cr.) Provides instruction in fundamentals of Internet application design, development, and deployment using client side scripting language(s).

ITP 160 - Introduction to Game Design and Development (3 cr.) Introduces object-oriented game design and development. Provides overview of the electronic game design and development process and underlines the historical contest, content creation strategies, game careers, and future trends in the industry. Utilizes a game language environment to introduce game design, object-oriented paradigms, software design, software development and product testing. Teaches skills of writing a game design document and creating a game with several levels and objects. Integrate 2D animations, 3D models, sound effects, and background music as well as graphic backgrounds.

ITP 165 - Gaming and Simulation (3 cr.) Introduces students to the concepts and applications of gaming and simulation through the use of gaming and simulation tools, as well as through basic programming skills.

ITP 170 - Project Management (3 cr.) Introduces the concepts of project management as defined by the Project Management Institute, the accreditation body for project management.

ITP 200 - Data Structure and Algorithms (3 cr.) Introduces searching and sorting algorithms and basic data structures. Examines data structures and algorithms in a given computer language including sets, strings, stacks, queries, arrays, linked lists, and trees.

ITP 214 - Windows Mobile Development (4 cr.) Provides skills for creating mobile enterprise solutions by using the Smart Device Extensions for Microsoft Visual Studio .NET and the Microsoft .NET Compact Framework for wireless devices. Develops systems including mobile phones and a range of rich hand-held devices such as PDAs using applications utilizing the .NET Compact Framework. Covers Enterprise business applications and game applications.

ITP 215 - XML Web Services (4 cr.) Presents the techniques for developing and implementing Web-based applications with Web forms, ASP.NET, and the Microsoft.NET Framework. Includes Window services.NET remote objects, XML Web services, security, and consuming and manipulating Web data.

ITP 220 - Java Programming II (4 cr.) Imparts instruction in application of advanced object-oriented techniques to application development using Java. Emphasizes database connectivity, inner classes, collection classes, networking, and threads.

ITP 224 - Mobile Java ME (4 cr.) Provides skills for creating Java ME applications for wireless devices. Systems will be developed for mobile phones and a range of rich hand-held devices such as PDAs with applications utilizing the Java ME architecture and Java Specification Requests (JSRs).

ITP 225 - Web Scripting Languages (3 cr.) Introduces students to principles, systems, and tools used to implement web applications. Provides students with a comprehensive introduction to the programming tools and skills required to build and maintain interactive Web sites. Students will develop Web applications using client-side and server-side scripting languages along with auxiliary tools needed for complete applications. Prerequisites: ITD 110, ITP 100.

ITP 226 - Mobile Java Android Development (4 cr.) Provides the necessary design and programming skills required for developing applications on mobile devices (smartphones, tablets, etc.). Utilize the Java-based Android Development Kit to create Android applications, from concept to business model to final product.

ITP 236 - C# Programming II (4 cr.) Focuses instruction in advanced object-oriented techniques using C# for application development. Emphasizes database connectivity and networking using the .NET Framework.

ITP 244 - ASP.NET - Server Side Programming (4 cr.) Entails instruction in creation of ASP.NET Web applications to deliver dynamic content to a Web site utilizing server controls, web forms, and web services to accomplish complex data access tasks.

ITP 246 - JAVA - Server Side Programming (3 cr.) Provides instruction in application and integration of web-based clients and server-side java to three-tier business applications. Includes us of tools UML, XML, Java servlets, JSPs, and JDBC database access.

ITP 251 - Systems Analysis and Design (4 cr.) Focuses on application of information technologies (IT) to system life cycle methodology, systems analysis, systems design, and system implementation practices. Covers methodologies related to identification of information requirements, feasibility in the areas of economic, technical and social requirements, and related issues are included in course content. Software applications may be used to enhance student skills.

ITP 258 - Systems Development Project (3 cr.) Provides instruction in application of life cycle system development methodologies using a case study which incorporates feasibility study system analysis, system design, program specification, and implementation planning. Course project assignment(s) will have students perform as members of system development teams.

ITP 265 - Applications of Modeling and Simulation (4 cr.) Expands understanding of Modeling and Simulation via the implementation of a capstone project. Continues to develop object oriented programming skills. Expands 3D visualization skills. Examines all aspects of the project lifecycle. Develops workplace readiness for the Modeling and Simulation industry.

(MAC) Machine Technology

MAC 101 - Machine Shop I (8 cr.) Introduces the machinist to identification, care, and use of precision tools and instruments. Emphasizes the operation of the drill press, lathe, power saw, grinder, and milling machine. Covers the sharpening of lathe curing tools, safety, and good housekeeping. Provides for operation and setup on the various types of precision grinders, milling machines, and drill presses. Part I of II.

MAC 102 - Machine Shop II (7 cr.) Introduces the machinist to identification, care, and use of precision tools and instruments. Emphasizes the operation of the drill press, lathe, power saw, grinder, and milling machine. Covers the sharpening of lathe curing tools, safety, and good housekeeping. Provides for operation and setup on the various types of precision grinders, milling machines, and drill presses. Part II of II.

MAC 108 - Computer Numerically Controlled (CNC) Grinding (2 cr.) Provides students with the opportunity to demonstrate proper techniques in computer numerically controlled (CNC) outside diameter (OD), internal diameter (ID), and surface grinding. Covers the programming and operation of various CNC grinders and the set-up of selected grinding operations. Focuses on understanding the importance of machine parameters and wheel selection to surface finish in grinding applications.

MAC 121 - Numerical Control I (2 cr.) Focuses on numerical control techniques in metal forming and machine processes. Includes theory and practice in lathe and milling machine computer numerical control program writing, setup and operation. Part I of II.

MAC 122 - Numerical Control II (2 cr.) Focuses on numerical control techniques in metal forming and machine processes. Includes theory and practice in lathe and milling machine computer numerical control program writing, setup and operation. Part II of II.

MAC 123 - Computer Numerical Control III (2 cr.) Focuses on numerical control techniques in metal forming and machine processes. Includes theory and practice in lathe and milling machine computer numerical control program writing, setup and operation.

MAC 126 - Introductory CNC Programming (3 cr.) Introduces programming of computerized numerical control machines with hands-on programming and operation of CNC machines.

MAC 127 - Advanced CNC Programming (3 cr.) Provides in-depth study of programming computerized numerical control machines.

MAC 128 - CNC Programming (2 cr.) Teaches programming of computerized numerical control machines. Focuses on CNC machining processes..

MAC 130 - Introduction to Electric Discharge Machining (EDM) (2 cr.) Introduces the equipment, processes, and components of electric discharge machining. Includes basic operation and programming for computer numerical control (CNC) electrical discharge machining (EDM).

MAC 131 - Machine Lab I (2 cr.) Teaches fundamental machine shop operations, bench work, layout, measuring tools, and safety. Part I of II.

MAC 134 - CMM Operation and Programming (2 cr.) Focuses on inspection using a Coordinate Measuring Machine. Includes hands-on demonstration of CMM setup, initialization and operation. Covers the essential aspects of the software and CMM operation, using a sample part for hands-on practice.

MAC 146 - Metals/Heat Treatment (2 cr.) Provides approach to metals and their structure. Gives working knowledge of methods of treating ferrous and non- ferrous metals.

MAC 150 - Introduction to Computer Aided Manufacturing (3 cr.) Introduces computer aided manufacturing (CAM) with emphasis on programming of numerical control machinery. Teaches program writing procedures using proper language and logic and a CAM programming system to produce numerical control code for machines. Teaches basic computer usage, 2 1/2D and 3D CAD-CAM integration, and code-to-machine transfer.

MAC 161-162 Machine Shop Practices I-II (3 cr. each) Introduces safety procedures, bench work, hand tools, precision measuring instruments, drill presses, cut- off saws, engine lathes, manual surface grinders, and milling machines. Part I and II of II.

MAC 163-164 Machine Shop Practices III-IV (3 cr. each) Offers practice in the operation of the drill press, engine lathe, vertical milling machine, horizontal milling machine, and the surface grinder. Introduces practical heat treatment of directly hardenable steels commonly used in machine shops. Part I and II of II.

MAC 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

MAC 209 - Standards, Measurements and Calculations (3 cr.) Presents typical mathematical and mechanical problems requiring the use of reference standards such as the Machinery's Handbook for solution. Presents use of the Coordinate Measuring Machine for solution.

MAC 221-222-223 - Advanced Machine Tool Operations I-II-III (7 cr. each) Focuses on advanced lathe and mill work with concentration on fits, finishes, inspection, quality control, and basic heat treating. Includes design and construction of specific projects to determine the student's operational knowledge of all equipment. Part I, II and III of III.

MAC 224 - Advanced Tooling Applications (3 cr.) Provides students with the opportunity to demonstrate the techniques for selecting proper tool applications. Focuses on complex tool geometries and their effects on machining parameters in a precision environment. Examines production advantages of advanced tooling applications. Highlights 5-axis milling programming to maximize tool life and optimize performance.

MAC 251 - Advanced Computer Aided Manufacturing (CAM) Modeling and Simulation (3 cr.) Provides students with the opportunity to demonstrate the usage of computer-aided manufacturing (CAM) in a complex 5-axis milling and 3-axis turning environment. Examines model and program complex parts using computer-aided design (CAD) and CAM software and features various complex multi-axis machining methods and applications. Applies machining methods to a flow cell precision machining production environment to witness positive production and quality impacts.

MAC 253 - Advanced Coordinate Measuring Machine (CMM) Operating and Programming (3 cr.) Provides students with the opportunity to demonstrate advanced coordinate measuring machine (CMM) programming using modeling and scanning. Examines advanced geometrical dimensioning and tolerancing (GD&T) theories and reports. Covers advanced machine tool calibration, investigate form, and use complex visual inspection equipment.

MAC 254 - Machining Flow Cell IT Integration (2 cr.) Provides students with the opportunity to demonstrate process and quality control through the use of information technology (IT) systems in the manufacturing environment. Covers the use of measure cuts in high-end machining, systems communication, and data transfer to monitor productivity and quality. Features tools to monitor part quality in process.

MAC 255 - Introduction to Supply Chain Strategies for Industry (3 cr.) Focuses on effective supply chain strategies for industry. Covers first article part inspections and production validation. Demonstrates flow cell ideology in a live flow cell production environment. Examines value stream mapping, customer/supplier roles, and quality systems in addition to proper health and safety guidelines.

MAC 256 - Multi-axis Machine Tool Set-up, Programming and Operation (3 cr.) Covers the programming and operation of high end 5-axis milling and 3-axis turning machines. Features complex set-ups on 5-axis milling and 3-axis turning machines. Examines technical instructions and guidelines set forth by a flow cell precision machining environment. Demonstrates the necessary standard and quality audits associated with a machining flow cell.

MAC 257 - Precision Machining Flow Cell Capstone (4 cr.) Provides students with the opportunity to demonstrate various machining methods such as 5-axis milling, 3-axis turning, internal diameter (ID) and outside diameter (OD) grinding in addition to vertical and wire electrical discharge machining (EDM). Covers coordinate measuring machine (CMM) programming and measuring, tool presetting and validation. Examines Lean and Six Sigma methodology in a live precision machining flow cell.

MAC 258 - Tool Inspection, Validation and Presetting (2 cr.) Covers the importance of tool management and tool presetting in a production environment. Examines tool presetting and tool presetter programming. Provides students with the opportunity to inspect and validate complex tool geometry using a computer numerical controlled (CNC) tool presetter.

MAC 295 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

(MDL) Medical Laboratory

MDL 101 - Introduction to Medical Laboratory Techniques (3 cr.) Introduces the basic techniques including design of the health care system, ethics, terminology, calculations, venipuncture and routine urinalysis.

MDL 105 - Phlebotomy (4 cr.) Introduces basic medical terminology, anatomy, physiology, components of health care delivery and clinical laboratory structure. Teaches techniques of specimen collection, specimen handling, and patient interactions.

MDL 106 - Clinical Phlebotomy (3 cr.) Focuses on obtaining blood specimens, processing specimens, managing

assignments, assisting with and/or performing specified tests, performing clerical duties and maintaining professional communication. Provides supervised learning in college laboratory/and or cooperating agencies.

MDL 110 - Urinalysis and Body Fluids (3 cr.) Studies the gross, chemical, and microscopic techniques used in the clinical laboratory. Emphasizes study of clinical specimens which include the urine, feces, cerebrospinal fluid, blood, and body exudates. Introduces specimen collection and preparation.

MDL 125 - Clinical Hematology I (3 cr.) Teaches the cellular elements of blood including blood cell formation, and routine hematological procedures.

MDL 190 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

MDL 210 - Immunology and Serology (3 cr.) Teaches principles of basic immunology, physiology of the immune system, diseases involving the immune system, as well as serologic procedures.

MDL 216 - Blood Banking (4 cr.) Teaches fundamentals of blood grouping and typing, compatibility testing, antibody screening, component preparation, donor selection, and transfusion reactions and investigation.

MDL 225 - Clinical Hematology II (3 cr.) Teaches advanced study of blood to include coagulation, abnormal bloody formation, and changes seen in various diseases.

MDL 251 - Clinical Microbiology I (3 cr.) Teaches handling, isolation, and identification of pathogenic microorganisms. Emphasizes clinical techniques of bacteriology, mycology, parasitology and virology. Part I of II.

MDL 252 - Clinical Microbiology II (3 cr.) Teaches handling, isolation, and identification of pathogenic microorganisms. Emphasizes clinical techniques of bacteriology, mycology, parasitology and virology. Part II of II.

MDL 262 - Clinical Chemistry and Instrumentation II (4 cr.) Introduces methods of performing biochemical analysis of clinical specimens. Teaches instrumentation involved in a clinical chemistry laboratory, quality control, and the ability to recognize technical problems. Part II of II.

MDL 281 - Clinical Correlations (1 cr.) Teaches students to apply knowledge gained in courses offered in the MDL curriculum using primarily a case history form of presentation. Emphasizes critical thinking skills in the practice of laboratory medicine.

MDL 282 - Clinical Laboratory Techniques (3 cr.) Includes performing techniques, procedures, and interpretations in all areas of the clinical laboratory or simulated laboratory setting.

MDL 290 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service

firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(MEC) Mechanical Engineering Technology

MEC 100 - Introduction to Engineering Technology (2 cr.) Introduces professional fields of engineering technology. Covers the work of the engineering technologist, professional ethics, division of industrial practice, and engineering problem solving with hand calculator and computer applications.

MEC 111 - Materials for Industry (3 cr.) Studies the nature, structure, properties, and typical applications of metallic, polymeric, ceramic, and composite materials. Focuses on applications of materials as well as the behavior of materials subjected to external stresses. Addresses as required the earth's limited material resources, energy efficient materials, dependence on foreign sources of materials, material systems, thermal processing, and electronic-related materials.

MEC 126 - Computer Programming for Technologists (2 cr.) Introduces computer software and programming. Covers programming for the microcomputer using high level languages. Teaches computer solutions of mathematical problems in applications such as circuit analysis and static equilibrium.

MEC 131 - Mechanics I-Statics for Engineering Technology (3 cr.) Teaches Newton's laws, resultants and equilibrium of force systems, trusses and frames, determination of centroids, and distributed loads and moments of inertia. Introduces dry friction and force systems in space.

MEC 132 - Mechanics II Strength of Mat. for Eng. Tech. (3 cr.) Teaches the concepts of stress and strain. Provides an analysis of stresses and deformations in loaded members, connectors, shafts, beams, columns, and combined stress.

MEC 148 - Industrial Pipefitting (3 cr.) Covers the fundamentals of industrial piping installation, components, and layout. Considers the types of pipe and fabrication of piping systems, as well as the methods used to connect them.

MEC 154 - Mechanical Maintenance I (3 cr.) Provides an overview of basic maintenance techniques and processes for industrial mechanics and technicians who are installing and maintaining industrial mechanical and power transmission components.

MEC 161 - Basic Fluid Mechanics: Hydraulics/Pneumatics (3 cr.) Introduces theory, operation and maintenance of hydraulic/ pneumatics devices and systems. Emphasizes the properties of fluids, fluid flow, fluid statics, and the application of Bernoulli's equation.

MEC 162 - Applied Hydraulics and Pneumatics (3 cr.) Introduces hydraulic and pneumatic systems found in construction equipment, road vehicles, and farm equipment. Includes the basic theory, construction, maintenance and repair of hydraulic and pneumatic power systems.

MEC 168 - Pump Systems (2 cr.) Introduces the principles and

applications of various commercial and industrial pumps and pumping systems with setups to calculate and measure pressure, flow and velocity of fluids within pumping systems.

MEC 169 - Steam Systems (2 cr.) Introduces the components, principles and applications of various commercial and industrial steam and thermal controlled systems. Covers how to calculate and measure pressure, flow and system performance.

MEC 208 - Materials Handling and Forklift Operation (2 cr.) Provides guidance and hands-on experience in the use of jib, overhead cranes and the rigging involved for lifting/moving materials and working safely. Covers forklift training and safety issues for operating a forklift on the job site. Course prerequisites/corequisites SAF 130 or equivalent.

MEC 211-212 - Machine Design I-II (4 cr. each) Introduces analytical design of bearings, clutches, coupling, brakes, springs, gearing systems, and power shafting. Emphasizes methods of construction, machine parts and specifications of materials, and manufacturing processes. Part I and II of II.

MEC 254 - Mechanical Maintenance II (3 cr.) Covers advanced maintenance techniques and processes for industrial mechanics and technicians who are installing and maintaining industrial mechanical and power transmission components.

MEC 265 - Fluid Mechanics (3 cr.) Studies properties of fluids and fluid flow, Bernoulli's theorem, measuring devices, viscosity and dimensional analysis. Emphasizes fluid statics, flow in pipes and channels, and pumps.

MEC 266 - Applications of Fluid Mechanics (3 cr.) Teaches theory of hydraulic and pneumatic circuits including motors, controls, actuators, valves, plumbing, accumulators, reservoirs, pumps, compressors, and filters.

MEC 268 - Fluid Power - Hydraulic Systems (2 cr.) Studies hydraulic components and their integration into complex systems including system analysis and troubleshooting. Introduces design considerations necessary for repair and modification. Covers closed loop control and proportional valves with electronic control.

MEC 269 - Fluid Power - Pneumatic Systems (2 cr.) Teaches pneumatic components, systems and trouble analysis. Introduces basic design for modification and repair. Covers open loop control, fluidics, robotics and computer controls.

(MKT) Marketing

MKT 100 - Principles of Marketing (3 cr.) Presents principles, methods, and problems involved in marketing to consumers and organizational buyers. Discusses problems and policies connected with distribution and sale of products, pricing, promotion, and buyer motivation. Examines variations of marketing research, legal, social, ethical, e-commerce, and international considerations in marketing.

MKT 110 - Principles of Selling (3 cr.) Presents a fundamental, skills-based approach to selling and relationship building. Emphasizes learning effective interpersonal communication skills in all areas of the sales process through skill-building activities. Examines entry-level sales careers in retailing, wholesaling, services and industrial selling.

MKT 170 - Customer Service (1 cr.) Introduces students to the concepts of marketing as they relate to customer service. Teaches development of customer service training and implementation of strategies to improve customer relations and service. Includes lecture, role-playing, and case studies.

MKT 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours

MKT 216 - Retail Organization and Management (3 cr.) Examines the organization of the retail establishment to accomplish its goals in an effective and efficient manner. Includes study of site location, internal layout, store operations, and security. Examines the retailing mix, the buying or procurement process, pricing, and selling. Studies retail advertising, promotion, and publicity as a coordinated effort to increase store traffic.

MKT 227 - Merchandise Buying and Control (3 cr.) Studies the merchandising cycle. Explores techniques used in the development of buying resources, merchandising plans, model stock, unit control, and inventory systems. Highlights merchandise selection, policy pricing strategies, and inventory control methods.

MKT 228 - Promotion (3 cr.) Presents an overview of integrated marketing communications through advertising, public relations, personal selling and sales promotion. Focuses on coordinating these activities into an effective campaign to promote sales for a particular product, business, institution or industry.

MKT 281 - Principles of Internet Marketing (3 cr.) Introduces students to Internet marketing. Discusses how to implement marketing programs strategically and tactically using online communications tools. Teaches e-marketing strategies.

MKT 282 - Principles of E-Commerce (3 cr.) Studies on-line business strategies, and the hardware and software tools necessary for Internet commerce. Includes the identification of appropriate target segments, the development of product opportunities, pricing structures, distribution channels and execution of marketing strategies.

MKT 297 - Cooperative Education (1-6 cr.) Supervises in on-the-job training for pay in approved business, industrial and service firms, coordinated by the college's cooperative education office. Is applicable to all occupational- technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

MKT 298 - Seminar and Project (1-5 cr.) Requires completion

of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(MTE) Math Essentials

MTE 1 - Operations with Positive Fractions (1 cr.) Includes operations and problem solving with proper fractions, improper fractions, and mixed numbers without the use of a calculator. Emphasizes applications and includes U. S. customary units of measure. Credit is not applicable toward graduation. Prerequisite: Qualifying placement score.

MTE 2 - Operations with Positive Decimals and Percents (1 cr.) Includes operations and problem solving with positive decimals and percents. Emphasizes applications and includes U. S. customary and metric units of measure. Credit is not applicable toward graduation. Prerequisite(s): MTE 1 or qualifying placement score.

MTE 3 - Algebra Basics (1 cr.) Includes basic operations with algebraic expressions and solving simple algebraic equations using signed numbers with emphasis on applications. Credit is not applicable toward graduation. Prerequisite: MTE 2 or qualifying placement score.

MTE 4 - First Degree Equations and Inequalities in One Variable (1 cr.) Includes solving first degree equations and inequalities containing one variable, and using them to solve application problems. Emphasizes applications and problem solving. Credit is not applicable toward graduation. Prerequisite(s): MTE 3 or qualifying placement score.

MTE 5 - Linear Equations, Inequalities and Systems of Linear Equations in Two Variables (1 cr.) Includes finding the equation of a line, graphing linear equations and inequalities in two variables and solving systems of two linear equations. Emphasizes writing and graphing equations using the slope of the line and points on the line, and applications. Credit is not applicable toward graduation. Prerequisite(s): MTE 4 or qualifying placement score.

MTE 6 - Exponents, Factoring and Polynomial Equations (1 cr.) The student will learn to perform operations on exponential expressions and polynomials. Students will also learn techniques to factor polynomials and use these techniques to solve polynomial equations. Emphasis should be on learning all the different factoring methods, and solving application problems using polynomial equations. Credit is not applicable toward graduation. Prerequisite(s): MTE 5 or qualifying placement score.

MTE 7 - Rational Expressions and Equations (1 cr.) Includes simplifying rational algebraic expressions, solving rational algebraic equations and solving applications that use rational algebraic equations. Credit is not applicable toward graduation. Prerequisite(s): MTE 6 or qualifying placement score.

MTE 8 - Rational Exponents and Radicals (1 cr.) Includes simplifying radical expressions, using rational exponents, solving radical equations and solving applications using radical equations. Credit is not applicable toward graduation. Prerequisite(s): MTE 7 or qualifying placement score.

MTE 9 - Functions, Quadratic Equations and Parabolas (1 cr.) Includes an introduction to functions in ordered pair, graph, and equation form. Also introduces quadratic functions, their properties and their graphs. Credit is not applicable toward graduation. Prerequisite(s): MTE 8 or qualifying placement score.

(MTH) Mathematics

MTH 111 - Basic Technical Mathematics (3 cr.) Provides a foundation in mathematics with emphasis in arithmetic, unit conversion, basic algebra, geometry and trigonometry. This course is intended for CTE programs. Prerequisites: MTE 1-3. Prereq OR Corequisite: MCR 1.

MTH 115 - Technical Mathematics I (3 cr.) Presents algebra through exponential and logarithmic functions, trigonometry, vectors, analytic geometry, and complex numbers. Prerequisites: Competency in Math Essentials MTE 1-6 as demonstrated through the placement and diagnostic tests, or by satisfactorily completing required MTE units or equivalent. Part I of II.

MTH 120 - Introduction to Mathematics (3 cr.) Introduces number systems, logic, basic algebra, and descriptive statistics. Prerequisites: Competency in Math Essentials MTE 1-3 as demonstrated through the placement and diagnostic tests, or by satisfactorily completing the required MTE units or equivalent. (Intended for occupational/technical programs.)

MTH 121 - Fundamentals of Mathematics I (3 cr.) Covers concepts of numbers, fundamental operations with numbers, formulas and equations, graphical analysis, binary numbers, Boolean and matrix algebra, linear programming, and elementary concepts of statistics. Prerequisites: Competency in Math Essentials MTE 1-3 as demonstrated through the placement and diagnostic tests, or by satisfactorily completing the required MTE units or equivalent (Intended for occupational/technical programs.)

MTH 130 - Fundamentals of Reasoning (3 cr.) Presents elementary concepts of algebra, linear graphing, financial literacy, descriptive statistics, and measurement & geometry. Based on college programs being supported by this course, colleges may opt to add additional topics such as logic or trigonometry. This course is intended for occupational/technical programs. Prerequisite(s): Competency in MTE 1-3 as demonstrated through placement or unit completion or equivalent or Corequisite: MCR 2.

MTH 133 - Mathematics for Health Professions (3 cr.) Presents in context the arithmetic of fractions and decimals, the metric system and dimensional analysis, percents, ratio and proportion, linear equations, topics in statistics, topics in geometry, logarithms, topics in health professions including dosages, dilutions and IV flow rates. This course is intended for

programs in the Health Professions. Prerequisite(s): Competency in MTE 1-3 as demonstrated through placement or unit completion or equivalent or Corequisite: MCR 9.

MTH 141 - Business Mathematics I (3 cr.) Provides instruction, review, and drill in percentage, cash and trade discounts, mark-up, payroll, sales, property and other taxes, simple and compound interest, bank discounts, loans, investments, and annuities. Prerequisites: Competency in Math Essentials MTE 1-3 as demonstrated through the placement and diagnostic tests, or by satisfactorily completing the required MTE units or equivalent. Part I of II.

MTH 152 - Mathematics for the Liberal Arts II (3 cr.) Presents topics in functions, combinatorics, probability, statistics and algebraic systems. Prerequisites: Competency in Math Essentials MTE 1-5 as demonstrated through the placement and diagnostic tests, or by satisfactorily completing the required MTE units or equivalent.

MTH 154 - Quantitative Reasoning (3 cr.) Presents topics in proportional reasoning, modeling, financial literacy and validity studies (logic and set theory). Focuses on the process of taking a real-world situation, identifying the mathematical foundation needed to address the problem, solving the problem and applying what is learned to the original situation. Prerequisite(s): Competency in MTE 1-5 as demonstrated through placement or unit completion or equivalent or Corequisite: MCR 4: Learning Support for Quantitative Reasoning.

MTH 155 - Statistical Reasoning (3 cr.) Presents elementary statistical methods and concepts including visual data presentation, descriptive statistics, probability, estimation, hypothesis testing, correlation and linear regression. Emphasis is placed on the development of statistical thinking, simulation, and the use of statistical software. Prerequisite: Competency in MTE 1-5 as demonstrated through placement or unit completion or equivalent or Co-requisite: MCR 5Learning Support for Statistical Reasoning.

MTH 157 - Elementary Statistics (3 cr.) Presents elementary statistical methods and concepts including descriptive statistics, estimation, hypothesis testing, linear regression, and categorical data analysis. (Credit will not be awarded for both MTH 157 and MTH 240 or MTH 241.) Prerequisites: Competency in Math Essentials MTE 1-5 as demonstrated through the placement and diagnostic tests, or by satisfactorily completing the required MTE units or equivalent.

MTH 158 - College Algebra (3 cr.) Covers the structure of complex number systems, polynomials, rational expressions, graphing, systems of equations and inequalities and functions, quadratic and rational equations and inequalities.

MTH 161 - PreCalculus I (3 cr.) Presents topics in power, polynomial, rational, exponential, and logarithmic functions, and systems of equations and inequalities. Credit will not be awarded for both MTH 161: Precalculus I and MTH 167: Precalculus with Trigonometry or equivalent. Prerequisite(s): Competency in MTE 1-9 as demonstrated through placement

or unit completion or equivalent or Corequisite: MCR 6: Learning Support for Precalculus I.

MTH 162 - PreCalculus II (3 cr.) Presents trigonometry, trigonometric applications including Law of Sines and Cosines and an introduction to conics. Credit will not be awarded for both MTH 162: Precalculus II and MTH 167: Precalculus with Trigonometry or equivalent. Prerequisite(s): Placement or completion of MTH 161: Precalculus I or equivalent with a grade of C or better.

MTH 167 - PreCalculus with Trigonometry (5 cr.) Presents topics in power, polynomial, rational, exponential, and logarithmic functions, systems of equations, trigonometry, and trigonometric applications, including Law of Sines and Cosines, and an introduction to conics. Credit will not be awarded for both MTH 167: Precalculus with Trigonometry and MTH 161/MTH 162: Precalculus I and II or equivalent. Prerequisite(s): Competency in MTE 1-9 as demonstrated through placement or unit completion or equivalent or Corequisite: MCR 7: Learning Support for Precalculus w/ Trigonometry.

MTH 166 - Precalculus with Trigonometry (4 cr.) Presents college algebra, analytic geometry, trigonometry, and algebraic exponential, and logarithmic functions. Prerequisite: Competency in Math Essentials MTE 1-9 as demonstrated through the placement and diagnostic tests, or by satisfactorily completing the required MTE units or equivalent. (Credit will not be awarded for both MTH 163 and MTH 166).

MTH 173 - Calculus with Analytic Geometry I (4 cr.) Presents analytic geometry and the calculus of algebraic and transcendental functions including the study of limits, derivatives, differentials, and introduction to integration along with their applications. Designed for mathematical, physical and engineering science programs. Prerequisites: a placement recommendation for MTH 173 and four units of high school mathematics including Algebra I, Algebra II, Geometry and Trigonometry or equivalent. (Credit will not be awarded for more than one of MTH 173, MTH 175, or MTH 273.)

MTH 174 - Calculus with Analytic Geometry II (4 cr.) Continues the study of analytic geometry and the calculus of algebraic and transcendental functions including rectangular, polar, and parametric graphing, indefinite and definite integrals, methods of integration, and power series along with applications. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 173 or equivalent. (Credit will not be awarded for more than one of MTH 174, MTH 176 or MTH 274.)

MTH 175 - Calculus of One Variable I (3 cr.) Presents differential calculus of one variable including the theory of limits, derivatives, differentials, antiderivatives and applications to algebraic and transcendental functions. Designed for mathematical, physical, and engineering science programs. Prerequisites: a placement recommendation for MTH 175 and four units of high school mathematics including Algebra I, Algebra II, Geometry and Trigonometry or equivalent. (Credit will not be awarded for more than one of

MTH 173, MTH 175 or MTH 273.)

MTH 176 - Calculus of One Variable II (3 cr.) Continues the study of integral calculus of one variable including indefinite integral, definite integral and methods of integration with applications to algebraic and transcendental functions. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 175 or equivalent. (Credit will not be awarded for more than one of MTH 174, MTH 176 or MTH 274.)

MTH 177 - Introductory Linear Algebra (2 cr.) Covers matrices, vector spaces, determinants, solutions of systems of linear equations, and Eigen values. Designed for mathematical, physical, and engineering science programs. Corequisite: MTH 175.

MTH 178 - Topics in Analytic Geometry (2 cr.) Covers conic sections, polar and parametric equations, polar and parametric graphing, and calculus with vector valued functions. Designed for mathematical, physical, and engineering science programs. Prerequisite: 175, Corequisite: MTH 176.

MTH 240 - Statistics (3 cr.) Presents an overview of statistics, including descriptive statistics, elementary probability, probability distributions, estimation, hypothesis testing, and correlation and regression. Prerequisites: a placement recommendation for MTH 240 and successful completion of MTH 158, MTH 163, MTH 166, or equivalent.

MTH 241 - Statistics I (3 cr.) Covers descriptive statistics, elementary probability, probability distributions, estimation, and hypothesis testing. Prerequisites: a placement recommendation for MTH 241 and MTH 163 or MTH 166 or equivalent. (Credit will not be awarded for both MTH 240 and MTH 241.)

MTH 245 - Statistics I (3 cr.) Presents an overview of statistics, including descriptive statistics, elementary probability, probability distributions, estimation, hypothesis testing, correlation, and linear regression. Credit will not be awarded for both MTH 155: Statistical Reasoning and MTH 245: Statistics I or equivalent. Prerequisite: Completion of MTH 154 or MTH 161 or equivalent with a grade of C or better.

MTH 261 - Applied Calculus I (3 cr.) Introduces limits, continuity, differentiation and integration of algebraic, exponential and logarithmic functions, and techniques of integration with an emphasis on applications in business, social sciences and life sciences. Prerequisite: Completion of MTH 161 or equivalent with a grade of C or better.

MTH 263 - Calculus I (4 cr.) Presents concepts of limits, derivatives, differentiation of various types of functions and use of differentiation rules, application of differentiation, antiderivatives, integrals and applications of integration. Prerequisite: Completion of MTH 167 or MTH 161/162 or equivalent with a grade of C or better.

MTH 264 - Calculus II (4 cr.) Continues the study of calculus of algebraic and transcendental functions including rectangular, polar, and parametric graphing, indefinite and definite integrals, methods of integration, and power series along with applications. Features instruction for mathematical, physical and engineering science programs. Prerequisite: Completion of MTH 263 or equivalent with a grade of C or better.

MTH 265 - Calculus III (4 cr.) Focuses on extending the concepts of function, limit, continuity, derivative, integral and vector from the plane to the three dimensional space. Covers topics including vector functions, multivariate functions, partial derivatives, multiple integrals and an introduction to vector calculus. Features instruction for mathematical, physical and engineering science programs. Completion of MTH 264: Calculus II or equivalent with a grade of C or better.

MTH 266 - Linear Algebra (3 cr.) Covers matrices, vector spaces, determinants, solutions of systems of linear equations, basis and dimension, eigenvalues, and eigenvectors. Features instruction for mathematical, physical and engineering science programs. Prerequisite: Completion of MTH 263 or equivalent with a grade of B or better or MTH 264 or equivalent with a grade of C or better.

MTH 267 - Differential Equations (3 cr.) Introduces ordinary differential equations. Includes first order differential equations, second and higher order ordinary differential equations with applications and numerical methods. Prerequisite: Completion of MTH 264 or equivalent with a grade of C or better.

MTH 272 - Applied Calculus II (3 cr.) Covers techniques of integration, multivariable calculus, and an introduction to differential equations. Prerequisite: MTH 271 or equivalent.

MTH 274 - Calculus II (4 cr.) Covers vectors in three dimensions, definite integrals, methods of integration, indeterminate forms, partial differentiation, and multiple integrals. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 273 or equivalent. (Credit will not be awarded for more than one of MTH 174, MTH 176 or MTH 274.)

MTH 277 - Vector Calculus (4 cr.) Presents vector valued functions, partial derivatives, multiple integrals, and topics from the calculus of vectors. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 174 or equivalent.

MTH 279 - Ordinary Differential Equations (4 cr.) Introduces ordinary differential equations. Includes first order differential equations, second and higher order ordinary differential equations with application. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 174 or equivalent.

MTH 286 - Discrete Mathematics (4 cr.) Presents topics in discrete mathematical structures which are basic tools used in computer science. Covers sets, Boolean algebra, counting methods, generating functions and recurrence relations, graph theory, trees, and an introduction to finite state automata.

Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 174 or equivalent.

(MTS) Motorsports Management and Technology

MTS 105 - Fundamentals of Motorsports Technology (3 cr.) Introduces manual transmissions and differentials used in Stock car racing. Demonstrates and performs installation, repair, and maintenance of stock care repair, and maintenance of stock car manual gearboxes and final drive units. Prerequisites: ENG 03, ENG 05.

MTS 120 - Introduction to Motorsports Technology (3 cr.) Introduces the student to a survey of the Motorsports Industry. Explores the student to a broad overview of the industry, terminology and technology associated with developing a competition racecar.

MTS 125 - Motorsports Technology I (3 cr.) Introduces the student to the various systems of the racecar. Focuses on the inter-related functions and the theoretical concepts of the high performance race engine. Emphasizes hands-on skills with identification and installation of component parts of a race engine. Prerequisite: MTS 120.

MTS 126 - Motorsports Technology II (3 cr.) Introduces the student to charging, ignition systems and fuel systems of Stock car racing. Provides hands- on experience with specialized ignition systems, charging systems, fuel cells, fuel delivery, carburetion, and back up systems. Prerequisite: MTS 125.

MTS 130 - Motorsports Structural Technology I (3 cr.) Introduces the student to the basic design and fabrication of a racecar. Develops skills for use of the tools, equipment, and materials in the production of a racecar. Emphasizes safety, accuracy, and aesthetics of the racecar and the work environment. Prerequisite(s): MTS 125 and WEL 130.

MTS 135 - Sheet Metal Fabrication (3 cr.) Introduces sheet metal terminology, fabrication, and installation for covering structural framework of race cars. Provides project oriented, problem-based experiences with equipment and machinery used in the Motorsports industry.

(MUS) Music

MUS 121-122 - Music Appreciation I-II (3 cr. each) Increases the variety and depth of the student's interest, knowledge, and involvement in music and related cultural activities. Acquaints the student with traditional and twentieth century music literature, emphasizing the relationship music has as an art form with man and society. Increases the student's awareness of the composers and performers of all eras through listening and concert experiences. Part I and II of II.

MUS 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

(NAS) Natural Sciences

NAS 105 - Natural Science Topics for Modern Society (3 cr.) Emphasizes method of the scientific disciplines as applied to selected topics pertinent to modern society.

NAS 161 - Health Science I (4 cr.) Presents an integrated approach to human anatomy and physiology, microbiology, and pathology. Includes chemistry and physics as related to health sciences. Part I of II.

NAS 162 - Health Science II (4 cr.) Presents an integrated approach to human anatomy and physiology, microbiology, and pathology. Includes chemistry and physics as related to health sciences. Part II of II.

NAS 185 - Microbiology (4 cr.) Surveys microorganisms, presenting their characteristics and activities as related to health and disease.

(NSG) Nursing

NSG 100 - Introduction to Nursing Concepts (4 cr.) Introduces concepts of nursing practice and conceptual learning. Focuses on basic nursing concepts with an emphasis on safe nursing practice and the development of the nursing process. Provides supervised learning experiences in college nursing laboratories, clinical/community settings, and/or simulated environments. Prerequisite(s): BIO 141 or BIO 231 or NAS 161

NSG 106 - Competencies for Nursing Practice (2 cr.) Focuses on the application of concepts through clinical skill development. Emphasizes the use of clinical judgment in skill acquisition. Includes principles of safety, evidence-based practice, informatics and math computational skills. Prepares students to demonstrate competency in specific skills and drug dosage calculation including the integration of skills in the care of clients in simulated settings. Provides supervised learning experiences in college nursing laboratories, clinical/community settings, and/or simulated environments. Prerequisite(s): MTE 1-5 and BIO 141 (or BIO 231 or NAS 161)

NSG 130 - Professional Nursing Concepts (1 cr.) Introduces the role of the professional nurse and fundamental concepts in professional development. Focuses on professional identity, legal/ethical issues and contemporary trends in professional nursing. Prerequisite(s): BIO 141 or BIO 231 or NAS 161

NSG 152 - Health Care Participant (3 cr.) Focuses on the health and wellness of diverse individuals, families, and the community throughout the lifespan. Covers concepts that focus on client attributes and preferences regarding healthcare. Emphasizes population-focused care. Provides supervised learning experiences in college nursing laboratories, clinical/community settings, and/or cooperating agencies, and/or simulated environments. Prerequisite(s): BIO 142 (or BIO 232 or NAS 162), NSG 100, NSG 106, NSG 130 and NSG 200 Corequisite(s): BIO 150 or BIO 205

NSG 170 - Health/Illness Concepts (6 cr.) Focuses on the

nursing care of individuals and/or families throughout the lifespan with an emphasis on health and illness concepts. Includes concepts of nursing care for the antepartum client and clients with common and predictable illnesses. Provides supervised learning experiences in college nursing laboratories, clinical/community settings, and/or simulated environments. Prerequisite(s): BIO 142 (or BIO 232 or NAS 162), NSG 100, NSG 106, NSG 130 and NSG 200 Corequisite(s): BIO 150 or BIO 205

NSG 200 - Health Promotion and Assessment (3 cr.) Introduces assessment and health promotion for the individual and family. Includes assessment of infants, children, adults, geriatric clients and pregnant females. Emphasizes health history and the acquisition of physical assessment skills with underlying concepts of development, communication, and health promotion. Prepares students to demonstrate competency in the assessment of clients across the lifespan. Provides supervised learning experiences in college nursing laboratories, clinical/community settings, and/or simulated environments. Prerequisite(s): BIO 141 (or BIO 231 or NAS 161)

NSG 210 - Health Care Concepts I (5 cr.) Focuses on care of clients across the lifespan in multiple settings including concepts related to physiological health alterations and reproduction. Emphasizes the nursing process in the development of clinical judgment for clients with multiple needs. Provides supervised learning experiences in college nursing laboratories, clinical/community settings, and/or simulated environments. Part I of II. Prerequisite(s): BIO 150 (or BIO 205), NSG 152 and NSG 170

NSG 211 - Health Care Concepts II (5 cr.) Focuses on care of clients across the lifespan in multiple settings including concepts related to psychological and physiological health alterations. Emphasizes the nursing process in the development of clinical judgment for clients with multiple needs. Provides supervised learning experiences in college nursing laboratories, clinical/community settings, and/or simulated environments. Part II of II. Prerequisite(s): BIO 150 (or BIO 205), NSG 152 and NSG 170

NSG 230 - Advanced Professional Nursing Concepts (2 cr.) Develops the role of the professional nurse in the healthcare environment in preparation for practice as a registered nurse. Introduces leadership and management concepts and focuses on the integration of professional behaviors in a variety of healthcare settings. Prerequisite(s): NSG 210 and NSG 211

NSG 252 - Complex Health Care Concepts (4 cr.) Focuses on nursing care of diverse individuals and families integrating complex health concepts. Emphasizes clinical judgment, patient-centered care and collaboration. Prerequisite(s): NSG 210 and NSG 211

NSG 270 - Nursing Capstone (4 cr.) Provides students with the opportunity to comprehensively apply and integrate learned concepts from previous nursing courses into a capstone experience. Emphasizes the mastery of patient-centered care, safety, nursing judgment, professional

behaviors, informatics, quality improvement, and collaboration in the achievement of optimal outcomes of care. Provides supervised learning experiences in faculty and/or preceptor-guided college nursing laboratories, clinical/community settings, and/or simulated environments. Prerequisite(s): NSG 210 and NSG 211.

(NUR) Nursing

NUR 25 - Nursing Assistant (3 cr.) Teaches fundamentals of patient care with laboratory experience in foods and fluids, elimination, moving patients, morning, afternoon and evening care, care of hospital equipment, means of providing special comforts and safety, and admission and discharge procedures.

NUR 27 - Nurse Aide I (3 cr.) Teaches care of older patients with emphasis on the social, emotional, and spiritual needs. Covers procedures; communication and interpersonal relations; observation, charting and reporting; safety and infection control; anatomy and physiology; personal care, nutrition and patient feeding; death and dying. May include laboratory or clinical hours.

NUR 98 - Seminar and Project (3 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit.

NUR 100 - Introduction to Nursing and Health (2 cr.) Introduces concepts of nursing and health. Includes historical and cultural aspects, legal, and ethical responsibilities and an overview of health and the health care delivery system.

NUR 111 - Nursing I (8 cr.) Introduces nursing principles including concepts of health and wellness and the nursing process. Develops nursing skills to meet the biopsychosocial needs of individuals across the lifespan. Includes math computational skills, basic computer instruction related to the delivery of nursing care, communication skills, introduction to nursing, health, the health care system, legal aspects of nursing care, diagnostic testing, assessment, teaching and learning, asepsis, body mechanics and safety, personal care, activity/rest, wound care, nutrition, elimination, oxygenation, fluid and electrolytes, pain control, medication administration, aging populations and pre/post-operative care. Provides supervised learning experiences

NUR 112 - Nursing II (8 cr.) Focuses on the nursing care of adults experiencing changes along the health/illness continuum that are common, well-defined, and have predictable outcomes. Includes math computational skills, basic computer instruction related to the delivery of nursing care; acid-base balance, gastrointestinal, genitourinary, musculoskeletal, immunology, oncology, sensori-neural, infectious diseases, endocrine, respiratory and blood disorders and care of the dying client. Provides supervised learning experiences in college nursing laboratories and/or cooperating agencies.

NUR 135 - Drug Dosage Calculations (2 cr.) Focuses on apothecary, metric, household conversion in medication dosage calculation for adult and pediatric clients. Provides a practical approach to learning to calculate and prepare medications and solutions. Includes calculating intravenous flow rates.

NUR 193 - Studies In (1-5 cr.) Covers new content not covered in existing courses in the discipline. Allows instructor to explore content and instructional methods to assess the course's viability as a permanent offering. Variable hours per week.

NUR 202 - Medical/Surgical Nursing I (4 cr.) Focuses on the care of individuals/families requiring complex or surgical treatment. Uses all components of the nursing process with increasing degrees of skill. Includes math computational skills and basic computer instruction related to the delivery of nursing care; cardiac, neurological, renal, burn disorders and clients experiencing shock. Provides supervised learning experiences in college nursing laboratories and/or cooperating agencies.

NUR 208 - Acute Medical-Surgical Nursing (5 cr.) Focuses on the use of nursing process to provide care to individuals/families with acute medical or surgical problems or to prevent such problems. Includes math computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experiences in cooperating agencies.

NUR 226 - Health Assessment (3 cr.) Introduces the systematic approach to obtaining a health history and performing a physical assessment.

NUR 230 - Pharmacology (3 cr.) Introduces general principles of drug action, pharmacology of the major drug classes, and specific agents within each class. Includes math calculations necessary to adapt dosages to the multidimensional needs of individuals across the lifespan.

NUR 245 - Maternal/Newborn Nursing (3 cr.) Develops nursing skills in caring for families in the antepartum, intrapartum, and post-partum periods.

NUR 246 - Parent/Child Nursing (3 cr.) Develops nursing skills in caring for both well and ill children in a variety of settings. Emphasizes theories of growth and development and the family as a unit.

NUR 247 - Psychiatric/Mental Health Nursing (3 cr.) Develops nursing skills in caring for individuals, families, and/or groups with mental health needs. Explores various treatment models, diagnostic categories, and rehabilitative measures.

NUR 254 - Dimensions of Professional Nursing (2 cr.) Explores the role of the professional nurse. Emphasizes nursing organizations, legal and ethical implications, and addresses trends in management and organizational skills. Explores group dynamics, relationships, conflicts, and leadership styles.

(PED) Phys Education and Recreation

PED 103 - Aerobic Fitness I (1-2 cr.) Develops cardiovascular fitness though activities designed to elevate and sustain heart rates appropriate to age and physical condition. Part I of II.

PED 104 - Aerobic Fitness II (1-2) Develops cardiovascular fitness though activities designed to elevate and sustain heart rates appropriate to age and physical condition. Part II of II.

PED 107 - Exercise and Nutrition I (2 cr.) Provides for the study and application of fitness and wellness and their relationship to a healthy lifestyle. Defines fitness and wellness, evaluates the student's level of fitness and wellness. Students will incorporate physical fitness and wellness into the course and daily living. A personal fitness/wellness plan is required for the 2 credit course. Part I of II.

PED 108 - Exercise and Nutrition II (2 cr.) Provides for the study and application of fitness and wellness and their relationship to a healthy lifestyle. Defines fitness and wellness, evaluates the student's level of fitness and wellness. Students will incorporate physical fitness and wellness into the course and daily living. A personal fitness/wellness plan is required for the 2 credit course. Part II of II.

PED 109 - Yoga (1-2 cr.) Focuses on the forms of yoga training emphasizing flexibility.

PED 110 - Zumba (1-2 cr.) Focuses on Latin rhythms, dance moves and techniques in Zumba. Utilizes physical activity, cardiovascular endurance, balance, coordination and flexibility as related to dance.

PED 111 - Weight Training I (1-2 cr.) Focuses on muscular strength and endurance training through individualized workout programs. Teaches appropriate use of weight training equipment. Part I of II.

PED 112 - Weight Training II (1-2 cr.) Focuses on muscular strength and endurance training through individualized workout programs. Teaches appropriate use of weight training equipment. Part II of II.

PED 117 - Fitness Walking (1 cr.) Teaches content and skills needed to design, implement, and evaluate an individualized program of walking, based upon fitness level.

PED 118 - Baseball Fundamentals I (1-2 cr.) Enhances the mental and physical ability of students for playing the sport of baseball. Introduces skills of weight training, flexibility, fielding, throwing, hitting, pitching, and position play. Explains the history of the sport and provides students an understanding of and respect for the game and its role in society.

PED 119 - Baseball Fundamentals II (1-2 cr.) Continues to enhance the mental and physical ability of students for playing the sport of baseball. Continues to teach the skills necessary to play the sport. Provides students with the opportunity to evaluate, train, and coach players in order to enhance others' playing abilities. Provides an understanding of the multiple processes involved in forming a baseball team.

PED 170 - Tai Chi I (1-2 cr.) Develops an understanding of the Theories and practices of Tai Chi. Explores the energy of exercise that will tone muscles, improve circulation and increase flexibility and balance. Discusses history and philosophy of exercise and relaxation techniques for stress reduction.

PED 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours.

PED 206 - Sports Appreciation (2 cr.) Focuses on the history, trends, rules, methods, strategy, and terminology of selected sports activities. Provides student awareness as a spectator and/or participant.

PED 270 - Tai Chi II (1-2 cr.) Develops an understanding of the Theories and practices of Tai Chi. Explores the energy of exercise that will tone muscles, improve circulation and increase flexibility and balance. Discusses history and philosophy of exercise and relaxation techniques for stress reduction.

(PHI) Philosophy

PHI 100 - Introduction to Philosophy (3 cr.) Presents an introduction to philosophical problems and perspectives with emphasis on the systematic questioning of basic assumptions about meaning, knowledge, reality, and values.

PHI 220 - Ethics (3 cr.) Provides a systematic study of representative ethical systems.

PHI 226 - Social Ethics (3 cr.) Provides a critical examination of moral problems and studies the application of ethical concepts and principles to decision-making. Topics may include abortion, capital punishment, euthanasia, man and the state, sexuality, war and peace, and selected issues of personal concern.

(PHT) Photography

PHT 100 - Introduction to Photography (3 cr.) Introduces principles of photography with outside shooting assignments related to lecture topics.

PHT 101 - Photography I (3 cr.) Teaches principles of photography and fundamental camera techniques. Requires outside shooting and lab work. Part I of II.

(PHY) Physics

PHY 130 - Survey of Applied Physics (3 cr.) Surveys topics such as heat, electricity, and light with emphasis on practical applications.

PHY 201 - General College Physics I (4 cr.) Teaches fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity and magnetism, and selected topics in modern physics. Part I of II.

PHY 202 - General College Physics II (4 cr.) Teaches fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity and magnetism, and selected topics in modern physics. Prerequisite: MTH 163. Part II of II.

PHY 241-242 - University Physics I-II (4 cr. each) Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity, and nuclear physics. Prerequisite for PHY 241--MTH 173 or MTH 273 or divisional approval. Prerequisite for PHY 242--MTH 174 or MTH 274 or divisional approval. Part I and II of II.

(PLS) Political Science

PLS 135 - American National Politics (3 cr.) Teaches political institutions and processes of the national government of the United States, focuses on the Congress, presidency, and the courts, and on their inter- relationships. Gives attention to public opinion, suffrage, elections, political parties, interest groups, civil rights, domestic policy, and foreign relations.

PLS 211 - U.S. Government I (3 cr.) Teaches structure, operation, and process of national, state, and local governments. Includes in-depth study of the three branches of the government and of public policy. Part I of II.

PLS 212 - U.S. Government II (3 cr.) Teaches structure, operation, and process of national, state, and local governments. Includes in-depth study of the three branches of the government and of public policy. Part II of II.

PLS 241 - International Relations I (3 cr.) Teaches geographic, demographic, economic, ideological, and other factors conditioning the policies of countries and discusses conflicts and their adjustment.

(PNE) Practical Nursing

PNE 135 - Maternal and Child Health Nursing (5 cr.) Examines pregnancy, childbirth, postpartum and newborn care from a family centered approach. Covers complications related to childbearing. Emphasizes growth and development and exploration of common childhood disorders at various stages.

PNE 145 - Trends in Practical Nursing (1 cr.) Studies the role of the Licensed Practical Nurse. Covers legal aspects, organizations, and opportunities in practical nursing. Assists students in preparation for employment.

PNE 158 - Mental Health and Psychiatric Nursing (1 cr.) Recognizes emotional needs of patients. Provides knowledge of the role that emotions play. Enables students to understand their own behavior as well as patient behavior.

PNE 161 - Nursing in Health Changes I (6 cr.) Focuses on nursing situations and procedures necessary to assist individuals in meeting special needs related to human functions.

PNE 162 - Nursing in Health Changes II (10 cr.) Continues the focus on nursing situations and procedures necessary to

assist individuals in meeting special needs related to human functions.

PNE 163 - Nursing in Health Changes III (9 cr.) Continues the focus on nursing situations and procedures necessary to assist individuals in meeting special needs related to human functions.

PNE 173 - Pharmacology for Practical Nurses (2 cr.) Studies history, classification, sources, effects, uses and legalities of drugs. Teaches problem solving skills used in medication administrations. Emphasizes major drug classes and specific agents within each class.

PNE 174 - Applied Pharmacology for Practical Nurses (2 cr.) Applies problem solving skills in preparing and administering medications.

(PNT) Printing

PNT 110 - Survey of Reproduction Processes (3 cr.) Presents history of printing, job safety, and career opportunities. Evaluates various printing processes including letterpress, offset, gravure, heat transfer, flexographic and screen printing.

PNT 130 - Applied Math for the Graphics Industry (3 cr.) Presents math skills as it relates to the graphics industry. Students will develop the computational skills necessary to prepare illustrations and photographs, computer page layouts, calculate paper stock and ink needs.

PNT 131 - Principles of Lithography I (4 cr.) Presents principles of lithography printing, its safety practices and equipment operation. Covers job planning, copy preparation, stripping, presensitized plates, small press operation, ink, paper handling, finishing operations.

PNT 135 - Print Imaging (2 cr.) Introduces the student to graphic imaging as it relates to the printing industry. Includes capturing and reproduction of line art, line copy and continuous tone by conventional and electronic methods.

PNT 141 - Printing Applications I (3 cr.) Provides instruction in the production of college-related publications and print shop management. Provides classroom and laboratory experiences in photography, layout and design, copy preparation, presswork, inventory control and production management. Part I of I.

PNT 142 - Printing Applications II (3 cr.) Provides instruction in the production of college-related publications and print shop management. Provides classroom and laboratory experiences in photography, layout and design, copy preparation, presswork, inventory control and production management. Part II of II.

PNT 211 - Electronic Publishing I (3 cr.) Teaches principles of typography and graphics, word processing and page layout. Survey of electronic publishing, hardware systems, peripherals, laser printers and imagesetters. Uses microcomputers to achieve a high degree of proficiency in completing a variety of laboratory projects. Prerequisite: PNT 131; Co-Requisites: PNT

221-222-223 or departmental approval.

PNT 221 - Layout and Design I (3 cr.) Analyzes production art necessary to prepare camera-ready copy for photomechanical printing. Teaches basic drawing concepts and techniques with emphasis on design principles, and care and use of instruments. Studies production methods to prepare ruled forms, overlays, bendays, bleeds, two and multicolor forms for advertising and publication work.

PNT 222 - Layout and Design II (3 cr.) Analyzes production art necessary to prepare camera-ready copy for photomechanical printing. Teaches basic drawing concepts and techniques with emphasis on design principles, and care/use of instruments. Studies production methods to prepare ruled forms, overlays, bendays, bleeds, two and multicolor forms for advertising and publication work.

PNT 231 - Lithographic Chemistry (2 cr.) Introduces chemistry and how it involves the printer. Covers the role of water in lithography, pH of solutions, plate coatings and film emulsions. Studies relationships of paper and ink, emulsification, waterlogging, effect of humidity, and causes and control of static electricity.

PNT 241 - Advanced Printing Applications (3 cr.) Continues PNT 141 to provide additional experience in production and shop management.

PNT 245 - Production Planning and Estimating (4 cr.) Teaches theory and gives experience in planning and quality control for printing production. Includes printing plant supervision and management techniques, organization, maintenance and inventory control systems. Discusses estimating for printing, including job layout, purchasing, pricing and trade customs.

PNT 251 - Offset Press Operations I-II (4 cr.) Explains procedures for practical operation of offset equipment including adjustments, setup make-ready, and imposition for single-color and multi-color production jobs. Studies feeder registration, printing and delivery systems, roller and blanket problems, ink and dampening problems, and quality control. Part I and II of II.

PNT 260 - Color Separation (3 cr.) Introduces study of color theories and principles as they apply to process color printing. Provides classroom and laboratory experiences in dot gain, densitometry, creation and manipulation of color images and electronic color separation. Prerequisites: PNT 132, PNT 135.

PNT 265 - Digital Imaging Applications (4 cr.) Provides an introduction to the proper use of software for production purposes. Covers design software for page layout and composition, image manipulation and creation, drawing and illustration.

PNT 298 - Seminar and Project (1-5 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May

be repeated for credit. Variable hours.

(PSY) Psychology

PSY 126 - Psychology for Business and Industry (3 cr.) Focuses on the application of psychology to interpersonal relations and the working environment. Includes topics such as group dynamics, motivation, employee-employer relationship, interpersonal communications. May include techniques for selection and supervision of personnel.

PSY 200 - Principles of Psychology (3 cr.) Surveys the basic concepts of psychology. Covers the scientific study of behavior, behavioral research methods and analysis, and theoretical interpretations. Includes topics that cover physiological mechanisms, sensation/perception, motivation, learning, personality, psychopathology, therapy, and social psychology. Readiness to enroll in English 111 required.

PSY 201-202 - Introduction to Psychology I-II (3 cr. each) Examines human and animal behavior, relating experimental studies to practical problems. Includes topics such as sensation/perception, learning, memory, motivation, emotion, stress, development, intelligence, personality, psychopathology, therapy, and social psychology. Part I and II of II.

PSY 215 - Abnormal Psychology (3 cr.) Explores historical views and current perspectives of abnormal behavior. Emphasizes major diagnostic categories and criteria, individual and social factors of maladaptive behavior, and types of therapy. Includes methods of clinical assessment and research strategies. Prerequisite PSY 200, 201, or 202.

PSY 230 - Developmental Psychology (3 cr.) Studies the development of the individual from conception to death. Follows a life-span perspective on the development of the person's physical, cognitive, and psychosocial growth.

PSY 235 - Child Psychology (3 cr.) Studies development of the child from conception to adolescence. Investigates physical, intellectual, social and emotional factors involved in the child's growth.

PSY 255 - Psychological Aspects of Criminal Behavior (3 cr.) Studies psychology of criminal behavior. Includes topics such as violent and non-violent crime, sexual offenses, insanity, addiction, white collar crime, and other deviant behaviors. Provides a background for law enforcement occupations. Prerequisites: PSY 125, 200, 201, 202 or divisional approval.

(REL) Religion

REL 200 - Survey of the Old Testament (3 cr.) Surveys books of the Old Testament, with emphasis on prophetic historical books. Examines the historical and geographical setting and place of the Israelites in the ancient Middle East as background to the writings.

REL 210 - Survey of the New Testament (3 cr.) Surveys books of the New Testament, with special attention upon placing the writings within their historical and geographical setting.

REL 230 - Religions of the World (3 cr.) Introduces the religions of the world with attention to origin, history, and doctrine.

REL 240 - Religions in America (3 cr.) Surveys various manifestations of religion in the American experience. Emphasizes concepts, problems, and issues of religious pluralism and character of American religious life.

(RTH) Respiratory Therapy

RTH 102 - Integrated Sciences for Respiratory Care II (3 cr.) Integrates the concepts of mathematics, chemistry, physics, microbiology, and computer technology as these sciences apply to the practices of respiratory care.

RTH 110 - Fund. Theory and Procedures for Respiratory Care (4 cr.) Focuses on the development of basic respiratory care skills necessary to enter the hospital environment. This is a first semester course that requires acceptance into the Respiratory Therapy program.

RTH 112 - Pathology of the Cardiopulmonary System (3 cr.) Presents pathophysiology of medical and surgical diseases with emphasis upon diseases of cardiopulmonary system.

RTH 113 - Pathophysiology of the Cardiopulmonary System (4 cr.) Presents pathophysiology of medical and surgical diseases with emphasis upon diseases of the cardiopulmonary system. Includes the development of diagnostic skills.

RTH 121 - Cardiopulmonary Science I (3 cr.) Focuses on pathophysiology, assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary and neuromuscular physiology and patho-physiology.

RTH 131 - Respiratory Care Theory and Procedures I (4 cr.) Presents theory of equipment and procedures and related concepts used for patients requiring general, acute and critical cardiopulmonary care. Part I of II.

RTH 132 - Respiratory Care Theory and Procedures II (4 cr.) Presents theory of equipment and procedures and related concepts used for patients requiring general, acute and critical cardiopulmonary care. Part II of II.

RTH 135 - Diagnostic and Therapeutic Procedures I (2 cr.) Focuses on purpose, implementation and evaluation of equipment, and procedures used in the diagnosis and therapeutic management of patients with cardiopulmonary disease.

RTH 145 - Pharmacology for Respiratory Care I (1 cr.) Presents selection criteria for the use of, and detailed information on pharmacologic agents used in pulmonary care.

RTH 190 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

RTH 199 - Supervised Study (1-5 cr.) Assigns problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

RTH 215 - Pulmonary Rehabilitation (1 cr.) Focuses on purpose and implementation of comprehensive pulmonary rehabilitation program.

RTH 222 - Cardiopulmonary Science II (3 cr.) Focuses on assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary, renal, and neuromuscular physiology, and pathophysiology.

RTH 223 - Cardiopulmonary Science III (2 cr.) Continues the exploration of topics discussed in RTH 121 and 222.

RTH 226 - Theory of Neonatal and Pediatric Respiratory Care (2 cr.) Focuses on cardiopulmonary physiology and pathology of the newborn and pediatric patient.

RTH 227 - Integrated Respiratory Therapy Skills II (2 cr.) Presents intensive correlation of all major respiratory therapy subject areas reflecting the entry-level and advanced practitioner matrices. Emphasizes assessment, implementation, and modification of therapy to patient response.

RTH 236 - Critical Care Monitoring (3 cr.) Focuses on techniques and theory necessary for the evaluation and treatment of the critical care patient, especially arterial blood gases and hemodynamic measurements. Explores physiologic effects of advanced mechanical ventilation.

RTH 265 - Current Issues in Respiratory Care (2 cr.) Explores current issues affecting the profession of respiratory care.

RTH 290 - Coordinated Internship (1-5 cr.) Supervises on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

RTH 299 - Supervised Study (1-5 cr.) Assigns problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

(SAF) Safety

SAF 120 - Safety & Health Standards: Regulations and Codes (3 cr.) Teaches development of safety standards, the Occupational Safety and Health Act (OSHA), its rules and regulations; penalties for non-compliance, and methods of compliance. Includes an examination of Government Regulatory Codes and appraisal of consensus, advisory, and proprietary standards.

SAF 126 - Principles of Industrial Safety (3 cr.) Teaches 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.

SAF 130 - Industrial Safety - OSHA 10 (1 cr.) Presents an introduction to occupational health and safety and its application in the workplace. Emphasizes safety standards and the Occupational Safety and Health Act (OSHA), its rules and regulations (OSHA 10).

(SDV) Student Development

SDV 100 - College Success Skills (1 cr.) Assists students in transition to colleges. Provides overviews of college policies, procedures, curricular offerings. Encourages contacts with other students and staff. Assists students toward college success through information regarding effective study habits, career and academic planning, and other college resources available to students. May include English and Math placement testing. Strongly recommended for beginning students. **Required for graduation.**

SDV 101 - Orientation to College (1 cr.) Introduces students to the skills which are necessary to achieve their academic goals, to services offered at the college and to the discipline in which they are enrolled. Covers topics such as services at the college including the learning resources center; counseling, and advising; listening, test taking, and study skills; and topical areas which are applicable to their particular discipline.

SDV 106 - Preparation for Employment (1 cr.) Provides experience in resume writing, preparation of applications, letters of application, and successfully preparing for and completing the job interview. Assists students in identifying their marketable skills and aptitudes. Develops strategies for successful employment search. Assists students in understanding effective human relations techniques and communication skills in job search.

SDV 108 - College Survival Skills (1 cr.) Provides an orientation to the college. Introduces study skills, career and life planning. Offers an opportunity to engage in activities aimed at self-discovery. Emphasizes development of "coping skills" such as listening, interpersonal relations, competence, and improved self-concept. Recommended for students enrolled in developmental courses.

SDV 110 - Orientation to Teaching As a Profession (3 cr.) Introduces students to a career in teaching and education by allowing students to experience the components of the learner, the school environment and the classroom teaching environment. Utilizes the Virginia Teachers for Tomorrow/ Teacher Cadet curriculum. Students participate in a 15-hour student teaching internship in a classroom at one of the levels between Kindergarten and grade 9.

SDV 195 - Topics In (1-5 cr.) Provides an opportunity to explore topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hours

SDV 198 - Seminar and Project (1-5 cr.) Requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(SOC) Sociology

SOC 200 - Principles of Sociology (3 cr.) Introduces fundamentals of social life. Presents significant research and

theory in areas such as culture, social structure, socialization, deviance, social stratification, and social institutions.

SOC 201-202 - Introduction to Sociology I-II (3 cr. each) Introduces basic concepts and methods of sociology. Presents significant research and theory in areas such as socialization, group dynamics, gender roles, minority group relations, stratification, deviance, culture, community studies. Includes population, social change, and social institutions (family, education, religion, political system, economic system). Part I and II of II.

SOC 215 - Sociology of the Family (3 cr.) Studies topics such as marriage and family in social and cultural context. Addresses the single scene, dating and marriage styles, child-rearing, husband and wife interaction, single parent families, alternative lifestyles.

SOC 235 - Juvenile Delinquency (3 cr.) Studies demographic trends, causal theories, and control of juvenile delinquency. Presents juveniles' interaction with family, schools, police, courts, treatment programs, and facilities. Also approved for ADJ Juvenile curriculum.

SOC 236 - Criminology (3 cr.) Studies research and causal theories of criminal behavior. Examines crime statistics, crime victims, and types of criminal offenses. Introduces role of police, judicial and correctional system in treatment and punishment of offenders. Is also approved for ADJ Criminology.

SOC 268 - Social Problems (3 cr.) Applies sociological concepts and methods to analysis of current social problems. Includes delinquency and crime, mental illness, drug addiction, alcoholism, sexual behavior, population crisis, race relations, family and community disorganization, poverty, automation, wars, and disarmament.

(SPA) Spanish

SPA 101 - Beginning Spanish I (4 cr.) Introduces understanding, speaking, reading, and writing skills and emphasizes basic Spanish sentence structure. May include an additional hour of oral drill and practice per week. Part I of II.

SPA 102 - Beginning Spanish II (4 cr.) Introduces understanding, speaking, reading, and writing skills and emphasizes basic Spanish sentence structure. May include an additional hour of oral drill and practice per week. Part II of II.

SPA 103-104 - Basic Spoken Spanish I-II (3 cr. each) Teaches oral communication and introduces cultural mores and customs to students with no prior instruction in the language. Part I and II of II.

SPA 150 - Spanish for Law Enforcement (3 cr.) Introduces Spanish to those in the criminal justice field. Emphasizes oral communication and practical first-hand police and justice vocabulary. May include oral drill and practice.

SPA 201 - Intermediate Spanish (3 cr.) Continues to develop understanding, speaking, reading, and writing skills. Prerequisite SPA 102 or equivalent. May include oral drill and practice. Part I of II.

SPA 203 - Intermediate Spanish I-II (3 cr.) Continues to develop understanding, speaking, reading, and writing skills. Classes conducted in Spanish. Prerequisite SPA 102 or equivalent. May include oral drill and practice. Part I of II.

SPA 204 - Intermediate Spanish I-II (3 cr.) Continues to develop understanding, speaking, reading, and writing skills. Classes conducted in Spanish. Prerequisite SPA 102 or equivalent. May include oral drill and practice. Part II of II.

(WEL) Welding

WEL 31 - Introductory Gas Tungsten Arc Welding (3 cr.) Introduces practical operations in use of tungsten arc welding and equipment, operations, safety practices in various positions, shielding gases, filler rods, process variations, and their applications.

WEL 116 - Welding I (Oxyacetylene) (2 cr.) Teaches oxygen/acetylene welding and cutting including safety of equipment, welding, brazing and soldering procedures and cutting procedures.

WEL 120 - Fundamentals of Welding (2 cr.) Introduces history of welding processes. Covers types of equipment, and assembly of units. Stresses welding procedures such as fusion, non-fusion, and cutting oxyacetylene. Introduces arc welding. Emphasizes procedures in the use of tools and equipment.

WEL 121 - Arc Welding (2 cr.) Studies the operation of AC and DC power sources, weld heat, polarities, and electrodes for use in joining various alloys by the SMAW process. Covers welds in different types of joints and different welding positions. Emphasizes safety procedures.

WEL 122 - Welding II (Electric Arc) (2 cr.) Teaches electric arc welding, including types of equipment, selection of electrodes, safety equipment and procedures, and principles and practices of welding.

WEL 124 - Shielded Metal Arc Welding (Advanced) (4 cr.) Continues instruction on operation of AC and DC power sources, welding polarities, heats and electrodes for use in joining various metal alloys by the arc welding process. Deals with running beads, butt, and fillet welds in all positions. Emphasizes safety procedures.

WEL 126 - Pipe Welding I (3 cr.) Teaches metal arc welding processes including the welding of pressure piping in the horizontal, vertical, and horizontal-fixed positions in accordance with section IX of the ASME code.

WEL 135 - Inert Gas Welding (2 cr.) Introduces practical operations in use of inert gas shielded arc welding. Studies equipment operation, setup, safety and practice of GMAW (MIG) and GTAW (TIG).

WEL 136 - Welding III (Inert Gas) (2 cr.) Studies Tungsten and metallic inert gas procedures and practices including principles of operation, shielding gasses, filler rods, process variations and applications, manual and automatic welding, equipment and safety.

WEL 138 - Pipe and Tube Welding (2 cr.) Develops entry level skills for the inert gas tungsten welding process (TIG) with emphasis upon thin and thick wall carbon and stainless piping and tubing. Prerequisite: WEL 136.

WEL 145 - Welding Metallurgy (3 cr.) Studies steel classifications, heat treatment procedures, properties of ferrous and non-ferrous metals. Discusses techniques and practices of testing welded joints and destructive/nondestructive, visual magnetic and fluorescent testing.

WEL 150 - Welding Drawing and Interpretation (3 cr.) Teaches fundamentals required for successful drafting as applied to the welding industry. Includes blueprint reading, geometric principles of drafting and freehand sketching, basic principles of orthographic projection, preparation of drawings and interpretation of symbols.

WEL 160 - Gas Metal Arc Welding (4 cr.) Introduces semi-automatic welding processes with emphasis on practical application. Includes the study of filler wires, fluxes, and gases.

WEL 199 - Supervised Study (1-5 cr.) Assigns problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

WEL 233 - Gas Metal Arc Welding (GMAW) Aluminum (2 cr.) Examines the use of the Gas Metal Arc Welding (GMAW) process of welding aluminum. Focuses on welding aluminum projects in various weld joint configurations and in all welding positions.

WEL 235 - Advanced Gas Metal Arc Welding (GMAW) (3 cr.) Continues the study of Gas Metal Arc Welding (GMAW), wire feed welding, Metal Inert Gas (MIG) using spray transfer, pulsed GMAW, short circuit transfer, and flux cored wire on various metals and joint designs. Focuses on developing GMAW skills with practice and instruction in these advanced processes.

WEL 237 - Applied Welding Process (3 cr.) Studies advanced welding applications for various materials, advanced welding skills and fabrication equipment. Examines materials to be welded such as stainless steel and aluminum, choosing the proper welding process such as advanced Gas Tungsten Arc Welding (GTAW)-Aluminum, Gas Metal Arc Welding (GMAW)-Aluminum and Shielded Metal Arc Welding (SMAW), developing the appropriate welding procedure for the materials chosen and successfully completing a capstone project for the entire course of study.

WEL 238 - Gas Tungsten Arc Welding (GTAW) Aluminum (2 cr.) Examines the use of the Gas Tungsten Arc Welding (GTAW) process in welding aluminum. Focuses on practice welding aluminum projects in various weld joint configurations and in all welding positions.

WEL 241 - Robotic Welding I (2 cr.) Examines safety, setup, programming, and operation of a welding robot. Covers variables and problems in addition to solutions applied to provide a practical and efficient application of the Gas Metal Arc Welding (GMAW) process to an automated system. (Part I of II).

WEL 242 - Robotics Welding II (2 cr.) Incorporates skills learned in Robotic Welding I into simulating projects used in industry. Focuses on Gas Metal Arc Welding (GMAW) processes used to create weldments taken from industry drawings and blueprints. (Part II of II) WEL 241.

WEL 244 - Weld Testing and Codes (2 cr.) Covers non-destructive (NDT) weld testing and how it plays a critical role in assuring that structural components and materials meet specified requirements. Examines how and why these NDT processes are used and will use them to test welds and weldments.

WEL 247 - Welding Layout and Fabrication I (2 cr.) Introduces student to project layout from shop sketches/blueprints, developing templates/patterns and the use of fabrication tools. Covers the safe operation of different types of manual metal fabrication equipment used in the industry. Examines safe and efficient use of the manual metal shear, metal roller, metal break and other fabrication. (Part I of II).

WEL 248 - Welding Layout and Fabrication II (2 cr.) Applies previously learned skills from Welding and Fabrication I in a job-simulated situation. Focuses on pipe, structural steel and other weldments that will be fabricated using all available equipment and welding processes. Covers job site type blueprints and drawings used in fabrication. Incorporates American Welding Society (AWS) visual inspection, weld measurements and codes. (Part II of II) WEL 247.

Index

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