Vermont Tech

Catalog 2018-2019

Master of Science
Computer Software Engineering

Bachelor of Science
Applied Business Management
Architectural Engineering Technology
Business Technology & Management
Computer Engineering Technology
Computer Information Technology
Computer Software Engineering
Construction Management
Dental Hygiene
Diversified Agriculture
Electrical Engineering Technology
Electromechanical Engineering Technology
Entrepreneurship
Manufacturing Engineering Technology
Nursing
Professional Pilot Technology
Renewable Energy

Associate of Science
Computer Information Technology
Computer Software Engineering
Dental Hygiene
Nursing
Respiratory Therapy

Associate of Engineering
Civil & Environmental Engineering Technology
Computer Engineering Technology
Electrical Engineering Technology
Mechanical Engineering Technology

Associate of Applied Science
Agribusiness Management
Architectural & Building Engineering Technology
Automotive Technology
Business Technology & Management
Construction Management
Dairy Farm Management
Diesel Power Technology
Entrepreneurship
Equine Studies
Fire Science
Forestry
General Engineering Technology
Landscape Design & Sustainable Horticulture
Veterinary Technology

Advanced Certificate
Advanced Software Development
Computer Networking
Cybersecurity
Software Development
Web Development

Certificate
Diesel Technology
Paramedicine
Practical Nursing

High School Diploma (VAST)

Foreword

This catalog presents a comprehensive preview of programs and policies.

Notice of College Regulations

The information contained in this catalog is current at the time of publication and subject to change at any time. The regulations included in this catalog and other official college statements are binding on all students. The college reserves the right to change any of the regulations or curriculum at any time. Students have had sufficient notice of all official regulations when such are contained in official publications or posted on the college's website: www.vtc.edu.

Should you have questions not answered in this catalog, please email admissions@vtc.edu or write to:

Office of Admissions
Vermont Technical College
PO Box 500
Randolph Center, VT 05061-0500

Vermont Tech:	(802) 728-1000
Office of Admissions:	(800) 442-8821 or (802) 728-1444
Fax:	(802) 728-1390

Non-Discrimination & Equal Opportunity Statement

Every member of Vermont Tech should work to ensure non-discriminatory processes and practices with faculty, staff, and students. Qualified students are recruited for, admitted to, and participate in all college programs without discrimination on the basis of race, color, sex, sexual orientation, religion, creed, national origin, age, veteran status, or disability. Vermont Tech provides reasonable accommodations to create equal opportunities for students with documented disabilities.

Faculty, administrators, and staff are employed without discrimination on the basis of race, color, sex, sexual orientation, religion, creed, national origin, age, veteran status, or disability unrelated to job requirements. Vermont Tech makes reasonable accommodations to the known disability of an otherwise qualified applicant or employee.

Additionally, the Vermont State Colleges (VSC) engage in affirmative efforts to recruit, admit, and support students and to recruit, employ, and support employees in order to achieve the diversity which advances the educational mission.

The VSC complies with state and federal laws related to equal opportunity and non-discrimination. Any questions or complaints about potential or perceived discrimination in violation of any state or federal law should be directed to: the Vermont Tech Ombudsperson, the VSC Office of the Chancellor, the Vermont Office of the Attorney General, or the federal Equal Opportunity Employment Commission.

If auxiliary aid or service is needed to apply for admission or employment, please contact Vermont Tech's Learning Skills Specialist at (802) 728-1396. For questions related to Title IX, please contact the Title IX coordinator via mail at PO Box 500, Randolph Center, Vermont 05061.

Academic Calendar 2018-2019

2018 Fall Term

Sunday	**August 26**	Academic Day: student advising/department meetings
Monday	**August 27**	Classes begin for all students on all campuses
Monday	**September 3**	Labor Day: no classes
Friday	**September 7**	Add/drop period ends
Monday	**September 24**	Early warnings due
Monday	**October 8**	Vacation week begins
Friday	**October 12**	Deadline for make-up of *I* grade from spring or summer
Friday	**October 12**	Fall graduation applications due
Monday	**October 15**	Classes resume
Tuesday	**October 23**	Registration for spring begins
Saturday	**November 3**	Last day to drop with a *W* (60% point)
Monday	**November 5**	Student faculty evaluation period begins
Friday	**November 16**	Registration for spring ends
Monday	**November 19**	Thanksgiving recess begins
Monday	**November 26**	Classes resume
Monday	**November 26**	Spring graduation applications due
Monday	**December 17**	Last day of classes for term
Monday	**December 17**	Student faculty evaluation period ends
Tuesday	**December 18**	Final exams and presentations week begins
Saturday	**December 22**	Final exams and presentations week ends
Monday	**December 24**	Final grades due
Friday	**January 4**	Final grades posted

2019 Spring Term

Monday	**January 21**	Classes begin
Friday	**February 1**	Add/drop period ends
Monday	**February 18**	Vacation week begins
Monday	**February 18**	Early warnings due
Monday	**February 25**	Classes resume
Friday	**March 15**	Deadline for make-up of *I* grade from fall
Friday	**March 29**	Last day to drop with a *W* (60% point)
Monday	**April 1**	Student faculty evaluation period begins
Monday	**April 8**	Vacation week begins
Monday	**April 8**	Registration for summer and fall begins
Monday	**April 15**	Classes resume
Friday	**April 26**	Registration for summer and fall ends

Friday	**May 10**	Last day of classes
Friday	**May 10**	Student faculty evaluation period ends
Monday	**May 13**	Final exams and presentations week begins
Friday	**May 17**	Final exams and presentations week ends
Saturday	**May 18**	Commencement
Sunday	**May 19**	Final grades due
Sunday	**May 19**	Commencement
Tuesday	**May 21**	Final grades posted
Tuesday	**May 21**	VAST graduation

PN Academic Calendar 2018-2019

2018 Fall Term

Monday	**August 27**	Classes begin for all students on all campuses
Monday	**September 3**	Labor Day: no classes
Friday	**September 7**	Add/drop period ends
Monday	**September 24**	Early warnings due
Monday	**October 8**	Columbus Day: no classes
Friday	**October 12**	Deadline for make-up of *I* grade from spring2
Tuesday	**October 23**	Last day to drop with a *W* (60% point)
Monday	**October 29**	Student faculty evaluation period begins
Monday	**October 29**	Registration for winter begins
Tuesday	**November 20**	Thanksgiving recess begins after classes
Monday	**November 26**	Classes resume
Friday	**December 7**	Student faculty evaluation period ends
Friday	**December 7**	Fall term ends after classes
Sunday	**December 9**	Final grades due
Tuesday	**December 11**	Final grades posted

2018 Winter Term

Monday	**December 10**	Classes begin
Friday	**December 21**	Vacation begins after classes
Monday	**January 7**	Classes resume
Monday	**January 21**	Early warnings due
Monday	**January 21**	Registration for spring2 begins
Friday	**February 15**	Vacation begins after classes
Monday	**February 25**	Classes resume
Saturday	**March 2**	Last day to drop with a *W* (60% point)
Monday	**March 4**	Student faculty evaluation period begins

Thursday	**March 7**	Deadline for make-up of *I* grade from fall
Friday	**April 5**	Vacation begins after classes
Monday	**April 15**	Classes resume
Friday	**April 19**	Winter term ends after classes
Friday	**April 19**	Student faculty evaluation period ends
Sunday	**April 21**	Final grades due
Tuesday	**April 23**	Final grades posted

2019 Spring2 Term

Monday	**April 22**	Classes begin
Friday	**April 26**	Graduation applications due
Friday	**May 17**	Deadline for make-up of *I* grade from winter
Monday	**May 20**	Early warnings due
Monday	**May 27**	Memorial Day: no classes
Monday	**May 27**	Last day to drop with a *W* (60% point)
Friday	**May 31**	Student faculty evaluation period begins
Thursday	**June 20**	Spring2 term ends after classes
Thursday	**June 20**	Student faculty evaluation period ends
Saturday	**June 22**	Final grades due
Saturday	**June 22**	Commencement
Monday	**June 24**	Final grades posted

General Information

Vermont Tech is part of the Vermont State Colleges (VSC) system that includes Castleton University, Northern Vermont University, and the Community College of Vermont and offers collegiate-level programs leading to certificates, associate degrees, and bachelor's degrees in agriculture; business; engineering technologies; applied technologies; allied health and nursing; and renewable energy. The college also offers a master's degree in software engineering.

Vermont Tech provides students with a rigorous, broad-based background in technology and applied sciences. Graduates are well-prepared to work with scientists, engineers, and other professionals in meeting the challenges of today's high-tech workplaces. They find career opportunities in business, industry, commerce, transportation, agriculture, healthcare, construction, government, and advanced manufacturing.

Vermont Tech Mission Statement

We provide career-focused technical and professional education in a caring community which prepares students for immediate workplace success and continued learning.

Institutional Values

Vermont Tech emphasizes the core values of dedication, integrity, and responsibility as a foundation for learning, career preparation, and citizenship.

Vermont Tech is dedicated to its tradition of helping students reach their full potential by developing their academic and scholarly proficiency; critical thinking and communication skills; civic responsibility; and global awareness.

The faculty, staff, administration, and students at Vermont Tech are committed to forming a stimulating, compassionate, and supportive learning community which fosters the personal and professional growth of all members.

Vermont Tech values its role in supporting the Vermont economy and meeting the needs of businesses by preparing highly qualified graduates in various occupations, as well as by providing businesses with opportunities for continuing education for their employees.

VSC Mission Statement

For the benefit of Vermont, the VSC system provides affordable, high-quality, student-centered, and accessible education, fully integrating professional, liberal, and career study, consistent with student aspirations and regional and state needs.

This integrated education, in conjunction with experiential learning opportunities, assures that graduates of VSC programs will:

- Demonstrate competence in communication, research, and critical thinking
- Practice creative problem-solving, both individually and in collaboration
- Be engaged, effective, and responsible citizens
- Bring to the workplace appropriate skills and an appreciation of work quality and ethics
- Embrace the necessity and joy of lifelong learning for personal and professional growth

The Vermont State College system provides continuing educational opportunities for individuals to meet their specific goals.

History

Since its founding more than 150 years ago, Vermont Tech has continuously evolved to meet the educational needs of the state and its workforce.

In Public Act No. 1 of 1866, the Vermont legislature established the first public schools in Vermont devoted to the education of teachers. The schools were located in Randolph, Johnson, and Castleton. The Randolph State Normal School served in this capacity until 1910, when the legislature determined that there was a need for a state agricultural school and established the Vermont School of Agriculture (VSA) at the Normal School site.

Over its long years of service, the VSA graduated many Vermonters who were distinguished by their numerous and notable contributions to agriculture and government.

In response to evolving educational needs, technical courses were added to the offerings of the school in 1957 and the institution was given a new name reflecting this expanding mission: Vermont Agricultural and Technical Institute (VATI). It was the first technical institute in Vermont with an initial enrollment of approximately 75 students.

By act of the 1961 legislature, VATI and the state teacher colleges (Castleton, Johnson, and Lyndon) were placed under the control of a newly created public corporation known as Vermont State Colleges. Community College of Vermont joined the other state colleges in 1975.

The name VATI was changed to Vermont Technical College on July 1, 1962 and the college was authorized to grant associate of applied science degrees. The associate of engineering degree was first granted in 1965.

On May 7, 1993, the VSC Board of Trustees approved the college's first baccalaureate degree program: the Bachelor of Science in Architectural Engineering Technology.

Nursing programs were added to the college curriculum in 1994 when Vermont's three schools of practical nursing became part of the Vermont Tech community. Beginning in the fall of 1996, Practical Nursing became a credit-bearing program that could be applied toward a two-year Associate Degree in Nursing from Vermont Tech. The Bachelor of Science in Nursing was added in 2013.

In 2015, Vermont Tech's NEASC accreditation was updated to include the offering of master's degrees with the launch of its Master of Science in Software Engineering. The college also began offering more certificate programs in allied health, agriculture, and computer science.

Academic Recognition

By authority conferred by the Vermont legislature, the Trustees of the VSC have authorized Vermont Tech to grant the degrees of associate of applied science, associate of science, associate of engineering, and bachelor of science with a major in the program pursued.

The Vermont Academy of Science and Technology (VAST) at Vermont Tech has Independent School Approval for grade 12 from the Vermont State Board of Education.

Vermont Tech is an institutional member of the New England Association of Schools and Colleges, the Vermont Higher Education Council, and the American Society for Engineering Education.

Accreditation

Vermont Tech is accredited by the New England Association of Schools and Colleges Commission on Institutions of Higher Education (NEASC).

The following programs are accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org: Architectural & Building Engineering Technology; Architectural Engineering Technology; Civil & Environmental Engineering Technology; Computer Engineering Technology; Electrical Engineering Technology; Electromechanical Engineering Technology; Mechanical Engineering Technology.

The Automotive Technology program is accredited by NATEF (ASE), 101 Blue Seal Dr, SE, Suite 101, Leesburg, VA 20175.

The Dental Hygiene associate degree program is accredited by the Commission on Dental Accreditation, 211 East Chicago Ave, Chicago, IL 60611-2678, (312) 440-4653.

The Nursing programs, including the LPN and RN re-entry programs, are approved by the Vermont State Board of Nursing. The Vermont State Board of Nursing can be contacted at the Office of Professional Regulation, Board of Nursing, 89 Main St, 3rd Floor, Montpelier, VT 05620-3402. All Nursing programs are accredited by the Accreditation Commission of Education in Nursing (ACEN). The Accreditation Commission of Education in Nursing can be contacted at 3343 Peach Tree Rd, NE, Suite 500, Atlanta, GA 30326.

The Respiratory Therapy program is accredited by the Commission on Accreditation for Respiratory Care, http://www.coarc.com, 1248 Harwood Rd, Bedford, TX 76021-4244, 817-283-2835.

The Veterinary Technology program is accredited by the American Veterinary Medical Association as a program for educating veterinary technicians at 1931 North Meacham Rd, Suite 100, Schaumburg, IL 60173.

Facilities

Randolph Center Campus

Vermont Tech's main campus is located in Randolph Center. The school has a long history of education, both as a teacher training school and a post-secondary agricultural institution. Today, it offers a wide range of programs leading to credentials in engineering technology, agriculture, nursing, allied health, and renewable energy.

With four residence halls, two dining facilities, academic buildings equipped with laboratories for numerous technical majors, distance education with Telepresence technology, conference facilities, and a student-run ski tow, Vermont Tech's main campus is equipped to offer the full traditional college experience. The campus includes a solar array and anaerobic digester that help the campus operations displace an equivalent quantity of electricity to its normal usage, as well as a farm to support the agriculture programs and provide nutrients to the biodigester. The campus also acts as an anchor for the wider community and a resource for non-traditional students and lifelong learners.

The Randolph Center Campus is part of the Central Region of Vermont Tech's Nursing program.

Williston Campus

Vermont Tech's Williston campus offers programs leading to certificates and degrees for part-time and full-time students. This campus has been designed to make our top-notch technical education programs available to the student looking for a suburban setting with optional housing.

The Williston campus is rapidly expanding. Programs include Dental Hygiene; Nursing; Respiratory Therapy; Aviation; Electrical and Computer Engineering Technology; Computer Information Technology and Software Engineering; and Business Management. The campus also supports a wide array of degree and non-degree workforce-education programs for area businesses.

The Williston campus is part of the Northwest Region of Vermont Tech's Nursing program.

Telepresence

Distance education is a key delivery model of some programs, including Nursing, Respiratory Therapy, and several workforce development apprenticeship programs. It allows Vermont Tech to offer high-quality curricula in local communities that a student would otherwise have to travel to one of our campuses to experience.

A Telepresence classroom has the capability to connect to other Telepresence classrooms synchronously using video-conferencing equipment and software to support an interactive student learning experience. This delivery model enables the student to sit in one of our eleven Telepresence classrooms across the state while their faculty and peers are in different classrooms miles away. Several classrooms can be connected at the same time during a scheduled class period. Students are able to see their instructor, ask questions, participate in discussions, take exams, and conduct presentations in real time. Some classes pair in-person instruction, with the instructor rotating between locations. This gives the student face-to-face time with their instructor periodically.

Telepresence technology includes cameras, desktop microphones, speakers, large flat-screen monitors, and video-conferencing software.

Classrooms are located in Bennington, Brattleboro, Lyndonville, Middlebury, Morrisville, Newport, Rutland, Springfield, St. Albans, and Wilder. Our Randolph Center and Williston campuses have two Telepresence classrooms on each campus.

Nursing & Allied Health Campuses & Sites

Bennington Campus

Vermont Tech's Bennington Campus is located at 210 South Street in the historic Bjur Building, built in 1920. The college renovated two floors of the building to create a spacious, well-equipped learning environment where the Paramedicine, PN, and ADN programs are offered. There are two simulation labs, a Telepresence classroom, a computer/library resource room, a student lounge, and a meeting area.

The Bennington campus is part of the Southwest Region of Vermont Tech’s Nursing program.

Brattleboro Campus

Vermont Tech’s Brattleboro Campus is located at 41 Harmony Place in the historic Brooks House on Main Street. This campus began as the Thompson School of Nursing shortly after the Civil War and holds the distinction of being one of the longest continuously running practical nursing programs in the United States. After a devastating fire in 2011, Brooks House was beautifully restored in 2014, just before Vermont Tech took residence along with the CCV.

The PN and ADN programs are offered at this campus. There are two nursing classrooms, a Telepresence classroom, a nursing-skills lab, a student lounge, and a simulation lab with adult and pediatric simulators.

The Brattleboro campus is part of the Southeast Region of Vermont Tech’s Nursing program.

Keene/Monadnock Site

Vermont Tech’s Keene/Monadnock site is located in Langdon Place in Keene.

The Keene/Monadnock site is part of the Southeast Region of Vermont Tech’s Nursing program.

Lyndon Site

Vermont Tech’s Lyndon site is located in Vail Hall at Northern Vermont University’s Lyndon campus.

Lyndon-based PN and ADN students have their clinical experience at Northeastern Vermont Regional Hospital (NVRH), as well as several long-term care facilities and healthcare agencies in the area. There's a Telepresence classroom in Vail Hall. The nursing-skills lab and simulation lab for this site are located at NVRH.

The Lyndon site is part of the Northeast Kingdom Region of Vermont Tech’s Nursing program.

Middlebury Site

Vermont Tech’s Middlebury site is located at the Patricia Hannaford Career Center at 51 Charles Avenue.

The PN and ADN programs are offered in alternate years at this campus. The PN program begins each fall of even-numbered years and the ADN programs begins each fall of odd-numbered years. There's a Telepresence classroom and a nursing-skills lab in the facility.

The Middlebury site is part of the Southwest Region of Vermont Tech’s Nursing program.

Morrisville Site

Vermont Tech’s Morrisville site is centrally located at Northern Vermont University’s Johnson campus at 337 College Hill Road in Johnson.

This site uses Telepresence technology to deliver ADN courses. Clinical experiences are all local to Lamoille County and students access high-fidelity simulation in Randolph Center with a skills lab in Morrisville.

The Morrisville site is part of the Central Region of Vermont Tech’s Nursing program.

Newport Site

Vermont Tech’s Newport site is located in the North Country Career Center at 209 Veterans Avenue.

The Newport site uses Telepresence technology to deliver PN and ADN courses. Students have their clinical experience at North Country Hospital (NCH), as well as several agencies in the area. NCH partners with Vermont Tech to provide clinical instruction by a nurse educator employed at the hospital. The nursing-skills lab and simulation lab for this site are located at NCH.

The Newport site is part of the Northeast Kingdom Region of Vermont Tech’s Nursing program.

Springfield Site

Vermont Tech’s Springfield site is located in the River Valley Technical Center at 307 South Street.

Both the PN and ADN programs are offered at this site. There's a Telepresence classroom and a two-bed nursing-skills lab in the facility.

The Springfield site is part of the Southeast Region of Vermont Tech’s Nursing program.

St. Albans Site
Vermont Tech's St. Albans site is located at CCV at 142 South Main Street and has a Telepresence classroom.

The PN and ADN programs are offered at this site. St. Albans-based students have their clinical experience in the St. Albans community and use the Williston campus for access to the nursing-skills lab and simulation lab.

The St. Albans site is part of the Northwest Region of the Vermont Tech Nursing program.

White River Junction Site
Vermont Tech's White River Junction site is located at the Upper Valley CCV in Wilder and has a Telepresence classroom.

The PN, ADN, and Respiratory Therapy programs are offered at this site.

Nursing students have their clinical experience at Dartmouth Hitchcock Medical Center, Mt. Ascutney Hospital, and Alice Peck Day Hospital. The nursing-skills lab and simulation lab for this site are located at Upper Valley CCV.

The White River site is part of the Northeast Kingdom Region of Vermont Tech's Nursing program.

Respiratory Therapy students have their clinical experience at a New Hampshire or a Vermont hospital. Students rotate through Dartmouth Hitchcock Medical Center beginning in their second year of the program.

Admissions

The admission process includes a review of all applicable transcripts, letters of recommendation, extra-curricular experiences, essays, and standardized test scores. Admission is offered to candidates whose credentials indicate the greatest promise of academic success. Applicants who don't meet normal admission requirements may be admitted provisionally. Provisional acceptance may include summer coursework prior to enrolling or additional coursework while enrolled.

Application Deadlines

Vermont Tech has a policy of rolling admission for most majors. We process applications throughout the year until we determine that we have filled each semester's class and may close admission once the class is filled.

Applicants are notified promptly of their admission status after a review of their complete file.

Because admission to selected programs is exceptionally competitive, decisions on these programs aren't made until we receive files from the entire applicant pool. Priority application deadlines for these majors are:

Associate Degree Nursing	March 15
Dental Hygiene	December 1
Practical Nursing	December 1
VAST	May 1
Veterinary Technology	December 1

After the initial round of reviews, complete files are reviewed on a rolling admission, space-available basis.

Standardized Testing

All freshman admission candidates must take either the SAT I, ACT, or Accuplacer. Applicants who are already out of high school may be required to take Accuplacer exams.

The College Entrance Examination Board code for Vermont Tech is 3941.

The ACT code number is 4323.

First-Year Applicant Requirements

If you haven't attended any college or university previously, please submit:

- Completed application with application fee
- Official high school transcript with at least the first marking period grades of the senior year or official scores from a high school equivalency exam (GED)
- SAT I, ACT, or Accuplacer results
- Personal statement (250-500 words; discuss why you're pursuing a degree at Vermont Tech or write about a topic of your choice)

Transfer Applicant Requirements

If you have previous college-level work at another college or university, please submit:

- Completed application with application fee
- Official high school transcript or official scores from a high school equivalency exam (GED)
- Official transcripts from all colleges previously attended
- Official transcripts from any other VSC school attended prior to summer 2002
- Personal statement (250-500 words; discuss why you're pursuing a degree at Vermont Tech or write about a topic of your choice)

Additional Requirements for Paramedicine Certificate

- Valid EMT license
- Proof of current Basic Life Support for Healthcare Providers CPR certification
- Two letters of reference from an ALS provider familiar with your character, abilities, and capability to succeed

Transfer Credit

If an applicant has attended another VSC school prior to summer 2002 or any college outside the VSC system, Vermont Tech requires official transcripts. These should be sent directly to the Office of Admissions from the college at the time of application.

Transcript evaluations are available upon request.

Credit for applicable college courses completed may be granted for those courses taken at a regionally accredited institution with a grade of *C-* or better or *C* for any science course completed in the last ten years that's required for Dental Hygiene, Nursing, or Respiratory Therapy. Transferred grades aren't computed into a student's GPA.

Courses taken at an accredited institution on a pass/fail basis may be transferred. Vermont Tech may require the student to obtain a grade equivalent in the course.

Exams may be required to show competence in subject material.

Vermont Tech is the final judge as to what transfer credit it accepts depending upon factors such as the student's academic record, the institution attended, and the program selected.

Earned VSC credits are transferable to other institutions at their discretion.

Advanced Standing

Applicants may be granted advanced standing in a degree program by transfer of courses from other accredited post-secondary institutions, advanced placement examination, recognized equivalent military courses, credit by challenge examinations, or previous relevant experience.

Consideration of previous relevant experience for credit is initiated by receipt of a completed academic portfolio by the Department Chair via the Office of Academic Affairs. If approved, the portfolio is returned to the Registrar with signatures of approval from the Department Chair, the credit-granting department, and the Academic Dean. The college may require a challenge exam.

Advanced standing toward a degree program is subject to the following restrictions:

- No more than 50% of the total required credits may be obtained by advanced standing for an associate degree or the +2 portion of a bachelor's degree
- No more than 50% of the total major technical course credits in an academic program may be obtained by advanced standing.

Dental Hygiene, Nursing, Respiratory Therapy, Applicant Requirements

If you're applying to one of the nursing or allied health programs, please submit:

- Completed application with application fee (indicate your first choice location only)
- Official high school transcript or official scores from a high school equivalency exam (GED)
- Official transcripts from all colleges previously attended
- SAT I or ACT results if available
- Vermont Tech placement test scores
- Two letters of recommendation dated within the past six months. The recommenders should submit their letters directly to Admissions. Letters should address your work ethic, communication skills, potential for adaptation to a fast-paced clinical environment, and potential to competently and compassionately deliver healthcare to patients across the lifespan. Letters from family members or friends can't be accepted.
- Personal statement (250-500 words; discuss why you're pursuing a degree at Vermont Tech or write about a topic of your choice)
- Proof of current Basic Life Support for Healthcare Providers CPR certification (*Nursing only*)

All Nursing, Dental Hygiene, and Respiratory Therapy students are required to pass a background check prior to June 1 (see policy below).

Additional Requirements for Associate Degree Nursing

- An unencumbered PN license
- If you aren't a Vermont Tech PN graduate, you must have transferable credits in
    - Anatomy & Physiology (8 credits)
    - Nutrition (3 credits)
    - Human Growth & Development (3 credits)

- If you're a graduate of a non-college PN program, you must submit a program transcript
- If you're a current PN student, you must have a GPA of 3.0 or higher each PN semester
- If you're a current PN student, you must provide proof of passing the PN NCLEX
- If a PN graduate, you must have a GPA of 3.0 in your PN coursework (*BIO 2120, ENG 1061, MAT 1040, PSY 1010, or an approved AH elective may be taken after graduation to improve GPA*)
- At least one of the two required letters of recommendation should be from someone within the nursing field

PN students attempting to complete courses for the ADN program may not enroll in spring or summer courses at any VSC institution until their spring2 term is complete.

Additional Requirements for Bachelor's Degree Nursing
For non-VTC applicants, see *Program Prerequisites*.

Nursing Direct Progression Policy
A student accepted into either the PN or the ADN program may progress directly to the next level nursing program at Vermont Tech without having to reapply if they qualify. Please refer to the Nursing curriculum pages for more information.

Nursing Policy for Criminal Background Checks & Drug Screening
To ensure the safety of all patients under the care of Vermont Tech nursing students and the safety of all faculty and students, all PN and ADN students are required to have criminal background checks (CBCs) which include FBI fingerprinting. The CBC must be completed and reviewed prior to the first day of class. In the event that the student is admitted late, the CBC must be completed and reviewed prior to any clinical experience. Any student who fails to comply with this process is dropped from the program. The school uses the CBC report for screening purposes and to secure clinical placements. In the event that there are positive findings (either convictions on the CBC or positive drug screen results at the sites that require them), the Associate Dean of Nursing and a member of the administration review the information and meet with the student. The student must provide a written explanation of all convictions and positive drug screens prior to this meeting. Court documents must be provided that detail the disposition of the case. Failure to do so will result in dismissal from the program. The Associate Dean of Nursing and the college administrator review all provided documentation and determine the student's enrollment status.

The student must report any convictions that occur after the CBC while enrolled in school.

A third-party vendor conducts the CBC and drug screens and maintains the records. Accepted students are given instructions on when and where to complete the CBC.

International Applicant Requirements

If you're applying as an international student, please submit:

- Completed application with application fee
- Official secondary school transcript evaluated by World Education Services (WES) or equivalent international transcript evaluator
- Official college/university transcripts (if applicable) with course-by-course evaluation by WES or equivalent international transcript evaluator
- Personal statement (250-500 words; write about a topic of your choice)
- Official TOEFL score if English isn't your first language. The minimum score required is 500 for paper, 173 for computer, or 61 for internet. IELTS is accepted with a recommended minimum score of 5.5 for Engineering, Nursing/Allied Health, and Aviation. A minimum score of 5 is accepted for: Business, Computer Information Technology, Construction Management, Diversified Agriculture, and Landscape Design & Sustainable Horticulture. Pearson is accepted with a recommended score of 44 or higher
- Official financial statement indicating your ability to pay one full year of tuition, room, and board. Proof must be provided on official bank letterhead before an I-20 can be issued
- A copy of your passport information page with your complete name, date of birth, country of birth, and country of citizenship

International students are encouraged to apply between the months of November and April due to the lengthy visa process. Upon acceptance, international students are required to submit a $300 deposit before we issue an I-20. The $300 is credited to the fall semester bill.

English for Speakers of Other Languages (ESOL)

According to language acquisition experts, non-native speakers of English need five to seven years of consistent exposure to oral and written academic language to achieve proficiency in college-level work. With this fact in mind, the following conditions and recommendations apply:

- Vermont Tech's writing placement test determines the student's appropriate English course. If the student's English skills are below the minimum level, they must take ESL 0141, achieve at least a *B,* and demonstrate improved skills in two post-course placement tests
- A student who places in higher-level English courses benefits from structured time at the Center for Academic Success. Tutors work with the student to improve reading and writing skills. In addition, ESOL software in vocabulary, grammar, and pronunciation are available for study and practice
- A student who doesn't achieve a placement level of 3 or its equivalent may require extra terms to complete their degree program
- Students at all sites have access to ESOL support

Master's Degree Applicant Requirements

To apply to a master's degree program, please submit:

- Completed application with application fee
- Official transcripts from all colleges previously attended
- GRE results
- Personal statement (250-500 words; discuss why you're pursuing a degree at Vermont Tech or write about a topic of your choice)

Vermont Academy of Science & Technology Applicant Requirements

The Vermont Academy of Science and Technology (VAST) provides an opportunity for high school seniors with a strong interest and ability in science and math to complete their senior year at Vermont Tech. Recognized by the state of Vermont as an approved independent high school, the program awards high school diplomas. Because Vermont state law allows VAST students to transfer Vermont Tech credits back to their sending high schools, students may receive a second high school diploma from that school.

Applications for VAST are accepted until May 1 and acceptance decisions are made by May 15. Any available seats available after May 15 are filled on a rolling basis.

Entry into VAST is competitive. Applicants should have a strong academic transcript and one of three standardized tests (SAT, ACT, PSAT) with scores in the following ranges:

- SAT scores of 550 for each subsection
- ACT scores of 21 for each subsection
- PSAT scores of 28 or higher for each subsection

A VAST student must maintain at least a 2.0 GPA while attending Vermont Tech or return to their sending high school. A student is eligible for a VAST diploma when they have a minimum of 2.0 GPA and meet the minimum number of credits as required by the state of Vermont.

VAST students must adhere to all policies and procedures outlined in the student handbook.

Upon completion of the one-year program, students may remain at Vermont Tech to complete a degree. A student who remains at Vermont Tech after graduation is awarded the VAST Forward Scholarship in the amount of $3,000 per year for up to three years.

A Vermont student's general state support grant for the senior year of high school may be used to cover tuition for VAST. Vermont Tech provides financial aid to Vermont residents for any gap that may exist between the state grant and its tuition, enabling Vermonters to attend VAST tuition-free. Other non-tuition fees, including room and board, are the responsibility of the student.

To apply to this accelerated high school program, please submit:

- Completed application with application fee
- Official high school transcript with at least the first marking period grades of the junior year or a home school plan
- PSAT, SAT I, or ACT results

- Two letters of recommendation (one from a teacher, one from a guidance counselor or principal)
- Personal interview
- College-administered placement test
- Essay that addresses:
    - What do you envision yourself doing ten years from now?
    - How do you think attending the Academy will help you reach these goals?
    - What can you contribute to the Vermont Tech community?
    - A significant event in your life and how it has affected you

Dual Enrollment

Dual enrollment programs allow a student to take college courses while still in high school. Programs may be found at the home high school, a regional technical center, or a college campus.

Students who take advantage of the dual enrollment program receive VSC transcripts. Credits earned can then be used to further the students' education at Vermont Tech or other participating post-secondary institutions. A college transcript provides evidence of a student's academic ability and ambitions for furthering their education and may assist students seeking entrance into their chosen college. Acceptance of transfer credits is at the discretion of the receiving post-secondary institution.

While participation in dual enrollment may not reduce financial expenses at Vermont Tech, benefits include getting a jump start on college courses, taking advantage of a lighter credit load during the first semester, taking additional courses to balance out other occupational desires, or trying out a college course in a familiar venue.

Placement Testing

A provisionally accepted student may need to take placement tests in English and mathematics. Test results are used to place this student in the correct courses at Registration.

A student who has completed a bachelor's degree at a regionally accredited US college or university or has met the English and mathematics program requirements may be exempted.

If a student's skills are below minimum levels, they're required to take developmental courses in the appropriate areas. This results in additional coursework and a longer overall enrollment period.

A student has the right to retest one time if dissatisfied with their original score.

Testing may be waived if an applicant has previous assessment testing from another institution or if the applicant has approved transfer credit in English and mathematics.

Admission & Housing Deposits

Accepted students must remit a tuition deposit of $200 on or before May 1 for the fall semester or December 15 for the spring semester. After these dates, deposits are accepted on a space-available basis. The tuition deposit is credited toward the first semester's bill and is non-refundable after May 1.

If a student intends to live on campus, a $100 room deposit must be paid by May 1 (or within two weeks if accepted after May 1). The deposit must accompany an applicant's complete Housing Contract. For returning students, room deposits are due in early April. Deposits are non-refundable after May 1.

Housing deposits are placed in a holding account until the end of the spring semester, at which time they're placed on a student's account and go toward any dorm damage fines that may be incurred for the academic year. Any amount not used for damage is refunded to the student at the end of May if no balance remains on the student's account. If a balance remains, the deposit is applied to the balance.

Orientation

Prior to the start of the fall and spring terms, the college provides detailed instructions on orientation to accepted applicants.

Registration, Schedules, & Class Listings

Vermont Tech courses are available online at Web Services. Click on *Prospective Students* and then *Search for Sections*.

All Vermont Tech terms start with *T*. For example, *T18FA* is the Fall 2018 term at Vermont Tech.

A first-year student registers with the Registrar after they pay their tuition deposit. There's no online registration for new students. Continuing students register in the prior term.

During orientation and the first week of classes, students may meet with their advisors regarding schedule changes.

Program Prerequisites

Program	Degree	Prerequisite
Advanced Software Development	**C**	Bachelor's degree or higher from a regionally accredited institution
Agribusiness Management Technology	**AAS**	Algebra I; algebra II recommended, 2 years of science (CHE preferred)
Applied Business Management	**BS**	50 transferrable higher education credits
Architectural & Building Engineering Technology	**AAS**	Algebra I & II; geometry; lab physics or chemistry (PHY preferred)
Architectural Engineering Technology	**BS**	Algebra I & II; geometry; lab physics or chemistry (PHY preferred)
Automotive Technology	**AAS**	Algebra I; algebra II recommended; geometry; lab physics or chemistry recommended
Business Technology & Management	**AAS, BS**	Algebra I; algebra II recommended
Civil & Environmental Engineering Technology	**AE**	Algebra I & II; geometry; lab physics or chemistry (PHY preferred)
Computer Engineering Technology	**AE, BS**	Algebra I & II; geometry; lab physics or chemistry (PHY preferred)
Computer Information Technology	**AS, BS**	Algebra I & II; geometry; lab physics or chemistry
Computer Networking	**C**	Associate degree or higher from a regionally accredited institution
Computer Software Development	**C**	Associate degree or higher from a regionally accredited institution
Computer Software Engineering	**AS, BS**	Algebra I & II; geometry; lab physics or chemistry
Computer Software Engineering	**MS**	Bachelor's degree from a regionally accredited institution; GRE scores; one letter of recommendation
Construction Management	**AAS**	Algebra I; algebra II recommended; geometry; lab physics or chemistry recommended
Construction Management	**BS**	Completion of AAS in Construction Management or AE in Civil & Environmental or Architectural Engineering Technology
Dairy Farm Management	**AAS**	Algebra I; algebra II recommended; 2 years of science (CHE preferred)
Dental Hygiene	**BS**	Algebra I & II; geometry; lab biology; lab chemistry; minimum Accuplacer scores of 70 for arithmetic, 40 for algebra; freshman English placement; 2 letters of recommendation
Dental Hygiene (degree completion)	**BS**	AS in DHY with 2.50 minimum GPA; 2 letters of recommendation
Diesel Power Technology	**AAS**	Algebra I; algebra II recommended; geometry; lab physics or chemistry recommended
Diesel Technology	**C**	Algebra I; algebra II recommended; geometry; lab physics or chemistry recommended
Diversified Agriculture	**BS**	Algebra I & II; lab physics or chemistry
Electrical Engineering Technology	**AE, BS**	Algebra I & II; geometry; lab physics or chemistry (PHY preferred)
Electromechanical Engineering Technology	**BS**	Completion of AE program in EET, MEC, or equivalent

Program	Degree	Prerequisite
Entrepreneurship	**AAS, BS**	Algebra I; algebra II recommended
Equine Studies	**AAS**	Algebra I; algebra II recommended; biology; lab chemistry
Fire Science	**AAS**	Algebra I; algebra II recommended; geometry; lab physics or chemistry (CHE preferred)
Forestry	**AAS**	Algebra I; algebra II recommended; 2 years of science (CHE preferred)
General Engineering Technology	**AAS**	Algebra I & II, geometry; lab physics or chemistry (PHY preferred)
Landscape Design & Sustainable Horticulture	**AAS**	Algebra I; algebra II recommended; 2 years of science (lab courses preferred)
Manufacturing Engineering Technology	**BS**	Algebra I & II, geometry; lab physics or chemistry (PHY preferred)
Mechanical Engineering Technology	**AE**	Algebra I & II, geometry; lab physics or chemistry (PHY preferred)
Nursing	**C**	Algebra I; lab chemistry; lab biology or college-level Anatomy & Physiology (within the last 10 years); minimum Accuplacer scores of 70 for arithmetic, 40 for algebra; freshman English placement; 2 letters of recommendation
Nursing	**AS**	LPN licensure with 3.0 minimum GPA; minimum Accuplacer scores of 70 for arithmetic and 40 for algebra; freshman English placement; 2 letters of recommendation; current VTC PN students: see *Direct Progression Policy*;
Nursing	**BS**	Unencumbered active US RN license; RN graduate of a nationally accredited Nursing program; 2.50 minimum ADN GPA; BIO 1030, 2011, 2012, 2120; ENG 1060/1061; MAT 1040; PSY 1010,1050
Paramedicine	**C**	Valid EMT license; healthcare provider-level CPR card; two letters of recommendation
Professional Pilot Technology	**BS**	Algebra I & II; geometry; lab physics or chemistry
Renewable Energy	**BS**	Algebra I & II; geometry; lab physics or chemistry
Respiratory Therapy	**AS**	Algebra I; lab chemistry; lab biology (within the last 10 years); minimum Accuplacer scores of 70 for arithmetic, 50 for algebra; freshman English placement; 2 letters of recommendation
Veterinary Technology	**AAS**	Algebra I & II; biology; lab chemistry
Web Development	**C**	Associate degree or higher from a regionally accredited institution

AAS: Associate of Applied Science

AE: Associate of Engineering

AS: Associate of Science

BS: Bachelor of Science

C: Certificate Program

MS: Master of Science

Definition of a Vermont Resident

For Determination of In-State Residency for Tuition Purposes, see [Policy 301] on the college's website or the Portal.

RSP-Approved Programs

Vermont Tech participates in the Regional Student Program (RSP) of the New England Board of Higher Education. Under this agreement, students from other New England states pay 150% of the in-state tuition per academic year if the student enters an eligible program under the RSP pact. A program not generally eligible because it's also offered in a student's home state may be eligible if the student's legal residence is closer to Vermont Tech than to the home state institution. State eligibility is subject to change without notice.

	CT	MA	ME	NH	RI
Agribusiness Management	♦	♦	♦		♦
Architectural & Building Engineering Technology		♦			♦
Architectural Engineering Technology	♦		♦	♦	♦
Automotive Technology					♦
Business Technology & Management (2 year)	♦	♦		♦	
Business Technology & Management (4 year)			♦	♦	
Civil & Environmental Engineering Technology (2 year)					♦
Computer Engineering Technology (2 year)			♦		
Computer Engineering Technology (4 year)			♦		♦
Computer Information Technology (2 year)					♦
Computer Software Engineering (2 year)		♦	♦	♦	♦
Computer Software Engineering (4 year)		♦			
Construction Management (2 year)	♦	♦			♦
Construction Management (4 year)		♦		♦	♦
Dairy Farm Management		♦	♦		♦
Dental Hygiene	♦	♦		♦	
Diesel Power Technology	♦				♦
Diversified Agriculture		♦	♦		♦
Electrical Engineering Technology (4 year)	♦			♦	♦
Electromechanical Engineering Technology	♦	♦	♦	♦	♦
Entrepreneurship (4 year)	♦				♦
Equine Studies			♦		♦
Fire Science	♦				
Landscape Design & Sustainable Horticulture			♦		♦
Manufacturing Engineering Technology				♦	♦
Mechanical Engineering Technology			♦		
Professional Pilot Technology	♦			♦	♦
Renewable Energy	♦	♦	♦	♦	♦
Veterinary Technology					♦

Good Neighbor Policy

Reduced tuition rates are available for residents of the following states and counties:

Massachusetts	Berkshire, Franklin
New Hampshire	Coos, Grafton, Sullivan, Cheshire
New York	Clinton, Essex, Washington, Rensselaer

Readmission & Reactivation

You may apply for reactivation if:

- You've been a matriculated student within the last three years but haven't attended Vermont Tech for a year or more
- You're a previously matriculated student who left while on probation or were academically dismissed within the last three years

You may apply for readmission if:

- You're a previously matriculated student in Associate Degree Nursing, Practical Nursing, Dental Hygiene, Respiratory Therapy, or Veterinary Technology and have been absent from the program for any length of time
- You applied within the previous two years but didn't matriculate (updated supporting documents may be requested)

To apply for reactivation or readmission, the applicant must complete a Readmission Application. Completion of this application doesn’t guarantee admission. Contact Admissions for more information and to determine eligibility.

A student who attended Vermont Tech within the last year doesn’t need to apply for readmission. They may contact their advisor or the Registrar’s Office for re-enrollment.

Practical Nursing Re-entry
If an applicant wants to re-enter the Practical Nursing program one year after their original matriculation, they must perform a demonstration of all skills learned in the appropriate labs and clinical courses prior to re-entry. If the applicant is unable to perform these skills satisfactorily, they aren't readmitted to the program. Students who have been out of the program for more than a year must repeat all Principles & Practices courses in the program curriculum.

Respiratory Therapy Re-entry
If an applicant wants to re-enter the Respiratory Therapy program after one semester, they must perform a demonstration of all skills learned in the appropriate labs and clinical courses from the year before prior to re-entry. If the applicant is unable to perform these skills satisfactorily, they aren't readmitted to the program. Students who have been out of the program for more than a semester must repeat all RSP courses in the program curriculum.

Non-Degree Students

A student who wishes to enroll in courses but not a program must meet the prerequisites for the courses and is subject to the same academic regulations and standards as a degree student.

Registration for courses is subject to availability, with initial priority given to degree students. Non-degree students register for classes through the Registrar. There's no online registration for non-degree students nor are they eligible for federal financial aid.

Academic Affairs

Academic Advising

Vermont Tech is committed to providing comprehensive advising to enrich the educational experience of every student. Students have assigned academic advisors, usually within their program, and are encouraged to meet with their advisors throughout the academic year to discuss their progress and future plans.

Students who are having academic or personal difficulties may get extra help from faculty advisors to identify problem areas; clarify educational and personal goals; resolve difficulties; and obtain referrals to campus services, such as the Center for Academic Success.

If students need to change advisors, they should contact the Office of the Registrar.

Attendance & Assignment Requirements

Students must meet the attendance and assignment requirements set by each instructor for each class in which they're enrolled. Failure to meet these requirements may result in removal from the class roster with a failing grade.

In cases of excessive absences and upon the recommendation of the instructor, a student may be dismissed from the college with failing grades.

The make-up of any work missed for any reason is at the discretion of the instructor. Any time a student misses a class, exam, lab, or other scheduled event, it's the student's responsibility to inform the instructor and to make satisfactory arrangements for any make-up work.

Participation in varsity athletic contests may be considered excused absences. Practices aren't excused absences. Athletes are responsible for all work missed; the instructor and athlete will make every reasonable effort to establish an acceptable make-up procedure. If no reasonable make-up alternative is possible, academic standing has priority.

Transcripts

Credits earned within the VSC system aren't considered transfer credit. All VSC courses taken after the 2002 summer term are included and count in the determination of quality points and GPA on the Vermont Tech transcript.

A transcript is a copy of a student's permanent record of attendance at the college and can't be altered. Current or former students may request that the college issue an official transcript to any school, employer, or other agency. For each transcript, students must submit a written, signed request to the Office of the Registrar or the electronic transcript exchange. A transcript fee is charged. Transcripts are sent as soon as possible, but please allow a minimum of five days for normal processing and two weeks following the end of a term. Transcripts aren't sent for students who haven't satisfied financial obligations to the college.

Grade Amelioration

One time in an academic career, a student who's changing programs or VSC schools may have selected grades excluded from the calculation of their cumulative GPA in the new academic program. Grades may only be excluded for courses that are required in the old program and not required in the new or subsequent four-year program. All credits earned in courses excluded from the calculation are lost. This policy doesn't apply to electives or credits used for any diploma, certificate, or degree already awarded.

Approval from the student's new Department Chair or Program Director is required for grade amelioration. The student must have one term of at least 6 credits with a term GPA of 2.00 or better following the term for which amelioration is requested and approval from the Academic Deans of both the home and sending institutions.

Grade Point Average (GPA) Calculation

GPA is determined by dividing the quality points earned by the GPA credits attempted. GPA credits are those taken for a letter grade, *A* through *F*. Remedial or zero level letter-graded courses taken count as GPA credits only in the term taken. They aren't included in the cumulative GPA.

Grading System

Grade		Quality Points
A+		4.0
A		4.0
A-		3.7
B+		3.3
B		3.0
B-		2.7
C+		2.3
C		2.0
C-		1.7
D+		1.3
D		1.0
D-		0.7
F	*Failure*	0.0
P	*Pass*	0.0
NP	*No Pass*	0.0
I	*Incomplete*	0.0
AU	*Audit*	0.0
W	*Withdrawn*	0.0
CR	*Credit Received (Challenge, AP, CLEP, etc.)*	0.0
TR	*Transfer Credit Received*	0.0

Official grades are issued online at the end of each semester. Unofficial academic warnings are issued online prior to the mid-point of each term.

Auditing Courses

If space is available, students may audit a Vermont Tech course, provided they have met all course prerequisites and have obtained the permission of the instructor. Audit course credit hours aren't applied to student credit load or status.

In giving permission for an audit, instructors specify expectations for auditors. Students who successfully audit a course receive an *AU* grade, which carries no credit or quality points. Students who don't meet expectations of the audit are dropped from the course with no grade or with a *W* grade. Students may not change to audit status to avoid receiving poor final grades.

Tuition charges for an audit course are 50% of the full applicable per-credit rate. Students must register to audit a course by the end of the add/drop period.

Incomplete Work

Work in a course which has not been completed because of illness or other satisfactory reasons may receive an *I* grade. The incomplete work must be made up as specified by the instructor no later than halfway through the subsequent term.

The final grade for the course is determined by the quality of the make-up work and the previously completed work. If the student fails to complete the assigned work, the instructor determines a default grade that's entered on the student's transcript.

A student receiving an *I* grade may enroll in courses for which the incomplete course is a prerequisite. Continued enrollment in the new course is contingent on completion of the incomplete course with a passing grade.

Repeated Courses

When a course is repeated and completed, the initial grade remains on the record but doesn't count in the GPA or for credit. The most recent grade earned in a course is entered on the record and used in computing the term and cumulative GPA and class rank. If a grade other than a *W* grade is recorded in the repeated course, all attempts appear on the record and the most recent earned grade is used in computing the cumulative GPA.

Add/Drop Period

The normal add/drop period is defined as the first two weeks of classes (or the first 15% of class meetings for non-regular offerings). Degree students may add or drop a course until the end of the second week of classes with their advisors' permission. To add a class after the first week, a student must have permission from both their advisor and the instructor.

Students pay for any classes dropped after the second week of classes.

Non-degree students must have the instructor's permission to add a course after the first week.

Dropping a Course

A student who drops a course during the normal add/drop period is dropped from the roster and receives no grade. After the normal add/drop period until the 60% point of a course, the student receives a grade of *W*. After the 60% point (or if the student fails to drop the course), the student receives an earned grade whether they attend remaining classes or not. Students who fail to drop a course are responsible for costs incurred

If a student successfully completes a course before withdrawing from the college, they receive an appropriate grade from the instructor.

A student who drops any courses after the first two weeks of class isn't reimbursed unless they withdraw from *all their courses for the term*.

For students who have enrolled under the VSC Enrollment Consortium Agreement, the school-specific policies and procedures regarding add/drop/withdraw dates and procedures are those of their home institution.

Withdrawals & Leaves of Absence

To withdraw or take a leave of absence once the term has started, a student must give written notification to Office of the Registrar or off-campus site office. A parent or guardian must approve requests made by minors.

A student who stops attending classes after add/drop and doesn't inform the college is considered to have withdrawn after the 60% point of the term if the last date of an academic event can't be determined.

Grades for students on approved withdrawals or leaves of absence are in accordance with the guidelines specified in *Dropping a Course* except that for an approved leave of absence, the *I* or *W* grades may be used after the 60% point until the end of the leave of absence.

If the request is for a medical leave of absence, a letter from the student's health practitioner is required. Students approved for a medical leave of absence based on a letter from their health practitioner must provide a time frame for their return to a normal class schedule. The student is also required to provide a subsequent letter stating that they're medically fit to return to their studies.

To get approval for a leave of absence, the student must show that incomplete coursework can be satisfactorily completed upon their return. For more information on medical leaves of absence, please review *Policy T116* on the college's website or the Portal.

If a student fails to return to school at the end of an approved leave of absence or if the student makes a written request to rescind the leave of absence, the withdrawal date is the original date of the request for leave or the last date of an academic event, whichever is later.

College policy is followed for students required to take a mandatory leave of absence.

Non-Returning Students

Students who don't intend to return to Vermont Tech for the subsequent term should complete a non-returning student form at the Office of the Registrar or off-campus site office and complete an exit interview with the Office of Financial Aid.

Credit by Challenge Examination

Credit by Challenge Examination Students who can document coursework, private study, or on-the-job experiences equivalent to a Vermont Tech course may receive credit by examination. Approval by a Department Chair is required and there is an associated fee.

Documentation must be submitted to the Department Chair at least three weeks prior to the planned date of testing. After review and acceptance by the Chair, the student submits an application for credit by examination and a challenge exam fee. Upon satisfactory completion of the exam, a maximum of 12 credits may be given toward any one program. These credits are subject to advanced standing restrictions.

Challenge exams that are taken to replace failed coursework must comply with all of the above criteria and must document new coursework, private study, or on-the-job experience since the failure occurred.

Waiver of Courses

A student may have a specific course waived by submitting an academic petition to the Department Chair through the Dean of Academic Affairs. The petition must be approved by the student's program department and by the department offering the course. A waived course may be replaced by an alternative course.

Substitution of Courses

A student may substitute another course for a specific required course if they're unable to take the course for a specific, approved reason. A student can request a substitute by an academic petition to the Department Chair through the Dean of Academic Affairs. The petition must be approved by the student's program department and by the department offering the course.

Class Level

Class level is based on total earned credits toward an academic program. It affects financial aid, class standing, and other calculations regarding student progression. Non-degree students have no class standing.

Level	Earned Credits
Freshman	0-29.99
Sophomore	30-59.99
Junior	60-89.99
Senior	90+

Credit Overload

A student credit overload is defined as a course load in excess of 19 credits in a single term.

Students with a cumulative GPA of 3.00+ may be approved for a load of up to 24 credits in a term. Students with a cumulative GPA of 2.00-2.99 may be approved for a load of up to 21 credits in a term. Students with a cumulative GPA below 2.00 aren't approved for a term credit overload. Students with overloads are reviewed at mid-term for possible load reduction.

Academic Standing

At the end of each term, academic standing is calculated for each matriculated student. There are three levels of academic standing:

Good Standing: degree students are in good standing if they meet the enrollment criteria for the term and have a cumulative GPA of 2.00 or better (1.75 for students with fewer than 30 earned credits).

Academic Probation: degree students are placed on academic probation if they have a cumulative GPA below that required for good standing. Probation isn't a punitive measure, but is used to identify students who may need additional services or help.

Academic Dismissal: degree students may be academically dismissed from the college for a minimum of one term for:

- Receiving a term or cumulative GPA below .70
- Not achieving good standing while on probation (on probation for more than one semester)

A student may also be dismissed from an individual class at any time when the instructor or Academic Dean determines that continued enrollment isn't appropriate: violation of cheating or plagiarism policy, nonattendance, inappropriate behavior, failure to complete assigned work, etc.

A student dismissed during the term receives a grade of *F* or *NP* in any incomplete course.

A student who's dismissed may not enroll in any Vermont Tech course for a minimum of one term. This also applies to consortium enrollment from other VSC institutions. A student returning from academic dismissal is on probation for a minimum of one term.

Appeal of Academic Dismissal
A student who believes there are significant mitigating circumstances may submit an email to the Academic Appeals Committee (AAC).

This email shall include the student's full name, address, and college identification number and should fully explain the circumstances surrounding the appeal. The AAC meets and makes a recommendation to the Academic Dean, who makes a final decision regarding the appeal. This decision is final and not subject to further appeal. To read about this process more fully, please see the student handbook.

A student reinstated on appeal is normally reinstated on academic probation. The student must also appeal to the Office of Financial Aid to have their aid reinstated. This is a separate process from the academic appeal.

Disciplinary Dismissal

Students who are dismissed from Vermont Tech for non-academic reasons are no longer matriculated students. They aren't eligible to enroll in Vermont Tech courses. These students may apply for re-admission through the Office of Admissions after they have met the conditions set for them at the time of dismissal. Re-admission requires the approval of the Dean of Students.

Returning after Dismissal

A student who has been dismissed from the college may return under the following conditions:

- The student has met the requirements placed upon them at the time of dismissal
- The student notifies the Office of Admissions in writing of their intent to return to Vermont Tech
- The student is approved for re-admission by the Office of Admissions

A Nursing student wishing to return to the Vermont Tech Nursing program after dismissal should refer to *Re-admission After Clinical Dismissal* in the Nursing student handbook

Upon receiving notification from the Office of Admissions, the Department Chair or Program Director determines whether a fall or spring re-admission is most appropriate and sends a registration to the Office of Admissions outlining coursework or suggested coursework prior to re-admission. The Office of Admissions forwards returning student information to the Office of the Registrar, student housing, and the Office of Financial Aid.

A returning student who wants financial aid has to appeal to the Office of Financial Aid to have their aid reinstated. The student must complete a new housing contract if they wish to live on campus. After returning, the student is on probation and receives increased supervision and academic support for a minimum of one semester.

Changing Programs

If a student wishes to change programs, they must petition through the Office of the Registrar and be approved by the appropriate Department Chair.

Dual Major & Dual Degree

A student who wishes to receive an additional degree or major must complete a Change of Program request form, available from the Office of the Registrar. The student must complete all of the requirements of the new major or degree. There's no need to retake completed courses. An additional associate degree major must contain at least fifteen credits that weren't part of the previous major. An additional bachelor's degree major must contain at least thirty credits that weren't part of the previous major.

Course schedules are designed for full-time students who are pursuing one major. Therefore, dual majors typically require a minimum of one extra year at Vermont Tech.

A student who earns multiple majors is awarded one degree with the additional majors annotated on the diploma.

Residency Requirement & Matriculation

A matriculated student is one who has been formally accepted by the college and registered in a degree program. All matriculated students have a minimum number of credit hours that must be taken at Vermont Tech. For bachelor's candidates, the residency requirement is that 30 credit hours, including substantial advanced work in the major, must be achieved in courses specifically taken at a VSC. For associate and certificate candidates, at least 15 credit hours must be achieved in courses taken specifically at Vermont Tech. For master's candidates, at least 18 credit hours of coursework within the major must be completed at Vermont Tech. Exceptions to the residency requirement may be considered and require approval from the Academic Dean.

Graduation Standards

A Vermont Tech degree demonstrates not only accomplishment in the major field, but also acquisition of the fundamental transferable skills required for success in today's world. For this reason, Vermont Tech is committed to ensuring that graduates have achieved proficiency in written and oral communication, quantitative reasoning, and information literacy.

All degree students are required to demonstrate competence in these disciplines at the appropriate level for their degree program. Students have more than one opportunity to meet the expected level of performance.

All transfer students are required to take all graduation standards except:

- Students with a bachelor's degree or higher
- Students who have completed the assessments at another VSC college
- Students who are granted a special exemption by the Academic Dean

Procedures for completing the graduation standards are outlined in the student handbook.

Graduation Requirements

In order to graduate, a student must:

- Have a 2.00 cumulative GPA
- Complete at least 30 credits of coursework at Vermont Tech for a bachelor's degree program; 15 credits minimum for an associate degree or a certificate program; or 18 credits minimum for a master's degree program
- Complete 60 credits minimum for an associate degree; 120 credits minimum for a bachelor's degree; or 30 credits minimum for a master's degree
- Satisfy all financial obligations to Vermont Tech
- Apply for graduation

Department Chairs submit program candidates who satisfy the above, as attested by the Registrar, to the full college faculty for recommendation to graduate.

Time Limitation on Graduation Requirements

Students are expected to finish their degree programs with continuous enrollment in the specified number of terms outlined in the curriculum for their programs. Students who leave the college for a full term are assigned the requirements for the catalog that's in effect for the year of their return. These students are expected to meet any new requirements for that catalog year unless the sponsoring department approves an earlier catalog year.

Each student operates under degree requirements in effect at the time of initial acceptance as a degree candidate. If, after two years for a certificate, four years for an associate, or six years for a bachelor's, the degree requirements haven't been met, the student must satisfy the graduation requirements in effect during the student's year of graduation.

A student participating in a college-sponsored part-time degree program has two years from the conclusion of the last scheduled course in the sponsored program to complete the degree requirements. After this time, if the degree requirements haven't been met, the student must satisfy the graduation requirements in effect during the student's year of graduation.

Graduation Participation Requirements

Commencement is an important celebration of a student's academic success, as well as an opportunity for family, friends, and future employers to formally recognize those efforts. Academic credentials are important benchmarks in a student's career. All students are strongly encouraged to attend commencement.

A student who successfully completes all graduation requirements and is recommended by their department graduates and receives a diploma.

A student who's within 7 credits of the graduation requirements; has applied to walk or graduate on their application; and has the recommendation of their department may participate as a walker. Although walkers participate in the graduation ceremony, they don't actually graduate until they have successfully completed all graduation requirements and are so recommended by their departments. A walker who subsequently completes their degree requirements must apply for a diploma that's mailed after approval and the next commencement. Walkers are expected to complete their remaining requirements within one year.

Term Honors

At the end of each term, degree students who have attained a term GPA of 3.50 or 4.00 while carrying 12 or more letter-graded credit hours and who haven't received a failing or incomplete grade in any subject during that semester are accorded Dean's List honors or President's List honors, respectively. Full-time nursing students are eligible for term honors while enrolled in a non-graded clinical course.

Honor Societies

Vermont Tech students may qualify for membership in the following national honor societies:

Alpha Delta Nu is a national honor society formed by the Organization for Associate Degree Nursing to recognize the academic excellence of students in the study of Associate Degree Nursing. The society shall encourage the pursuit of advance degrees in the profession of nursing as well as continuing education as a lifelong professional responsibility. Additionally, the Society shall participate in the recruitment of qualified individuals into the nursing profession.

Requirements for candidacy are:

- 3.00 or above in nursing courses (with letter grades of *B* or higher) and a cumulative GPA of 3.00 or above and no previous failures in any Nursing course
- Sophomore status
- Students shall have demonstrated conduct on campus and the clinical areas that reflects integrity and professionalism as determined by the Nursing faculty advisors

Lambda Beta is the national honor society for the profession of respiratory care. It was formed in 1986 to promote, recognize, and honor scholarship, scholarly achievement, service, and character of students, graduates, and faculty members of the profession.

Requirements for candidacy are:

- Completion of 50% of the Respiratory Therapy courses
- GPA which ranks in the top 25 percent of the Respiratory Therapy class

Phi Theta Kappa is a national honor society formed to recognize and encourage scholarship, academic excellence, leadership, and service among two-year college students.

Requirements for candidacy are:
- 3.50 cumulative GPA with no incomplete grades
- Working toward a VTC degree with a minimum of 12 credits completed at Vermont Tech

Sigma Phi Alpha is a national honor society for dental hygiene students. It was formed to recognize, promote, and honor outstanding scholarship, service, and character among students or graduates of dental hygiene schools in the U.S. and Canada. Second-year dental hygiene students who rank highest in scholarship and character and who exhibit potential for future growth are, upon recommendation of the full-time Dental Hygiene faculty, elected to this prestigious group. Membership is limited to ten percent of the graduating class.

Sigma Theta Tau is an international honor society recognizing baccalaureate and graduate nursing students who demonstrate excellence in scholarship and nurse leaders who exhibit exceptional achievements in nursing. The mission of the honor society is advance world health and celebrating nursing excellence in scholarship, leadership, and service.

Requirements for candidacy are:
- Junior or senior enrolled in a baccalaureate program at an accredited institution of higher education who has completed at least half of the Nursing curriculum
- GPA which ranks in the top 35 percent of their graduating class
- Achievement of academic excellence (at schools where a 4.0 GPA system is used, this equates to at least a 3.0)

Tau Alpha Pi is a national honor society for associate and baccalaureate degree students in engineering technology. Its purpose is to recognize academic excellence in fields of engineering technology study and to encourage a lifetime commitment to learning and scholarship.

Requirements for candidacy are:
- Cumulative GPA of 3.50 with no incomplete grades
- Minimum of 24 credits completed at Vermont Tech while in an engineering technology program

Engineering technology students with more than 48 credits may be considered with a 3.30 or better cumulative GPA.

Graduation Honors

A degree student is eligible for graduation honors when they:
- Have a minimum of 30 credits for an associate degree, a minimum of 60 credits for a bachelor's degree completed within the VSC
- Have achieved the following cumulative GPA for all coursework:

Cum Laude	3.50
Magna Cum Laude	3.70
Summa Cum Laude	3.90

A student in the final two years of a 2+2 degree program may petition to receive graduation honors provided they have earned a minimum of 30 graded credits at the VSC.

A certificate student is eligible for graduation honors when they:
- Complete 50% of the degree requirements at Vermont Tech
- Have achieved the following cumulative GPA for all coursework:

Honors	3.00
High Honors	3.50

Awards

Each year, a number of students receive awards for distinguished performance, noteworthy improvement, and superior service and dedication to the college. A student who fulfills the requirements for two degrees is eligible for awards in both majors. Full-time students who are degree candidates may be eligible for these awards:

- The *ADN Clinical Excellence Award* recognizes the associate degree nursing student who is consistently prepared for each clinical day, has a clear understanding of the application theory to the clinical setting, utilizes effective communication techniques in all settings, demonstrates the art of nursing in the care that they provide, shows that they're a self-initiator, and has shown real growth in their understanding of the role of the associate degree-prepared registered nurse as compared to that of the licensed practical nurse. In addition to an award certificate, the awardee receives membership to the American Nurses Association Vermont when they're licensed

- The *American Society of Civil Engineers Award* is given to the graduating student with the highest academic average and greatest all-around academic development in the Civil & Environmental Engineering Technology program
- The *American Society of Heating, Refrigeration, and Air-Conditioning Engineers Award*, sponsored by the Champlain Valley Chapter, is given to a deserving senior who is graduating from the Bachelor of Science in Architectural Engineering Technology program. The award is based on factors such as participation in student and parent chapter activities and interest and excellence in building mechanical engineering systems. This award is given most years, but not every year
- The *Angus A. Murray Award for Excellence in Writing* is given to a returning student who demonstrates the greatest overall excellence in writing in Vermont Tech's two required English courses
- The *BSN Nurse Leadership Award* is given to a graduate of the Bachelor of Science in Nursing program who has exemplified the leadership qualities sought after and valued in today's BSN graduates. The recipient has displayed excellence in nursing through scholastic achievement; participation on committees; service to the college; community and social advocacy; role modeling, and promoting academic progression for nurses
- The *Business Technology & Management Faculty Award* is given to the graduating student with the highest academic average and greatest all-around academic development in this program
- The *Colgate STAR Award* is offered to the graduating dental hygiene student who shows excellence and commitment to the hygiene profession by demonstrating true dedication to the profession; exhibiting extraordinary compassion in patient care; displaying enthusiasm and follow-through for community service; and demonstrating outstanding patient education and motivation skills
- The *Computer Engineering Technology Award, AE* is given to the graduating associate degree student with the highest academic average and greatest all-around academic development in this program
- The *Computer Engineering Technology Award, BS* is given to the graduating bachelors degree student with the highest academic average and greatest all-around academic development in this program
- The *Construction Management AAS Academic Excellence Award* is given to the student graduating from the associate degree program who has shown the greatest all-around academic excellence
- The *Construction Management AAS Greatest Academic Development Award* is given to the student graduating from the associate degree program who has shown the greatest all-around academic development
- The *Construction Management BS Academic Excellence Award* is given to the student graduating from the bachelor's degree program who has shown the greatest all-around academic excellence
- The *Construction Management BS Greatest Academic Development Award* is given to the student graduating from the bachelor's degree program who has shown the greatest all-around academic development
- The *Dorothy Wootton Outstanding Clinician Award* is given by the faculty of the department of Dental Hygiene to the graduating student who best demonstrates outstanding clinical performance

- The *Dorothy Wootton Scholarship* is presented to a second-year dental hygiene student with a minimum GPA of 3.0 and is based on faculty recommendation
- The *E.H. Jones Award* is given by the family of E.H. Jones, who was a Commissioner of Agriculture for the state of Vermont. This award is given to a graduating senior who has shown the greatest all-around academic development in an agricultural technology program
- The *Edward F. Kibby Memorial Award* is given to the athlete who has displayed the most outstanding sportsmanship throughout the year from the Vermont Tech Alumni Association.
- The *Electrical Engineering Technology Department Award, AE* is given to the graduating student in the associate degree program with the highest academic average
- The *Electrical Engineering Technology Department Award, BS* is given to the graduating student in the bachelor's degree program with the highest academic average
- The *Electrical Engineering Technology Faculty Award for Technical Excellence, AE* is awarded to graduating students in the associate degree program who have exhibited enthusiasm for the field and possess an excellent work ethic
- The *Electrical Engineering Technology Faculty Award for Technical Excellence, BS* is awarded to graduating students in the bachelor's degree program who have exhibited enthusiasm for the field and possess an excellent work ethic
- The *Electrical Engineering Technology Greatest All-Around Academic Development Award* is given to the student with the greatest all-around academic development in the Electrical Engineering Technology program
- The *Electromechanical Engineering Technology Department Award* is given to the graduating student in the bachelor's degree program with the highest academic average
- The *Electromechanical Engineering Technology Faculty Award for Technical Excellence* is awarded to the graduating student in the bachelor's degree program who has exhibited enthusiasm for the field and possesses an excellent work ethic
- The *Engineer of the Year Award* is awarded to a graduating baccalaureate student from an engineering technology or engineering program who is selected from nominations by the engineering technology departments for outstanding scholarship, character, and leadership
- The *Equine Studies Faculty Award* is given to the graduating student with the highest academic average and greatest all-around academic development in this program
- The *Faculty Award* is given to the graduating student who, in the estimation of the Faculty Assembly at large, has made the greatest contribution to student activities while attending Vermont Technical College
- The *Faculty Memorial Fund Scholarship Award* was created by the faculty as a living memorial to the people who served on the faculty and have passed away. It's given to the student who has completed their freshman year and whose outstanding scholarship exemplifies excellence in technology
- The *J. Edward Marceau Memorial Scholarship Award* is given to one graduating Dental Hygiene student who is a Vermont resident and plans to practice in Vermont for at least one full year and, in the opinion of the faculty, exhibits outstanding scholastic achievement and community involvement
- The *Manufacturing Engineering Technology Academic Excellence Award* is given to the graduating student in the Manufacturing Engineering Technology program who has demonstrated the highest academic performance
- The *Mechanical Engineering Technology Academic Excellence Award* is given to a student in the associate degree program who has demonstrated the highest academic performance
- The *Mechanical Engineering Technology Faculty Award* is given to a student in the associate degree program who demonstrates character, commitment, and effort in their academic studies
- The *Outstanding Community Service Leader Award* recognizes one outstanding student for

their contributions to the community through volunteering significant amounts of their time

- The *Outstanding Student in Professional Pilot Technology Award* is given to a graduating student in the Professional Pilot Technology Program who is selected based on their outstanding academic achievement; demonstrated leadership skills, especially applicable to the high standards of a future airline captain; willingness to do outreach for the program and the community; and who exemplifies scholarly commitment to lifelong learning as a professional pilot in a global air transport world
- The Practical Nursing faculty and administration recognize the clinical excellence of one Practical Nursing student from each region: Central, Northeast Kingdom, Northwest, Southeast, and Southwest
- The *Professional Pilot Technology Outstanding Student Award* is given to a student who has consistently demonstrated the outstanding personal qualities and skills necessary for a successful career in aviation and, during years of training at VFA, has developed the highest standards under the following criteria: technical knowledge, risk management, aeronautical decision-making, communication, airmanship, ability to follow standard operating procedures, preparedness for flight lessons, and punctuality
- The *Rena Katz Chernick Memorial Scholarship Award* is given by the Vermont Dental Hygienists' Association in memory of Ms. Chernick, who was a very dedicated, enthusiastic, and active dental hygienist on the state, regional, and national levels. The award is given to the graduating student who exhibits outstanding scholastic achievement
- The *Respiratory Therapy Clinical Excellence Award* is given to the graduating student who, in the opinion of the clinical faculty, demonstrated the professional ideals of competence, integrity, leadership, collaboration, advocacy, and accountability throughout their clinical education experiences
- The *Robert S. Brady Award* is given to the student who has shown the greatest all-around academic achievement in the Architectural & Building Engineering Technology program. The award is given from the Hanne Williams fund by the Vermont Chapter of the American Institute of Architects
- The *Ruth Freeman Memorial Award for Architectural & Building Engineering Technology* is given to the student in the Architectural & Building Engineering Technology program whose work in ARE 2050 has exhibited architectural design excellence
- The *Sigma Phi Alpha Dental Hygiene Honor Society Board Award Scholarship* is presented by the Sigma Alpha Dental Hygiene Honor Society to a graduating dental hygiene student based on academic achievement, community service, and financial need. The award covers the cost of the Dental Hygiene National Board Examination
- The *Society of Manufacturing Engineers Award* is given to the graduating student in the Manufacturing Engineering Technology bachelor's degree program who exhibits outstanding professionalism, proficiency, and dedication
- The *Stanley G. Judd Memorial Fund Award* is given to the graduating student with the highest academic average in an agricultural technology program
- The *State of Vermont Agency of Transportation: Aviation Recognition Award* is given to a student in recognition of dedication, accomplishment, and contribution to general aviation in the state of Vermont
- The *Student Engineering Technician of the Year Award* is presented to a sophomore-level associate or bachelor's degree student from an engineering technology program who is selected from nominations by the engineering technology departments for outstanding scholarship, character, and leadership
- The *Vermont Agency of Transportation (Aviation Division) Award* is presented to the student who exhibits dedication, accomplishment, and contribution to general aviation in keeping with the highest standards of aeronautics
- The *Vermont Automobile Dealers Association Award* is given to the graduating student with the greatest all-around academic development in the Automotive Technology program

- The *Vermont Automobile Enthusiasts Award* is presented to the graduating senior in the Automotive Technology program who exhibits the greatest appreciation of automobiles
- The *Vermont Dental Hygienists Association Membership Spirit Award* is given to a graduating Dental Hygiene student who exhibits a high level of professional pride and enthusiasm for the profession of dental hygiene
- The *Vermont Nursery and Landscape Association Student Merit Award* is given to a second-year student in the Landscape Design & Sustainable Horticulture program who exemplifies the qualities of a professional in the field: motivation, direction, leadership, and respect for both humans and the natural environment. The recipient must have earned at least 30 credits and hold a GPA of 3.0 or greater
- The *Vermont Tech Fire Science Special Recognition Award* is awarded to Vermont Tech Fire Science students whose combined academic achievement, leadership, and service to the program and to the college deserves special recognition
- The *Veterinary Technology Department Greatest All-Around Academic Development Award* is given to the graduating student who has shown the greatest all-around academic development
- The *Veterinary Technology Department Highest Academic Average Award* is given to the graduating student who has the highest academic average
- The *W. Newton Ryerson Award for Excellence in Math & Physics* is given to a returning student with a GPA of 3.5 or higher in freshman mathematics and physics courses who demonstrates excellence in lab performance and a positive general attitude as shown by class and lab participation or by assisting other students

Honesty & Ethics

Vermont Tech expects high standards of truthfulness and honesty in all academic work. Any student who's found guilty of academic dishonesty faces disciplinary action, up to and including dismissal from the college. Cheating refers to plagiarizing or using unauthorized aids or copying another person's work on exams, quizzes, or assignments.

Center for Academic Success

The staff and programs at the Center for Academic Success (CAS) provide assistance to all students to help them reach their full potential and be successful while attending Vermont Tech. The support provided includes peer mentors for first-semester students; tutoring; short-term counseling and goal-setting; study and test taking assistance; and financial literacy information and assistance, all of which are necessary for students to meet academic, personal, and career goals. The TRiO Student Support Services (SSS) and services for students with disabilities are also housed at the CAS. The main office is on the Randolph Campus, with staffing provided at the Williston campus, all Nursing sites, and to online students. Services are provided in person or via telephone or Adobe Connect. Students enrolled at off-campus sites can contact their site coordinator or the main CAS office to arrange for services.

Academic Counseling
Academic counseling includes a variety of services designed to help students with non-academic issues that may interfere with attaining their academic goals. CAS counselors provide help with:

- Managing stress, anxiety, and personal issues
- Study skills and learning style informal academic assessments
- Academic and vocational counseling

All counseling services are free of charge.

Assistive Technology
The CAS provides access to assistive technology software and hardware designed to help students with scanning, editing, or dictating documents; having documents read aloud by the computer for editing or test-taking; and developing or organizing information.

ESOL
Tutors for students whose first language isn't English may be available to help with reading,

writing, class-specific vocabulary, and pronunciation. There's also software available for students to practice ESOL skills. All tutoring services are free of charge.

Services for Students with Disabilities
Students with disabilities should meet with the Learning Specialist to explore their options and determine their eligibility for accommodations. Meetings to address particular concerns are welcome at any time during the admission process or after enrollment at the college. All information regarding disability is kept in strict confidence and never becomes a part of the student's academic record. Accommodations are always determined individually on a case-by-case basis. Available services include: academic counseling, individualized support, classroom accommodations, training in the use of assistive technology, and assistance in obtaining auxiliary aids.

Therapists
A licensed mental health therapist contracted with Student Affairs is available several days per week to assist students with more serious emotional issues. Referrals are necessary and must be obtained through CAS or Student Affairs.

TRiO Student Support Services (SSS)
The TRiO SSS program at Vermont Tech provides support services designed to increase student retention and graduation. Funded by a special grant from the U.S. Department of Education, TRiO SSS provides services to first-generation college students, low-income students, and students with disabilities. This program is widely used by students for academic and career counseling; assistance in transferring to associate and bachelor's degree programs; improving study skills; developing reading and writing skills; individual tutoring; workshops; peer advising and mentoring; information on financial literacy; and help with financial aid forms and issues. All services are free of charge.

There's also a TRiO Opportunity Grant for which VTC TRiO students may apply during each fall semester, as well as state and regional scholarship opportunities.

Support & Counseling
The CAS focuses on wellness for emotional and mental health. The center offers peer and professional mentoring on issues such as stress, adjusting to college, test anxiety, and other issues related to student wellness. The center also offers referrals to licensed mental health professionals on campus when appropriate. All support counseling services are free of charge.

Students with specific mental health concerns may work with the counselor at the CAS to connect with licensed therapists on campus or with locating community treatment resources.

Tutoring
The CAS provides individual or small group tutoring for most first-year classes and many specialized upper-level classes. Each student is allowed one hour per subject per week. Additionally, students can access any or all of the drop-in tutoring sessions on the Randolph or Williston campuses. Drop-in sessions run for all math classes and many science classes. Writing assistance sessions for research, labs, or reports are available. Prior to the final exam period, test review sessions are scheduled for most math classes and some science classes. Services are available to any student who wants to improve their grades or comprehension of content, regardless of their current grade or GPA. All tutoring services are free of charge.

Career Development Center

The Career Development Counselor provides assistance with career and college transfer decision-making, individual assistance, and workshops on writing resumes.

Hartness Library

Hartness Library supports the curricular and research needs of Vermont Technical College and the Community College of Vermont by providing information resources, services, and instruction. Located in the heart of the Randolph Center campus, the library provides a comfortable and welcoming place to study, learn, and gather with friends to work in collaboration. The library has study and meeting rooms, computers, printers, and scanners available for the campus community. A satellite on the Williston campus is staffed by a librarian and offers the same services as the main library. Hartness also provides access online, ensuring that all students, whether online, on campus, at a distance site, or at a CCV academic center, can use the library. To access resources and services, visit our website.

Collection
The collection is developed with input from faculty to ensure that we are supporting our students and the curriculum effectively. The library collection includes over 42,000 books; 200,000 ebooks; 25,000 streamed films and documentaries; 6,000 videos and DVDs; 58,000 full-text online periodical titles; and course reserve materials. The VSC libraries share their collections, expanding access to over 450,000 physical items which are easily requested online and mailed to the student's home library (or home address for online and remote students). Students have 24-hour access to the library's extensive online resources from anywhere through the library's website using any computer or mobile device. Our free interlibrary service is available to request books or journal articles which the library doesn't own.

Reference Services
Staff and professional librarians offer students support in finding and evaluating resources for their research and are available face-to-face, via phone using our 800 number, via live online chat, text message, or by email. Librarians may also be embedded in classes to serve online students and VTC's distance sites and campuses. The library provides an online library orientation, video tutorials, a research basics guide, and librarian-created subject guides to help familiarize students with library resources and services.

Information Literacy
The library supports students in meeting the VSC information literacy graduation standard. Librarians visit classes for face-to-face library orientation and information literacy instruction early in the semester and are also embedded in Moodle classes.

Public Notice Designating Directory Information

Directory information is information which wouldn't generally be considered harmful if disclosed. It includes: name; home and college addresses; telephone listing; mailing address; date of birth; major; enrollment status (full-time or part-time); dates of attendance; awards received; weight and height of athletic team members; photographs; most recent and previous educational institutions attended; and participation in officially recognized activities and sports.

Currently enrolled students may withhold disclosure of personally identifiable directory information under the Family Educational Rights and Privacy Act (FERPA). To withhold disclosure, the student should obtain and complete a FERPA form, available at the Office of the Registrar. Vermont Tech assumes that failure on the part of any student to specifically request the withholding of directory information indicates individual approval for disclosure.

Records Review, Release, & Right-to-Know
Vermont Tech informs students of FERPA annually. This act was designated to protect the privacy of educational records; to establish the right of students to inspect and review their educational records; and to provide guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the FERPA office concerning alleged failures by the institution to comply with the act.

The college has a policy of disclosing educational records to Vermont Tech and VSC officials with a legitimate educational interest without prior consent. Questions concerning FERPA may be referred to the Office of the Registrar.

VSC Enrollment Consortium Agreement

By agreement of the VSC, students enrolled at any VSC institution may simultaneously enroll in courses at other VSC institutions and receive full credit for those courses at their home institution. This agreement eliminates duplication of registration or other enrollment fees and students receive financial aid based upon their total credit enrollment within the VSC. Course-specific fees of $100 or more are reimbursed by the student to the institution where those fees are incurred.

Students seeking to benefit by this agreement must ensure that coursework meets program requirements at the home institution prior to enrolling at the other VSC institution. Registration for courses at other VSC institutions is through the home institution. The school-specific policies and procedures regarding degree requirements, transfer credits, placement levels, refund policies, and add/drop/withdraw dates and procedures that pertain to each student are those of the home institution. When registering, it's important that students receive information and advising based on their own school's policies and procedures. Therefore, students register at their home institutions (or online via Web Services with home institution approval) for all courses taken within the VSC.

Students enrolled in the LPN program aren't eligible for the VSC enrollment consortium because of the divergent calendar of that program.

A student who wants to enroll exclusively at a VSC school other than their home institution may do so for a maximum of two terms. To be eligible, the student must be matriculated at the home institution and must secure written permission in advance of their enrollment from the home institution.

Courses taken at any VSC institution are included in GPA calculations at the home institution.

Tuition & Fees 2018-2019

Estimated Costs of Attendance

Students are responsible for familiarizing themselves with the cost descriptions; payment and refund policies; and the definition of residency for tuition payment purposes as detailed below. In the following cost charts, all charges are based on full-time enrollment (12-19 credits per semester) and are subject to change.

All Undergraduate Programs Except Dental Hygiene, Nursing, & Paramedicine

	Vermont Resident		Non-VT Resident		RSP/NEBHE Program	
	Term	*Year*	*Term*	*Year*	*Term*	*Year*
Tuition	$6,948	$13,896	$13,284	$26,568	$10,422	$20,844
Facilities Fee	422	844	422	844	422	844
Matriculation Fee*	402	402	402	402	402	402
Student Activity Fee	143	286	143	286	143	286
Security Fee	41	82	41	82	41	82
Total	**$7,956**	**$15,510**	**$14,292**	**$28,182**	**$11,430**	**$22,458**
Double Room	3,156	6,312	3,156	6,312	3,156	6,312
Meal Plan (Gold)**	2,143	4,286	2,143	4,286	2,143	4,286
Total with Room & Meals	**$13,255**	**$26,108**	**$19,591**	**$38,780**	**$16,729**	**$33,056**

Dental Hygiene

	Vermont Resident		Non-VT Resident		RSP/NEBHE Program	
	Term	*Year*	*Term*	*Year*	*Term*	*Year*
Tuition	$8,700	$17,400	$13,608	$27,216	$13,050	$26,100
Facilities Fee	422	844	422	844	422	844
Matriculation Fee*	402	402	402	402	402	402
Student Activity Fee	143	286	143	286	143	286
Security Fee	41	82	41	82	41	82
Total	**$9,708**	**$19,014**	**$14,616**	**$28,830**	**$14,058**	**$27,714**
Williston Double Room†	3,156	6,312	3,156	6,312	3,156	6,312
Total with Room	**$12,864**	**$25,326**	**$17,772**	**$35,142**	**$17,214**	**$34,026**

Nursing

	ADN 2 Semesters			PN 3 Semesters		
	Vermont Resident	Non-VT Resident	RSP/ NEBHE Program	Vermont Resident	Non-VT Resident	RSP/ NEBHE Program
Tuition	$14,592	$30,792	$21,888	$20,064	$42,339	$30,096
Facilities Fee	844	844	844	1,168	1,168	1,168
Matriculation Fee*	402	402	402	402	402	402
Student Activity Fee	286	286	286	394	394	394
Graduation/Audit Fee	101	101	101	101	101	101
Security Fee	82	82	82	123	123	123
Total	**$16,307**	**$32,507**	**$23,603**	**$22,252**	**$44,527**	**$32,284**

	ADN 2 Semesters			PN 3 Semesters		
	Vermont Resident	Non-VT Resident	RSP/ NEBHE Program	Vermont Resident	Non-VT Resident	RSP/ NEBHE Program
Double Room Meal Plan (Gold)**	10,598	10,598	10,598	13,778	13,778	13,778
Total with Room & Meals	**$26,905**	**$43,105**	**$34,201**	**$36,030**	**$58,305**	**$46,062**

For further information concerning estimated costs of attendance for the Nursing programs, contact the Business Office at (802) 728-1301. Program costs are based on annual full-time cost of the program.

Paramedicine

	VT Resident	Non-VT Resident	RSP/NEBHE Program
Tuition (3 semesters)	$21,888	$46,188	$32,832
Facilities Fee	1,266	1,266	1,266
Matriculation Fee*	402	402	402
Student Activity Fee	429	429	429
Security Fee	123	123	123
Graduation/Audit Fee	101	101	101
Total	**$24,209**	**$48,509**	**$35,153**
Williston Double Room†	8,416	8,416	8,416
Total with Room	**$32,625**	**$56,925**	**$43,569**

International

	Undergrad	ADN	LPN	DHY	PMD	Graduate
Tuition	$30,552	$34,776	$47,817	$31,200	$52,164	$28,638
Facilities Fee	844	844	1,168	844	1,266	844
Matriculation Fee*	402	402	402	402	402	402
Student Activity Fee	286	286	394	286	429	286
Security Fee	82	82	123	82	123	82
Total	**$32,166**	**$36,390**	**$49,904**	**$32,814**	**$54,384**	**$30,252**
Double Room	6,312	6,312	8,206	6,312	8,416	6,312
Meal Plan (Gold)**	4,286	4,286	5,572	--	--	--
Total with Room & Meals	**$42,764**	**$46,988**	**$63,682**	**$39,126**	**$62,800**	**$36,564**

Graduate

	Vermont Resident		Non-VT Resident		RSP/NEBHE Program	
	Term	***Year***	***Term***	***Year***	***Term***	***Year***
Tuition (at 9 credits)	$6,516	$13,032	$12,465	$24,930	$9,774	$19,548
Facilities Fee	422	844	422	844	422	844
Matriculation Fee*	402	402	402	402	402	402
Student Activity Fee	143	286	143	286	143	286
Security Fee	41	82	41	82	41	82
Total	**$7,524**	**$14,646**	**$13,473**	**$26,544**	**$10,782**	**$21,162**
Williston Double Room†	3,156	6,312	3,156	6,312	3,156	6,312
Total with Room	**$10,680**	**$20,958**	**$16,629**	**$32,856**	**$13,938**	**$27,474**

Online

	Vermont Resident	Non-VT Resident
Tuition (per credit)	$579	$579
Online Fee (per semester)	$243	$243
Matriculation Fee*	402	402
Security Fee	21	21

†Williston based on availability
**Applies to all new matriculated students*
***Meal charges for Randolph Center campus and Gold Plan; no meal plans at Williston campus*

Professional Pilot Technology Fees

Flight Fees

In addition to tuition and other fees, the Professional Pilot Technology program requires flight fees. Flight fees are applied to individual flight courses in the semester that they're taken. The fees outlined below are based on the number of hours the average student takes to complete each course. Additional flight time may be required. Any additional ground or flight instruction required is billed on an hourly basis until successful completion is reached.

Course	Flight Training	Flight Fees	Flight Hours	Credits
AER 1021	Private	$12,655	30	2
AER 1120	Instrument	12,334	52	2
AER 2031	Commercial I	17,923	85	2
AER 2032	Commercial II	8,909	35	2
AER 3020	CFI: Airplane	6,723	25	2
AER 4010	Multi-Engine: Land	5,374	10	0.5
AER 4011	Multi-Engine: Sea	4,968	7.5	0.5
AER 4020	CFI: Instrument	4,883	15	1
AER 4030	CFI: Multi-Engine	11,374	25	1

All required courses for the degree must use full flight hours.

All flight courses begin as 141 with an enrollment certificate. If a student receives sufficient training to complete the FAA check-ride with fewer hours, they can drop as 141 students and receive an FAA Part 61 check-ride to complete. Excess funding must be returned to the VA or the student's account after financial scrutiny of fewer hours flight training.

FAA First Class Medical Examination

This must be completed by an authorized aviation medical examiner and a copy submitted to the Program Director or Admissions by June 1. Estimated expense is $150. A $50 urine drug screening is also required. Students may not need any additional medical during the degree program.

FAA Written Exam Fees

A total of six exams are required for certifications and ratings during the four-year program. Each exam costs $150 and is administered at a Laser Grade Testing Center (as required by the FAA) at the Vermont Flight Academy.

FAA Examiner Fees

Before each flight, FAA examiner fees are paid directly to the examiner at the time of their oral and flight test for each certificate and rating. Fees vary from $300-680 per check ride depending on the certificate or rating.

Pilot Equipment

A list of all required materials is handed out and posted on the website. Textbooks for non-flight aviation courses aren't included. Estimated cost for the program is $1,700-2,000.

Insurance

Vermont Flight Academy carries liability and physical damage (hull) insurance. VFA extends limited liability coverage to students, but students are responsible for the insurance deductible in the event of a loss. Each student must purchase an individual non-owner policy for $314 per year which provides student liability protection for legal defense; deductible and loss of use; and subrogation.

Appropriate Dress
Students are expected to dress professionally and in accordance with the season at all times.

iPhones & iPads
These devices are recommended along with multiple apps to assist pilots with convenient access to weather, navigation, approach charts, and regulations.

Other Estimated Expenses (*per year*)

Books, transportation, personal needs	$4,650
Automotive Technology student tools (first year)	2,400
Dental Hygiene instruments/lab materials (first three years)	1,400
Dental Hygiene attire & magnification lenses (first year)	1,400
Dental Hygiene local anesthesia exam (second year)	150
Dental Hygiene exams & licensure (third year)	1,600
Equine Studies riding arena costs	2,400
LPN lab kit	115
Nursing laptop computer	1,200
Nursing uniforms	250
Respiratory Therapy scrubs	75
Respiratory Therapy lab kit	70

Room & Board Rates (*per semester*)

Single Room	$3,997
Double Room	3,156
Triple Room	2,833
Gold Meal Plan (unlimited with 75 points at snack bar)*	2,143
Base Meal Plan (+150 points at snack bar)*	2,064
8 Meal Plan (+225 points at snack bar)*	1,985
Overnight rooms for emergencies (per night)	37

**Meal charges for Randolph Center campus; no meal plans at Williston campus*

Other Fees (all programs)

Application fee	$47
Challenge Exam Fee	150
Deferred Payment Fee	56
Graduation Fee	101
Late Financial Clearance Fee	134
Matriculation Fee	402
Registration Fee*	73
Returned Payment Fee	25
Portfolio Assessment	50
Security Fee (per semester)	41
Student Activity Fee	143
Transcript Fee (per copy)	6.50

** Applies only to students who haven't been accepted into a VTC program*

Per Credit Tuition & Fees

Degree-seeking students registered for 12 credit hours or more (except graduate students) are full-time students and expenses are set forth under the cost charts on the preceding pages.

Overload status fees apply to class loads of 20 or more credit hours per semester. Overload credit hours are billed at the rates below.

Degree-seeking students registered for fewer than 12 credit hours are considered part-time students and are charged on a per credit basis as indicated below. Non-degree-seeking students are charged for all credits.

Tuition

Vermont Resident	$579
Vermont Resident (Nursing & Paramedicine)	608
Vermont Resident (Dental Hygiene)	725
Vermont Resident (Graduate)	724
Non-Vermont Resident	1,107
Non-Vermont Resident (Nursing & Paramedicine)	1,283
Non-Vermont Resident (Dental Hygiene)	1,134
Non-Vermont Resident (Graduate)	1,385
RSP/NEBHE	869
RSP/NEBHE (Nursing & Paramedicine)	912
RSP/NEBHE (Dental Hygiene)	1,088
RSP/NEBHE (Graduate)	1,086
International	1,273
International (Nursing & Paramedicine)	1,449
International (Dental Hygiene)	1,300
International (Graduate)	1,591

(RSP/NEBHE/GN cost shown as money due after NEBHE credit is applied)

Fees

Student Activity Fee* (per credit hour, max. 11 credits)	$12
Non-degree Student Registration Fee (per semester)	73
Facilities Fee* (per credit hour, max. 11 credits)	36

**All Matriculated Students*

2019 Summer Costs

Vermont Resident	$579
Vermont Resident (Nursing & Paramedicine)	608
Vermont Resident (Dental Hygiene)	725
Vermont Resident (Graduate)	724
Non-Vermont Resident	869
Non-Vermont Resident (Nursing & Paramedicine)	912
Non-Vermont Resident (Dental Hygiene)	1,088
Non-Vermont Resident (Graduate)	1,086
RSP/NEBHE	869
RSP/NEBHE (Nursing & Paramedicine)	912
RSP/NEBHE (Dental Hygiene)	1,088

RSP/NEBHE (Graduate)	1,086
International	1,273
International (Nursing & Paramedicine)	1,449
International (Dental Hygiene)	1,300
International (Graduate)	1,086

There's no financial aid for summer term; payment in full is expected by the start of summer classes.

Senior Citizen Discount

Any student aged 65 years or older may audit one VSC course per enrollment period without tuition charge. Additional courses may be taken without limitation, up to and including completion of a certificate or undergraduate degree, at the rate of 50% of the charged tuition. To be eligible, such persons may not take the place of full tuition-paying students in courses with enrollment limits. Course-specific fees, including Registration fees, shall be the responsibility of the student. All other student fees are waived.

Explanation of Fees

Board
Randolph Center students may choose from three meal plans. The *Gold Plan* offers unlimited meals with $75 per year in debit points for the snack bar. The *Base Plan* offers 12 meals per week with $150 per year in debit points. The *8 Meal Plan* offers 8 meals per week with $225 per year in debit points. Each meal plan also comes with 6 guest meals per semester.

Challenge Exam Fee: $150 per exam
This fee is required when students take challenge exams for college credit or advanced standing.

Course Fee
This fee is required to offset the cost of special projects or equipment for specific courses.

Deferred Payment Fee: $56 per semester
This fee is charged to students who request that payment of semester charges be deferred because an outside source is providing payment directly to VTC past the normal due date.

Facilities Fee: up to $422 per semester
This fee is charged per semester to all matriculated students. The fee is pro-rated per credit hour for part-time students. Funds raised by the fee support the development of new facilities on the Randolph Center and Williston campuses. In billing, the fee is referred to as *VTC Facilities Fee*.

Graduation Fee: $101 per degree
This fee is charged prior to graduation and all graduating students must pay whether or not they're participating in the ceremony.

Health Insurance Fee: $2,181 per year
Health insurance is mandatory for all full-time students not otherwise covered. To earn exemption from the insurance fee, a student or their parents must present written proof that they're covered. The Student Waiver form for the VSC Student Health Insurance Plan must be completed in Web Services by all full-time students. Students failing to return the form by the published deadline are automatically enrolled in and billed for the VSC health plan.

Institutional Lab Fee: $66 per lab credit hour
This fee is required to offset the cost of instruction in labs, studios, clinicals, activities, and practica.

Late Financial Clearance Fee: $134
This fee is charged to students who haven't paid or provided proof of how their current semester bill will be paid. Financial holds are activated approximately 30 days into each semester and this fee charged.

Matriculation Fee: $402
This fee applies to all matriculated students. It's a one-time charge in the first enrolled semester.

Online Support Fee: $243
This fee provides support infrastructure for students in the college’s online programs.

Portfolio Assessment Fee: $50
This fee is for each portfolio submitted for review.

Registration Fee: $73 per semester
This fee is required of non-degree students who enroll in one or more courses during a semester.

Returned Payment Fee: $25
There's a service charge on any payment that's returned to the Student Accounts Office by the banking institution for insufficient funds, invalid accounts, etc. For returned checks that were received for cash, we won't accept subsequent checks.

Safety & Security Fee: $41 per semester
This fee is used to enhance safety and security and to ensure a safe and healthy learning environment and is charged to all matriculated students.

Student Activity Fee: up to $143 per semester
This fee covers the expense of student clubs, activities, and associated costs. It also covers admission to most campus events such as concerts, dramatic productions, films, lectures, and recreational and social activities.

Transcript Fee: $6.50 per copy
This fee covers the cost of processing transcripts. Other fees may apply.

Textbooks & Supplies

The college bookstore sells textbooks, supplies, equipment, calculators, and sundries. The cost of required textbooks and supplies varies depending on the program but typically amount to approximately $800 per semester. The bookstore accepts credit cards and cash. Upon approval from the Business Office, students who have financial aid to cover college expenses plus books are eligible to charge books to their student accounts 30 days prior to the start of each semester.

Automotive Technology and Construction Management students are required to have their own tools. Contact these departments for details.

Other Expenses

College students incur a variety of other expenses (travel, social activities, laundry, etc.) These costs are difficult to judge and can best be determined by each student and their family. The college estimates these cost about $1,650 per year.

Payment Authorization

Students can authorize anyone they choose to access, log in, view, and/or make a payment on their account via the web. Students must complete this process, as Student Accounts staff must know who has permission for account reviews.

Semester Payment Plans

Fall plans are available online on Portal beginning June 1 or when billed. Select the *VSC Bill Payment for Students and Authorized Users* link at the bottom of the page. You must have a login ID, a password, and a billing statement to access this service.

We offer five convenient in-house plans for fall (see Student Accounts for other semester plans):

- Six payments from June through November
- Five payments from July through November
- Four payments from August through November
- Three payments from September through November
- Two payments from October through November

There's a $30 enrollment fee and a down-payment required when signing up based on the option chosen. Monthly payments are due on the fifteenth of each month and a $15 late fee is incurred for payments not made by the due date. Semester balances must be paid in full prior to enrolling in future semesters. A new payment plan must be set up each semester.

As a condition of enrollment, students must provide payment in full or proof of how all semester charges will be paid within 30 days of billing. Fall billing begins on June 1.

Veterans who are certified as eligible for the GI Educational Assistance allowance are permitted to register upon signing an approved payment plan with the business office.

Employer payments requiring final grades can be deferred. Please contact the business office for more information and eligibility requirements.

Financial delinquency may serve as a basis for dismissal. Financially delinquent students are denied enrollment for subsequent semesters; issuance of grades or transcripts; or graduation. Reasonable interest and collection costs may be added to delinquent accounts.

Tuition, Fees, & Room & Board Reductions for Withdrawal

If a student withdraws or is dismissed before the 60% point of the term, they're credited tuition, applicable fees, and room and board on a prorated basis. The date of withdrawal or dismissal is determined by the Office of the Registrar. The prorated calculation uses the number of calendar days completed divided by the number of total calendar days included for the full term.

Financial Aid Refunds

If a student is receiving financial aid and is eligible for credit in accordance with the above paragraph, the credit received is first applied to financial aid sources. Federal regulations are used for return of Title IV funds and individual state, college, or outside scholarship policies for return of non-Title IV funds. Because financial aid funds must be used for educational expenses, when a student who's receiving financial aid for non-institutional costs withdraws from the college, a portion of this aid must be repaid. The order of distribution for the return of Title IV funds is as follows:

1. Unsubsidized FFEL/Direct Stafford Loan
2. Subsidized FFEL/Direct Stafford Loan
3. Perkins Loan
4. FFEL/Direct PLUS Loan
5. Pell Grant
6. FSEOG
7. Other Title IV programs

Other Credits

Board charges are credited for each full week of extended illness or authorized absence. There's no credit of room charges for students suspended or dismissed from on-campus housing.

Financial Aid

All federal funds at Vermont Tech are awarded on the basis of financial need. All students who apply for financial aid by the March 1 priority deadline and who are eligible for assistance are offered financial aid, subject to availability of funds. The amount of any award is determined by the amount of student need as computed from information provided by the family on the Free Application for Federal Student Aid (FAFSA). Federal regulations mandate that a needs analysis be completed for anyone who applies for federal financial aid. It's important to file the FAFSA as early as possible to avoid delays in processing loan applications and other forms of campus-based aid. After March 1, late applicants are considered for aid only after all on-time applications have been processed.

Students may apply for financial aid by filling out a FAFSA online.

Vermont residents should also complete the Vermont Grant Application through VSAC online. Non-residents should check with their home state higher education agency for state grant information.

Students selected for verification are required to submit additional information and are sent a tracking letter accordingly. The Office of Financial Aid uses imaging to maintain and track documentation sent to the office and all originals are shredded.

All FAFSA on the Web applicants and parents of dependent applicants who indicate that they *have filed* or *will file* a federal tax return are directed to use the IRS Data Retrieval Tool to report and/or update their income information on the FAFSA.

Expected Family Contribution

Financial aid at Vermont Tech is based on the assumption that a student's family will make the maximum effort to finance college expenses. Since there are many more demands on Vermont Tech's financial aid resources than the college can possibly meet, assistance is viewed as supplemental to this family obligation. Applicants can expect that a fair portion of their personal savings at the time of each year's application will be applied to college expenses.

The needs analysis system evaluates the requested information and determines a reasonable contribution that can be expected from the student and their family. Unless there are extenuating circumstances, the Office of Financial Aid is required to use this expected family contribution in determining a student's need for aid. If family financial circumstances change significantly after filing the FAFSA (due to loss of employment, extended illness, disability, etc.), the family should write to the Office of Financial Aid as soon as possible outlining this change.

For the purpose of application, income is defined as wages, salary, tips, interest accrued, dividends, pensions, welfare, social security, or any other form of income. Deductions against income are made for taxes and there's an employment allowance for parents working outside the home, as well as an income protection allowance that's based upon family size and the total number of family members in college.

Sources of Financial Aid

When you file a FAFSA, you're applying for the following federal, state, and college aid programs and establishing eligibility for a Federal Direct Loan.

Federal

The *Federal Pell Grant Program* is an entitlement program. This means that all eligible students receive awards. Eligibility is determined by the family's and the student's financial resources.

*Federal Direct Loans (*subsidized and unsubsidized) are available to qualified students. A subsidized loan is awarded on the basis of financial need and the federal government pays interest on the loan until the student begins repayment and during authorized periods of deferment. The student pays the interest on an unsubsidized loan while enrolled on at least a half-time basis.

If you're a dependent undergraduate student, you can borrow up to:

- $3,500 if you're a first-year student enrolled in a program of study that's at least a full academic year
- $4,500 if you've completed your first year of study and the remainder of your program is at least a full academic year

- $5,500 per year if you’ve completed two years of study, are matriculated in a bachelor’s degree program, and the remainder of your program is at least a full academic year

Additional unsubsidized Direct loan limits may be increased by $2,000 for loans first disbursed after July 1, 2008.

Independent undergraduate students may borrow an additional amount up to $4,000-5,000 per year, depending on their year of study. However, students in the unsubsidized loan program can’t borrow more than the cost of attendance minus any other financial aid for which they're eligible.

Both subsidized and unsubsidized loan eligibility amounts are outlined on a student’s award letter.

All Federal Direct and PLUS loans are processed through the Federal Direct Loans Program (Direct Loans). Direct Loans provides Parent PLUS loans to parents of dependent undergraduate students through the school, funded directly by the government.

PLUS Loans enable parents with good credit histories to borrow for each dependent student who is enrolled at least half-time. Parents who wish to apply must fill out a PLUS Loan Request Form, which is available through the Office of Financial Aid. A request form is automatically mailed with financial aid award notification letters. The yearly limit on a PLUS Loan is the cost of attendance minus any other financial aid for which a student is eligible.

150% Rule for Subsidized Loans
On July 6, 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) (Public Law 112-141) was enacted and limits a first-time borrower’s eligibility for Direct Subsidized Loans to a period not to exceed 150% of the length of the borrower’s education program. In the summer of 2013, final regulations were completed. This legislation was enacted to encourage students to obtain their degrees within a reasonable time frame.

First-time borrowers on or after July 1, 2013 are subject to the provisions in this legislation. Generally speaking, a first-time borrower is one who didn't have an outstanding balance of principal or interest on a Direct Loan or FFEL loan on July 1, 2013.

Federal regulations limit the time period during which you can receive Direct Subsidized loans to 150% of the standard length of the program in which you're enrolled. For example, for a bachelor’s degree program that is normally completed in four years attending full-time, borrowers can receive subsidized loans for a maximum of six years (*150% x 4 = 6*). The period is reduced for less than full-time study. Once you've received direct subsidized loans for your maximum eligibility period, you may continue to receive direct unsubsidized loans and your subsidized loans may begin to accrue interest.

Federal Aid Programs Administered by the College
The *Federal Supplemental Education Opportunity Grant* (FSEOG) is a gift of money to assist students with the cost of their education. It's restricted to undergraduates and doesn't require repayment. The maximum amount awarded is $4,000, depending on a student’s need and the availability of funds at Vermont Tech. Average grants range from $600 to $1,600 per year. Students who are eligible for Pell grants have first consideration for this fund.

The *Federal Work-Study Program* (*FWS*) is a federal work program administered by Vermont Tech which provides jobs for students on or off campus. Average awards range from $1,200 to $1,600 for the year, which translates to approximately 10-14 hours of work per week. Students may also use FWS funds for off-campus non-profit community service placements. Federal Work-Study earnings aren't credited on a student’s bill. Instead, the student worker receives a paycheck every two weeks.

State

Vermont Incentive Grants are awarded on the basis of financial need. Any full-time undergraduate Vermont resident who plans to attend or is enrolled in an approved post-secondary institution and who has not already received a bachelor’s degree is eligible to apply.

Students are required to file supplemental information with the Vermont Student Assistance Corporation (VSAC) to be considered for a Vermont state grant.

Other states, including Maine, Rhode Island, Connecticut, and Massachusetts, offer undergraduate grants or scholarships usable at Vermont Tech. All students eligible for these grants should apply for them. Contact the Office of Financial Aid or your high school guidance office to find out which states require supplemental information.

Veterans' Education Benefits

Veterans planning to attend Vermont Tech using the *GI Bill*® should indicate this on their admissions application.

Please visit the GI Bill® website and complete the VA form that applies:

- 22-1990 if you have served in the military and are applying for education benefits for the first time
- 22-199E if you are a dependent using a spouse's or parent's post-9/11 GI Bill® benefits
- 22-1995 if you are a veteran who is changing schools
- 22-5490 if you are a dependent (child or spouse) of a deceased or 100% disabled veteran and are applying for benefits for the first time
- 22-5495 if you are a dependent who is changing schools

After the VA processes an application, they send a certificate of eligibility letter to the applicant, which the applicant should forward to:

Vermont Technical College
Attn.: Veterans' Certifying Official
PO Box 500
Randolph Center, VT 05061

Once eligibility is established, student enrollment is certified with the VA every semester that a student is enrolled. If a student doesn't want to be certified or is no longer eligible for VA benefits, they must notify the Registrar prior to the start of classes.

Veterans need to be prepared to purchase books and have living expenses for the first four to six weeks of classes. The initial payments can be slow, but are retroactive to the start of the term once they begin.

Veterans must submit a request for enrollment certification each time they register for classes and must notify the Registrar of any changes in tuition and fees after the initial enrollment certification is completed each semester. Post-9/11 (Chapter 33) students who are also receiving Air National Guard tuition reduction (25%) must notify the Student Accounts Office of this prior to the start of each semester.

The VA determines the BAH rate. Starting August 2018 for Post-9/11 (Chapter 33) Veterans, the VA calculates MHA based on the location of the campus where the student physically attends a majority of their classes.

The *Vermont National Guard State Educational Assistance Program* provides tuition assistance to eligible members of the Vermont National Guard who are enrolled in undergraduate degree and diploma programs at public colleges in Vermont.

Other Financial Aid Sources

Scholarships administered by the college are available to students who meet the criteria set for each. Contact the Office of Financial Aid for information about scholarships appropriate to your situation or go to VTC Financial Aid online.

Vermont Tech also has institutional grants which are awarded based on financial need or merit. Financial need is determined using the same criteria used for awarding campus-based aid. The maximum amount awarded depends upon the availability of funds and student need.

Satisfactory Academic Progress (SAP)

Federal statutes and regulations require that recipients of federal financial aid must progress at a pace to ensure degree completion within the maximum time frame allowed and must be in good standing based on cumulative GPA requirements.

Students are reviewed on a semester basis. Students not making SAP (either the pace or the GPA requirement) as described below lose their financial aid eligibility for all aid types. Students have to successfully appeal to the Director of Financial Aid in order to continue to receive Title IV aid despite failing SAP standards. Students who are academically dismissed from their programs are automatically recognized as failing to meet SAP standards.

All semesters of enrollment, including periods in which the student didn't receive federal student aid funds, must be considered in the determination of SAP.

1. **Pace/Time Progression** Students must successfully complete 67% of their attempted courses within the VSC as recorded and documented by the Office of the Registrar. Dropped courses aren't included. Courses from which the student withdraws after the end of the add/drop period are counted toward attempted courses. For financial aid eligibility, total hours attempted, including transfer credits counted toward the degree, can't exceed 150% of graduation requirements. As an example, if you attempt/enroll in 12 credits for one semester, you must successfully complete 8 of those 12 credits (*12 x 67% = 8*).
2. **GPA Requirement** Students with fewer than 30 attempted credits must maintain a cumulative GPA of 1.75. Students with 30 attempted credits or greater must maintain a cumulative GPA of 2.00 as documented by the Registrar.
3. **Maximum Time Frame** The maximum time frame for a student to complete their academic program may not exceed 150% of the published length of the program, measured in credit hours. As an example, if an associate degree program requires 68 credits, the maximum time frame allowed to complete the program would be 102 credits* (*68 x 150% = 102*).

**Different programs have different degree requirements. Students who have reached the maximum time frame aren't eligible for federal financial aid.*

Appeal Process
An appeal is the process by which a student who isn't meeting Vermont Tech's SAP standards can petition the school for reconsideration of Title IV eligibility.

An appeal form is sent to each student not making SAP. The form explains how the student has failed to meet SAP and the steps to appeal the loss of financial aid. To appeal, students complete the form and submit it, along with all supporting documentation, to the Director of Financial Aid. As part of the appeal, the student must include information regarding why they failed to make SAP and what has changed in their situation that would allow the student to demonstrate SAP at the next evaluation. An appeal must be based on significant mitigating circumstances that seriously impacted academic performance. Examples of mitigating circumstances are: serious illness, severe injury, death of a family member, and other similar situations.

Approval is based on the likelihood that the student will meet SAP at the next review. Please note that merely filing an appeal doesn't guarantee continued eligibility for federal aid. Students should make every effort to improve their SAP standing, as they're limited to two SAP appeals.

If a student's appeal is approved, the student is considered for federal aid during the probationary periods for which the student has applied and is otherwise eligible. Once the probationary period has concluded, the student may re-establish eligibility for federal aid for a subsequent semester by meeting SAP standards.

Financial Aid Probation: a status assigned to a student who fails to meet SAP who has appealed and has had eligibility for aid reinstated

Financial Aid Warning: a status assigned to a student who fails to make SAP. The student may continue to receive Title IV aid for one payment period. Students receive a warning that they need to bring their academic standing up to satisfy academic progress standards in their following semester as outlined or they lose their eligibility for aid. No appeal is necessary for this status.

Appeal Denial: if an appeal for federal financial aid is denied, the decision is final for that semester. The student may re-establish eligibility for federal aid for a subsequent semester by taking action to comply with the GPA and pace/time progression components of SAP policy standards.

Special Circumstances
Students with documented disabilities may be allotted additional time for completion of courses.

Change in Degree Program

All credits earned at Vermont Tech plus transfer credits are normally counted when the student changes degree programs. Each case is evaluated on its own merit. Students may not extend their period of enrollment by changing their majors after accumulating maximum credits for a program.

Grades & Credits

Courses with grades of *W* (withdrawn), *I* (incomplete), or *F* (failed) are counted as courses attempted but not earned and are also counted toward the maximum time frame.

Credits earned for repeated courses and remedial coursework don't count toward academic progress. Courses graded solely on a pass/fail basis that are accepted toward the academic program are included when measuring academic progress.

Transfer Students

Transfer credits accepted toward the student's academic program or degree count as both attempted and earned credits and are counted when measuring SAP, but don't impact GPA.

Review of Awards

The Director of Financial Aid reserves the privilege of reviewing and revising awards. Therefore, the applicant should notify the Office of Financial Aid immediately if there's a change in either the student's or the family's financial situation. This includes the receipt of non-college scholarships. Financial aid awards may be adjusted upon receipt of such items as family contributions, grants, outside scholarships, and loans. Eligibility for financial aid depends on such resources not exceeding the total costs of attending VTC.

If a student receives an outside scholarship that the college doesn't know about at the time an award letter is prepared, they're issued a revised award reflecting an adjustment to avoid an over-award situation. Any initial adjustment is reflected in unmet need, then self-help (loan and work) before the gift aid portion of the financial aid package is adjusted.

Most financial aid awards are based originally upon the assumption that a student will enroll as a full-time student (12 or more credits per term) unless they have notified us to the contrary. If a student changes status from full- to part-time enrollment, an aid adjustment may result. A review of enrollment status is completed each term at the end of the add/drop period; any aid adjustments are made accordingly.

Notice of Federal Student Financial Aid Penalties for Drug Law Violations

Per Federal Financial Aid Regulations 34 CFR 668.40, HEAO Sec. 488(g), amended HEA Sec. 485 (20 U.S.C. 1092), HEA Sec. 485(k):

In compliance with the above regulation, this statement serves as notice that a student who has a drug conviction for any offense during a period of enrollment for which the student was receiving Title IV HEA program funds (Federal Pell, Supplemental Education Opportunity Grant, Federal Work-Study, Federal Perkins Loan, Federal Stafford Loans, Federal PLUS Loans, Federal Grad PLUS Loans) under any federal or state law involving the possession or sale of illegal drugs will result in the loss of eligibility for any Title IV program funds (see above listing of program funds).

General Education Requirements

Vermont Tech is committed to the intellectual and personal development of every student. Our educational programs should foster the development of the whole person. This philosophy also aligns with Vermont Tech's Definition of the Educated Person:

> *Vermont Tech faculty, staff, and students believe that an educated person is one who assumes responsibility for their own learning, for career preparation, and for citizenship. We believe that an educated person consistently strives to reach their full potential, can think critically, is globally aware, is civically engaged, is curious, and is an effective communicator.*

We seek to foster an appreciation in each student for the major domains of human achievement; to provide a common educational experience; to refine ethical reasoning, critical thinking, writing, information literacy, communication, and quantitative and qualitative reasoning skills; to nurture civic, cultural, and global awareness and responsibility; to celebrate diversity and common values; to foster lifelong learning; and to produce a well-rounded graduate.

A baccalaureate graduate from Vermont Tech will be able to:

- Effectively speak, write, and communicate with a team
- Exhibit effective scientific and quantitative reasoning and problem-solving skills appropriate to their program field
- Prove effective qualitative and algorithmic reasoning skills
- Demonstrate an informed personal, civic, and social awareness
- Exhibit an informed aesthetic and cultural awareness
- Establish effective and ethical decision making skills
- Find and critically consider information from a wide range of sources
- Demonstrate essential skills and duties expected of professionals in their program field
- Continuously acquire new concepts, skills, and technologies in their program field

The college doesn't guarantee that general education or elective courses are available and reserves the right to withdraw or restrict any offering if registration exceeds class capacity, an insufficient number of students enroll in the course, or the availability of faculty or other resources are limited. This doesn't waive the imperative for students to complete each requirement prior to receiving a degree. Some courses offered by major departments may fulfill the elective requirements, but only for students who aren't majoring in the department where these courses are offered and only if the General Education Task Force and the Dean of Academic Affairs have approved the courses for elective credit.

Course requirements may be fulfilled by simultaneous enrollment at other VSC schools under the VSC Consortium Agreement. Students can't use one course to meet more than one requirement within their program except to meet a graduation standard or dual major/degree requirement.

The student should work with their advisor to develop a plan to meet the general education elective requirements without requiring additional class loads or semesters at the college.

Associate degree requirements (20 credits minimum)
Depending on specific program requirements, each associate degree student completes a minimum of the following general education requirements:

- 1 credit of information technology
- 3 credits of English (composition, writing, and research)
- 3 credits of mathematics/critical thinking
- 3 credits of technical communication
- 4 credits of natural or physical sciences
- 6 credits of arts/humanities or social sciences

Bachelor's degree requirements (40 credits minimum)
Depending on specific program requirements, each bachelor's degree student completes a minimum of the following general education requirements *plus* any other general education courses required to meet the 40 credit minimum:

- 3 credits of English (composition, writing, and research)
- 3 credits of information technology
- 3 credits of technical communication
- 6 credits of other general education courses

- 6 credits of mathematics/critical thinking
- 7 credits of natural or physical sciences
- 12 credits of arts/humanities and social sciences (3 credits minimum at the 3000 level)

Arts & Humanities & Social Sciences Electives (AH/SS)
Each student is exposed to methods of inquiry and major concepts in the arts and humanities and to an understanding of human behavior, personality, politics, economics, and the social context of human interaction. Courses at the lower level are offered as survey and special topics courses to expose students to a broad array of concepts and enhance reading, writing, and communication skills. Courses at the upper level require a higher level of learning and understanding. SS electives include survey courses from ECO, GEO, HIS, PSY, and SSC. For current offerings, see the Academic Scheduling page on the college's website.

English Requirements
Each student completes ENG 1061 or its equivalent or a sequence of courses that emphasizes reading and writing and requires the successful completion of a research paper. Degree students may satisfy the requirements by completing one of the following as determined by placement: ENG 1042 and 1060; ENG 1060; or ENG 1061. Students who don't place into ENG 1060 or 1061 may take ENG 1042 and 1060 to complete requirements which may require summer courses or additional terms.

Each student completes ENG 2080 or its equivalent that emphasizes the principles and forms of communication in the workplace, including a technical report. Each student completes coursework that emphasizes effective speaking, organization, and presentation skills.

Information Technology Requirements
Each student is introduced to computer information technology to include internet orientation, research, email, word processing, and software applications applicable to their field of study.

Mathematics/Critical Thinking Requirements
Each student completes the mathematical or empirical techniques for problem-solving in logic and critical thinking appropriate for their program of study. In addition to the regular mathematics offerings, there are other courses under separate subject listings that satisfy the logic and critical thinking component of this requirement.

Natural Sciences Requirements
Each student is introduced to natural or physical sciences, including a lab experience. The course of study is determined by the major and can be filled by coursework available as electives. These science courses include BIO, CHE, and PHY, as well as appropriate coursework under other prefixes.

Calculators

The Vermont Tech mathematics department requires all entering students to have a contemporary graphing calculator for use in math classes. For those taking MAT 1420 and MAT 1520, the mathematics faculty recommends either a TI-83 or TI-83+ *or* an HP-48 or HP-49. We highly recommend that students taking a business math or statistics course have the TI-83 or TI-83+. Calculators may be bought at local stores and are also available at the Vermont Tech bookstore.

Minors, Concentrations, & Specializations

The Business Technology & Management department offers a minor or concentration in Entrepreneurship and a specialization in Small Business Planning.

A minor is a secondary area of interest that often complements a major or it may be a completely different area of study which serves to balance the student's educational experience and life preparation. A student who satisfies the minor requirements for their area of major study may earn a concentration. Although not a degree requirement of the college, minors and concentrations allow students to group related courses into an organized field of study. Minors require a minimum of 18 credits of related study and a minimum GPA of 2.0 for those credits.

There are no limits to the number of minors that a student may earn. Students apply for a minor in their junior year or by permission of the host department. Students may take courses related to the minor prior to their junior year provided they meet the course requirements. Applying for a minor requires completion of a Declaration of Intention to Complete a VTC Minor form and good academic standing. Graduates of Vermont Tech with a bachelor's degree may not earn a minor.

Minor in Entrepreneurship

In this minor for non-Business bachelor's degree majors, students must take the following courses. No more than 9 credits of the minor may be applied to the major degree requirements.

BUS 2041	Foundations of Entrepreneurship	3
BUS 2210	Small Business Management	3
BUS 3721	Business Planning Seminar	3
BUS 3041	Applied Entrepreneurship	3
BUS 3230	Principles of Financial Management	3
Select one:		
ACC 1020	Survey of Accounting	3
ACC 2121	Financial Accounting	4
		18-19

Concentration in Entrepreneurship

In this concentration for Business bachelor's degree majors, students must take the courses in the previous table. No more than 9 credits of the minor may be applied to the major degree requirements.

Specialization in Small Business Planning

In this specialization open to all students (including non-degree), students must take the following courses. All credits may be applied toward graduation requirements.

BUS 2210	Small Business Management	3
BUS 3721	Business Planning Seminar	3
BUS 3230	Principles of Financial Management	3
Select one:		
ACC 1020	Survey of Accounting	3
ACC 2121	Financial Accounting	4
		12-13

Advanced Software Development (AC)

A student with a certificate in Advanced Computer Software Development will be able to:

- Understand the requirements for developing and deploying high-quality, large-scale software systems
- Understand the concepts and practice of relational databases
- Demonstrate technical depth in an area approved by the Department Chair

This certificate is designed for the student who has already earned a bachelor's degree or higher from an accredited institution and would like to obtain the skills required of a mid- to senior-level software developer. In addition to their prior academic work, a student pursuing this advanced certificate should have completed a minor, certificate, or equivalent coursework in computer science, software engineering, or a related field.

To earn a certificate, a student must maintain a cumulative GPA for the entire certificate of at least 3.0. Courses in which the final grade is below a *C* don't count toward the certificate, but, with permission from the host department, a subsequent course may be substituted. For a student with a particularly strong background, up to two courses may be waived with department permission.

First Year

	Fall Semester			**Spring Semester**	
CIS 3050	Algorithms & Data Structures	3	CIS 3030	Programming Languages	3
CIS 3/4XXX	Upper-level computer elective	3-4	CIS 3010	Database Systems	4
CIS 4150	Software Engineering	3	CIS 4120	Systems Analysis & Design	3
		9-10			10

Agribusiness Management (AAS)

A student with an Associate of Applied Science in Agribusiness Management will be able to:

- Apply knowledge of concentrated agribusiness industries to effectively and professionally communicate technical information in writing, speaking, listening, and interpersonal skills to work as part of a team and interact with clients, the public, and industry professionals
- Apply knowledge of general agribusiness science and technology to concentrated agribusiness industry problems that require the application of principles and applied procedures or methodologies
- Understand the income and expenses of concentrated agribusiness
- Prepare and assess agricultural business plans
- Competently represent the vocation of agriculture
- Combine knowledge of concentrated agriculture industries with practical aspects of organizing and managing a small business, marketing, applying accepted practices, managing agricultural business operation budgets, and writing a business plan for concentrated agricultural operations

First Year

	Fall Semester			Spring Semester	
ACC 1020	Survey of Accounting	3	ACC 1010	Computerized Accounting	3
AGR 1011	Agricultural Techniques I	1	ENG 2080	Technical Communication	3
AGR 1050	Livestock Production	3	INT 1005	Self, Career, & Culture	3
CIS 1080	Intro Spreadsheets/Database Mgmnt	2	LAH 1050	Introduction to Soils	4
ENG 10XX	English	3	**Select one**		
Select one			AGR 1030	Animal Reproduction & Genetics	3
MAT 1210	Principles of Mathematics	3	AGR 3040	Maple Production	3
MAT 1221	Finite Mathematics	3	BIO 1220	Botany	4
MAT 1311	Precalculus I	3	BUS XXXX	BUS elective	3
As required			**As required**		
AGR 2130	Dendrology	3	ENG 10XX	English	3
LAH 1020	Introduction to Horticulture	3	MAT 1210	Principles of Mathematics	3
LAH 1030	Woody Ornamentals	3	MAT 1221	Finite Mathematics	3
		15-18			16-20

Second Year

	Fall Semester			Spring Semester	
BUS 2210	Small Business Management	3	BUS 2230	Principles of Marketing	3
BUS 3230	Principles of Financial Mgmnt	3	BUS 3721	Business Planning Seminar	3
Select one			ELE XXXX	AH/SS elective	3
CHE 1020	Introduction to Chemistry	4	**Select two**		
CHE 1031	General Chemistry I	4	AGR 1062	Timber Harvesting	4
Select two			AGR 2030	Animal Nutrition	4
AGR 1061	Burls to Boards	3	AGR 2050	Large Animal Diseases	3
AGR 2011	Dairy Herd Management I	4	BIO 2030	Plant Pathology	3
AGR 2012	Dairy Herd Management II	2	BUS XXXX	Business elective	3
AGR 2040	Forage Production	3	LAH 1040	Greenhouse Management	3
BIO 1241	Intro to Forest Ecology	4			
BIO 2040	Entomology	3			
BUS XXXX	BUS elective	3			
LAH 2010	Landscape Construction	3			
LAH 2020	Plant Propagation	3			
LAH 2030	Herbaceous Plant Materials	3			
		15-18			15-17

Applied Business Management (+2 BS)

Applied Business Management is a degree-completion program that's offered entirely online. Students must have at least 50 transferrable credits from an accredited institution. These credits should include 20 credits consistent with the general education requirements for an associate degree. Any deficiencies will require additional coursework.

A student with a Bachelor of Science in Applied Business Management will be able to meet all of the outcomes of the Business Technology & Management bachelor's degree.

The student, in conjunction with the Department Chair, develops a sequence of courses to best meet their background and needs that still satisfies the degree requirements. A typical curriculum is shown here.

Third Year

	Fall Semester			Spring Semester	
ACC 2121	Financial Accounting	4	BUS 2230	Principles of Marketing	3
BUS 2020	Principles of Management	3	BUS 3250	Organizational Behavior & Mgmnt	3
BUS 2440	Intro to Business Law	3	ENG 2080	Technical Communication	3
CIS 1041	Computer Applications	3	MAT 2021	Statistics	3
MAT 1221	Finite Mathematics	3	SCI XXXX	Science elective	3-4
		16			15-16

Fourth Year

	Fall Semester			Spring Semester	
BUS 3150	Production & Operations Mgmnt	3	BUS 3811	Business Problem Practicum	3
BUS 3230	Principles of Financial Mgmnt	3	BUS 4080	Business Policy & Strategy Dvlpmnt	3
BUS 3410	Business Ethics	3	**Select one**		
ECO 2060	Survey of Economics	4	BUS 4310	Business Information Architecture	3
ELE 3/4XXX	Upper-level AH/SS elective	3	BUS 4530	Technical Project Management	3
			Select two		
			ELE XXXX	AH/SS elective	3
		16			15

All courses or equivalent coursework must be completed. All coursework from an accredited institution not used to meet the core requirement may be used toward the 120 credit minimum provided that it doesn't duplicate other coursework.

Architectural & Building Engineering Technology (AAS)

A student with an Associate of Applied Science in Architectural & Building Engineering Technology will be able to:

- Apply the knowledge, techniques, skills, and modern tools of architectural and building engineering technology to narrowly defined engineering technology activities
- Apply knowledge of mathematics, science, engineering, and technology to architectural and building engineering technology problems that require limited application of principles but extensive practical knowledge
- Conduct standard tests and measurements and conduct, analyze, and interpret experiments related to architectural and building engineering technology
- Function effectively as a member of a technical team
- Identify, analyze, and solve narrowly defined architectural and building engineering technology problems
- Apply written, oral, and graphical communication in both technical and non-technical environments and identify and use appropriate technical literature
- Understand the need for and engage in self-directed continuing professional development
- Understand and commit to addressing professional and ethical responsibilities, including a respect for diversity
- Commit to quality, timeliness, and continuous improvement
- Utilize instruments, methods, software, and techniques that are appropriate to produce A/E documents and presentations
- Utilize measuring methods that are appropriate for field, office, or lab
- Apply fundamental computational methods and elementary analytical techniques in sub-disciplines related to architectural engineering

Educational objectives that are demonstrated during their workforce careers include:

- **Graphic communication skills**: using freehand sketches and drawing, presentation graphics, and CAD as tools for design and communication
- **Communication skills**: communicating technical information in writing, speaking, listening, and interpersonal skills to work effectively as part of a team and to interact effectively with clients, the public, and others
- **Technical skills**: understanding residential and commercial building systems, materials, and regulations; applying that knowledge to site layout and material estimating; and using appropriate computer applications
- **Architectural design skills**: demonstrating knowledge of historical precedents and aesthetics and using design principles (including energy use, conservation, and sustainability concepts) as part of a process to create workable building designs
- **Engineering design skills**: understanding design principles and applying procedures in the design of building engineering systems in the areas of building structures; heating, ventilation, and air conditioning (HVAC); plumbing; electrical; and lighting with emphasis on energy use, conservation, and sustainability concepts

The program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

First Year

Fall Semester			Spring Semester		
ARE 1000	ARE Freshman Seminar	1	ARE 1210	Construction Materials & Methods	5
ARE 1011	Intro to Construction Drawing	3	INT 1005	Self, Career, & Culture	3
ARE 1220	Architectural History	3	MAT 1312	Precalculus II	3
ENG 10XX	English	3	PHY 1042	Physics II	4
MAT 1311	Precalculus I	3			
PHY 1041	Physics I	4			
		17			15

Second Year

Fall Semester			Spring Semester		
ARE 2031	Environmental Systems I	3	ARE 2032	Environmental Systems II	3
ARE 2040	Construction Practices	3	ARE 2052	Architectural Design II	3
ARE 2051	Architectural Design I	3	ARE 2720	Arc & Building Eng Seminar	1
CET 2040	Statics & Strength of Materials	4	CET 2120	Structural Design	3
MAT 1520	Calculus for Engineering	4	ELE XXXX	AH/SS elective	3
			ENG 2080	Technical Communication	3
		17			16

Architectural Engineering Technology (BS)

In addition to the student outcomes included in the architectural engineering or civil engineering associate programs, a student with a Bachelor of Science in Architectural Engineering Technology will be able to:

- Select and apply the knowledge, techniques, skills, and modern tools of architectural engineering technology to broadly defined engineering technology activities
- Select and apply knowledge of mathematics, science, engineering, and technology to architectural engineering technology problems that require the application of principles and applied procedures or methodologies
- Conduct standard tests and measurements; conduct, analyze, and interpret experiments; and apply experimental results to improve processes
- Design systems, components, or processes for broadly defined engineering technology problems appropriate to architectural engineering technology educational objectives
- Function effectively as a member or leader of a technical team
- Identify, analyze, and solve broadly defined architectural engineering technology problems
- Understand the impact of architectural engineering technology solutions in societal and global contexts
- Create, utilize, and present design, construction, and operations documents
- Perform economic analyses and cost estimates related to design, construction, and maintenance of building systems
- Select appropriate materials and practices for building construction
- Apply principles of construction law and ethics in architectural practice
- Perform standard analysis and design in at least one recognized technical specialty within architectural engineering technology that's appropriate to the goals of the program

Educational objectives that are demonstrated during their workforce careers include:

- **Technical design skills**: designing and integrating complex systems into the building form; emphasizing human comfort and resource conservation; incorporating expertise in a single engineering discipline
- **Communication skills**: using computer-aided design and drafting to communicate complex building systems; exhibiting expanded oral presentation skills to effectively explain technical designs; demonstrating improved interpersonal skills for team efforts and for interacting with clients, the public, and others
- **Structural engineering design skills**: using principles and procedures to analyze and design structures in wood, steel, concrete, and other materials while addressing sustainability issues
- **Mechanical engineering design skills (HVAC and plumbing systems)**: using principles and procedures to analyze and design building mechanical systems, including the use of energy conservation and sustainability concepts
- **Electrical and lighting engineering design skills**: using principles and procedures to analyze and design energy-efficient building electrical and lighting systems
- **Engineering management skills**: understanding and applying the principles of management for engineering business and project administration

The program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

Third Year

Architectural Engineering Track

Course	Fall Semester	Credits	Course	Spring Semester	Credits
ARE 3020	Structural Analysis	3	ARE 2022	Architectural CAD II	3
ARE 3050	Fluids/Thermodynamics	4	ARE 3030	Steel Structures Design	3
ARE 3111	Codes & Loads: Structural	1	ARE 3040	Electrical/Lighting Systems	3
ARE 3112	Codes & Loads: Mech/Electrical	1	ARE 4030	HVAC Systems	4
ELT 2071	Basic Electricity	3	CHE 1031	General Chemistry I	4
MAT 2532	Calculus II	4			
		16			17

Civil Engineering Track

Course	Fall Semester	Credits	Course	Spring Semester	Credits
ARE 3020	Structural Analysis	3	ARE 1210	Construction Materials/Methods Studio	1
ARE 3050	Fluids/Thermodynamics	4	ARE 2022	Architectural CAD II	3
ARE 3111	Codes & Loads: Structural	1	ARE 3030	Steel Structures Design	3
ARE 3112	Codes & Loads: Mech/Electrical	1	ARE 3040	Electrical/Lighting Systems	3
ELT 2071	Basic Electricity	3	ARE 4030	HVAC Systems	4
Select one					
PHY 1042	Physics II	4			
PHY 2042	Physics II w/ Calculus	4			
		16			14

Fourth Year

Architectural Engineering Track

Course	Fall Semester	Credits	Course	Spring Semester	Credits
ARE 3010	Design Systems Integration	3	ARE 4040	Plumbing Systems	3
ARE 4010	Concrete Structures Design	3	ARE 4720	ARE Senior Project	4
ARE 4020	Architectural Engineering Mgmnt	3	ELE XXXX	AH/SS elective	3
ARE 4050	FE Exam Survey	1	XXX XXXX	Program/technical elective	3
ELE 3/4XXX	Upper-level AH/SS elective	3			
		13			13

Civil Engineering Track

Course	Fall Semester	Credits	Course	Spring Semester	Credits
ARE 3010	Design Systems Integration	3	ARE 4040	Plumbing Systems	3
ARE 4010	Concrete Structures Design	3	ARE 4720	ARE Senior Project	4
ARE 4020	Architectural Engineering Mgmnt	3	ELE XXXX	AH/SS elective	3
ARE 4050	FE Exam Survey	1	XXX XXXX	Program/technical elective	3
ELE 3/4XXX	Upper-level AH/SS elective	3			
MAT 2532	Calculus II	4			
		17			13

Automotive Technology (AAS)

A student with an Associate of Applied Science in Automotive Technology will be able to:

- Understand the theory of operation, plus diagnostic and service procedures of
  - Engines
  - Brakes
  - Suspension and steering systems
  - Electrical and electronic systems
  - Drive-train systems
  - Engine performance
  - Advanced technology vehicles
  - Automatic transmissions
  - Automotive heating and air-conditioning systems
- Communicate effectively with customers and business relations
- Exhibit the principles of professional conduct in all aspects of customer relations

Students are required to wear black work pants and steel-toed leather work or hiking boots in all lab sections. The college provides T-shirts.

The student must have a set of tools for use in the lab and during the summer cooperative work experience and must also have a dependable vehicle to travel to and from the lab facilities.

First Year

	Fall Semester			**Spring Semester**	
ATT 1011	Suspension & Steering I	1.5	ATT 1020	Engine Diagnostics & Repair	2
ATT 1012	Suspension & Steering II	1.5	ATT 1051	Alignment & Brakes I	2
ATT 1013	Preventative Maintenance	2	ATT 1052	Alignment & Brakes II	2
ATT 1090	Automotive Electronics Lab	1	ATT 1110	Automotive Electrical Systems Lab	1
ELE XXXX	AH/SS elective	3	CIS 1050	Intro to Spreadsheets	1
ENG 10XX	English	3	GTS 1040	Vehicle Electrical Systems	3
GTS 1120	Vehicle Electronics	3	PHY 1030	General Physics	4
MAT 1210	Principles of Mathematics	3			
		18			15
				Summer Semester	
			ATT 2801	ATT Summer Internship	0

Second Year

	Fall Semester			**Spring Semester**	
ATT 2010	Engine Performance	4	ATT 2030	Adv Engine Performance & Fuel	4
ATT 2020	Body Electronics Systems	4	ATT 2040	Automotive Drive Trains	4
ATT 2802	ATT Summer Internship Review	1	ATT 2060	Advanced Technology Vehicle	4
ELE XXXX	AH/SS elective	3	ENG 2080	Technical Communication	3
Select one					
BUS 2210	Small Business Management	3			
XXX XXXX	Program/technical elective	3			
		15			15

Business Technology & Management (AAS)

A student with an Associate of Applied Science in Business Technology & Management will be able to:

- Complete the steps of the accounting cycle, including processing and recording typical cash receipts, cash payments, sales, vendor, and payroll transactions
- Prepare and interpret financial statements for service and merchandising businesses on an accrual basis
- Understand module integrated accounting software and use Quickbooks software to record and process typical transactions and prepare financial statements
- Use document and communication collaboration systems to create business documents and to design and develop newsletters, brochures, and other promotional materials
- Write business letters, memos, email messages, instant messages, and blog posts
- Create reports using accurate research methods and citations
- Develop and deliver an effective oral presentation
- Understand the psychology of face-to-face communication and the role of non-verbal communication
- Demonstrate successful team skills, effective listening, and professional behavior
- Effectively utilize resume-writing, interviewing, and job-seeking skills to advance career goals
- Understand the key characteristics and terminology of the business disciplines of management, human resources, marketing, and finance

First Year

Fall Semester			Spring Semester		
ACC 2121	Financial Accounting	4	ACC 1010	Computerized Accounting	3
BUS 1010	Introduction to Business	3	CIS 1042	Computer Applications II	3
CIS 1041	Computer Applications	3	ENG 2080	Technical Communication	3
ENG 10XX	English	3	INT 1005	Self, Career, & Culture	3
MAT 1210	Principles of Mathematics	3	**Select one**		
			ACC 2122	Managerial Accounting	4
			BUS 2210	Small Business Management	3
			BUS 2410	Human Resource Management	3
			BUS 2440	Introduction to Business Law	3
			CIS 1151	Website Development	3
			XXX XXXX	Program/technical elective	3
		16			15-16

Second Year

Fall Semester			Spring Semester		
BUS 2020	Principles of Management	3	BUS 2230	Principles of Marketing	3
BUS 2270	Organizational Communication	3	BUS 3811	Business Problem Practicum	3
ELE XXXX	AH/SS elective	3	SCI XXXX	Science elective	4
Select two			**Select two**		
BUS 2041	Foundations of Entrepreneurship	3	ACC 2122	Managerial Accounting	4
BUS 2131	Writing for Electronic & Social Media	3	BUS 2132	Management Applications	3
BUS 2210	Small Business Management	3	BUS 2210	Small Business Management	3
BUS 2440	Introduction to Business Law	3	BUS 2440	Introduction to Business Law	3
BUS 2820	Business Intern & Career Seminar	3	CIS 1151	Website Development	3
BUS 3230	Principles of Financial Management	3	XXX XXXX	Program/technical elective	3
CIS 1151	Website Development	3			
SCI XXXX	Science elective	3-4			
XXX XXXX	Program/technical elective	3			
		15-16			16-17

Business Technology & Management (BS)

In addition to the student outcomes included in the business technology and management associate program, a student with a Bachelor of Science in Business Technology & Management will be able to:

- Understand the accounting cycle on an accrual and cash basis
- Interpret financial statements and prepare budgets
- Apply financial information to broad-based business decision making
- Develop and deliver an effective oral team presentation on a strategic business topic
- Understand the structure and function of human behavior in organizations and how behavioral influences impact productivity, organizational effectiveness, and efficiency at the individual, small group, and organizational levels
- Develop marketing strategies to satisfy specific target audiences and create a marketing mix using the 4 Ps: product, price, place, and promotion
- Apply and integrate marketing concepts with other disciplines to affect a business strategy
- Perform human resources functions in the areas of selecting, training, and evaluating personnel
- Identify best practices in employee training, development, appraisal, and rewards
- Understand the basic operations, tools, and production functions of an organization involved in the efficient and effective production and delivery of goods and services
- Understand the genesis of project, program, and portfolio management
- Use the tools and techniques involved in initiating, planning, executing, monitoring, controlling, and closing projects
- Integrate the disciplines of management, human resources, marketing, and finance to develop and affect corporate strategies and plans

The student, in conjunction with the Department Chair, develops a sequence of courses to best meet their background and needs that still satisfies the degree requirements. A typical curriculum is shown here.

Third Year

	Fall Semester			**Spring Semester**	
BUS 2440	Introduction to Business Law	3	BUS 3250	Organizational Behavior & Mgmnt	3
BUS 3230	Principles of Financial Management	3	ELE XXXX	AH/SS elective	3
ECO 2060	Survey of Economics	4	MAT 2021	Statistics	3
MAT 1221	Finite Mathematics	3	**Select two:**		
SCI XXXX	Science elective	3-4	XXX XXXX	Program/technical elective	3
		16-17			15

Fourth Year

	Fall Semester			**Spring Semester**	
BUS 3150	Production & Operations Mgmnt	3	BUS 4080	Business Policy & Strategy Dvlpmnt	3
BUS 4310	Business Information Architecture	3	ELE 3/4XXX	Upper-level AH/SS elective	3
ELE 3/4XXX	Upper-level AH/SS elective	3	**Select one**		
Select two			BUS 4310	Business Information Architecture	3
XXX XXXX	Program/technical elective	3	BUS 4530	Technical Project Management	3
			Select two		
			XXX XXXX	Program/technical elective	3
		15			15

Business Technology & Management (+2 BS)

The +2 Business Technology & Management program is a degree-completion program. Students must have at least 50 transferrable credits from an accredited institution. These credits should include 20 credits consistent with the general education requirements for an associate degree. Any deficiencies will require additional coursework.

Student outcomes correlate with the four-year bachelor's degree.

The student, in conjunction with the Department Chair, develops a sequence of courses to best meet their background and needs that still satisfies the degree requirements. A typical curriculum is shown here.

Third Year

	Fall Semester			**Spring Semester**	
ACC 2121	Financial Accounting	4	BUS 2230	Principles of Marketing	3
BUS 2020	Principles of Management	3	ENG 2080	Technical Communication	3
CIS 1041	Computer Applications	3	MAT 2021	Statistics	3
ECO 2060	Survey of Economics	4	SCI XXXX	Science elective	3-4
MAT 1221	Finite Mathematics	3	**Select one**		
			BUS 4310	Business Information Architecture	3
			BUS 4530	Technical Project Management	3
		17			15-16

Fourth Year

	Fall Semester			**Spring Semester**	
BUS 2440	Intro to Business Law	3	BUS 3250	Organizational Behavior & Mgmnt	3
BUS 3150	Production & Operations Mgmnt	3	BUS 3811	Business Problem Practicum	3
BUS 3230	Principles of Financial Mgmnt	3	BUS 4080	Business Policy & Strategy Dvlpmnt	3
BUS 3410	Business Ethics	3	ELE 3/4XXX	Upper-level AH/SS elective	3
XXX XXXX	Program/technical elective	3	ELE XXXX	AH/SS elective	3
		15			15

All courses or equivalent coursework must be completed. All coursework from an accredited institution not used to meet the core requirement may be used toward the 120 credit minimum provided that it doesn't duplicate other coursework.

Civil & Environmental Engineering Technology (AE)

Any student completing this program can continue for a 2+2 bachelor's degree in Architectural Engineering Technology, Business Technology & Management, Construction Management, or Renewable Energy.

A student with an Associate of Engineering in Civil & Environmental Engineering Technology will be able to:

- Apply the knowledge, techniques, skills, and modern tools of civil and environmental engineering technology to narrowly defined engineering technology activities
- Apply knowledge of mathematics, science, engineering, and technology to civil and environmental engineering technology problems that require limited applications of principles but extensive practical knowledge
- Conduct standard tests and measurements and conduct, analyze, and interpret experiments
- Function effectively as a member of a technical team
- Identify, analyze, and solve narrowly defined civil and environmental engineering technology problems
- Apply written, oral, and graphical communication in both technical and non-technical environments and identify and use appropriate technical literature
- Understand the need for and possess an ability to engage in self-directed continuing professional development
- Understand and commit to addressing professional and ethical responsibilities, including a respect for diversity
- Commit to quality, timeliness, and continuous improvement

Educational objectives that are demonstrated during their workforce careers include:

- **Communication skills**: communicating technical information in writing, speaking, listening, and interpersonal skills to work effectively as part of a team in the workforce
- **Technical skills**: understanding the principles of storm water, hydraulics, environmental engineering, surveying, soils, engineering structures, wastewater, water/wastewater treatment, and engineering materials; estimating quantities; and, using appropriate computer applications to apply that knowledge as a consultant in the workforce
- **Professional skills**: performing in the workforce with confidence in the use of CAD software; creating site plans from raw survey data; designing sewage disposal systems; developing profiles and cross-sections for highway design
- **Engineering design skills**: understanding design principles and functioning actively as part of a design team in the workforce with acquired skills and the knowledge of building materials and structures, site development, and estimating quantities
- **Innovation skills**: demonstrating the skills and ability needed to continue learning through formal education or adapt to changing technologies in the workplace

The program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

First Year

Fall Semester			Spring Semester		
CET 1000	CET Freshman Orientation	1	CET 1020	Engineering Materials	3
CET 1011	Surveying I	3	CET 1032	Eng/Surveying Computer Apps II	2
CET 1031	Eng/Surveying Computer Apps I	2	CHE 1031	General Chemistry I	4
ENG 10XX	English	3	ENG 2080	Technical Communication	3
MAT 1311	Precalculus I	3	INT 1005	Self, Career, & Culture	3
Select one			MAT 1312	Precalculus II	3
PHY 1041	Physics I	4			
PHY 2041	Physics I w/ Calculus	4			
		16			18

Second Year

Fall Semester			Spring Semester		
CET 2012	Surveying II	4	CET 2030	Environmental Eng & Science	3
CET 2020	Hydraulics & Drainage	3	CET 2050	Civil & Environmental Design	4
CET 2040	Statics & Strength of Materials	4	CET 2110	Mechanics of Soils	3
MAT 1520	Calculus for Engineering	4	CET 2120	Structural Design	3
			ELE XXXX	AH/SS elective	3
		15			16

Computer Engineering Technology (AE)

A student with an Associate of Engineering in Computer Engineering Technology will be able to:

- Apply the knowledge, techniques, skills, and modern tools of computer engineering technology to narrowly defined engineering technology activities
- Apply knowledge of mathematics, science, engineering, and technology to computer engineering technology problems that require limited application of principles but extensive practical knowledge
- Conduct standard tests and measurements and conduct, analyze, and interpret experiments related to computer engineering technology
- Function effectively as a member of a technical team
- Identify, analyze, and solve narrowly defined computer engineering technology problems
- Apply written, oral, and graphical communication in both technical and non-technical environments and identify and use appropriate technical literature
- Understand the need for and engage in self-directed continuing professional development
- Understand and commit to addressing professional and ethical responsibilities, including a respect for diversity
- Commit to quality, timeliness, and continuous improvement

Educational objectives that are demonstrated during their workforce careers include:

- **Professional skills**: being immediately employable and productive in the workplace
- **Engineering management skills**: possessing qualifications for positions of responsibility based on knowledge of necessary skills
- **Engineering skills**: demonstrating knowledge in both theory and application
- **Innovation skills**: engaging in lifelong learning; adapting to new and emerging technologies; continuing their formal education

The program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

First Year

	Fall Semester			Spring Semester	
ELT 1015	Introduction to Engineering	1	ELT 1110	Introduction to Digital Circuits	3
ELT 1031	Electrical Circuits I	4	ELT 2041	Electronic Circuits I	4
MAT 1311	Precalculus I	3	ENG 10XX	English	3
PHY 1041	Physics I	4	INT 1005	Self, Career, & Culture	3
Select one			MAT 1312	Precalculus II	3
CIS 2261	Introduction to Java Programming I	4	**If required**		
CIS 2271	Java Programming	4	CIS 2262	Introduction to Java Programming II	3
		16			16-19

Second Year

	Fall Semester			Spring Semester	
CIS 1151	Website Development	3	CIS 2010	Computer Organization	4
ELT 2015	Introduction to Projects	1	CIS 2151	Networks I	4
ELT 2050	Microcomputer Techniques	4	ELE XXXX	AH/SS elective	3
MAT 1520	Calculus for Engineering	4	ENG 2080	Technical Communication	3
PHY 1042	Physics II	4	**Select one**		
			CIS 2730	Software Engineering Projects	3
			ELT 2720	Electrical Project	2
		16			16-17

Computer Engineering Technology (BS)

In addition to the student outcomes included in the associate program, a student with a Bachelor of Science in Computer Engineering Technology will be able to:

- Select and apply the knowledge, techniques, skills, and modern tools of computer engineering technology to broadly defined engineering technology activities
- Select and apply knowledge of mathematics, science, engineering, and technology to computer engineering technology problems that require the application of principles and applied procedures or methodologies
- Conduct standard tests and measurements; conduct, analyze, and interpret experiments; and apply experimental results to improve processes
- Design systems, components, or processes for broadly defined engineering technology problems appropriate to computer engineering technology educational objectives
- Function effectively as a member or leader of a technical team
- Identify, analyze, and solve broadly defined computer engineering technology problems
- Understand the impact of computer engineering technology solutions in societal and global contexts

Educational objectives that are demonstrated during their workforce careers include:

- **Engineering skills**: demonstrating knowledge in both theory and application and analyzing, designing, and implementing electrical and computer systems and products
- **Engineering management skills**: applying project management techniques to electrical/computer systems and qualifying for positions of responsibility
- **Design skills**: demonstrating creativity in the design of systems, components, or processes by researching and developing multiple solutions to problems and using a variety of tools and techniques in their work

The program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

Third Year

	Fall Semester			Spring Semester	
CIS 3050	Algorithms & Data Structures	3	ELT 3050	Microprocessor Techniques II	4
CIS 4150	Software Engineering	3	MAT 3720	Topics in Discrete Math	3
ELE 3/4XXX	Upper-level AH/SS elective	3	**Select two**		
MAT 2532	Calculus II	4	XXX XXXX	Program/technical elective	3-4
As offered					
ELT 3010	Digital Circuits II	3			
ELT 3070	Semiconductor Technology	3			
		16			13-15

Fourth Year

	Fall Semester			Spring Semester	
CIS 4020	Operating Systems	4	CIS 4722	CIS Senior Project II	3
CIS 4721	CIS Senior Project I	2	ELE XXXX	AH/SS elective	3
ELT 4010	Computer Architecture	3	ELT 4020	Digital Signal Processing	3
Select two			**Select two**		
XXX XXXX	Program/technical elective	3-4	XXX XXXX	Program/technical elective	3-4
		15-17			15-17

Computer Information Technology (AS)

A student with an Associate of Science in Computer Information Technology will be able to:

- Demonstrate fluency in multiple programming languages
- Develop and manage complete websites
- Understand the design and implementation of computer networking
- Understand basic principles for developing and deploying high quality software systems
- Understand how to manage systems, including UNIX-based computers
- Demonstrate a solid background in business processes
- Understand the historical and social context of information technology

First Year

	Fall Semester			Spring Semester	
CIS 1120	Intro to Information Technology	3	CIS 1152	Advanced Website Development	3
CIS 1151	Website Development	3	CIS 2151	Networks I	4
ENG 10XX	English	3	ELE XXXX	AH/SS elective	3
MAT 1311	Precalculus I	3	**Select one**		
Select one			MAT 1312	Precalculus II	3
CIS 2261	Introduction to Java Programming I	4	MAT 2021	Statistics	3
CIS 2271	Java Programming	4	MAT 2120	Discrete Structures	3
			If required		
			CIS 2262	Introduction to Java Programming II	3
		16			13-16

Second Year

	Fall Semester			Spring Semester	
BUS 2270	Organizational Communication	3	CIS 2235	Advanced System Administration	4
CIS 2230	System Administration	4	CIS 3/4XXX	Upper-level computer elective	3-4
CIS 2320	Software QA & Testing	3	ELE XXXX	AH/SS elective	3
ENG 2080	Technical Communication	3	SCI XXXX	Science elective	4
Select one			**Select one**		
XXX XXXX	Program/technical elective	3-4	MAT 1312	Precalculus II	3
			MAT 2021	Statistics	3
			MAT 2120	Discrete Structures	3
		16-17			17-18

Computer Information Technology (BS)

In addition to the student outcomes included in the associate program, a student with a Bachelor of Science in Computer Information Technology will be able to:

- Design and architect systems that utilize computer networking
- Understand the requirements for developing and deploying high-quality, large-scale software systems
- Design, implement, and evaluate a user interface for a computer system
- Understand the concepts and practice of relational databases
- Understand the security issues surrounding information technology and the appropriate tools and techniques to safeguard that security
- Understand the professional, historical, and social context of information technology and make reasoned judgments about the social and ethical implications of their actions

All students actively participate in the design, development, and evaluation of a sizable information technology system and present the results of that effort.

The student, in conjunction with the Department Chair, may develop a sequence of courses to best meet their background and needs that still satisfies the degree requirements. A typical curriculum is shown here.

Third Year

	Fall Semester			**Spring Semester**	
BUS 2440	Introduction to Business Law	3	BUS 4530	Technical Project Management	3
CIS 4040	Computer Security	3	CIS 3010	Database Systems	4
CIS 4150	Software Engineering	3	CIS 4120	Systems Analysis & Design	3
ELE 3/4XXX	Upper-level AH/SS elective	3	ELE XXXX	AH/SS elective	3
Select one			HUM 3060	Cyberethics	3
XXX XXXX	Program/technical elective	3-4			
		15-16			16

Fourth Year

	Fall Semester			**Spring Semester**	
CIS 4721	CIS Senior Project I	2	CIS 4722	CIS Senior Project II	3
SCI XXXX	Science elective	3-4	**Select three**		
Select three			XXX XXXX	Program/technical elective	3-4
XXX XXXX	Program/technical elective	3-4			
		14-18			12-15

Computer Networking (AC)

A student with a certificate in Computer Networking will be able to:

- Understand the design and implementation of computer networking
- Understand how to manage systems including UNIX-based computers
- Design and architect systems that utilize computer networking
- Demonstrate technical depth in an area approved by the Department Chair

This certificate is designed for the student who has already earned an associate degree or higher from an accredited institution and would like to obtain the skills required to fill a limited role in systems or network administration and support. A student enrolling in this program is expected to have some academic study of the basic concepts of computer networking or equivalent work experience.

To earn a certificate, a student must maintain a cumulative GPA for the entire certificate of at least 3.0. Courses in which the final grade is below a C don't count toward the certificate, but, with permission from the host department, a subsequent course may be substituted. For a student with a particularly strong background, up to two courses may be waived with department permission.

First Year

	Fall Semester			Spring Semester	
CIS 2230	System Administration	4	CIS 2235	Advanced System Administration	4
CIS 3210	Routing Concepts & WAN	4	CIS 3250	Advanced Network Architectures	4
CIS 3/4XXX	Upper-level computer elective	3-4			
		11-12			8

Computer Software Development (AC)

A student with a certificate in Computer Software Development will be able to:

- Demonstrate fluency in an object-oriented programing language
- Develop complete websites
- Understand the behaviors and implementation of computer networking
- Understand basic principles for developing and deploying high-quality software systems

This certificate is designed for the student who has earned an associate degree or higher from an accredited institution and would like to obtain the skills required to fill a limited role in a software development group. A student enrolling in this program is expected to have some experience programming in Java or a related language; additional coursework may be necessary for students who don't meet this requirement.

To earn a certificate, a student must maintain a cumulative GPA for the entire certificate of at least 3.0. Courses in which the final grade is below a *C* don't count toward the certificate, but, with permission from the host department, a subsequent course may be substituted. For a student with a particularly strong background, up to two courses may be waived with department permission.

First Year

	Fall Semester			Spring Semester	
CIS 1151	Website Development	3	CIS 1152	Advanced Website Development	3
CIS 2260	Object-Oriented Programming	3	CIS 2151	Networks I	4
CIS 2320	Software QA & Testing	3	**Select one**		
			CIS 2010	Computer Organization	4
			CIS 2730	Software Engineering Projects	3
		9			10-11

Computer Software Engineering (AS)

A student with an Associate of Science in Computer Software Engineering will be able to:

- Demonstrate fluency in multiple languages, including one object-oriented language and one scripting language
- Understand the fundamentals of computer hardware, including assembly language
- Develop complete websites
- Understand the behaviors and implementation of computer networking
- Understand basic principles for developing and deploying high-quality software systems
- Understand how to manage systems, including UNIX-based computers
- Work effectively in a group software development effort
- Understand the historical and social context of information technology

All students actively participate in the design and development of a software system and present the results of that effort.

The student, in conjunction with the Department Chair, may develop a sequence of courses to best meet their background and needs that still satisfies the degree requirements. A typical curriculum is shown here.

First Year

	Fall Semester			Spring Semester	
CIS 1120	Intro to Information Technology	3	CIS 1152	Advanced Website Development	3
CIS 1151	Website Development	3	CIS 2151	Networks I	4
ENG 10XX	English	3	ELE XXXX	AH/SS elective	3
MAT 1311	Precalculus I	3	**Select one**		
Select one			MAT 1312	Precalculus II	3
CIS 2261	Introduction to Java Programming I	4	MAT 2021	Statistics	3
CIS 2271	Java Programming	4	MAT 2120	Discrete Structures	3
			If required		
			CIS 2262	Introduction to Java Programming II	3
		16			13-16

Second Year

	Fall Semester			Spring Semester	
CIS 2230	System Administration	4	CIS 2010	Computer Organization	4
CIS 2260	Object-Oriented Programming	3	CIS 2730	Software Engineering Projects	3
CIS 2320	Software QA & Testing	3	ELE XXXX	AH/SS elective	3
ENG 2080	Technical Communication	3	SCI XXXX	Science elective	3-4
Select one			**If required**		
BUS 2020	Principles of Management	3	MAT 2021	Statistics	3
MAT 1520	Calculus for Engineering	4			
		16-17			13-17

Computer Software Engineering (BS)

In addition to the student outcomes included in the associate program, a student with a Bachelor of Science in Computer Software Engineering will be able to:

- Understand the behaviors and implementation of computer networking
- Develop systems that utilize computer networking
- Understand the requirements for developing and deploying high-quality, large-scale software systems
- Design, implement, and evaluate a user interface for a computer system
- Understand the concepts and practice of relational databases
- Understand the security issues surrounding information technology and the appropriate tools and techniques to safeguard that security
- Understand the workings of modern operating systems, both in theory and in practice
- Work with an operating system using administrative tools
- Demonstrate significant technical depth in areas approved by the Department Chair
- Understand the professional, historical, and social context of information technology and make reasoned judgments about the social and ethical implications of their actions

All students actively participate in the design, development, and evaluation of a sizable software system and present the results of those efforts.

The student, in conjunction with the Department Chair, may develop a sequence of courses to best meet their background and needs that still satisfies the degree requirements. A typical curriculum is shown here.

Third Year

	Fall Semester			Spring Semester	
CIS 3050	Algorithms & Data Structures	3	BUS 4530	Technical Project Management	3
CIS 4150	Software Engineering	3	CIS 3010	Database Systems	4
SCI XXXX	Science elective	3-4	CIS 3030	Programming Languages	3
Select two			CIS 4120	Systems Analysis & Design	3
XXX XXXX	Program/technical elective	3-4	ELE XXXX	AH/SS elective	3
		15-18			16

Fourth Year

	Fall Semester			Spring Semester	
CIS 3/4XXX	Upper-level computer elective	3-4	CIS 3/4XXX	Upper-level computer elective	3-4
CIS 4020	Operating Systems	4	CIS 4722	CIS Senior Project II	3
CIS 4721	CIS Senior Project I	2	ELE 3/4XXX	Upper-level AH/SS elective	3
Select two			HUM 3060	Cyberethics	3
XXX XXXX	Program/technical elective	3-4	**Select one**		
			XXX XXXX	Program/technical elective	3-4
		15-18			15-17

Computer Software Engineering (MS)

A student with a Master of Science in Software Engineering will be able to:

- Implement and analyze sophisticated algorithms and data structures
- Analyze the artifacts created during the software development process
- Know a range of distinct architectural styles, their appropriateness for problems, and possible organizational strategies for adoption
- Choose, read, and evaluate academic and industry publications

Fifth Year

	Fall Semester			Spring Semester	
CIS 5020	Advanced Operating Systems	4	CIS 5120	Adv Systems Analysis & Design	3
CIS 5050	Adv Data Structures & Algorithms	3	CIS 5140	Software Architecture	3
CIS 5150	Advanced Software Engineering	3	CIS 6050	Advanced Compiler Design	3
CIS 6740	Graduate Seminar I	1	CIS 6741	Graduate Seminar II	1
		11			10

Sixth Year

	Fall Semester			Spring Semester	
CIS 5130	Analysis of Software Artifacts	3	CIS 6721	Master's Project	1
Select three			**Select two**		
CIS 5/6XXX	Graduate-level program elective	3	CIS 5/6XXX	Graduate-level program elective	3
		12			7

Construction Management (AAS)

A student with an Associate of Applied Science in Construction Management will be able to:

- Communicate construction materials and methods using graphical symbols, drafting practice, and CAD
- Effectively communicate technical instructions and building details using written and spoken English
- Use computers for computation, research, documentation, and communication
- Identify building components and materials
- Demonstrate and model industry-accepted (OSHA) safety practices
- Understand a load table and choose proper materials for structural members
- Create and administer construction schedules
- Operate a total station to establish points, elevations, survey distances, building, and road layout
- Write a business plan
- Complete quantity takeoffs in residential and commercial construction

A student in this program must have safety glasses; work boots; a speed or combo square; a chalk line; a tool belt; a tape measure; a utility knife; and pencils.

First Year

	Fall Semester			Spring Semester	
CPM 1000	CPM Freshman Seminar	1	CPM 1010	Electrical/Mechanical Systems	3
CPM 1021	Construction Graphics I	2	CPM 1022	Construction Graphics II	2
CPM 1031	Residential Construction Systems	3	CPM 1111	Commercial Construction Systems	4
CPM 1032	Construction Lab	2	MAT 1210	Principles of Mathematics	3
ELE XXXX	AH/SS elective	3	PHY 1030	General Physics	4
ENG 10XX	English	3			
Select one					
MAT 1210	Principles of Mathematics	3			
MAT 1311	Precalculus I	3			
		17			16
				Summer Semester	
			CPM 2801	Construction Internship	0

Second Year

	Fall Semester			Spring Semester	
ACC 1020	Survey of Accounting	3	BUS 2210	Small Business Management	3
BUS 2440	Introduction to Business Law	3	CPM 2030	Elementary Theory of Structures	4
CPM 2010	Construction Estimates I	3	CPM 2730	Construction Seminar & Project	3
CPM 2020	Construction Project Management	3	ELE XXXX	AH/SS elective	3
CPM 2050	Construction Management Software	1	ENG 2080	Technical Communication	3
CPM 2060	Field Engineering	3			
CPM 2802	Construction Internship Review	1			
		17			16

Construction Management (BS)

In addition to the student outcomes included in the associate program, a student with a Bachelor of Science in Construction Management will be able to:

- Demonstrate strong technical and problem-solving backgrounds for management positions
- Control or contribute to a profitable construction-related business
- Adapt to technological and process changes in a rapidly developing field
- Exhibit resiliency, lifelong learning, and a “no excuses” mentality
- Create and implement a company safety plan
- Create, estimate, condense, and graphically communicate Gantt, network diagram, and activity on node project management charts
- Estimate and submit competitive construction bids
- Manage a construction project, including materials and resources, from design phase to close out
- Interpret construction drawings, specifications, and permits for implementation of best management practices
- Properly lay out and site buildings, bridges, and roads from designs
- Manage documentation for payments, inspections, as-built drawings, and progress submittals
- Provide immediate first aid and life-saving care to other employees
- Evaluate multiple choices in the means and methods of construction for fiscal decision-making and planning

Third Year

Construction Management Track

Fall Semester			Spring Semester		
CPM 3130	Construction Soils	3	BUS 2410	Human Resource Management	3
CPM 4030	Construction Safety & Risk Mgmnt	3	CPM 3010	Construction Estimates II	3
ELE 3/4XXX	Upper-level AH/SS elective	3	CPM 3020	Construction Documents	3
MAT 1311	Precalculus I	3	CPM 3030	Concrete & Steel Lab	2
			Select one		
			CHE 1020	Introduction to Chemistry	4
			PHY 1041	Physics I	4
		12			15

Civil or Architectural Engineering Track

Fall Semester			Spring Semester		
ACC 2121	Financial Accounting	3	BUS 2410	Human Resource Management	3
BUS 2210	Small Business Management	3	CPM 3010	Construction Estimates II	3
BUS 2440	Introduction to Business Law	3	CPM 3020	Construction Documents	3
CPM 2010	Construction Estimates I	3	CPM 3030	Concrete & Steel Lab	2
CPM 2020	Construction Project Management	3	ELE 3/4XXX	Upper-level AH/SS elective	3
CPM 4030	Construction Safety & Risk Mgmnt	3			
		18			14

	Summer Semester	
CPM 4801	CPM Senior Summer Internship	0

Fourth Year

Fall Semester			Spring Semester		
AHS 2035	First Aid & CPR	2	BUS 2230	Principles of Marketing	3
BUS 3230	Principles of Financial Management	3	CPM 4120	Project Planning & Finance	3
CPM 4010	Contract Negotiations	3	CPM 4130	Construction Superintendency	3
CPM 4040	Construction Scheduling	3	CPM 4140	Construction Contracts	3
ELE XXXX	AH/SS elective	3	**Select one**		
As required			MAT 1312	Precalculus II	3
CPM 4802	CPM Senior Internship Review	1	MAT 2021	Statistics	3
		14-15			15

Cybersecurity (AC)

A student with a certificate in Cybersecurity will be able to:

- Understand the concepts and applications of security algorithms and protocols
- Design information systems that are resistant to internal and external threats and verify the design's effectiveness
- Understand the concept of intrusion detection and forensic analysis
- Understand national and international laws, regulations, policies, and ethics as they relate to cybersecurity
- Understand current and emerging threats and threat vectors at the strategic and operational levels

This certificate is designed for the student who has already earned a bachelor's degree or higher from an accredited institution and would like to obtain the skills required of a security engineer, penetration tester, or network defense analyst. In lieu of a bachelor's degree, a student may enroll in this program if they have worked for a minimum of two years in the cybersecurity field.

First Year

	Fall Semester			Spring Semester	
CIS 4011	Information Warfare	3	CIS 4040	Computer Security	3
CIS 4240	Ethical Hacking & Network Defense	3	CIS 4080	Network Security	3
CIS 4310	Computer Forensics	3	CIS 4241	Advanced Ethical Hacking	3
		9			9

Dairy Farm Management (AAS)

A student with an Associate of Applied Science in Dairy Farm Management will be able to:

- Apply knowledge of the dairy industry to effectively and professionally communicate technical information in writing, speaking, listening, and interpersonal skills to work as part of a team and interact with clients, the public, and industry professionals
- Apply knowledge of dairy science and technology to dairy industry problems that require extensive practical knowledge
- Understand dairy cow nutrition and ration evaluation
- Understand dairy reproduction and breeding systems
- Understand heifer-raising
- Manage dairy cow transition from dry to lactating
- Understand forage production and management
- Understand dairy operation budgeting
- Combine knowledge of the dairy industry with practical aspects of organizing and managing a small business, marketing, applying accepted accounting practices, managing a dairy operation budget, and writing a business plan for a dairy operation

First Year

	Fall Semester			Spring Semester	
ACC 1020	Survey of Accounting	3	AGR 1012	Agricultural Techniques II	1
AGR 1011	Agricultural Techniques I	1	AGR 1030	Animal Reproduction/Genetics	3
AGR 1050	Livestock Production	3	AGR 2030	Animal Nutrition	4
CIS 1080	Intro Spreadsheets/Database Mgmnt	2	INT 1005	Self, Career, & Culture	3
ENG 10XX	English	3	LAH 1050	Introduction to Soils	4
Select one			**Select one**		
MAT 1210	Principles of Mathematics	3	ENG 10XX	English	3
MAT 1221	Finite Mathematics	3	ENG 2080	Technical Communication	3
MAT 1311	Precalculus I	3	**As required**		
			CHE 1031	General Chemistry I	4
		15			18-22

Second Year

	Fall Semester			Spring Semester	
AGR 2011	Dairy Herd Management I	4	AGR 2050	Large Animal Diseases	3
AGR 2012	Dairy Herd Management II	2	BUS 2210	Small Business Management	3
AGR 2040	Forage Production	3	BUS 2230	Principles of Marketing	3
BUS 3230	Principles of Financial Management	3	ELE XXXX	AH/SS elective	3
SSC 2720	The Social Ecology of Food	3	**Select one**		
			CHE 1020	Intro to Chemistry	4
			CHE 1031	General Chemistry I	4
			CHE 2060	Principles of Organic Chemistry	4
		15			16

Dental Hygiene (BS)

A student with a Bachelor of Science in Dental Hygiene will be able to:

- Competently perform the role of a dental hygienist in varied situations and settings
- Demonstrate the functional acuity and rationale for performing clinical techniques
- Continually promote the most current concepts of disease control and prevention
- Emphasize and promote ethical and responsible considerations in patient care
- Make an essential and unique contribution as an integral member of a healthcare team
- Demonstrate a basic knowledge of legal responsibilities and ethical considerations of patient care
- Demonstrate a commitment to continuous and lifelong learning

The Vermont Tech entry-level Dental Hygiene program consists of a 3-year CODA-approved associate degree followed by a final year accredited by NEASC, resulting in a Bachelor of Science in Dental Hygiene. Upon successful completion of either the associate or bachelor's degree, the student is eligible for application for dental hygiene licensure.

All dental hygiene professional courses must be taken in the prescribed six-semester sequence. The curriculum is time-intensive and the required courses are rigorous. Complete dedication to coursework is required for successful completion of the program.

First Year

	Fall Semester			Spring Semester	
BIO 1030	Nutrition	3	BIO 2012	Human Anatomy & Physiology II	4
BIO 2011	Human Anatomy & Physiology I	4	DHY 1012	Clinical Dental Hygiene I	5
DHY 1011	Pre-Clinical Dental Hygiene	5	DHY 1022	Oral Tissues II/Medical Emergencies	3
DHY 1021	Oral Tissues I	3	PSY 1010	Introduction to Psychology	3
ENG 10XX	English	3			
		18			15

Second Year

	Fall Semester			Spring Semester	
BIO 2120	Elements of Microbiology	4	DHY 2010	Dental Materials	3
DHY 1030	Dental Radiology	3	DHY 2020	General Pathology/Pharmacology	3
DHY 2030	Periodontics	3	DHY 2722	Clinical Dental Hygiene III	4
DHY 2721	Clinical Dental Hygiene II	4	ENG 2080	Technical Communication	3
			MAT 1040	Mathematics for Allied Health	2
		14			15

Third Year

	Fall Semester			Spring Semester	
CIS XXXX	Computer elective	3	CHE 1020	Introduction to Chemistry	4
DHY 2210	Community Oral Health I	2	DHY 2211	Community Oral Health II	1
DHY 3821	Clinical Dental Hygiene IV	6	DHY 2220	Oral Pathology	3
HUM 2020	Bioethics	3	DHY 3822	Clinical Dental Hygiene V	6
Select one					
MAT 1221	Finite Mathematics	3			
MAT 2021	Statistics	3			
		17			14

Fourth Year

	Fall Semester			Spring Semester	
DHY 3010	Evidence-Based Decision Making	3	DHY 3020	Advanced Periodontics	3
DHY 3015	Contemporary Issues in DHY	3	DHY 3030	DHY Methodology & Leadership	3
DHY 4010	Advanced Community Oral Health	3	DHY 4213	Practice Management	3
ELE XXXX	AH/SS elective	3	DHY 4237	Intro to DHY Research Methods	3
			ELE 3/4XXX	Upper-level AH/SS elective	3
		12			15

All DHY/BIO course must be completed with a grade of C *or better to continue in the program.*

Dental Hygiene (+2 BS)

A student with a Bachelor of Science in Dental Hygiene will be able to:

- Explore various occupational settings such as public health, education, sales, and research
- Study further at the graduate level
- Broaden their knowledge base and education experience in dental hygiene and general education courses
- Demonstrate skills in critical thinking and evidence-based research
- Demonstrate a commitment to lifelong learning

All courses are completed online, no campus visits are required, and the student has six years to complete the required courses for the bachelor's degree. The degree may be earned while the student is employed as a practitioner or working as a full-time student.

This program holds articulation agreements with Bristol Community College, Cape Cod Community College, Cuyahoga Community College, Middlesex Community College, Monroe Community College, Mount Wachusett Community College, New Hampshire Technical Institute, Quinsigamond Community College, Springfield Technical Community College, and Tunxis Community College associate degree dental hygiene programs. These agreements are designed to maximize the number of credits students can transfer to Vermont Tech.

Third Year

	Fall Semester			Spring Semester	
DHY 3010	Evidence-Based Decision Making	3	CHE 1020	Introduction to Chemistry	4
DHY 3015	Contemporary Issues in DHY	3	DHY 3020	Advanced Periodontics	3
ELE XXXX	AH/SS elective	3	DHY 3030	DHY Methodology & Leadership	3
PSY 1050	Human Growth & Development	3	SCI XXXX	Science elective	3-4
		12			13-14

Fourth Year

	Fall Semester			Spring Semester	
DHY 4010	Advanced Community Oral Health	3	DHY 4213	DHY Practice Management	3
ELE XXXX	AH/SS elective	3	DHY 4237	Intro to DHY Research Methods	3
Select one			ELE 3/4XXX	Upper-level AH/SS elective	3
HUM 2020	Bioethics	3	**Select one**		
PHI 1040	Introduction to Ethics	3	ELE 3/4XXX	Upper-level AH/SS elective	3
Select one			POS 1020	Intro American Politics & Govt	3
MAT XXXX	Mathematics elective	3			
CTE XXXX	Critical thinking elective	3			
		12			12

DHY bachelor's students must complete a minimum of two Arts and Humanities (AH) or Social Sciences (SS) courses, including one at the 3000 level.

All DHY and BIO courses must be completed with a grade of C or better to continue in the program.

Diesel Power Technology (AAS)

A student with an Associate of Applied Science in Diesel Power Technology will be able to:

- Use principles of critical thinking in the diagnostic process
- Understand, maintain, and repair advanced electronic systems on trucks and agricultural and earth-moving equipment
- Perform successfully as an entry to B-level heavy-duty service technician

The curriculum uses the National Technician's Education Foundation (NATEF) and Associated Equipment Distributors (AED) diesel task mastery specifications to assess successful learning outcomes.

The student must possess a set of hand tools for use in the lab and for the summer internship program. A tool list is available from the department. The student should also have a dependable vehicle to travel to and from the lab facilities.

First Year

	Fall Semester			Spring Semester	
DSL 1010	Steering, Suspension, & Alignment	4	DSL 1050	Preventive Maintenance	3
DSL 1020	Diesel Power Systems	4	DSL 1070	Diesel Electrical Systems Lab	1
DSL 1030	Diesel Electronics Lab	1	DSL 1110	Heavy Duty Braking Systems	3
ENG 10XX	English	3	ELE XXXX	AH/SS elective	3
GTS 1120	Vehicle Electronics	3	GTS 1040	Vehicle Electrical Systems	3
MAT 1210	Principles of Mathematics	3	PHY 1030	General Physics	4
		18			17
				Summer Semester	
			DSL 2801	DPT Summer Internship	0

Second Year

	Fall Semester			Spring Semester	
DSL 2030	Hydraulics	3	CIS 1050	Introduction to Spreadsheets	1
DSL 2802	DPT Summer Internship Review	1	DSL 2010	Fuel Systems	4
ELE XXXX	AH/SS elective	3	DSL 2020	Chassis Electrical/Electronic Sys	4
ENG 2080	Technical Communication	3	DSL 2040	Power Transmission	3
Select one			**Select one**		
BUS 2210	Small Business Management	3	ATT 2060	Advanced Technology Vehicle	4
XXX XXXX	Program/technical elective	3	MEC 1020	Manufacturing Processes I	2
		13			14-16

Diesel Technology (C)

This certificate program allows the student to begin a successful career in the heavy-duty diesel service industry without taking additional math, science, English, and general education courses.

Upon completion of the certificate program, the student can achieve an Associate of Applied Science in Diesel Power Technology with one additional year of study.

The student pursuing the certificate should be cautioned that most upscale original equipment manufacturer's dealerships (Milton CAT, NORTRAX, etc.) require a minimum of an associate degree before they hire graduates.

First Year

	Fall Semester			Spring Semester	
DSL 1010	Steering, Suspension, & Alignment	4	DSL 1050	Preventive Maintenance	3
DSL 1020	Diesel Power Systems	4	DSL 1070	Diesel Electrical Systems Lab	1
DSL 1030	Diesel Electronics Lab	1	DSL 1110	Heavy Duty Braking Systems	3
DSL 2030	Hydraulics	3	DSL 2010	Fuel Systems	4
GTS 1120	Vehicle Electronics	3	GTS 1040	Vehicle Electrical Systems	3
		15			14

Diversified Agriculture (BS)

A student with a Bachelor of Science in Diversified Agriculture will be able to:

- Apply knowledge of various agricultural industries to effectively and professionally communicate technical information in writing, speaking, listening, and interpersonal skills to work as part of a team and interact with clients, the public, and industry professionals
- Apply knowledge of agricultural science and technology to industry problems that require the application of applied procedures or methodologies
- Understand livestock nutrition and ration evaluation
- Design, plan, and implement healthy plant environments
- Balance a nutrient management plan
- Understand the operational details of various New England agricultural industries
- Combine knowledge of animal or plant science agricultural industries with practical aspects of organizing and managing a small business, marketing, applying accepted accounting practices, managing agricultural business operation budgets, assessing agricultural business operations, and writing a business plan for an agricultural operation

First Year

	Fall Semester			Spring Semester	
ACC 1020	Survey of Accounting	3	AGR 1012	Agricultural Techniques II	1
AGR 1011	Agricultural Techniques I	1	AGR 2030	Animal Nutrition	4
AGR 1050	Livestock Production	3	INT 1005	Self, Career, & Culture	3
CIS 1080	Intro Spreadsheets/Database Mgmnt	2	LAH 1050	Introduction to Soils	4
ENG 10XX	English	3	**Select one**		
Select one			ENG 10XX	English	3
MAT 1210	Principles of Mathematics	3	ENG 2080	Technical Communication	3
MAT 1221	Finite Mathematics	3	**As required**		
MAT 1311	Precalculus I	3	MAT 1210	Principles of Mathematics	3
As required			MAT 1221	Finite Mathematics	3
AGR 2130	Dendrology	3	MAT 1312	Precalculus II	3
LAH 1020	Introduction to Horticulture	3	**As required**		
			ACC 1010	Computerized Accounting	3
			AGR 1030	Reproduction & Genetics	3
			AGR 3040	Maple Production	3
			BIO 1220	Botany	4
		15-18			15-22

Second Year

Fall Semester			Spring Semester		
BUS 3230	Principles Financial Management	3	BUS 2210	Small Business Management	3
CHE 1031	General Chemistry I	4	BUS 2230	Principles of Marketing	3
SSC 2720	The Social Ecology of Food	3	ELE XXXX	AH/SS elective	3
Select two			**Select one**		
AGR 2011	Dairy Herd Management I	4	CHE 2060	Principles of Organic Chemistry	4
AGR 2012	Dairy Herd Management II	2	MAT 2021	Statistics	3
AGR 2040	Forage Production	3	**Select two**		
BIO 1241	Intro to Forest Ecology	4	AGR 1062	Timber Harvesting	3
BIO 2040	Entomology	3	AGR 2050	Large Animal Diseases	3
LAH 2020	Plant Propagation	3	BIO 2030	Plant Pathology	3
			BUS 3721	Business Planning Seminar	3
			LAH 1040	Greenhouse Management	3
		15-18			18-19

Third Year

Fall Semester			Spring Semester		
LAH 1020	Introduction to Horticulture	3	AGR 3050	Advanced Nutrient Management	3
Select four			AGR 3111	Vegetable Production	3
XXX XXXX	Program/technical elective	1-4	BIO 1220	Botany	4
			XXX XXXX	Program/technical elective	1-4
			Select one		
			CHE 2060	Principles of Organic Chemistry	4
			MAT 2021	Statistics	3
		12-19			14-18

Summer Semester

AGR 4801	AGR Senior Summer Internship	0

Fourth Year

Fall Semester			Spring Semester		
AGR 4040	Agricultural Products	3	BUS 2410	Human Resource Management	3
AGR 4802	AGR Sr Summer Internship Review	1	BUS 3721	Business Planning Seminar	3
ELE 3/4XXX	Upper-level AH/SS elective	3	ELE XXXX	AH/SS elective	3
Select 2-3			**Select one**		
XXX XXXX	Program/technical elective	1-4	CHE 2060	Principles of Organic Chemistry	4
			MAT 2021	Statistics	3
			Select 1-2		
			XXX XXXX	Program/technical elective	1-4
		12-19			13-21

Electrical Engineering Technology (AE)

A student with an Associate of Engineering in Electrical Engineering Technology will be able to:

- Apply the knowledge, techniques, skills, and modern tools of electrical engineering technology to narrowly defined engineering technology activities
- Apply knowledge of mathematics, science, engineering, and technology to electrical engineering technology problems that require limited application of principles but extensive practical knowledge
- Conduct standard tests and measurements and conduct, analyze, and interpret experiments related to electrical engineering technology
- Function effectively as a member of a technical team
- Identify, analyze, and solve narrowly defined electrical engineering technology problems
- Apply written, oral, and graphical communication in both technical and non-technical environments and identify and use appropriate technical literature
- Understand the need for and engage in self-directed continuing professional development
- Understand and commit to addressing professional and ethical responsibilities, including a respect for diversity
- Commit to quality, timeliness, and continuous improvement

Educational objectives that are demonstrated during their workforce careers include:

- **Professional skills:** being immediately employable and productive in the workplace
- **Engineering management skills:** possessing qualifications for positions of responsibility based on knowledge of necessary skills
- **Engineering skills:** demonstrating knowledge in both theory and application
- **Innovation skills:** engaging in lifelong learning and adapting to new and emerging technologies; continuing their formal education

The program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

First Year

	Fall Semester			Spring Semester	
ELT 1015	Introduction to Engineering	1	CIS 2025	C Programming	3
ELT 1031	Electrical Circuits I	4	ELT 1110	Introduction to Digital Circuits	3
ENG 10XX	English	3	ELT 2041	Electronic Circuits I	4
Select one			INT 1005	Self, Career, & Culture	3
MAT 1311	Precalculus I	3	MAT 1312	Precalculus II	3
MAT 1520	Calculus for Engineering	4			
Select one					
PHY 1041	Physics I	4			
PHY 2041	Physics I w/ Calculus	4			
		15-16			16

Second Year

	Fall Semester			Spring Semester	
ELT 1032	Electrical Circuits II	4	ELE XXXX	AH/SS elective	3
ELT 2015	Introduction to Projects	1	ELT 2042	Electronic Circuits II	4
ELT 2050	Microcomputer Techniques	4	ELT 2130	Industrial Electronics	4
MAT 1520	Calculus for Engineering	4	ELT 2720	Electrical Project	2
Select one			ENG 2080	Technical Communication	3
PHY 1042	Physics II	4			
PHY 2042	Physics II with Calculus	4			
		17			16

Electrical Engineering Technology (BS)

In addition to the student outcomes included in the associate program, a student with a Bachelor of Science in Electrical Engineering Technology will be able to:

- Apply the knowledge, techniques, skills, and modern tools of electrical engineering technology to broadly defined engineering technology activities
- Apply knowledge of mathematics, science, engineering, and technology to electrical engineering technology problems that require limited application of principles and applied procedures or methodologies
- Conduct standard tests and measurements; conduct, analyze, and interpret experiments; and apply experimental results to improve processes
- Design systems, components, or processes for broadly defined engineering technology problems appropriate to electrical engineering technology educational objectives
- Function effectively as a member or leader of a technical team
- Identify, analyze, and solve broadly defined electrical engineering technology problems
- Understand the impact of electrical engineering technology solutions in societal and global contexts

Educational objectives that are demonstrated during their workforce careers include:

- **Engineering skills:** analyzing, designing, and implementing electrical and electronic systems and products
- **Engineering management skills:** applying project management techniques to electrical/electronic systems
- **Design skills:** demonstrating creativity in the design of systems, components, or processes by researching and developing multiple solutions to problems and using a variety of tools and techniques in their work

The program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

Third Year

	Fall Semester			Spring Semester	
ELE 3/4XXX	Upper-level AH/SS elective	3	ELT 2061	Electromechanical Systems I	4
ELM 3015	Sensors & Instrumentation	3	ELT 3050	Microprocessor Techniques II	4
ELT 3053	Electronics III	4	MAT 3170	Applied Mathematics for Engineering	3
MAT 2532	Calculus II	4	PHY 3121	Modern Physics	3
As offered					
ELT 3010	Digital Circuits II	3			
ELT 3070	Semiconductor Technology	3			
		17			14

Fourth Year

	Fall Semester			Spring Semester	
ELE XXXX	AH/SS elective	3	ELM 4232	Control Systems II	3.5
ELM 4015	Electromechanical Power Systems	3	ELT 3040	Electronic & Data Communications	3.5
ELM 4231	Control Systems I	3	ELT 4020	Digital Signal Processing	3
ELM 4241	Senior Lab	1	ELT 4702	Electrical Project II	3
ELT 4701	Electrical Project I	2			
XXX XXXX	Program/technical elective	3			
		15			13

General education requirements for the program include 24 credits minimum, nine of which must contain a strong writing component. Three of these credits are included in ELT 4701 and 4702.

Electromechanical Engineering Technology (BS)

In addition to the student outcomes included in the electrical engineering or mechanical engineering associate programs, a student with a Bachelor of Science in Electromechanical Engineering Technology will be able to:

- Select and apply the knowledge, techniques, skills, and modern tools of electromechanical engineering technology to broadly defined engineering technology activities
- Select and apply knowledge of mathematics, science, engineering, and technology to electromechanical engineering technology problems that require the application of principles and applied procedures or methodologies
- Conduct standard tests and measurements; conduct, analyze, and interpret experiments; and apply experimental results to improve processes
- Design systems, components, or processes for broadly defined engineering technology problems appropriate to electromechanical engineering technology educational objectives
- Function effectively as a member or leader of a technical team
- Identify, analyze, and solve broadly defined electromechanical engineering technology problems
- Understand the impact of electromechanical engineering technology solutions in societal and global contexts

Educational objectives that are demonstrated during their workforce careers include:

- **Engineering skills:** demonstrating knowledge in both theory and application and analyzing, designing, and implementing electrical/electromechanical systems and products
- **Engineering management skills:** qualifying for positions of responsibility and applying project management techniques to electrical/electromechanical systems
- **Design skills:** demonstrating creativity in the design of systems, components, or processes by researching and developing multiple solutions to problems and using a variety of tools and techniques in their work
- **Innovation skills:** demonstrating preparation for lifelong learning and adapt to new and emerging technologies; continuing their formal education

The program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

Third Year

Electrical EngineeringTrack

	Fall Semester			Spring Semester	
ELM 3015	Sensors & Instrumentation	3	ELT 2061	Electromechanical Systems I	4
MAT 2532	Calculus II	4	MAT 3170	Applied Mathematics for Engineering	3
MEC 1011	Design Communication I	2	MEC 1020	Manufacturing Processes I Lab	2
MEC 2010	Fluid Mechanics & Fluid Systems	4	MEC 2065	Kinematics & Dynamics	3
MEC 2035	Statics & Strength of Materials	3	MEC 2071	Machine Design	2
			PHY 3121	Modern Physics	3
		16			17

Mechanical Engineering Track

	Fall Semester			Spring Semester	
CIS 2025	C Programming	4	ELT 2041	Electronic Circuits I	4
ELM 3015	Sensors & Instrumentation	3	ELT 2050	Microcomputer Techniques	4
ELT 1032	Electrical Circuits II	4	ELT 2061	Electromechanical Systems I	4
MAT 2532	Calculus II	4	MAT 3170	Applied Mathematics for Engineering	3
			PHY 3121	Modern Physics	3
		15			18

Fourth Year

	Fall Semester			Spring Semester	
ELE XXXX	AH/SS elective	3	ELE 3/4XXX	Upper-level AH/SS elective	3
ELM 4015	Electromechanical Power Systems	3	ELM 4232	Control Systems II	3.5
ELM 4231	Control Systems I	3	ELM 4702	Electrical Project II	3
ELM 4241	Senior Lab	1	ELT 3040	Electronic & Data Communications	3.5
ELM 4701	Electromechanical Project I	2			
XXX XXXX	Program/technical elective	3			
		15			13

**General education requirements for this program include a cumulative 24 credits, nine of which must contain a strong writing component. Some of these credits may have been earned in previous degree studies. Three of these credits are included in* ELM 4701 *and* 4702 *and three credits must be at the 3000 level.*

Entrepreneurship (AAS)

A student with an Associate of Applied Science in Entrepreneurship will be able to:

- Complete the steps of the accounting cycle, including processing and recording typical cash receipts, cash payments, sales, vendor, and payroll transactions
- Prepare and interpret financial statements for service and merchandising businesses on an accrual basis
- Understand module integrated accounting software and use Quickbooks software to record and process typical transactions and prepare financial statements
- Use document and communication collaboration systems to create business documents and to design and develop newsletters, brochures, and other promotional materials
- Write business letters, memos, email messages, instant messages, and blog posts
- Create reports using accurate research methods and citations
- Develop and deliver an effective oral presentation
- Understand the psychology of face-to-face communication and the role of non-verbal communication
- Demonstrate successful team skills, effective listening, and professional behavior
- Effectively utilize resume-writing, interviewing, and job-seeking skills to advance career goals
- Understand the key characteristics and terminology of the business disciplines of management, human resources, marketing, and finance
- Recognize a business opportunity that meets their individual needs
- Understand how to launch an entrepreneurial career

The student, in conjunction with the Department Chair, may develop a sequence of courses to best meet their background and needs that still satisfies the degree requirements. A typical curriculum is shown here.

First Year

	Fall Semester			Spring Semester	
ACC 1020	Survey of Accounting	3	ACC 1010	Computerized Accounting	3
CIS 1041	Computer Applications	3	BUS 2210	Small Business Management	3
ENG 10XX	English	3	CIS 1042	Computer Applications II	3
INT 1021	Creativity & Innovation	3	ENG 2080	Technical Communication	3
MAT 1210	Principles of Mathematics	3	INT 1005	Self, Career, & Culture	3
		15			15

Second Year

	Fall Semester			Spring Semester	
BUS 2020	Principles of Management	3	BUS 2230	Principles of Marketing	3
BUS 2041	Foundations of Entrepreneurship	3	BUS 3041	Applied Entrepreneurship	3
BUS 2270	Organizational Communication	3	BUS 3721	Business Planning Seminar	3
BUS 3230	Principles of Financial Management	3	SCI XXXX	Science elective	3-4
ELE XXXX	AH/SS elective	3	XXX XXXX	Program/technical elective	3
		15			15-16

Entrepreneurship (BS)

In addition to the student outcomes included in the entrepreneurship associate program, a student with a Bachelor of Science in Entrepreneurship will be able to:

- Understand the accounting cycle on an accrual and cash basis
- Interpret financial statements and prepare budgets
- Apply financial information to broad-based business decision making
- Develop and deliver an effective oral team presentation on a strategic business topic
- Understand the structure and function of human behavior in organizations and how behavioral influences impact productivity, organizational effectiveness, and efficiency at the individual, small group, and organizational levels
- Develop marketing strategies to satisfy specific target audiences and create a marketing mix using the 4 Ps: product, price, place, and promotion
- Apply and integrate marketing concepts with other business disciplines to affect business strategy
- Perform human resources functions in the areas of selecting, training, and evaluating personnel
- Identify best practices in employee training, development, appraisal, and rewards
- Understand the basic operations, tools, and production functions of an organization involved in the efficient and effective production and delivery of goods and services
- Understand the genesis of project, program, and portfolio management
- Use the tools and techniques involved in initiating, planning, executing, monitoring, controlling, and closing projects
- Integrate the disciplines of management, human resources, marketing, and finance to develop and affect corporate strategies and plans

The student, in conjunction with the Department Chair, may develop a sequence of courses to best meet their background and needs that still satisfies the degree requirements. A typical curriculum is shown here.

Third Year

	Fall Semester	
BUS 2440	Introduction to Business Law	3
ECO 2060	Survey of Economics	4
MAT 1221	Finite Mathematics	3
SCI XXXX	Science elective	3-4
		13-14

	Spring Semester	
BUS 3250	Organizational Behavior & Mgmnt	3
ELE XXXX	AH/SS elective	3
MAT 2021	Statistics	3
Select two		
XXX XXXX	Program/technical elective	3
		15

Fourth Year

	Fall Semester	
BUS 3150	Production & Operations Mgmnt	3
BUS 3410	Business Ethics	3
ELE 3/4XXX	Upper-level AH/SS elective	3
Select two		
XXX XXXX	Program/technical elective	3
		15

	Spring Semester	
BUS 4080	Business Policy & Strategy Dvlpmnt	3
ELE 3/4XXX	Upper-level AH/SS elective	3
Select one		
BUS 4310	Business Information Architecture	3
BUS 4530	Technical Project Management	3
Select two		
XXX XXXX	Program/technical elective	3
		15

Entrepreneurship (+2 BS)

The +2 Entrepreneurship program is a degree-completion program. Students must have at least 50 transferrable credits from an accredited institution. These credits should include 20 credits consistent with the general education requirements for an associate degree. Any deficiencies will require additional coursework.

Student outcomes correlate with the four-year bachelor's degree.

The student, in conjunction with the Department Chair, develops a sequence of courses to best meet their background and needs that still satisfies the degree requirements. A typical curriculum is shown here.

Third Year

	Fall Semester			Spring Semester	
ACC 1020	Survey of Accounting	3	ACC 1010	Computerized Accounting	3
BUS 2020	Principles of Management	3	BUS 2440	Intro to Business Law	3
BUS 2041	Foundations of Entrepreneurship	3	BUS 3041	Applied Entrepreneurship	3
CIS 1041	Computer Applications	3	BUS 3250	Organizational Behavior & Mgmnt	3
ECO 2060	Survey of Economics	4	ENG 2080	Technical Communication	3
MAT 1221	Finite Mathematics	3	MAT 2021	Statistics	3
		19			18

Fourth Year

	Fall Semester			Spring Semester	
BUS 2210	Small Business Management	3	BUS 2230	Principles of Marketing	3
BUS 2270	Organizational Communication	3	BUS 3721	Business Planning Seminar	3
BUS 3150	Production & Operations Mgmnt	3	BUS 4080	Business Policy & Strategy Dvlpmnt	3
BUS 3230	Principles of Financial Management	3	BUS 4530	Technical Project Management	3
ELE XXXX	AH/SS elective	3	ELE 3/4XXX	Upper-level AH/SS elective	3
SCI XXXX	Science elective	3-4			
		18-19			15

Equine Studies (AAS)

A student with an Associate in Applied Science in Equine Studies will be able to:

- Demonstrate fundamentals of equine care and facility management by utilizing knowledge to satisfactorily complete a predetermined set of skills with a minimum of 80% success
- Assess, critique, devise, and implement plans for using both teaching and training techniques, including their application in hands-on lab settings
- Understand issues in the equine industry and present an appraisal and recommendations regarding a defined area of the industry
- Review, examine, and draw conclusions about scientific theories concerning equine health, behavior, and care

The student must arrange for their own transportation to and from the equine facility, which is located seven miles from campus. The program encourages students to carpool whenever possible.

First Year

	Fall Semester			**Spring Semester**	
BIO 2320	Zoology	4	EQS 1012	Introduction to Equine Studies II	2
ENG 10XX	English	3	EQS 1032	Stable Management	3
EQS 1010	Introduction to Equine Studies I	4	EQS 2025	Equitation*	1
EQS 2011	Equine Training I	3	INT 1005	Self, Career, & Culture	3
EQS 2025	Equitation*	1	VET 1020	Animal Anatomy & Physiology	4
			Select one		
			MAT 1210	Principles of Mathematics	3
			MAT 1221	Finite Mathematics	3
		15			16
				Summer Semester (optional)	
			EQS 2801	EQS Summer Internship	0

Second Year

	Fall Semester			**Spring Semester**	
ELE XXXX	AH/SS elective	3	AGR 2030	Animal Nutrition	4
ENG 2080	Technical Communication	3	CIS 1050	Introduction to Spreadsheets	1
EQS 2025	Equitation*	1	EQS 2020	Equine Lameness	3
EQS 3012	Equine Training II	3	EQS 2025	Equitation*	1
EQS 3031	Riding Instruction I	3	EQS 3032	Riding Instruction II	3
EQS 4110	Equine Health & Diseases	3	EQS 4610	Equine Studies Senior Seminar	3
Optional			**Optional**		
EQS 2041	Equine Massage I	3	EQS 3042	Equine Massage II	3
		16-19			15-18

** Students must complete a minimum of four semesters of EQS 2025 (two in the freshman year) unless the department approves an alternate schedule.*

Fire Science (AAS)

A student with an Associate of Applied Science in Fire Science will be able to:

- Demonstrate the technical skills needed for firefighting, emergency medical services, and critical thinking skills used for fire prevention, control, suppression, and extinguishment
- Provide ethical leadership in their community, fire department, and personal lives
- Deliver professional presentations concerning fire safety in the public sector and produce the clear, concise, and accurate written reports required by the profession
- Understand scientific principles of fire and combustion, chemicals in hazardous materials, fire control, and extinguishment
- Recognize the importance of building construction concepts and materials in fire safety; the effects of heat and fire on buildings; and the impact of fire to the personal safety of building occupants
- Understand the science of hydraulics by demonstrating analytical skills needed for water system design including supply and suppression systems, community, and fire ground needs
- Understand concepts of wellness and the CPAT

Successful completion of AHS 2011 and licensure as an Emergency Medical Technician through the National Registry of Emergency Medical Technicians (NREMT) is required for graduation from the Fire Science program. EMT licensure is a prerequisite for licensure as an Advanced EMT and for admission into paramedic training programs. The cost of the exam is covered by the State of Vermont the first time. A student who fails the exam is responsible for the fees for retakes, which are available monthly. The student must pass the exam by the end of the sophomore year in order to graduate that year. Otherwise, the student won't graduate until the following year. For more details, see AHS 2011 under *Course Descriptions*.

First Year

	Fall Semester			Spring Semester	
CIS 1050	Introduction to Spreadsheets	1	ELE XXXX	AH/SS elective	3
ENG 10XX	English	3	ENG 2080	Technical Communication	3
FSC 1010	Construction & Fire Protection	3	FSC 1220	Fire Service Leadership	3
FSC 1030	History & Impact of Fire in America	3	FSC 1222	Firefighting Services I (cont.)	3
FSC 1221	Firefighting Services I	3	MAT 1210	Principles of Mathematics	3
		13			15

Second Year

	Fall Semester			Spring Semester	
AHS 2011	Emergency Medical Service	5	ELE XXXX	AH/SS elective	3
CHE 1020	Introduction to Chemistry	4	FSC 2020	Hydraulics & Water Supply	3
FSC 2220	Firefighting Strategy & Tactics	3	FSC 2210	Fire Administration	3
FSC 2250	Fire & Life Safety Educator	3	FSC 2230	HazMat Chemistry & Operations	3
			FSC 2240	Fire Protection Systems	3
			FSC 2260	Career Wellness: CPAT Prep	3
		15			18

Internships may be available for qualified students as either residential or day programs.

Forestry (AAS)

A student with an Associate of Applied Science in Forestry will be able to:

- Apply knowledge of the forestry and logging industries to effectively and professionally communicate technical information in writing, speaking, listening, and interpersonal skills to work as part of a team and interact with clients, the public, and industry professionals
- Apply knowledge of timber science and technology to forestry and logging industry problems that require extensive practical knowledge
- Demonstrate familiarity with tree identification; functions of a forest ecosystem; natural community and site indicator species identification; forestry inventory data collection; mapping skills; operation of a chainsaw and sawmill; maple management and production; and timber harvesting techniques
- Create a forest management plan
- Combine knowledge of the forestry and logging industries with practical aspects of organizing and managing a small business; marketing, applying accepted accounting practices; managing a forestry or logging operation budget; and writing business plans for forestry or logging operations

First Year

	Fall Semester			Spring Semester	
ACC 1020	Survey of Accounting	3	BIO 1220	Botany	4
AGR 2130	Dendrology	4	ENG 2080	Technical Communication	3
CIS 1080	Intro Spreadsheets/Db Mgmnt	2	INT 1005	Self, Career, & Culture	3
ENG 1061	English Composition	3	LAH 1050	Introduction to Soils	4
Select one			**Select one**		
MAT 1210	Principles of Mathematics	3	CHE 1020	Introduction to Chemistry	4
MAT 1221	Finite Mathematics	3	CHE 1031	General Chemistry I	4
MAT 1311	Precalculus I	3	DSL 1050	Preventative Maintenance	3
		15			17-18

Second Year

	Fall Semester			Spring Semester	
AGR 1061	Burls to Boards	3	AGR 1062	Timber Harvesting	4
BIO 1241	Introduction to Forest Ecology	4	AGR 1801	Forestry Internship	4
BUS 2210	Small Business Management	3	AGR 3040	Maple Production	3
BUS 3230	Principles of Financial Mgmnt	3	ELE XXXX	AH/SS elective	3
Select one			**As required**		
CHE 1020	Introduction to Chemistry	4	XXX XXXX	Program/technical elective	3-4
CHE 1031	General Chemistry I	4	MEC 1190	Advanced Welding	2
DSL 1020	Diesel Power Systems	4			
MEC 1180	Introduction to Welding	3			
		16-17			16-18

General Engineering Technology

Administered by the college's Continuing Education & Workforce Development (CEWD) office, GET degree programs are industry-sponsored and offered primarily at the facilities of sponsoring organizations. The curriculum consists of initial courses common to all GET degree programs, as well as a sequence of technology foundation and technical emphasis courses specific to the needs of a workforce education population. These industry-specific technical courses are developed by a curriculum development team comprised of Vermont Tech faculty and representatives from the sponsoring organizations. The goal is a flexible, interdisciplinary path to the acquisition of basic engineering concepts and specific job-related skills needed for the student to excel in their current position and prepare for career growth.

General Education

ELE 2XXX	AH elective	3
ELE 2XXX	SS elective	3
ENG 1061	English Composition	3
ENG 2080	Technical Communication	3
MAT XXXX	Mathematics elective	3-5
SCI XXXX	Science elective	4
		19-21

Foundation Courses

These courses provide a general educational foundation appropriate to the particular technical emphasis. Foundation courses should satisfy the following requirements and can't be used to satisfy a general education or technical emphasis course requirement:

CIS XXXX	Computer elective	3
CIS XXXX	Computer elective	3
MSC XXXX	Advanced math/science elective	3-5
COM XXXX	Communications elective	3
COM XXXX	Communications elective	3
XXX XXXX	Program/technical elective	3
		18-20

Technical Emphasis Courses

A combination of technical courses based on the degree emphasis is required. These courses must have the following characteristics:

- Lab or hands-on components when practicable; these experiences build troubleshooting and problem-solving skills as well as providing exposure to course topics
- At least one multi-course sequence; the program shouldn't contain only introductory courses (typically, there are 1000-level courses followed by 2000-level courses which lead to more advanced issues; prerequisites are established and reinforced)
- A capstone experience (typically a senior project course) which requires students to call upon the comprehensive skills/knowledge gained in the program
- Integration of theoretical topics with practical skills

Landscape Design & Sustainable Horticulture (AAS)

A student with an Associate of Applied Science in Landscape Design & Sustainable Horticulture will be able to:

- Demonstrate mastery of freehand sketching; presentation graphics and layout; and CAD as effective tools to formulate, explore, communicate, and present design ideas
- Communicate technical and theoretical information effectively to clients and coworkers
- Exhibit professional conduct in all aspects of client/customer and employee/employer relations
- Comprehend, analyze, solve, and apply materials and methods of construction
- Understand site engineering issues such as grading and drainage
- Create and maintain a healthy plant environment
- Install, operate, and understand greenhouse and nursery environmental systems
- Understand integrated pest management
- Use appropriate computer applications
- Take base plan measurements and study historic precedent in order to analyze, create, and apply these concepts to comprehensive and holistic landscape designs
- Identify, produce, and use herbaceous and woody ornamental plants
- Diagnose insect and disease problems and use integrated approaches for their management
- Understand soil properties
- Demonstrate plant selection, planting, propagation, and pruning practices
- Understand cultural requirements and practices and maintenance
- Demonstrate the practical aspects of organizing and managing a small business, including marketing, management skills, and generally accepted accounting practices as they apply to the horticultural/design industry

First Year

	Fall Semester			Spring Semester	
CIS 1050	Introduction to Spreadsheets	1	BIO 1220	Botany	4
ENG 10XX	English	3	ELE XXXX	AH/SS elective	3
LAH 1020	Introduction to Horticulture	3	LAH 1031	CAD for Landscape Applications	2
LAH 1021	Landscape Graphics	3	LAH 1050	Introduction to Soils	4
LAH 1030	Woody Ornamentals †	3	LAH 2011	Introduction to Landscape Design	3
MAT 1210	Principles of Mathematics	3			
		16			16

	Summer Semester	
LAH 2801	LDSH Summer Internship	0

Second Year

	Fall Semester			Spring Semester	
BIO 2040	Entomology/Ecological Pest Mgmnt	3	BIO 2030	Plant Pathology	3
BUS 2210	Small Business Management	3	ELE XXXX	AH/SS elective	3
LAH 2010	Landscape Construction Practices	3	ENG 2080	Technical Communication	3
LAH 2020	Plant Propagation	3	LAH 1040	Greenhouse Management	3
LAH 2030	Herbaceous Plant Materials †	3	LAH 2012	Landscape Design II	3
LAH 2802	LDSH Summer Internship Review	1			
		16			15

Courses marked with † are offered every other year.

Manufacturing Engineering Technology (BS)

A student with a Bachelor of Science in Manufacturing Engineering Technology will be able to:

- Apply knowledge of and experience with materials and manufacturing processes
- Apply knowledge of and experience with product design process, tooling, and assembly
- Understand manufacturing systems, automation, and operations
- Select and apply knowledge of statistics; quality and continuous improvement; and industrial organization and management
- Apply knowledge of mathematics, science, engineering, and technology principles with practical knowledge to solve both broadly defined and narrowly constrained problems related to manufacturing systems
- Conduct standard tests and measurements and conduct, analyze, and interpret experiments
- Apply creativity and innovation in the design and planning of manufacturing processes and production systems
- Function effectively as a member of a technical team
- Apply written, oral, and graphical communication in both technical and non-technical environments and identify and use appropriate technical literature
- Engage in self-directed continuing professional development
- Understand and commit to addressing professional and ethical responsibilities, including a respect for diversity
- Commit to quality, timeliness, and continuous improvement

Bachelor's degree students are subject to Vermont Tech's minimum degree requirements. The minimum degree requirements for the Bachelor of Science in Manufacturing Engineering Technology are:

- 6 credits of English
- 12 credits of mathematics, including MAT 1520 and MAT 2021
- 12 credits of lab science, including PHY 1041 and 1042
- 12 credits of arts/humanities and social sciences
- 12 credits of business and management (6 credits minimum at the 3000+ level)
- 12 credits of electives
- 24 credits of engineering, science, or management courses (12 credits minimum at the 2000+ level)
- 30 credits of manufacturing core courses including or equivalent to:
    - MEC 1011 Design Communication I
    - MEC 1020 Manufacturing Processes
    - MEC 1040 Materials Science & Engineering
    - MEC 1060 Metrology & Inspection Techniques
    - MEC 2040 Computer-Aided Technology
    - MEC 3021 Manufacturing Processes II
    - MEC 3031 Materials Processes
    - MEC 3041 Advanced CNC
    - MEC 3120 Advanced Manufacturing & Automation
    - MEC 4010 Lean Manufacturing
    - MEC 4020 Quality Assurance
    - MEC 4220 Product Design & Production
    - MEC 4721 Manufacturing Capstone Project

First Year

	Fall Semester			Spring Semester	
ENG 1060	Freshman Composition	3	INT 1005	Self, Career, & Culture	3
MAT 1311	Precalculus I	3	MAT 1312	Precalculus II	3
MEC 1010	Intro to Mechanical Engineering	1	MEC 1012	Design Communication II	3
MEC 1011	Design Communication I	2	MEC 1040	Intro to Materials Sci/Engineering	3
MEC 1020	Manufacturing Processes I	2	PHY 1042	Physics II	4
PHY 1041	Physics I	4			
		15			16

Second Year

	Fall Semester			Spring Semester	
ELT 2071	Basic Electricity	3	CHE 1031	General Chemistry I	4
MAT 1520	Calculus for Engineering	4	ELE XXXX	AH/SS elective	3
MAT 2021	Statistics	3	ELT 2072	Electronics	3
MEC 1060	Metrology & Inspection Techniques	3	ENG 2080	Technical Communication	3
MEC 2040	Computer-Aided Technology	2	MEC 2071	Machine Design	2
		15			15

Third Year

	Fall Semester			Spring Semester	
BUS 2020	Principles of Management	3	BUS 4530	Technical Project Management	3
MEC 1180	Introduction to Welding	3	ELE XXXX	AH/SS elective	3
MEC 2035	Statics & Strengths of Materials	4	MEC 2050	Thermodynamics & Heat Transfer	4
MEC 3021	Manufacturing Processes II	3	MEC 3041	Advanced CNC Machining	3
MEC 3031	Materials Processes	3	MEC 3120	Adv Manufacturing & Automation	3
		16			16

Fourth Year

	Fall Semester			Spring Semester	
BUS 2270	Organizational Communication	3	ELE 3/4XXX	Upper-level AH/SS elective	3
BUS 3150	Production & Operations Mgmnt	3	MEC 4010	Lean Manufacturing	3
MEC 4020	Quality Assurance	3	MEC 4721	Manufacturing Capstone Project	3
MEC 4220	Product Design & Production	3	**Select two**		
XXX XXXX	Program/technical elective	3	XXX XXXX	Program/technical elective	3
		15			15

Mechanical Engineering Technology (AE)

A student with an Associate of Engineering in Mechanical Engineering Technology will be able to:

- Apply the knowledge, techniques, skills, and modern tools of mechanical engineering technology to areas such as design and solid modeling; materials and structures; machines and mechanisms; fluids systems; thermal systems; and manufacturing
- Apply knowledge of mathematics, science, engineering, and technology to mechanical engineering technology problems that require limited application of principles but extensive practical knowledge
- Conduct standard tests and measurements and conduct, analyze, and interpret experiments related to mechanical engineering technology
- Apply creativity in the design of systems, components, or processes appropriate to program objectives
- Function effectively as a member of a technical team
- Identify, analyze, and solve narrowly defined engineering technology problems
- Apply written, oral, and graphical communication in both technical and non-technical environments and identify and use appropriate technical literature
- Understand the purpose of and engage in self-directed continuing professional development
- Recognize the importance of and have a commitment to addressing professional and ethical responsibilities, including a respect for diversity
- Commit to quality, timeliness, and continuous improvement

Educational objectives that are demonstrated during their workforce careers include:

- **Engineering skills:** developing a successful career in the manufacturing, design, specification, installation, testing, operation, maintenance, sales, or documentation of mechanical systems
- **Professional skills:** employing strong communication and teamwork skills and participating productively on professional teams of engineers, technicians, managers, and skilled production workers
- **Design skills:** utilizing technical knowledge and skills to effectively design, fabricate, manufacture, and maintain industrial and consumer systems and products
- **Innovation skills:** continuously developing as a professional; adapting and staying current in their field

The program is accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.

First Year

	Fall Semester			Spring Semester	
ENG 10XX	English	3	ENG 2080	Technical Communication	3
MAT 1311	Precalculus I	3	INT 1005	Self, Career, & Culture	3
MEC 1010	Intro to Mechanical Engineering	1	MAT 1312	Precalculus II	3
MEC 1011	Design Communication I	2	MEC 1012	Design Communication II	2
MEC 1020	Manufacturing Processes I	2	MEC 1040	Intro to Materials Sci/Engineering	3
PHY 1041	Physics I	4	PHY 1042	Physics II	4
		15			18

Second Year

	Fall Semester			Spring Semester	
ELT 2071	Basic Electricity	3	ELE XXXX	AH/SS elective	3
MAT 1520	Calculus for Engineering	4	ELT 2072	Electronics	3
MEC 2010	Fluid Mechanics & Fluid Systems	3	MEC 2050	Thermodynamics & Heat Transfer	4
MEC 2035	Statics & Strengths of Materials	4	MEC 2065	Kinematics & Dynamics	3
MEC 2040	Computer-Aided Technology	2	MEC 2720	Mechanical Projects	3
		16			16

Nursing

Practical Nursing (C)

A student with a certificate in Practical Nursing will be able to:

- Employ the nursing process for select clients to maintain, achieve, or regain optimal self-care
- Integrate knowledge of scientific, behavioral, and cultural principles in the care of clients in a variety of settings
- Establish collaborative relationships with members of the nursing and health team
- Maintain confidentiality in a clinical setting and support the use of legal and ethical standards
- Assume the role of a member of an interdisciplinary team
- Provide care which maximizes the self-care potential of individuals across the lifespan in a variety of healthcare settings
- Contribute to the development of a teaching plan for the client with an alteration in basic self-care needs
- Assume responsibility for self-directed, goal-oriented growth

The PN program extends over three semesters, August through June. The student learns PN skills through independent study, lectures, demonstrations, and practice in a nursing skills lab. The student also provides patient care under instructor supervision in a variety of healthcare settings.

Upon completion of the program, the graduate is awarded a certificate and may apply to take the NCLEX for Practical Nursing Licensure. The Vermont State Board of Nursing application requires information regarding past history of substance abuse, prior felony convictions, and failure to pay child support or taxes for all graduates. Other states may ask similar questions. It's the Board's responsibility to determine eligibility to sit for the licensure examination and to issue a license to practice. For more information, please refer to their website.

Students accepted into the Practical Nursing program must be 18 years of age by September 1 of the PN fall semester.

PN students must receive a grade of *C+* or better in all NUR courses and a *C* or better in BIO and PSY courses in order to progress in the program. If a student in the last semester of the program doesn't achieve these grades, they aren't allowed to graduate.

Grades lower than the required 75 or 77 are reflected on the transcript with the corresponding letter grade, so credits may be awarded for any grade above an *F*, but the student won't progress or graduate from the program.

First Year

	Fall Semester			**Winter Semester**	
BIO 1030	Nutrition*	3	BIO 2012	Human Anatomy & Physiology II*	4
BIO 2011	Human Anatomy & Physiology I*	4	NUR 0121	Principles & Practices II Lab	4
NUR 0111	Principles& Practices I Lab	4	NUR 1010	Pharmacology for Nursing	3
NUR 1020	The Nurse-Client Relationship	3	NUR 1121	Principles & Practices of Nursing II	5
NUR 1111	Principles & Practices of Nursing I	5	PSY 1050	Human Growth & Development*	3
		19			19

	Spring2 Semester	
NUR 0131	Principles & Practices III Lab	4
NUR 1131	Principles & Practices of Nursing III	5
		9

** Prerequisite courses required at all sites except Randolph and Williston.*
The certificate program includes 495 hours of theory and 630 hours of clinical/lab.
Only 35 credits from the PN program count toward cumulative credits. Only non-clinical hours/courses count toward GPA.

Nursing (AS)

A student with an Associate of Science in Nursing will be able to:

- Evaluate the plan of care to assist clients with complex healthcare needs to maintain, achieve, or regain their optimal level of self-care
- Select appropriate scientific, behavioral, and cultural principles for the care of clients with complex needs in diverse settings
- Evaluate interpersonal skills in professional practice
- Incorporate behaviors consistent with legal and ethical standards of professional practice
- Assume the role of manager of care within the interdisciplinary team
- Competently deliver nursing care which maximizes the self-care potential of individuals with complex health needs in diverse settings
- Evaluate a comprehensive teaching plan to meet the physical and emotional needs of individuals and groups with common and complex healthcare needs
- Demonstrate accountability for growth as individuals, as members of society, and as professional nurses

The ADN program articulates with the PN program and requires two further semesters of full-time study. The twelve clinical credits earned in the PN program don't transfer to the ADN program. Graduates are prepared to work in a healthcare setting under the supervision of more experienced practitioners.

ADN graduates are awarded an Associate of Science in Nursing and may apply to take the NCLEX for Registered Nurses. The Vermont State Board of Nursing application requires information regarding past history of substance abuse, prior felony convictions, and failure to pay child support or taxes for all graduates. Other states may ask similar questions. It's the Board's responsibility to determine eligibility to sit for the licensure examination and to issue the license to practice. For more information, please refer to their website.

Vermont Tech guarantees direct progression from the PN to the ADN program for qualified students. Because of the competitive demand for ADN slots and the limitations of clinical ADN placements in some areas of the state, some students may have to continue their nursing studies at a site other than their first choice or the site at which their PN certificate was obtained. A student progressing directly from PN to ADN must request their first, second, and third site preferences on their Nursing Direct Progress form.

Vermont Tech assigns first priority to students requesting to remain at their PN site in order of GPA. Once ADN slots are filled for any site, we try to place students at their next highest preferences if seats are available. A student whose first preference is to attend an ADN site other than their PN site are considered for the preferred site only after qualified PN students at that site have been offered an ADN seat.

A student who wishes to take a semester or more off after completing the PN or ADN program may apply for re-admittance to the program through the regular admissions process, but aren't guaranteed admittance.

ADN students must receive a grade of *C+* or better in all NUR courses and a *C* or better in BIO and PSY courses in order to progress in the program. If a student in the last semester of the program doesn't achieve these grades, they aren't allowed to graduate.

Grades lower than the required 75 or 77 are reflected on the transcript with the corresponding letter grade, so credits may be awarded for any grade above an *F*, but the student won't progress or graduate from the program.

To progress directly from the ADN to the BSN level, a student must:

- Declare their intent to progress on a Change of Program form no later than March 31 of the year in which they wish to progress
- Maintain a minimum cumulative 2.5 GPA throughout the ADN program
- Obtain licensure as a Registered Nurse during the summer after completing the ADN degree

Second Year

	Fall Semester			Spring Semester	
AHE XXXX	AH elective	3	ENG 2080	Technical Communication	3
BIO 2120	Elements of Microbiology	4	MAT 1040	Mathematics for Allied Health	2
ENG 10XX	English	3	NUR 2011	Advanced Pharmacology	1
NUR 2010	LPN to RN Transition/Trends in NUR	2	NUR 2130	Principles & Practices of Nursing V	5
NUR 2030	Principles & Practices of Nursing IV	3	NUR 2140	Principles & Practices V Lab	4
NUR 2040	Principles & Practices IV Lab	2	PSY 1010	Introduction to Psychology	3
		17			18

The associate degree program includes 420 hours of theory and 315 hours of clinical/lab.
Only non-clinical hours/courses count toward GPA.

Nursing (BSN)

A student with a Bachelor of Science in Nursing will be able to:

- Collaborate with patients, the interdisciplinary team, and multiple care providers when planning care to establish patient-centered goals to optimize wellness outcomes and evaluate care plan effectiveness for the individual, organization, and community
- Engage applied sciences including scientific, behavioral, psychological, and cultural principles for the care of complex patients that incorporates global appreciation, understanding, and tolerance
- Design evidence-based practice to improve patient care and health
- Determine utilization of collaborative relationships with the healthcare team and the community to facilitate communication of team members to enhance care, promote quality care, and strategize utilization of technology, embracing diversity while evolving therapeutic communication techniques of presencing and dialogical exchange
- Integrate legal and ethical standards that address potential ethical dilemmas and promote self-integrity and consider benefits to the community's, state's, and nation's health
- Coordinate and co-lead the interdisciplinary team
- Advocate for patients by compassionately caring for people and families using the art and science of nursing in theoretically and evidence-based practice
- Help people flourish and find optimal meaning in their lived experiences, demonstrate sound nursing judgement, utilize critical thinking, develop scholarship, and promote the healthiest possible community, state, and nation
- Design a holistic teaching plan or pamphlet with understanding of the person, health, environment, and nursing
- Strive for excellence through ongoing engagement in self-directed lifelong learning with participation as an active member of society in their community; working with or becoming leaders; and developing their professional identity and ability to work with teams to create innovative or evidence-based solutions to problems

The Bachelor of Science in Nursing at Vermont Tech is fully online. Students currently enrolled in the ADN program may continue directly in the BSN program if they maintain a minimum 2.5 GPA and obtain a Registered Nurse license prior to beginning NUR courses in the BSN program.

BSN students must receive a grade of *C* or better in all NUR courses for the course to count toward the degree. If a student receives a grade of less than 75, the student is placed on academic probation but can continue to take classes. They may retake the course once within a one-year period and are removed from probation if they receive a *C* or better in that course. Receiving a grade of *C*- or less in the same course twice or once in two separate courses is grounds for dismissal from the program. The Associate Dean of Nursing reviews such cases for mitigating circumstances and makes final decisions regarding dismissal.

Third Year

Fall Semester			Spring Semester		
MAT 2021	Statistics	3	NUR 3210	Healthcare Systems	3
NUR 3100	RN to BSN: Online Transition	1	PSY 3070	Abnormal Psychology	3
NUR 3110	Nursing Informatics	3	SOC XXXX	Sociology elective	3
NUR 3140	Pathophysiology & Assessment	4	**Select one**		
Select one			NUR 4011	Teaching/Learning in Healthcare	3
NUR 3120	Palliative & End-of-Life Care	3	NUR 4012	Health Promotion Across the Lifespan	3
NUR 3121	Transition of Care in Healthcare Reform	3			
		14			12

Fourth Year

Fall Semester			Spring Semester		
HUM 2020	Bioethics	3	HUM 4010	East & West Holistic Healing	3
NUR 4110	Research & Evidence-Based Practice	4	NUR 4210	Global Health/Population Healthcare	3
NUR 4130	Nursing Leadership & Management	6	NUR 4410	Community Health	6
		13			12

The BSN program includes 675 hours of theory and 225 hours of precepted time that can be completed in the student's community or work setting.

Paramedicine (C)

A student with a certificate in Paramedicine will be able to:

- Demonstrate proper affective behaviors when interacting with patients, the public, and members of the health care team
- Perform a comprehensive history and physical examination to identify factors affecting the health and health needs of a patient
- Formulate a field impression based on analysis of comprehensive assessment findings, anatomy, physiology, pathophysiology, and epidemiology
- Relate assessment findings to underlying pathological and physiological changes in the patient's condition
- Integrate and synthesize the multiple determinants of health and clinical care
- Perform health screenings and referrals
- Effectively communicate in a manner that's culturally sensitive and intended to improve patient outcome
- Safely and effectively perform all psychomotor skills within the National EMS Scope of Practice Model and state Scope of Practice at the Paramedic level
- Anticipate and prospectively intervene to improve patient outcome
- Act as a role model of exemplary professional behavior
- Perform basic and advanced interventions as part of a treatment plan intended to mitigate an emergency, provide symptom relief, and improve the overall health of the patient
- Evaluate the effectiveness of interventions and modify treatment plans accordingly
- Report and document assessment findings and interventions
- Collect and report data for epidemiological and research purposes
- Perform a patient assessment, develop a treatment plan, and develop a disposition plan for a patient with a variety of medical and traumatic complaints
- Function as the team leader of a routine, single-patient advanced life support emergency call
- Ensure the safety of rescuers and others during an emergency
- Assume responsibility for self-directed, goal-oriented growth

First Year

	Fall Semester			Spring Semester	
BIO 2011	Human Anatomy & Physiology I	4	BIO 2012	Human Anatomy & Physiology II	4
EMS 1020	The Art of Paramedicine	2	EMS 1210	Medical Emergencies	4
EMS 1030	Pharmacology & Medication	3	EMS 1230	Cardiology	3
EMS 1040	Airway Management	1	EMS 1240	Paramedic Principles & Practices II	2
EMS 1050	Paramedic Principles & Practices I	2	EMS 1802	Paramedic Field Experience II	1
EMS 1801	Paramedic Field Experience I	1			
		13			14

	Summer Semester	
EMS 1310	OB/GYN & Pediatrics	3
EMS 1320	Trauma Management	3
EMS 1330	Emergency Medical Services Ops	2
EMS 1340	Special Considerations	1
EMS 1350	Paramedic Principles & Practices III	2
EMS 1803	Paramedic Field Experience III	1
		12

Second Year

	Fall Semester	
EMS 1804	Paramedic Field Internship	0

Professional Pilot Technology (BS)

A student with a Bachelor of Science in Professional Pilot Technology will be able to:

- Demonstrate the theoretical knowledge and flight skills necessary to attain FAA certificates and ratings in Private, Instrument, Commercial, Flight Instructor, and Multi-Engine as well as training or endorsements in taildragger (conventional gear), aerobatic, high performance, complex, and seaplane aircraft
- Understand and interpret meteorological data to ensure safe and efficient flight operations
- Operate as a crew member
- Function and communicate effectively as part of a multi-disciplinary team
- Understand leadership roles and step into those roles as a confident leader
- Understand the technological, political, and historical developments constituting the evolution of modern aviation
- Accurately analyze and interpret data from aerodynamic, mathematical, and scientific principles

Educational objectives that are demonstrated during their workforce careers include:

- Achieving success in the dynamic and growing aviation industry with proper academic and professional certification
- Demonstrating knowledge of contemporary world-wide aviation industry issues
- Utilizing specific flying skills to attain FAA certificates and ratings that allow for employment as pilots and flight crew within the international aviation industry
- Mastering critical thinking and decision-making skills necessary for safe and effective flying
- Committing to lifelong learning with focus on continuous development of professional skills

Completion of the degree entails intensive motivation and commitment. Most pilot certificates or ratings are completed in a 14-week semester. This may require flying 4-5 times each week. The FAA requires stage checks and short written exams for each stage in FAA-approved 141 flight courses. The Chief Flight Instructor and their assistants are required to follow the published milestones and stage checks for every student to ensure proper completion. The student must make up cancellations or delays on weekends and during scheduled breaks if necessary and must be available to fly seven days per week, including some night flights.

Success in the program requires understanding that consequences incur for noncompliance of scheduling requests, failure to meet milestones, and stage check failures. If continuous interventions are necessary, the student can expect grade reductions or dismissal from the program. Compliance with all schedules, FAA regulations, and course syllabi is a major part of the training for a career in aviation.

First Year

	Fall Semester			Spring Semester	
AER 1005	Introduction to Aviation Careers	3	AER 1022	Private Pilot: Flight II	1
AER 1010	Private Pilot: Ground	3	ATM 1032	Aviation Meteorology II	4
AER 1021	Private Pilot: Flight I	1	ELE XXXX	AH/SS elective	3
ATM 1031	Meteorology I	3	INT 1005	Self, Career, & Culture	3
CIS 1041	Computer Applications	3	MAT 1311	Precalculus I	3
ENG 10XX	English	3			
		16			14

Second Year

	Fall Semester			Spring Semester	
AER 2010	Commercial Pilot: Ground	3	AER 1053	Aerodynamics/Practical Flight Apps	4
AER 2031	Commercial Pilot: Flight Phase I	2	AER 2032	Commercial Pilot: Flight Phase II	2
AER 2110	Safety & Accident Investigation	3	AER 2130	Aviation History	3
BUS 2020	Principles of Management	3	AER 2330	Aviation Physiology & Psychology	3
PHY 1041	Physics I	4	ENG 2080	Technical Communication	3
		15			15

Third Year

	Fall Semester			Spring Semester	
AER 3010	Certified Flight Instructor: Ground	6	AER 3110	Aviation Law	3
AER 3030	Human Factors, Risk Mgmnt, CRM	3	BUS 3250	Organizational Behavior & Mgmnt	3
AER 3040	Aircraft Maintenance for Pilots	3	ELE 3/4XXX	Upper-level AH/SS elective	3
AER 3080	Airline Operations & Management	3	MAT 2021	Statistics	3
Optional			**Select 3 credits**		
AER 3020	Certified Flight Instructor: Flight	2	AER 2802	Aviation Fieldwork/Internship	3
			AER 4010	Multi-Engine Land Ground/Flight	0.5
			AER 4011	Multi-Engine Sea Ground/Flight	0.5
			AER 4020	CFI: Instrument Ground/Flight	1
			AER 4030	CFI: Multi-Engine Ground/Flight	1
			ELE XXXX	AH/SS elective	3
		17			15

Fourth Year

	Fall Semester			Spring Semester	
AER 4040	Corporate Flying/Business Aviation	3	AER 4050	Training & Flying Adv Airplanes	3
AER 4060	Unmanned Aerial Systems	3	AER 4110	Adv Transport Category Systems	3
AER 4610	Aviation Senior Project II	3	AER 4130	High Alt Nav/Internat'l Flight Ops	3
Select two			ELE XXXX	AH/SS elective	3
ELE XXXX	AH/SS elective	3			
		15			12

Renewable Energy (BS)

A student with a Bachelor of Science in Renewable Energy will be able to:

- Design and manage renewable energy systems and related technologies
- Develop a career path that employs knowledge of science, technology, and management to address energy needs and challenges
- Work as an effective member of a multidisciplinary team using strong graphic and verbal skills to present ideas
- Integrate state-of-the-art knowledge in this rapidly evolving profession

Bachelor's degree students are subject to Vermont Tech's minimum degree requirements. The minimum degree requirements for the Bachelor of Science in Renewable Energy are:

- 6 credits of college English
- 12 credits of mathematics, including MAT 1520 and MAT 2021
- 12 credits of arts, humanities, and social science
- 12 credits of electives
- 16 credits of lab-based science, including PHY 1041, PHY 1042, chemistry, and biology
- 16 credits of engineering courses, including CAD, AC, and DC electrical circuits
- 46 credits of Renewable Energy core courses, including or equivalent to:

ARE 2031	Environmental Systems I	3	MEC 2150	Solar Photovoltaics	3
ARE 2032	Environmental Systems II	3	MEC 3010	Wind Power	3
ARE 3050	Fndmntls Fluids/Thermodynamics	4	MEC 3040	Bioenergy	3
ARE 4030	HVAC Systems	4	MEC 3170	Renewable Heating Systems	3
BUS 2020	Principles of Management	3	MEC 4120	Renewable Energy Modeling	3
BUS 3250	Organizational Behavior & Mgmnt	3	MEC 4722	Renewable Energy Capstone	3
BUS 4530	Technical Project Management	3	MEC 4802	MEC Internship Review	1
MEC 1010	Intro to MEC	1	SSC 2030	Energy Systems & Sustainability	3

First Year

	Fall Semester			Spring Semester	
ENG 1060	Freshman Composition	3	ENG 2080	Technical Communication	3
MAT 1311	Precalculus I	3	INT 1005	Self, Career, & Culture	3
MEC 1010	Introduction to MEC	1	MAT 1312	Precalculus II	3
MEC 1011	Design Communication I	2	MEC 1012	Design Communication II	2
MEC 1020	Manufacturing Processes I	2	PHY 1042	Physics II	4
PHY 1041	Physics I	4			
		15			15

Second Year

	Fall Semester			Spring Semester	
BIO 1020	Intro to Environmental Biology	4	CHE 1031	General Chemistry I	4
BUS 2020	Principles of Management	3	ELE XXXX	AH/SS elective	3
ELT 2071	Basic Electricity	3	ELT 2072	Electronics	3
MAT 1520	Calculus for Engineering	4	MAT 2021	Statistics	3
SSC 2030	Energy Systems & Sustainability	3	MEC 2150	Intro to Solar Photovoltaic Tech	3
		17			16

Third Year

Renewable Energy Track

Fall Semester			Spring Semester		
ARE 2031	Environmental Systems I	3	ARE 2032	Environmental Systems II	3
ARE 3050	Fndmntls Fluids/Thermodynamics	4	BUS 3250	Organizational Behavior & Mgmnt	3
MEC 2035	Statics & Strength of Materials	4	BUS 4530	Technical Project Mgmnt	3
MEC 3010	Wind Power	3	ELE XXXX	AH/SS elective	3
MEC 3040	Bioenergy	3	XXX XXXX	Program/technical elective	3
		17			15

Architectural Engineering Track

Fall Semester			Spring Semester		
ARE 3050	Fndmntls Fluids/Thermodynamics	4	CHE 1031	General Chemistry I	4
BIO 1020	Intro to Environmental Biology	4	ELE XXXX	AH/SS elective	3
BUS 2020	Principles of Management	3	MAT 2021	Statistics	3
ELT 2071	Basic Electricity	3	MEC 2150	Intro to Solar Photovoltaics	3
SSC 2030	Energy Systems & Sustainability	3			
		17			13

Civil Engineering Track

Fall Semester			Spring Semester		
ARE 2031	Environmental Systems I	3	ARE 2032	Environmental Systems II	3
ARE 3050	Fndmntls Fluids/Thermodynamics	4	ELE XXXX	AH/SS elective	3
BUS 2020	Principles of Management	3	MAT 2021	Statistics	3
ELT 2071	Basic Electricity	3	MEC 2150	Intro to Solar Photovoltaics	3
SSC 2030	Energy Systems & Sustainability	3	PHY 1042	Physics II	4
		16			16

Electrical Engineering Track

Fall Semester			Spring Semester		
ARE 2031	Environmental Systems I	3	ARE 2032	Environmental Systems II	3
ARE 3050	Fndmntls Fluids/Thermodynamics	4	CHE 1031	General Chemistry I	4
BIO 1020	Intro to Environmental Biology	4	ELE XXXX	AH/SS elective	3
BUS 2020	Principles of Management	3	MAT 2021	Statistics	3
SSC 2030	Energy Systems & Sustainability	3	MEC 2150	Intro to Solar Photovoltaics	3
		17			16

Mechanical Engineering Track

Fall Semester			Spring Semester		
ARE 2031	Environmental Systems I	3	ARE 2032	Environmental Systems II	3
BIO 1020	Intro to Environmental Biology	4	CHE 1031	General Chemistry I	4
BUS 2020	Principles of Management	3	ELE XXXX	AH/SS elective	3
SSC 2030	Energy Systems & Sustainability	3	MAT 2021	Statistics	3
			MEC 2150	Intro to Solar Photovoltaics	3
		13			16

				Summer Semester	
			MEC 4801	MEC Internship	0

Fourth Year

Renewable Energy Track

	Fall Semester			**Spring Semester**	
ELE 3/4XXX	Upper-level AH/SS elective	3	ARE 4030	HVAC Systems	4
MEC 4120	Renewable Energy Modeling	3	MEC 3170	Renewable Energy Heating Systems	3
MEC 4802	MEC Internship Review	1	MEC 4722	Renewable Energy Capstone Project	3
Select two			XXX XXXX	Program/technical elective	3-4
XXX XXXX	Program/technical elective	3-4			
		13-15			13-14

2+2 Track

	Fall Semester			**Spring Semester**	
BUS 3150	Operations & Production Mgmnt	3	ARE 4030	HVAC Systems	4
MEC 3010	Wind Power	3	BUS 4530	Technical Project Management	3
MEC 3040	Bioenergy	3	ELE 3/4XXX	Upper-level AH/SS elective	3
MEC 4120	Renewable Energy Modeling	3	MEC 3170	Renewable Energy Heating Systems	3
MEC 4802	MEC Internship Review	1	MEC 4722	Renewable Energy Capstone Project	3
		13			16

Respiratory Therapy (AS)

A student with an Associate of Science in Respiratory Therapy will be able to:

- Demonstrate technical proficiency in the skills needed to deliver competent respiratory care
- Integrate science and evidence-based medicine to select, deliver, and evaluate respiratory care competently
- Use effective communication strategies to develop and maintain strong, respectful therapeutic relationships with patients and healthcare professionals
- Collaborate with healthcare professionals to promote shared decision-making in achieving quality patient care
- Demonstrate the leadership skills required of today's respiratory therapists

Graduates are eligible to attempt the credentialing examinations offered by the National Board for Respiratory Care. Upon successful completion of the credentialing exams, graduates receive the Registered Respiratory Therapist credential.

Credentialed respiratory therapists must apply for licensure to practice in Vermont and New Hampshire. The offices of professional regulation require information regarding past history of substance abuse, prior felony convictions, and failure to pay child support or taxes to determine eligibility. Other states requiring licensure for practice may ask similar questions. For more information, please refer to the website of the Vermont Secretary of State or the New Hampshire Office of Professional Licensure and Certification.

First Year

	Fall Semester			Spring Semester	
BIO 2011	Human Anatomy & Physiology I	4	BIO 2012	Human Anatomy & Physiology II	4
ENG 10XX	English*	3	ELE XXXX	AH/SS elective	3
RSP 1010	Foundations of Respiratory Care	3	RSP 1012	Respiratory Care II	5
RSP 1011	Respiratory Care I	5	RSP 1210	Respiratory Anatomy & Physiology	3
Select one			RSP 1601	RSP Clinical Field Experience I	2
MAT 1210	Principles of Mathematics**	3			
MAT 1221	Finite Mathematics**	3			
MAT 2021	Statistics**	3			
		18			17
				Summer Course	
			RSP 2801	Respiratory Internship	0

Second Year

	Fall Semester			Spring Semester	
BIO 2120	Elements of Microbiology	4	ELE XXXX	AH/SS elective	3
RSP 2011	Cardiopulmonary Disease I	4	ENG 2080	Technical Communication	3
RSP 2013	Respiratory Care III	5	RSP 2012	Cardiopulmonary Disease II	4
RSP 2602	RSP Clinical Field Experience II	4	RSP 2603	RSP Clinical Field Experience III	6
			RSP 2802	Respiratory Internship Review	1
		17			17

** Students must place into ENG 1060 or 1061 and achieve a level 2 math placement for acceptance into the program*
*** Students must complete a minimum of one placement level 2 math elective (may be taken in fall or spring)*

All BIO and RSP courses must be completed with a grade of C or better to continue in the program

Technical Education

The Career & Technical Teacher Education Program is an approved Vermont Agency of Education (AOE) alternative educational licensing route for trades and industry teachers at Vermont's secondary regional career and technical centers.

Typically, once a teacher is hired at a regional career and technical center, they enter this three-year program to complete the qualifications for a Vermont Level I Educator License. The teacher-candidate first obtains an apprenticeship license from the AOE, which requires at least a high school diploma and six years of experience in the trades or industry, or an associate degree and at least four years of experience. The teacher-candidate takes education courses and receives support during the next three years from the program.

EDU 2051	Teaching Methods I	3
EDU 2052	Teaching Methods I (continued)	3
EDU 2061	Teaching Methods II	3
EDU 2062	Teaching Methods II (continued)	2
EDU 2115	Issues & Trends in Technical Education	3
EDU 2135	Instruction for Students with Special Needs	3
EDU 2200	Assessment in the CTE Classroom	1
EDU 2650	Education Capstone	1
EDU 2802	Externship I	1
PSY 2110	Educational Psychology	3
		23

Enrollment in these courses requires the permission of the Program Director.

Undeclared Major

A student who has met acceptance requirements but hasn't decided on a specific program of study may be admitted to the college with an undeclared status. Enrollment as undeclared may begin in either the fall or spring semester. The student who might be interested in this program is one who's uncertain about a major, wants to begin college mid-year, wants a lighter credit load, wants a slower pace, or has other plans for subsequent semesters and should discuss these with their academic advisor.

A student who matriculates as undeclared is expected to select a degree program by the end of their second term. When ready to declare, the student applies for a change of program during Registration for the following term. Acceptance into a degree program is contingent upon space availability and department approval. Capped programs are handled through Admissions. Once in the program, the student must meet all the requirements of that program for graduation.

Enrollment as undeclared is based on placement, student desire, and class availability. Undeclared status increases the time it takes to complete a degree. No student is eligible to graduate as undeclared and don't have scheduling priority over degree-seeking students.

A minimum of 12 credits are required for full-time status and on-campus residency. Subsequent terms may be scheduled as necessary.

Sample Semesters:

	Fall Semester			**Spring Semester**	
CIS XXXX	Computer elective	2	CIS XXXX	Computer elective	2
ELE XXXX	AH/SS elective	3	ELE XXXX	AH/SS elective	3
ENG 10XX	English	3	ENG 10XX	English	3
MAT XXXX	Mathematics elective	2-5	MAT XXXX	Mathematics elective	2-5
SCI XXXX	Science elective	3-4	SCI XXXX	Science elective	3-4
XXX 1000	Freshman Seminar	1			
		14-18			13-17

Veterinary Technology (AAS)

A student with an Associate of Applied Science in Veterinary Technology will be able to:

- Demonstrate competency in veterinary facility management utilizing appropriate professional and client communication skills and maintaining ethical standards according to applicable laws and codes of the veterinary technology field
- Exhibit a technical level of competency in the safe and effective preparation, administration, and dispensation of medications (including controlled drugs) using proper dosage calculations, labeling, and record-keeping
- Demonstrate entry-level skills in patient nursing care for both companion and food animals including husbandry; nutrition; restraint techniques; patient data and sample collection; administration of therapeutics; and basic dental prophylaxis
- Safely and effectively manage patients and associated equipment in all phases of anesthetic procedures
- Integrate all aspects of patient, environment, and equipment management for common surgical procedures in a variety of animal species
- Handle, store, ship, and properly analyze lab specimens
- Safely and effectively produce diagnostic radiographic and non-radiographic images and operate and maintain the associated equipment
- Safely and effectively handle and provide care for lab, avian, and exotic animals

The matriculated Vet Tech student must adhere to the policies and procedures set forth in the program's student handbook including safety issues related to pregnancy, immunizations, and substance abuse. The college strongly recommends that Vet Tech students receive human prophylactic rabies vaccine, which is available through the college at the students' expense in the fall semester.

The student must satisfactorily complete all AVMA-required tasks for each course to receive a grade in that course.

BIO 2320 and all VET courses must be completed with a grade of *C* or better to graduate. Any student who fails to achieve a *C* or better in any core VET/BIO course after two attempts is dropped from the program. Returning students who need to repeat courses are placed in them as space is available.

First Year

	Fall Semester			Spring Semester	
BIO 2320	Zoology	4	CIS 1050	Intro to Spreadsheets	1
ENG 10XX	English	3	VET 1020	Animal Anatomy & Physiology	4
MAT 1210	Principles of Mathematics	3	VET 1040	Animal Diseases	4
VET 1030	Animal Care & Restraint	3	VET 1052	Animal Care II*	1
VET 1051	Animal Care I*	1	VET 1060	Lab Techniques	4
VET 2080	Animal Behavior	2			
		16			14
				Summer Course	
			VET 2801	VET Summer Externship	0

Second Year

	Fall Semester			Spring Semester	
ELE XXXX	AH/SS elective	3	ELE XXXX	AH/SS elective	3
VET 2011	Veterinary Clinical Techniques I	4	ENG 2080	Technical Communication	3
VET 2030	Animal Nutrition	2	VET 2012	Veterinary Clinical Techniques II	3
VET 2050	Applied Lab Methods	4	VET 2040	Reproduction & Genetics	3
VET 2070	Pharmacology & Toxicology	3	VET 2060	Veterinary Office Procedures	3
VET 2720	Veterinary Supervisor*	1	VET 2090	Vet Tech National Exam Seminar	1
VET 2802	VET Summer Externship Review	1	**Optional:**		
			VET 2720	Veterinary Supervisor*	1
		18			16-17

**Must be taken at least once; may be repeated for credit*

Web Development (AC)

A student with a certificate in Web Development will be able to:

- Demonstrate fluency in an object-oriented programming language
- Develop complete websites
- Understand the concepts and practice of relational databases

This certificate is designed for the student who has earned an associate degree or higher from an accredited institution and would like to obtain the skills required to develop professional-level websites.

To earn a certificate, a student must maintain a cumulative GPA for the entire certificate of at least 3.0. Courses in which the final grade is below a *C* don't count toward the certificate, but, with permission of the host department, a subsequent course may be substituted. For a student with a particularly strong background, up to two courses may be waived with department permission.

First Year

	Fall Semester			**Spring Semester**	
CIS 1151	Website Development	3	CIS 1152	Advanced Website Development	3
CIS 2230	System Administration	4	CIS 2450	Advanced Web Technologies	3
CIS 3/4XXX	Upper-level computer elective	3-4	CIS 3010	Database Systems	4
Select one:			**If required:**		
CIS 2261	Intro to Java Programming I	4	CIS 2262	Intro to Java Programming II	3
CIS 2271	Java Programming	4			
		14-15			10-13

Key to Course Subject Abbreviations

ACC	Accounting
AER	Aviation
AGR	Agriculture & Animal Science
AHS	Allied Health Sciences
ARE	Architectural Engineering Technology
ATM	Atmospheric Sciences
ATT	Automotive Technology
BIO	Biological Sciences
BUS	Business
CET	Civil & Environmental Engineering Technology
CHE	Chemistry
CIS	Computer Science
CPM	Construction Management
DHY	Dental Hygiene
DSL	Diesel
ECO	Economics
EDU	Education
ELM	Electromechanical Engineering Technology
ELT	Electrical Engineering Technology
EMS	Emergency Medical Services
ENG	English
EQS	Equine Studies
FSC	Fire Science
GTS	Ground Transportation Services
HIS	History
HUM	Humanities
INT	Interdisciplinary
LAH	Landscape
MAT	Mathematics
MEC	Mechanical Engineering Technology
MUS	Music
NUR	Nursing
PHI	Philosophy
PHY	Physics
POS	Political Science
PSY	Psychology
RSP	Respiratory Therapy
SOC	Sociology
SSC	Social Science
VET	Veterinary Technology
XXX	Special Topics

Course names in italics are VSC shared courses.

Course Descriptions

Accounting (ACC)

ACC 1010 Computerized Accounting **(3)** **spring**
This course demonstrates implementation and integration of various accounting systems on a microcomputer. The student becomes proficient with applications in general ledger, receivables, payables, inventory, fixed assets, and the preparation of financial statements.
1 hour of lecture, 2 hours of lab per week — Prerequisite: ACC 1020 or 2121

ACC 1020 Survey of Accounting (3) **as required**
In this course, the student identifies accounts and processes and records typical cash receipts, cash payments, and payroll transactions for a service business and a merchandising business. The student completes a worksheet; prepares and interprets financial statements; prepares adjusting and closing entries; and understands inventory valuation and depreciation of plant assets. This class is for non-Business majors.
3 hours of lecture per week

ACC 2121 Financial Accounting **(4)** **fall**
This course covers the basics of generally accepted accounting principles, terminology, and the accounting cycle. The students prepares financial statements and becomes familiar with special journals, receivables, payables, control accounts, inventory, depreciation, deferrals, accruals, and payroll.
3 hours of lecture, 2 hours of lab per week

ACC 2122 Managerial Accounting **(4)** **spring**
This course explores internal accounting systems and the use of internally generated data in management. Topics include the use of financial accounting data; cost-volume-profit analysis; budgets and responsibility accounting; and cost allocations.
4 hours of lecture per week — Prerequisite: ACC 2121

Aviation (AER)

AER 1005 Introduction to Aviation Careers (3) **fall**
This exploratory course demystifies obstacles and presents an overview of aviation career opportunities and the system of safety that supports the aviation industry. The student visits aviation facilities and speaks to professionals in the field including air traffic control, aircraft maintenance, airport operations, airline pilots, and crew members. For a student interested in becoming a professional pilot, flight attendant, dispatcher, mechanic, or a member of ground crew, this course offers career path guidance. An introductory flight with a separate class fee may be arranged for those interested in a pilot career.
3 hours of lecture per week

AER 1010 Private Pilot: Ground (3) **fall**
This course enables the student to gain the necessary aeronautical knowledge to pass the FAA Private Pilot written knowledge exam and oral exams for a Private Pilot certificate with an Airplane category rating and a Single-Engine Land class rating. The course runs concurrently with AER 1020, in which flight skills are learned in simulators and training aircraft.
3 hours of lecture per week — Corequisite: AER 1021, 1022

AER 1021 Private Pilot: Flight I (1) **fall**
This course is one of two that enable the student to gain the necessary aeronautical knowledge, skill, and experience to meet the FAA requirements for a Private Pilot certificate with an Airplane category and Single-Engine Land class rating. Flight training is on-on-one with a Certified Flight Instructor who teaches basic flight maneuvers, solo flight, introduction to instrument flying, ground reference maneuvers, radio navigation, and emergency situations in accordance with all facets of the FAA Private Pilot Airman Certification standards. Flight training includes the number of minimum FAA Part 141 FAA-approved flight school simulator and aircraft flight hours to meet performance requirements for an FAA Private Pilot Certificate. All students pay flight fees for each flight course based on the number of hours of the course. 30 hours is the minimum required for most students; those students needing additional hours are responsible for additional payment. After the final hour of flight training, the student receives a grade based on evaluations throughout, including four FAA-required Stage Checks (written and flight tests) and recorded attendance throughout the semester. The published flight fees don't include the FAA flight test or the examiner’s fees.
30 flight hours per term — Corequisite: AER 1010
[Course fee: $12,655]

AER 1022 Private Pilot: Flight II (1) **spring**
This course is one of two that enable the student to gain the necessary aeronautical knowledge, skill, and experience to meet the FAA requirements for a Private Pilot certificate with an Airplane category and Single-Engine Land class rating. Flight training is on-on-one with a Certified Flight Instructor who teaches basic flight maneuvers, solo flight, navigation with cross-country flying, and preparation for the FAA oral exam and flight test in accordance with all facets of the FAA Private Pilot Airman Certification standards. Flight training includes the number of minimum FAA Part 141 FAA-approved flight school simulator and aircraft flight hours to meet

performance requirements for an FAA Private Pilot Certificate. All students pay flight fees for each flight course based on the number of hours of the course. 25 hours is the minimum required for most students; those students needing additional hours are responsible for additional payment. After the final hour of flight training, the student receives a grade based on evaluations throughout, including two FAA-required Stage Checks (written and flight tests) and recorded attendance throughout the semester. The published flight fees don't include the FAA flight test or the examiner's fees.
25 flight hours per term — Prerequisite: AER 1021

AER 1053 Aerodynamics & Practical Flight Applications (4) — **spring**
This course is an algebra- and trigonometry-based course in aerodynamics as it relates to practical flight applications and specifically addresses aviation topics including linear and curved motion studies; kinematics; force; statics; dynamics; work and energy; impulse and momentum; rotary motion; and fluids. Vector analysis plays an important role in developing conceptual models to explain cause and effect. The student conducts investigations, collects data, and interprets the results using graphical analysis. The application of mathematical models to observed events enhances the development and reinforcement of conceptual understanding.
3 hours of lecture, 2 hours of lab per week — Prerequisite: MAT 1311

AER 1110 Pilot Instrument Rating: Ground (3) — **spring**
This course provides the training for a pilot to obtain an instrument rating which qualifies operations under Instrument Flight Rules (IFR). The course enables the student to gain the necessary knowledge to meet the requirements to pass the FAA Instrument Rating knowledge exam based on Airplane category and a Single-Engine Land class rating. It focuses on aeronautical knowledge, full procedural aspects of published instrument navigation, and instrument approaches. Topics included relate to attitude flying, radio navigation aids, IFR systems, and partial panel exercise for approaches. The student reviews nearly all FAA test questions to prepare for the required FAA Instrument Rating knowledge and oral exams for the Instrument rating.
3 hours of lecture per week — Prerequisite: AER 1020
Corequisite: AER 1120

AER 1120 Pilot Instrument Rating: Flight (2) — **spring**
This course provides training in aeronautical skill, knowledge, and procedures, using both AATD simulators and airplanes to acquire the FAA Instrument Rating: Airplane. The course builds skills of basic attitude flying, navigation, and air traffic control phraseology in the instrument (IFR) environment. The student experiences flight solely by reference to instruments, first by practicing in advanced training devices, followed by airplane training while wearing a vision-limited hood or by flying in actual instrument conditions with an instructor. Full training in instrument navigation on cross-country trips with multiple instrument approaches is conducted. This course results in an FAA Instrument: Airplane rating added to the student's pilot certificate. Training is conducted in flight stages with stage exams until completion. The course consists of 52 flight training hours; all students pay the same flight fees based on the number of flight hours.
52 flight hours per term — Prerequisite: AER 1020
[Course fee: $12,334] — Corequisite: AER 1110

AER 2010 Commercial Pilot: Ground (3) — **fall**
This course is the first of three that enable the student to gain the necessary aeronautical knowledge, skill, and experience to meet the FAA requirements of a Commercial Pilot certificate with an Airplane category and a Single-Engine Land class rating. The student must complete AER 2031 simultaneously with this course and AER 2032 the following semester to earn the FAA Commercial Pilot certificate. Emphasis is on advanced knowledge, regulations, and performance expectations for higher-level flight skills.
3 hours of lecture per week — Prerequisite: AER 1020
Corequisite: AER 2031

AER 2031 Commercial Pilot: Flight I (2) — **fall**
This course is the second of three that enable the student to gain the necessary aeronautical knowledge, skill, and experience to meet the FAA requirements of a Commercial Pilot certificate with an Airplane category and a Single-Engine Land class rating. The student must complete AER 2010 simultaneously with this course and AER 2032 the following semester to earn the FAA Commercial Pilot certificate. The subject material in both courses this semester is essentially identical, the difference being where and how the student learns or applies content. Dual instruction and solo flying are included in both. The student may have the option (subject to aircraft availability) of a variety of training and endorsements including seaplane (SES), taildragger, high performance, complex, aerobatic training, and upset recovery.
78 flight hours per term — Prerequisite: AER 1120
[Course fee: $17,923] — Corequisite: AER 2010

AER 2032 Commercial Pilot: Flight II (2) — **spring**
This course is the final of three that enable the student to gain the necessary aeronautical knowledge, skill, and experience to meet the FAA requirements of a Commercial Pilot certificate with an Airplane category and a Single-Engine Land and added Sea Class rating. The course is practice-intensive to build skills with flight time. The applicant's cumulative flight time must reach the minimum to be eligible for a Commercial certificate under Part 141 regulations.
120 minimum total flight hours — Prerequisite: AER 2031
[Course fee: $8,909]

AER 2110 Aviation Safety & Accident Investigation (3) **fall**

This course provides the student with a fundamental understanding of safety factors in aviation operations and sufficient knowledge to prepare for safety components of advanced FAA certifications throughout their careers. The student uses actual NTSB accident reports to explore, analyze, and discuss the complex and interacting factors involved with aircraft accidents and incidents, as well as the methodology of subsequent investigation. The course gives particular attention to safe operation of small aircraft, managing distractions, communications, attitudes towards safety, and cultivating a firm commitment to safe operations at all times. The student attends at least two FAASTeam safety seminars during the semester.

3 hours of lecture per week

AER 2130 Aviation History (3) **spring**

This course explores the history of aviation from its earliest concepts and first practical flying machines to war birds, airliners, and modern aircraft. The student learns about the evolution of aviation technology including engines, aircraft materials, and aerodynamics. In addition, this course covers important historical figures, explores their personalities, and explains why and how they became fixtures in history. General world history provides a contextual background and enhances student understanding of how aviation has shaped our world. Course materials are presented by lecture; class discussions; presentation of films and other media; student presentations; team-based historical knowledge games; and hands-on examination of primary documents and artifacts.

3 hours of lecture per week

AER 2330 Aviation Physiology & Psychology (3) **spring**

Pilots have unique mental and physical demands that are critical for their safety-sensitive roles in ensuring safety and passenger comfort. This course focuses on the need for awareness and understanding of these demands as well as the responsibility to ensure compliance from both a regulatory and ethical standpoint. The physiological component focuses on general health with emphasis on altitude physiology, vision, hearing, medications, and fitness. The psychological component emphasizes aeronautical decision-making (ADM), risk management, sleep, and fatigue. Both are integrated into a discussion of the FAA medical certification process and pilot duties and responsibilities of compliance. The student is required to select an aviation accident or incident and lead a class discussion that applies these concepts to a specific actual event.

3 hours of lecture per week

AER 2802 Aviation Fieldwork/Internship (3) **spring**

In this career experience-focused course, the student has the opportunity to get hands-on professional experience as pilots, flight instructors, or in related employment with aviation community partners while under the guidance of a faculty member who is a professional in the field. The student logs actual fieldwork hours and completes self-evaluations and weekly briefings of learning goals that have been accomplished. The student must attend at least one professional development workshop, career fair, or conference and complete a briefing on what they learned and what professional development and affiliates will be useful in the future. Upon completion of the course, the student presents an evaluation from the fieldwork supervisor, two letters of recommendation for future employment, and a presentation of their work.

3 hours of internship per week

AER 3010 Certified Flight Instructor: Ground (6) **fall**

This capstone course builds upon the student's extensive Commercial Pilot knowledge by adding the instructional skills of a Professional Flight Instructor. Strong emphasis is on the fundamentals of instructing and scenario-based teaching. Through the creation of weekly lesson plans delivered in the classroom with peers and in the broader community, the student builds confidence in their aviation knowledge and delivery. The student explores and understands their own learning and teaching styles and recognizes and supports individual learners. Upon completion, the student is prepared to complete aircraft flight instruction with a senior CFI and to step into their first job as a professional flight instructor.

6 hours of lecture per week — Corequisite: AER 3020

AER 3020 Certified Flight Instructor: Flight (2) **fall**

This hands-on capstone course completes the requirements for the Certified Flight Instructor: Airplane certificate issued by the FAA. The certificate provides authorization to train pilots for FAA certificates and ratings while building Pilot-in-Command flight time. The student can expect two flight-related events each week to meet the requirements of the Flight Instructor Airman Certification Standards (ACS). Flight training prepares applicants with the knowledge, experience, flight, and communication skills to pass the Flight Instructor practical test. Published flight fees are based on the number of flight hours. Progress tracking is completed on Moodle and Flight School Management. There are required flight course instructor meetings and Moodle-based discussions. The student must complete all requirements for the FAA Certified Flight Instructor certificate.

25 flight hours per term

[Course fee: $6,723] — Corequisite: AER 3010

AER 3030 Human Factors, Risk Management, Crew Resource Management (3) **fall**

As professionals in a global aviation world, pilots are expected to demonstrate skills such as resiliency, critical thinking, leadership, decision-making, and stress management. The study of human factors and crew resource management offers the student the opportunity to develop into their personal best as a pilot and as an essential part of a professional team. Using the latest research and training techniques from airlines and FAA programs, the student learns to use Threat and Error Management (TEM), Single Pilot Resource Management (SPRM),

and Crew Resource Management (CRM) as an integral part of their training and flying.
3 hours of lecture per week

AER 3040 Aircraft Maintenance for Pilots (3) **fall**
In this course, the student gets in-depth, hands-on experience learning the mechanics of aircraft systems and components. Through practice in an approved aircraft and power plant maintenance training facility, the student becomes familiar with the tools for performing FAA-approved pilot maintenance tasks. The class covers the specific Federal Aviation Regulations which govern pilot maintenance and the student keeps a maintenance log of their work. The student can write-up a faulty or inoperative system and communicate effectively with mechanics as they manage the maintenance and repair of the aircraft for which they're responsible.
2 hours of lecture, 1 hour of lab per week
[Course fee: $100]

AER 3080 Airline Operations & Management (3) **fall**
In this course, the student obtains a broad perspective of airline operations and management. Topics include the role of air transportation in global economic development; alternative strategic approaches to route structure and product design; fleet selection; finance; revenue management; distribution systems (including the role of travel agencies, freight forwarders, global distribution systems, and internet portals); and the regulatory foundation of international aviation and the effects of liberalization, privatization, mergers, and emerging global alliances.
3 hours of lecture per week

AER 3110 Aviation Law (3) **spring**
This course provides professional guidance on aviation law to pilots, managers, mechanics, aircraft owners, controllers, and others. The focus is on understanding how the legal system works in relation to aviation, including administrative agency regulations and decision-making based on Federal Aviation Regulations (FARs). Virtually all aspects of aviation in the United States are affected by FARs, which establish standards of legal behavior to hold professionals accountable. An in-depth study of FARs and how to interpret and use them as a professional pilot is included. Given the ease with which civil aircraft cross national borders as part of transportation's key role in today's global economy, the course also covers international concerns controlled by the Chicago Convention and its several Annexes published by the International Civil Aviation Organization (ICAO). Every professional pilot must recognize and avoid common legal pitfalls and discern when they need to call a lawyer. Current statutory and regulatory changes are emphasized. The student is taken through many real-life scenarios and discussions to give a vivid experiential basis for decision-making in their aviation careers.
3 hours of lecture per week

AER 4010 Multi-Engine Land: Ground & Flight (0.5) **spring**
An FAA Multi-Engine rating gives a competitive advantage when seeking employment within any part of the commercial aviation sector. From the fundamentals of flying multi-engine aircraft and the aerodynamic laws that govern multi-engine flight to the challenging task of learning related aeronautical knowledge, the student becomes a proficient and knowledgeable multi-engine pilot. Instruction takes the student up to the skill levels necessary to earn a Multi-Engine Land rating. The student has access to reprints of applicable FAA advisory circulars and source material for further study on all aspects of multi-engine training. The course is all hands-on flight time, tutoring with the instructor, and observing peers in the cockpit or in a simulator. The student practices to proficiency under dual instruction for all multi-engine training and masters the content for an added rating to their Commercial Pilot certificates and Instrument ratings.
10 flight hours per term
[Course fee: $5,374]

AER 4011 Multi-Engine Sea: Ground & Flight (0.5) **spring**
An FAA Multi-Engine Sea (MES) rating gives a further competitive advantage for seeking employment within any commercial aviation operation that operates seaplanes or amphibians. From the fundamentals of flying multi-engine aircraft and the aerodynamic laws that govern multi-engine flight to the challenging task of learning related aeronautical knowledge, the student becomes a proficient and knowledgeable multi-engine sea pilot. The instruction of this course takes the student up to the skill levels necessary to earn a Multi-Engine Sea rating. The student has access to reprints of applicable FAA advisory circulars and source material for further study on all aspects of multi-engine sea training. The course is all hands-on flight time, tutoring with expert flight instructors, and observing peers in the cockpit or in a simulator. The student practices to proficiency under dual instruction (up to 7.5 hours in a multi-engine seaplane or an amphibian) that covers sea training and masters the content for this added MES rating to the Commercial Pilot certificate.
7.5 flight hours per term
[Course fee: $4,968]

AER 4020 Certified Flight Instructor: Instrument Ground & Flight (1) **spring**
In this course, the student applies pilot skills gained throughout the program and learns how to become an instrument instructor using their skills as a flight instructor to teach instrument flying to students who then attain instrument ratings. This course adds the Instrument Instructor rating to their Certified Flight Instructor certificate and is one of the three ratings the student receives on their CFI in the aviation program. When completed, the new FAA certification is Certified Flight Instructor: Instrument Airplane, also known as the Double I rating.
15 flights hours per term Prerequisite: AER 3020
[Course fee: $4,883]

AER 4030 Certified Flight Instructor: Multi-Engine Ground/Flight (1) **spring**
In this course, the student applies pilot skills gained throughout the program and learns how to teach the requirements necessary to train pilots for Multi-Engine Ratings. The course assumes the student is already a skilled pilot with the basic Certified Flight Instructor: Airplane credentials, so the emphasis is on honing instructional skills learned during all of their pilot courses to train pilots on multi-engine aircraft. At the end of the course, the student receives their CFI: Multi-Engine rating. This course is one of the final capstone skill sets and certifications that gives the student an important advantage towards landing a job as a fully-qualified flight instructor or commercial pilot.
15 flight hours per term Prerequisite: AER 4010
[Course fee: $11,374]

AER 4040 Corporate Aviation & Career Preparation (3) **fall**
In this course, the student gets a broad perspective on the aviation business and corporate flying world, including equipment choices and operations, support services, and airports. The focus is on the culture and operational differences in aviation businesses such as charter, corporate, fractional, and owner-flown operations. The student studies operational costs and slim margins on both career stability and safety and understands the opportunities and methods for pursuing a career within the array of options available. The student experiences the steps needed to apply for jobs, network, create an aviation resume, complete job applications, and be a successful interviewee. The student discovers the kinds of ethical dilemmas they may face in their career along with tips on how to respond effectively to pressure to compromise safety, personal values, or income.
3 hours of lecture per week

AER 4050 Training & Flying Advanced Airplanes (3) **spring**
In this course, the student completes a more advanced study of the aerodynamics of flight, flight systems, and aircraft design to better understand how the characteristics of different systems affect performance in each phase of flight. The student gains insight on the rapidly accelerating pace of change including advanced wing design, alternative fuels, and new aircraft and engine materials. The student prepares for their first professional ground school on an advanced aircraft by utilizing a specific aircraft Computer Based Training (CBT) program. The student bolsters their knowledge by studying real FAA Airline Transport Pilot test questions.
3 hours of lecture per week

AER 4060 Introduction to Unmanned Aerial Systems (3) **fall**
This course provides a general understanding of Unmanned Aerial Systems (UAS, aka drones), the components of those systems, how they interact, and how they're used. It includes a comprehensive introduction to all of the elements of a complete UAS. Topics include the air vehicle; planning and control; mission payloads; data links; launch and recovery concepts; and ethical and legal issues associated with UAS operation.
3 hours of lecture per week

AER 4110 Advanced Transport Category Systems (3) **spring**
A prospective airline pilot goes through extensive screening in the employment process that proves their potential to command a jet aircraft. Knowledge of complex systems and operational limits of technical aircraft is essential to success as a professional airline pilot. This course specifically deals with the technology of flight found in modern advanced commercial airline aircraft, both turbofan and turboprop.
3 hours of lecture per week
[Course fee: $200]

AER 4130 High Altitude Navigation & International Flight Operations (3) **spring**
Unique rules and navigation requirements apply at the high altitudes used by commercial carriers in international operations. This course prepares the student to fly in a global world. The student explores standard airline operations in the North Atlantic and Pacific Track systems, including flight planning, oceanic control sectors, clearance communications, plotting, track entry/exit, and required position or event reports. The student studies hazardous weather and global weather support services and learns the special requirements governing communications, operations, and reporting related to emergency and diversion procedures. Topics include ICAO procedures and how they differ from domestic operations. The student works with a team to plan an international ferry flight.
3 hours of lecture per week

AER 4610 Aviation Senior Project (3) **fall**
In this course, the student applies what they have learned in the program to an aviation project selected, planned, implemented, approved, and presented by a specific project team. Under the guidance and supervision of skilled faculty and community experts, the student augments their experience with new learning in group-based project management skills, including planning, teamwork, problem-solving, leadership, and time management. Each student has the opportunity to assume different roles and responsibilities on the project. They're graded by a review of community partners and peers.
3 hours of lecture per week

Agriculture & Animal Science (AGR)

AGR 1011 Agricultural Techniques I (1) **fall**
This course facilitates a successful transition to college and focuses on four primary areas: orientation to the college and programs; basic agricultural skills; interpersonal development; and agriculture-related careers. The stu-

dent learns the practical skills necessary to succeed in the curriculum under the supervision of experienced farm staff. The student understands student rights and responsibilities, explores agricultural careers, and learns good time management; how to interact with faculty and classmates; and how to enhance academic performance.
2 hours of lab per week, plus weekly required farm work experience

AGR 1012 Agricultural Techniques II (1) spring
In this course, the student must select an area for independent study through a work experience project. The student works closely with the farm staff to complete their selected topic during the semester.
2 hours of lab per week, plus weekly required farm work experience

AGR 1030 Animal Reproduction & Genetics (3) spring
In this course, the student develops knowledge of the anatomy and physiology of the male and female reproductive systems and the estrous cycle in farm animals, leading to the development of sound breeding and selection skills. The course includes instruction in simple Mendelian and quantitative genetic principles.
3 hours of lecture per week

AGR 1050 Livestock Production (3) fall
This course focuses on the study and discussion of livestock applicable to the New England agricultural industry. Cell biology, beef cattle, sheep, swine, poultry, and horses are covered. Technical and practical breeding, feeding, and management topics are presented.
3 hours lecture per week

AGR 1061 Burls to Boards (3) fall
In this course, the student learns the principles of tree harvesting for wood product production. Choosing, cutting, skidding, and milling of common types of lumber in Vermont are discussed and practiced. Upon completion, the successful student can manage small woodlots for efficient personal production of lumber products.
2 hours of lecture, 3 hours of lab per week

AGR 1062 Timber Harvesting (4) spring
In this course, the student examines timber harvesting equipment operation, maintenance, and safety. The student assesses land for proper skid trails, landings, and access and erosion control. Harvesting ethics and laws such as trespassing are discussed and the student learns how to find land boundaries using tax maps.
3 hours of lecture, 3 hours of lab per week

AGR 1801 Forestry Internship (3) as required
In this course, the student experiences some facet of the wood and timber industry. Based on individual interest, the student has the opportunity to work as an intern at a variety of wood-based industries ranging from a lumber yard with scaling, a sawmill, a pellet business, a maple syrup operation, or a consulting or county forester.
2 hours of lecture, 6 hours of internship per week

AGR 2011 Dairy Herd Management I (4) fall/spring
This course covers the skill sets necessary for the operation and construction of a modern dairy farm. The student evaluates facilities and operations for performance. The student learns the environmental, biological, and physical factors necessary for the production of high quality milk and evaluates milk harvesting equipment and practices to make recommendations. The course discusses the materials used for animal housing and all of the aspects of a highly functional animal environment. Emphasis is on farmstead planning and basic structural concepts for farm buildings. Subtopics include construction materials and methods, environmental issues, waste management, and feeding systems.
3 hours of lecture, 2 hours of lab per week

AGR 2012 Dairy Herd Management II (2) fall/spring
This course covers the soft skills necessary for the operation of a modern dairy farm. The student synthesizes specific dairy knowledge into farm operational plans using multiple case studies and models and discusses the habits necessary for the operation of a modern dairy farm. Young stock rearing is discussed in detail.
4 hours of lab per week

AGR 2030 Animal Nutrition (4) spring
This course in the fundamentals of livestock feeding includes the study of the nutritive characteristics of forages, grains, and grain products as feeds for different farm animals. The student develops livestock rations and feeding programs based on available feedstuffs and needs for maintenance, growth, and production. Typical applications may center on the college's dairy herd or the student's home farm.
3 hours of lecture, 2 hours of lab per week for the first half of the term

AGR 2040 Forage Production (3) fall/spring
This course emphasizes the production of forage and pasture crops for New England dairy farms. Topics include the selection of adapted crops, varieties, seed mixtures, and soil sites, along with soil preparation, seeding methods, and crop management. Harvesting for best digestible energy and protein is stressed, as is the growing of alfalfa and corn.
2 hours of lecture, 2 hours of lab per week for the first half of the term

AGR 2050 Large Animal Diseases (3) fall/spring
This course includes discussion of those diseases which are of major importance in the husbandry of food

animals with special emphasis on herd and flock health. To further the student's understanding of disease and disease prevention, basic pathological changes and immunological processes involved in the occurrence and prevention of disease are described.
3 hours of lecture per week

AGR 2060 Beef Production (2) **as required**
This is an introductory course in beef production that addresses topics including marketing and price-making forces; the biological cycle of the beef cow; beef genetics; and the application of genetic principles to beef herd breeding programs. Reproductive management of cows, bulls, and heifers; principles of nutrition; and animal health issues are also discussed. Offered every third year.
1 hour of lecture, 2 hours of lab per week

AGR 2110 Sheep Production (2) **as required**
This is an introductory course in sheep production, including a presentation of intensive and extensive production models; life cycle management of the ewe; flock health and parasite control; ram health and fertility; and management of reproduction. Methods for measuring and monitoring flock performance are also presented. Offered every third year.
1 hour of lecture, 2 hours of lab per week

AGR 2130 Dendrology (4) **as required**
This course introduces the student to the study of trees (their physiology, taxonomy, silvics, uses, and identification) through readings, classroom activities, lectures, discussions, and outdoor labs.
3 hours of lecture, 2 hours of lab per week

AGR 3020 Advanced Livestock Production (3) **as required**
In this course, the student learns the reproduction, nutrition, housing, and financial requirements of profitable Vermont livestock operations. Swine, poultry, and small ruminant dairy are covered in detail. Emerging livestock production including camelids, meat goats, ostriches, and emus are covered. Offered every third year.
3 hours of lecture per week Prerequisite: AGR 1030, 1050, 2030

AGR 3040 Maple Production: Science & Practice (3) **spring**
This course presents current information relating to all aspects of maple production. It covers principles and practical application of sugarbush management; sap production; maple production facilities and equipment; maple syrup production; product packaging and marketing; and operator safety.
2 hours of lecture, 2 hours of lab per week

AGR 3050 Advanced Nutrient Management (3) **spring**
This course discusses the management of plant requirements for maximum production of plant crops. Special emphasis is on nutrient budgeting and use of manure-based fertilizers. The student interprets soil tests and makes recommendations for soil amendments that benefit the farmer and the environment.
3 hours of lecture per week

AGR 3110 Apples, Berries, & Bees (3) **fall**
This course presents the production requirements of apples, common berries, and honey bees. Plant or species selection, growing requirements, disease prevention, and harvesting are discussed for each. The successful student can confidently manage production of each of these agricultural products. Offered every other year.
3 hours of lecture per week

AGR 3111 Vegetable Production (3) **spring**
This course deals with the principles, production, management, and handling of vegetable crops in the context of today's commercial production systems.
3 hours of lecture per week

AGR 4040 Agricultural Products (3) **fall**
This course explores basic processing methods of the most common Vermont farm products: milk, maple, vegetables, fruits, cheeses, and meats. Laws pertaining to the sale of these products and common marketing methods are also covered.
3 hours of lecture per week

AGR 4801 AGR Senior Summer Internship (0) **summer**
The student spends a minimum of 45 hours in an agriculture setting. Student experiences should include grazing animals, farm machinery, and plant and animal production. Pass/No Pass.
45 hours of internship minimum per week

AGR 4802 AGR Senior Summer Internship Review (1) **fall**
The student must document and communicate their summer internship experience with grazing, machinery, plants, and animals. Pass/No Pass.
[Course fee: $250] Prerequisite: AGR 4801

Allied Health Science (AHS)

AHS 2011 Emergency Medical Service (5) **fall/spring**

This course follows the guidelines of the National Medical Service Blueprint for Education with approval and oversight by the Vermont Department of Health. The course focuses on the assessment and management of medical emergencies and trauma in the prehospital environment and provides a foundation for understanding anatomy, physiology, pathophysiology, and emergency medical service operations through a series of lecture, small group activities, and skill labs. The course prepares the student to test for licensure with the National Registry of Emergency Medical Technicians (NREMT) through the Vermont Department of Health. Successful completion of this course and licensure as an Emergency Medical Technician through the NREMT is required to graduate from the VTC Fire Science program. Those who are unable to attain certification within the course guidelines and time frame are given an incomplete grade and must attain certification in the proscribed time period. If the student is still unable to attain certification, a failing grade is given for the course and the student has to attain the certification outside of the program. The exam is computer-based. If the student is licensed under a Vermont EMS organization, the exam is $70. Each subsequent exam is $70. Pass/No Pass.

4 hours of lecture, 4 hours of lab per week

[Course fee: $200]

AHS 2035 First Aid & CPR (2) **as required**

This course introduces first aid and basic principles of assessment and treatment of injury in the workplace. Scenarios and practice take place in outdoor and indoor workplace settings. The successful student can provide first responder stabilization, treatment, and CPR.

4 hours of studio per week

[Course fee: $75]

Architectural Engineering Technology (ARE)

ARE 1000 ARE Freshmen Seminar (1) **fall**

This course provides a forum for the first-year student to learn about the program and about the architectural and engineering professions and the building construction industry. Skills that assist the student with a successful experience at the college are also discussed.

1 hour of seminar per week

ARE 1011 Introduction to Construction Drawing Practices (3) **fall**

This course covers basic instruction in architectural and engineering construction graphics utilizing hand drawing equipment and CAD software, as well as an introduction to the materials of residential construction. The student develops a set of drawings for a small residence in keeping with contemporary office practices.

6 hours of studio per week

[Course fee: $20]

ARE 1210 Construction Materials & Methods (5) **spring**

This course is a comprehensive study of common construction materials and methods of fabrication and erection employed in building construction. Sources, methods of manufacture, and uses of materials are covered. There are two different studio sessions within this course: the materials lab sessions familiarize the student with physical characteristics and uses of materials, performance of standard tests, and preparation of technical reports. The design/drafting studio involves the detailing of construction assemblies. Accurate hand sketches and CAD are both used in the latter.

3 hours of lecture, 3 hours of lab, 3 hours of studio per week Prerequisite: ARE 1011

[Course fee: $40]

ARE 1220 Architectural History (3) **fall/spring**

Through photo slide lectures and seminars, the student is introduced to architectural design philosophies and construction systems that have developed over the ages. Influences such as social, political, religious, economic, and technological advances are traced from the first significant works of humans 5,000 years ago through the present day. A major focus is western development since the eighteenth century, particularly in North America, and its significance to today's society. Discussion seminars provide an opportunity for the student to join in follow-up discussions of lectures with the objective of developing visual perception and knowledge of architectural styles and principles through the history of architecture.

3 hours of lecture per week

ARE 1221 Architectural History with Studies Abroad (4) **fall**

This course is based on ARE 1220, but includes a foreign study abroad component. The student enrolled in ARE 1221 studies topics that especially relate to the current year's tour provider destination. The destinations cycle through trips to Barcelona, London, Rome, and Greece.

3 hours of lecture per week, 1 week of foreign travel

[Course fee]

ARE 2022 Architectural CAD II (3) **fall/spring**

This course covers advanced instruction in computer-aided drafting and design for architecture and building engineering. There are combined lecture and studio sessions in the use of "Building Information Modelling" in

Revit Architecture to develop skills in the industry standard for 3D design. Building design is explored, as are presentation drawings and renderings.
6 hours of studio per week Prerequisite: ARE 1011, 2051

ARE 2031 Environmental Systems I (3) fall
This course covers the natural environmental influences upon building design and construction as well as the principal internal necessities for human habitation, including sanitation; heating and ventilation; and mechanical requirements in small buildings. The studio session reinforces the lectures by teaching the student how to design plumbing and heating systems for a small residential scale building.
2 hours of lecture, 3 hours of studio per week
[Course fee: $10] Corequisite: PHY 1042

ARE 2032 Environmental Systems II (3) spring
This is a continuation of ARE 2031. Broad-scale aspects of mechanical, electrical, and sanitary systems are investigated and studied as they apply to larger buildings and groups of buildings. Other topics covered include electrical and lighting design; the impact that building codes and other regulations have on buildings; and current environmental topics affecting society today.
2 hours of lecture, 3 hours of studio per week Prerequisite: ARE 2031 or CPM 1010
[Course fee $10]

ARE 2040 Construction Practices (3) fall
This course combines several distinct areas in the building construction industry. One part introduces fundamental surveying principles and methods: distance measurement, angular measurement, and elevation differences; instrument practice and care for levels; electronic distance measurement instruments; total station equipment; terminology; computations; developing site plans; and construction layout. Another part covers topics in construction estimates and records including estimating, takeoffs, and pricing for both residential and commercial construction. A third part explores construction management principles including scheduling practices, contracts, general conditions, and specifications.
2 hours of lecture, 3 hours of studio per week Prerequisite: ARE 1210

ARE 2051 Architectural Design I (3) fall
In this course, the student develops individual design projects from conception to presentation under faculty supervision. Problem-solving and design process are taught and reinforced throughout the semester. Major emphasis is on graphic techniques for design drawings. Building types covered range from small artifacts to a house to a small public building. Graphic and oral communication of goals, methods, and solutions are emphasized throughout. Some projects are presented by the student before a jury of architecture faculty and practicing architects.
6 hours of studio per week Prerequisite: ARE 1011,1220
[Course fee: $20] Corequisite: ARE 2031

ARE 2052 Architectural Design II (3) spring
This course is a continuation of ARE 2051. The design projects and problem-solving in this second semester involve more complex buildings than the previous course. The final project is a real-world building in Vermont. The student learns to work with zoning, building codes, and users of the building. Through the course, oral and graphic communication and presentation skill are developed as appropriate. The student works in a team on these projects to simulate real world working dynamics. The course terminates with the presentation of projects before a jury of architecture faculty and architectural practitioners.
6 hours of studio per week Prerequisite: ARE 2051
[Course fee: $20]

ARE 2720 Architectural & Building Engineering Seminar (1) spring
This seminar course for the sophomore student concentrates on developing knowledge and skills used in the workplace and throughout the student's life. Topics include job skills, continuing education, office practices, and soft skills.
1 hour of seminar per week

ARE 3010 Design Systems Integration (3) fall
This course concentrates the student's design thinking in the areas used in architectural engineering, particularly in the integration of environmental and structural systems into building design. The course complements the architectural engineering technology curriculum by introducing the student to the design of sustainable low-energy systems in small buildings and by providing tools for analysis in the schematic phase.
6 hours of studio per week Prerequisite: ARE 3020, 3040, 4030
[Course fee: $20]

ARE 3020 Structural Analysis (3) fall
This course covers the analysis of statically determinate and indeterminate structures, building on the foundation that the student obtains in a course on statics. Topics include static determinacy and stability, reactions, and member forces and moments in beams, frames, and trusses through both determinate and indeterminate methods, as well as approximate methods. Deflection analysis is also covered. Computer applications for analysis are used. Topics such as matrix methods of analysis or dynamics/structural analysis

may be introduced.
3 hours of lecture per week — Prerequisite: CET 2040; MAT 1520

ARE 3030 Steel Structures Design (3) **spring**
This course covers the design of steel structures, including typical structural elements such as tension members, beams, columns, base plates, connections, open web joists, and deck systems. Designs are based on the AISC Steel Construction Manual using the load and resistance factor design methodology. Issues such as economics of construction and sustainability are also addressed.
3 hours of lecture per week — Prerequisite: ARE 3020, 3111

ARE 3040 Electrical/Lighting Systems (3) **spring**
This course familiarizes the student with the various electrical and lighting systems commonly found in modern buildings including lighting, power, communications, and emergency systems. The course emphasizes design practices, safety/code issues, and coordination with other design professionals and building trades.
3 hours of lecture per week — Prerequisite: ARE 2032 or 3112; ELT 2071

ARE 3050 Fundamentals of Fluids & Thermodynamics (4) **fall**
In this course, the student examines the basic concepts and practical applications of fluid mechanics and thermodynamics. Topics include fluid properties and measurement; energy conservation; pipe and duct flow; pumps and fans; the first and second laws of thermodynamics; refrigeration; psychometrics; basic thermodynamic processes; and HVAC.
3 hours of lecture, 3 hours of lab per week — Corequisite: PHY 1042

ARE 3111 Codes & Loads: Structural (1) **fall**
This course teaches which codes and specifications govern the determination of design structural loads for buildings and other structures. It introduces the student to the determination and application of applicable code provisions and to methods for estimating loads. The course imparts basic knowledge and skills for the determination and use of loads in courses such as steel structures design, concrete structures design, and senior project. Lectures introduce topics and methods of application; laboratories emphasize the application of codes and methods on varying structure types. This is a half-semester course usually conducted the first half of the semester.
1 hour of lecture, 3 hours of lab per week for a half semester — Prerequisite: CET 2120

ARE 3112 Codes & Loads: Mechanical/Electrical (1) **fall**
This course teaches which codes and specifications govern the determination of design heating/cooling and lighting/electrical loads for buildings and other structures. It introduces the student to the determination and application of applicable code provisions and to methods for calculating and estimating loads that aren't specifically addressed (or are insufficiently addressed) in code books, manuals, and elsewhere (e.g., special studies, rules of thumb, past experience, expert elicitation). The course imparts basic knowledge and skills for the determination and use of such loads in courses such as HVAC, plumbing, electrical/lighting, and senior project. Lectures introduce topics and methods of application; studios emphasize the application of codes and methods on varying structure types. This is a half-semester course usually conducted the second half of the semester.
1 hour of lecture, 3 hours of studio per week for a half semester — Prerequisite: ARE 2032 or CET 2050

ARE 4010 Concrete Structures Design (3) **fall**
This course covers the design of typical statically determinate and indeterminate concrete structures. The course makes extensive use of the American Concrete Institute building code requirements and considers concrete and steel material properties, design approximations, design of concrete linear members (beams and columns), slabs, foundations, and walls. Sustainable engineering concepts are addressed.
3 hours of lecture per week — Prerequisite: ARE 3020, 3111; CET 2120

ARE 4020 Architectural Engineering Management (3) **fall**
This course covers many of the business, management, professional, and ethical subjects that architectural engineers and other infrastructure professionals may face during their careers including legal issues; business organizational frameworks; personnel and diversity issues; business planning and decision making; marketing; scheduling; professional ethics; project and design cost issues (including engineering economics); information management; and technical presentation skills. The student develops communication skills and the ability to analyze management-related situations and create management-related documents.
3 hours of lecture per week

ARE 4030 HVAC Systems (4) **spring**
This course addresses the engineering aspects of heating, ventilating, and air conditioning systems design. Focus is on mechanical systems for commercial buildings that include psychometrics; basic HVAC calculations; design condition determination; load estimating; duct and pipe sizing; HVAC systems; and HVAC equipment selection. The student is required to perform system design on a commercial building in preparation for ARE 4720. Energy conservation, comfort condition, indoor air quality, and mechanical codes are introduced using ASHRAE standards and international codes.
3 hours of lecture, 3 hours of studio per week — Prerequisite: ARE 3050, 3112
[Course fee: $15]

ARE 4040 Plumbing Systems (3) **spring**
A student in this course learns the basic practices and techniques for the design of plumbing systems in buildings using International Plumbing Code Commentary as a basis. Emphasis is on the design and calculations for sizing sanitary waste and vent systems; domestic hot and cold water systems; water heaters; storm drainage systems; and fire sprinkler systems, as well as fixture selection. Each topic includes discussions on materials and methods of construction and installation, code requirements, computer applications, specifications, and drafting symbols and standards.
2 hours of lecture, 3 hours of studio per week Prerequisite: ARE 3050

ARE 4050 FE Exam Survey (1) **fall**
This course provides the student with applications for and review of engineering, math, and science concepts to prepare for the Fundamentals of Engineering (FE) examination (primarily the "other disciplines" subject area) administered by most states as a first step toward professional licensure as a Professional Engineer. The course touches on both topics that the student has learned previously and new topics that are generally easier to understand and apply with limited explanation of background material. FE exam topics that are covered heavily in senior ARE courses (e.g., ethics and engineering economics) receive limited coverage. Strategies for studying for and taking the FE exam and similar examinations are covered, as is the application of engineering judgment in general.
3 hours of studio per week

ARE 4720 ARE Senior Project (4) **spring**
This is a capstone course that integrates knowledge and skills developed through other coursework and life experience. The student typically prepares drawings; design or evaluation documentation; and presentations for a commercial-scale project based on preliminary and incomplete architectural plans (the ASHRAE national student competition building is often used), an existing built structure, or other information. The student works on electrical/lighting, mechanical, or structural systems or an integrated, sustainable design of multiple systems. In most cases, a semester-long final design in one subject area is undertaken.
2 hours of lecture, 6 hours of studio per week Prerequisite: ARE 2022, 3030, 3040, 4010, 4020, 4030
[Course fee: $10]

Atmospheric Sciences (ATM)

ATM 1031 Meteorology I (3) **fall**
Meteorology is the scientific study of the atmosphere and weather events that interact with temperature, air pressure, water vapor, and time change across local, regional, and intercontinental geographies. This course provides the student with a foundation for understanding and applying weather factors to the safe operation of aircraft in preparation for the FAA knowledge exam for safe operation and for earning a Private Pilot certificate.
3 hours of lecture per week

ATM 1032 Aviation Meteorology II (4) **spring**
This course explores applicable weather conditions and how they impact aircraft operations. This allows accurate analysis for both preflight and in-flight application leading to certification for flying as an Instrument rated aviator. This course builds on the basics of ATM 1031 as they apply to the dynamics of flight conditions: turbulence, icing, thunderstorms, and low visibility related to instrument flight operations. During subsequent aviation courses, the student is routinely challenged to integrate and analyze all appropriate aviation meteorological conditions. The student provides feedback on the effectiveness of interpretations by using current and future web-based weather products.
3 hours of lecture, 2 hours of lab per week Prerequisite: AER 1020; ATM 1031

Automotive Technology (ATT)

ATT 1011 Suspension & Steering I (1.5) **fall**
This course gives the student a thorough understanding of the theory, construction, and design of vehicle steering and suspension systems. Emphasis is on the geometry of links and levers; vehicle suspension requirements; vehicle handling and dynamics; and the diagnosis of suspension problems.
2 hours of lecture, 3 hours of lab per week for the first half of the term
[Course fee: $55]

ATT 1012 Suspension & Steering II (1.5) **fall**
This course is a continuation of ATT 1011.
2 hours of lecture, 3 hours of lab per week for the second half of the term Prerequisite: ATT 1011

ATT 1013 Preventative Maintenance (2) **fall**
This course provides an understanding of the development and administration of preventive maintenance programs. Topics include engine, transmission/transaxle, suspension, and steering and brake system general service and inspection procedures based on NATEF MLR tasks. Supplemental tasks on shop/personal safety, tool, and equipment usage and maintenance as well as preparing the vehicle for service and returning it to the customer are also included.
1 hour of lecture, 3 hours of lab per week
[Course fee: $50]

ATT 1020 Engine Diagnostics & Repair (4) **fall**
This course is a comprehensive study of the theory, construction, design, and repair of the internal combustion engine. Topics include engine classification; power and torque development; engine power-efficiency tests; engine performance parameters; and mechanical design and failure analysis. The lab reinforces the lecture by providing engine performance diagnostic procedures, mechanical repair, and overhaul procedures. System problem diagnosis and component failure analysis are continually stressed.
3 hours of lecture, 3 hours of lab per week
[Course fee: $]

ATT 1051 Alignment & Brakes I (2) **spring**
This course gives the student a thorough understanding of the theory, construction, and design of the mechanical devices utilized in tires; wheels and bearings; and hydraulic braking systems. Emphasis is on the geometry of links and levers; the physics of friction and hydraulics; vehicle braking requirements; vehicle handling and dynamics; wheel alignment procedures and equipment; and the diagnosis of brake problems. The course includes the curriculum necessary for successful completion of the Vermont state inspection certification test, administered by the DMV. The student who is already certified receives credit for the inspection portion of the course.
3 hours of lecture, 3 hours of lab per week for the first half of the term Prerequisite: ATT 1012
[Course fee:$100]

ATT 1052 Alignment & Brakes II (2) **spring**
This course is a continuation of ATT 1051.
3 hours of lecture, 3 hours of lab per week for the second half of the term Prerequisite: ATT 1051

ATT 1090 Automotive Electronics Lab (1) **fall**
This is the automotive lab for GTS 1120. The lab uses electrical test equipment to analyze and troubleshoot basic electrical circuits including warning systems, electrical accessories, and battery starting and charging systems.
3 hours of lab per week Corequisite: GTS 1120

ATT 1110 Automotive Electrical Systems Lab (1) **spring**
This is the automotive lab for GTS 1040. The lab covers electrical systems and diagnostic and troubleshooting skills. Topics include the operation and testing of storage batteries, starting systems, charging systems, ignition systems, and basic accessory systems. The student becomes familiar with various types of test equipment, diagnostic charts, and vehicle wiring schematics.
3 hours of lab per week Corequisite: GTS 1040

ATT 2010 Engine Performance (4) **fall**
This course covers fuel delivery systems in the internal combustion engine. Topics include engine air/fuel requirements, gasoline fuel injection systems, diesel fuel injection systems, vehicle emissions, and emission controls. Fuel-related problems, diagnosis of component failures, and verification of repairs are also included.
3 hours of lecture, 3 hours of lab per week Prerequisite: GTS 1040; PHY 1030
[Course fee: $125]

ATT 2020 Body Electronic Systems (4) **fall**
This course covers commonly used body systems including heating, ventilation, and air conditioning; instrument panels; airbags; and antilock brakes. The student familiarizes with system operation, diagnostic techniques, system failure analysis, and repair. The lab offers experience in diagnosis and repair of these systems as well as more practice in using electrical diagnostic techniques.
3 hours of lecture, 3 hours of lab per week Prerequisite: ATT 1012; GTS 1040; PHY 1030
[Course fee: $100]

ATT 2030 Advanced Engine Performance & Fuel (4) **spring**
This course gives the student a thorough understanding of the electronic controls and devices used on the modern automobile power train. Topics covered include the theory, design, operation, and application of various domestic and foreign electronic control systems. Analysis of system problems; diagnosis of system failures; component and system test procedures; sensors; emissions systems; advanced drivability diagnostics; exhaust gas analysis; and causes of premature component failure are studied in detail.
3 hours of lecture, 3 hours of lab per week Prerequisite: ATT 2010
[Course fee: $75]

ATT 2040 Automotive Drive Trains (4) **spring**
In this course, the student learns the principles of construction, design, and operation of mechanical devices used in the modern automotive drive train. Specific topics include helical and planetary gear drive systems; torque converters; hydraulic control systems; principles of electronically controlled transmissions; clutches; manual transmission and transaxles; drive shafts and axles; universal and CV joints; differentials; transfer cases; and problem diagnosis and component failure analysis.
3 hours of lecture, 3 hours of lab per week Prerequisite: ATT 1012
[Course fee: $175]

ATT 2060 Advanced Technology Vehicle (4) **spring**
This course introduces the design operation and servicing of electric, hybrid, alternative fuel, and fuel cell vehicles. Topics include basic physics- and chemistry-influenced design; motor and generator design and utiliza-

tion; hybrid electric vehicle design variations; maintenance and service; light-duty diesel; CNG vehicles; and a basic introduction to fuel cell vehicles.
3 hours of lecture, 3 hours of lab per week — Prerequisite: ATT 1012 or DSL XXXX
[Course fee: $50]

ATT 2801 ATT Summer Internship (0) — **summer**
This course is a ten-week, 400-hour summer cooperative education experience followed by a one-credit fall internship review. Pass/No Pass.
400 hours of lab per term

ATT 2802 ATT Summer Internship Review (1) — **fall**
This course is a one-credit fall internship review. Pass/No Pass.
[Course fee: $250] — Prerequisite: ATT 2801

Biological Sciences (BIO)

BIO 1020 Introduction to Environmental Biology **(4)** — **fall**
This course introduces the student to the fundamentals of environmental biology: the structure and biota of several aquatic and terrestrial ecosystems. The student investigates why species occupy specific habitats. The course includes an introduction to Vermont's aquatic and terrestrial ecosystems; spatial and temporal changes in ecosystems and species; and critical observation and interpretation of landscapes. The course stresses communication skills as well as critical thinking and teamwork.
3 hours of lecture, 2 hours of lab per week

BIO 1030 Introduction to Nutrition **(3)** — **fall**
This course introduces the student to the physiological basis of nutrition and evaluates dietary requirements. Emphasis is on metabolism, digestion, and nutrients used in the human body and the nutrition involved in health, disease, and aging.
3 hours of lecture per week

BIO 1040 Principles in Biology (4) — **fall**
This course imparts a general knowledge of biology from the molecular level to whole systems. Topics include cell chemistry, evolution, genetics, ecology, diversity, and population dynamics. When applicable, the class focuses on biological aspects of the state of Vermont.
3 hours of lecture, 3 hours of lab per week

BIO 1220 Botany **(4)** — **spring**
This course covers the fundamentals of plant growth and development, including higher plant structure, metabolism, growth regulators, and mineral nutrition. The student becomes acquainted with the diversity of plants and plant-like organisms through the study of bacteria, viruses, algae, fungi, mosses, and lower vascular plants.
3 hours of lecture, 3 hours of lab per week

BIO 1241 Introduction to Forest Ecology (4) — **fall**
Through this course, the student understands the functions of a forest ecosystem and learns tree identification, silviculture practices, and the significance of natural communities such as vernal pools and wetlands. A central component of this course is a lab in which the student studies the natural communities that comprise the VTC forest.
3 hours of lecture, 3 hours of lab per week

BIO 2011 Human Anatomy & Physiology I **(4)** — **as required**
This is the first semester of a two-semester course which examines the structure and functions of the human body. Topics include fundamental principles of cell and tissue structure; gross anatomical and physiological organization; electrochemical communication systems; and muscle physiology. This is a lab course that involves hands-on or simulated lab experiences. Prior successful completion of basic algebra and chemistry or biology courses is recommended.
3 hours of lecture, 3 hours of lab per week

BIO 2012 Human Anatomy & Physiology II **(4)** — **as required**
This is the second semester of a two-semester course that examines the structure and functions of the human body, emphasizing and building upon the concepts learned in BIO 2011. Topics include special senses, blood, and the endocrine, cardiovascular, respiratory, digestive, urinary, and reproductive systems.
3 hours of lecture, 3 hours of lab per week — Prerequisite: BIO 2011

BIO 2030 Plant Pathology (3) — **spring**
In this course, the student explores the organisms and environmental factors that cause plant diseases. The biology of fungi, bacteria, and viruses, including their life histories, is studied extensively. A systematic approach to discovery and identification of plant disease is examined and the student learns to recognize disease symptoms. Methods of disease management are covered with emphasis on bio-rational techniques.
2 hours of lecture, 3 hours of lab per week — Prerequisite: BIO 2040

BIO 2040 Entomology & Ecological Pest Management (3) — **spring**
Entomology examines the biology and management of insect and other related invertebrate pests that attack

ornamental plants. In this course, the student studies insect morphology, anatomy, life processes, and ecology with special emphasis on insect identification and life histories. The student explores management strategies as part of an integrated approach to pest management.
2 hours of lecture, 3 hours of lab per week

***BIO 2120 Elements of Microbiology* (4)** **as required**
This course offers the student an opportunity to examine organisms that are too small to see with the naked eye and is a comprehensive study of the basic principles of microbiology. A brief survey of the history of the science is given. Emphasis is on understanding the variety and differences of microbes and their relationship to humans. Prior successful completion of BIO 2012 is recommended.
3 hours of lecture, 3 hours of lab per week

***BIO 2320 Zoology* (4)** **fall**
This course acquaints the student with the fundamental concepts of animal biology, including molecular genetics and inheritance, evolution, and biological systems with an emphasis on vertebrates. Previous successful completion of courses in biology and chemistry is recommended.
3 hours of lecture, 3 hours of lab per week

Business (BUS)

***BUS 1010 Introduction to Business* (3)** **fall**
The focus of this course is the interconnected disciplines of economics, management, marketing, finance, operations, and information technology. The course facilitates college success strategies such as note-taking, time management, test-taking, and study skills. The student is introduced to assignments typical of higher-level business courses with the goal of developing effective oral and written communication, critical thinking, problem-solving, interpersonal skills, and personal and professional ethical behavior.
3 hours of lecture per wee

***BUS 2020 Principles of Management* (3)** **fall**
This course introduces the philosophy, principles, and techniques of management. The student examines classical, modern, and emerging concepts as they relate to today's manager and the functional processes of planning, organizing, directing, and controlling resources. Learning experiences may include case studies, team experiences, and simulations.
3 hours of lecture per week

BUS 2041 Foundations of Entrepreneurship (3) **fall**
This course provides the foundations for understanding the nature, challenges, and rewards of entrepreneurship. Entrepreneurship is approached as a special and unique way of thinking and behaving. The student understands that entrepreneurship is a predictable and manageable process applicable to profit, non-profit, and public organizations.
3 hours of lecture per week

BUS 2131 Writing for Electronic & Social Media (3) **as required**
This course examines the history of electronic communication and social media and their roles in society and business. The course integrates components of communication, sociology, marketing, and analytics. The student reflects on the impact of social media on individuals and on the consumer experience and they discuss the ethical, cultural, global, and professional effects. The course focuses on how individuals and organizations can maximize the potential and minimize the drawbacks. The student writes emails, instant messages, and text messages and creates blogs, microblogs, and social media postings. The course prepares the student to analyze the impact of electronic communication, to write typical business messages, to have a role in marketing, or to pursue an entrepreneurial venture. The class also reviews grammar guidelines and research techniques.
3 hours of lecture per week

BUS 2132 Management Applications (3) **spring**
This course focuses on leadership theories and techniques with emphasis on the action skills managers need for success. Topics include leadership styles and strategies; a timeline of management theories, from classical to modern; and effective meeting management. The student learns the basics of parliamentary procedure; conducts and participates in a business meeting according to Robert's Rules of Order; and participates in team activities, role playing, and an oral presentation.
3 hours of lecture per week

***BUS 2140 Personal Finance* (3)** **as required**
The heart of personal financial planning is making sure that your values line up with how you spend and save. The goal of this course is to remove the mystery from the personal financial planning process and replace it with the tools needed to take charge of personal finances and life. Personal financial planning provides major benefits that help marshal and control financial resources more effectively and facilitate an improved standard of living. Because the emphasis in this course is on planning, it examines various areas to set and implement plans aimed at achieving financial goals. These areas include using financial statements and budgets; managing basic assets, credit, insurance needs, and investments; and planning for retirement.
3 hours of lecture per week
[Course fee: $10]

BUS 2210 Small Business Management **(3)** **fall/spring**
This course explores the practical aspects of organizing and managing a small business. The goal of the course equipping the student with the knowledge necessary to make informed business decisions. The student examines how to analyze a business and improve its management. The course covers the basic concepts of accounting, finance, cash management, business law, government regulations, taxes, and marketing.
3 hours of lecture per week
[Course fee: $10]

BUS 2230 Principles of Marketing **(3)** **spring**
This course examines the role of marketing as it relates to manufacturing, wholesale, retail, and service businesses. Emphasis is on the marketing mix of product, place, promotion, and price. The student learns marketing strategies well-suited to small business.
3 hours of lecture per week
[Course fee: $10]

BUS 2270 Organizational Communication (3) **as required**
This class offers a hands-on approach to learning the roles, processes, and skills of interpersonal, group, and public communication in personal and professional settings. The student understands the role of people in the communication process, both individually and in groups, and learns the psychology of face-to-face communication, the role of non-verbal communication, teamwork, effective listening, and professional behavior and then plans, prepares, and presents team oral presentations.
3 hours of lecture per week
[Course fee: $65]

BUS 2410 Human Resource Management **(3)** **spring**
This course introduces the student to the field of human resource management. Because of the wide nature of the topic and the limited time of the course, coverage is broad and emphasizes selecting, training, and evaluating personnel; wages, benefits, and bargaining units; motivation, morale, and human relations; and personnel problems in the workplace. The course emphasizes a general management perspective of HRM. Specifically, rather than assuming that the student wants to become an HR professional, we examine HRM from the perspective of a manager who wishes to effectively interact with and utilize human resources.
3 hours of lecture per week

BUS 2440 Introduction to Business Law (3) **fall/spring**
This course familiarizes the student with the law as it relates to business. Following a review of the legal and constitutional environment of business, the course focuses on contract law; the Uniform Commercial Code; negotiable instruments; debtor and creditor rights; bankruptcy; and agency relationships.
3 hours of lecture per week
[Course fee: $10]

BUS 2820 Business Internship & Career Seminar (3) **as required**
This course blends the reflective nature of classroom learning with the applied nature of the workplace and focuses on the role and importance of work in society, the impact of work, and work-life balance in one's personal and professional life. Readings and online forum discussions examine topics such as matching skills and interests to career paths; job search and interview techniques; physical, emotional, and financial well-being; work/life balance; dealing with difficult people; organizational politics; and ethical implications of decisions and actions. The student creates a resume, cover letter, and LinkedIn profile and learns effective job search and interview techniques.
3 hours of online lecture per week

BUS 3041 Applied Entrepreneurship (3) **fall**
This course takes the fundamentals of entrepreneurship and applies them to business cases and fieldwork. The course is divided into two sections: creating and pitching a new business concept and evaluating an existing entrepreneurial venture through fieldwork. The student works in a team to create, evaluate, and develop a concept for a new entrepreneurial venture for either a profit or non-profit mission. The student also engages in field work with an existing organization engaged in entrepreneurial activities. Organizations may be identified by the student or through client-based service providers (VT SBDC, VMEC, United Way, VBSR, etc.)
3 hours of lecture per week

BUS 3150 Production & Operations Management **(3)** **fall**
This course provides the student with an overview of the concepts, methodologies, and applications of production and operations management as an evolving discipline with roots in industrial engineering, behavioral theories of management, quantitative methods, and other functional areas of business.
3 hours of lecture per week Prerequisite: MAT 2021

BUS 3230 Principles of Financial Management **(3)** **fall**
This course teaches the student to use accounting data to make financial decisions. The student learns decision-making techniques and uses them to address financial situations faced by a firm.
3 hours of lecture per week Prerequisite: ACC 1020 or 2121
[Course fee: $10]

***BUS 3250 Organizational Behavior & Management* (3)** **spring**
This course provides an understanding of the structure and function of human behavior in organizations and explores the behavioral influences impacting productivity, organizational effectiveness, and efficiency. Behavior is examined at the individual, small group, and organizational levels. Topics include perception, motivation, negotiation, decision-making, communication, job design, power, politics, and organizational culture.
3 hours of lecture per week Prerequisite: BUS 2020

***BUS 3260 Investments & Portfolio Management* (3)** **as required**
This course examines investments in stocks, bonds, government securities, options, and collectibles. Topics include investment setting; securities valuation and analysis; security markets and regulations; and portfolio constraints.
3 hours of lecture per week Prerequisite: BUS 3230

BUS 3410 Business Ethics (3) **fall**
This course introduces the student to the general field of ethics and teaches them to apply ethical thinking to the business environment. An overview of modern ethical thought is provided with specific cases and scenarios presented which the student assesses from legal, moral, and economic perspectives.
3 hours of lecture per week Prerequisite: BUS 2020

BUS 3721 Business Planning Seminar (3) **spring**
This course teaches the student how to estimate the market potential for a business idea and provides a realistic experience in the process of preparing a business plan that attracts lenders or investors. The student should already have a business idea or a technology to develop. The course emphasizes the importance of market research and collection of the information necessary to establish the viability and sustainability of a business idea. There's a heavy emphasis on knowing the target market, analyzing competition, and anticipating how the external environment affects a business. During the semester, the student repeatedly defends their ideas with peers and invited guests. The development and presentation of a sound business plan is the final product.
3 hours of seminar per week Prerequisite: BUS 2210, 3230

BUS 3811 Business Problem Practicum (3) **spring**
This course serves as both a practice and a capstone experience in team research and presentation skills. The course integrates skills and knowledge developed through previous coursework. The student works in a team to select a business topic for research and oral presentation. Where appropriate and with the instructor's approval, the student may select a client-based problem. Teams present a significant business problem, offer proof of the problem, recommend solutions, and give evidence that the solutions help solve the problem. A final team oral presentation is required.
3 hours of lecture per week

***BUS 4080 Business Strategy & Policy Development* (3)** **as required**
This capstone integrates knowledge gained throughout the program and applies it to a variety of business case studies, concentrating on the total enterprise and its environment. The student assumes the functions and responsibilities of senior management, addresses the crucial problems that affect success in the organization, and makes decisions that determine the direction and future of the organization. The student engages in strategy formulation and development and the administration of those strategies through policies, structures, and initiatives. The course may include case studies, simulations, team projects, and presentations.
3 hours of lecture per week

BUS 4310 Business Information Architecture (3) **as required**
In this course, the student learns and applies theory, process, design, and development to create effective, user-centered written and electronic communications. The course focuses on the convergence of communication technology and tools and the impact on business applications such as letters, email messages, instant messages, podcasts, and a variety of social media. The student designs and creates an online portfolio to showcase education, skills, abilities, and experience for a job search.
3 hours of lecture per week

***BUS 4530 Technical Project Management* (3)** **spring**
This course introduces the student to the field of project management. Because of the wide nature of the topic and the limited time of the course, coverage is broad and emphasizes and follows the Project Management Institute (PMI) model of project management.
3 hours of lecture per week

Civil & Environmental Engineering Technology (CET)

CET 1000 CET Freshman Orientation (1) **fall**
This course introduces the skills required by the student for success in the Civil & Environmental Engineering Technology program and to the variety of work done in the civil and environmental engineering fields. The course may have guest speakers and field trips to construction projects and public facilities that give the student a picture of the variety of work and the job opportunities in the field.
2 hours of seminar per week for the first half of the semester

CET 1011 Surveying I (3) **fall**

This course introduces fundamental surveying principles and methods including benchmark leveling; the measuring of distances and angles; and instruction and practice in the care and use of equipment. Areas covered are azimuths and bearings; coordinate geometry; cross-sections and profiles; note-keeping; computations and field practice related to traverses; introduction to total stations and point files; and the adjustment of surveying instruments. The basics of construction surveying are discussed.

2 hours of lecture, 3 hours of lab per week — Corequisite: MAT 1311

CET 1020 Engineering Materials (3) **spring**

In this course, the student examines the materials used in the design and construction of civil engineering projects including soil, aggregates, cements, concrete, timber, asphalt, steel, masonry, and special topics (glass or geotextiles). Sources, manufacture, transport, standard tests, best use, and environmental considerations are covered. Lab work involves testing of materials and technical reporting.

2 hours of lecture, 3 hours of lab per week
[Course fee: $30]

CET 1030 CAD for Civil Engineering (2) **as required**

This course is for non-traditional students with a strong desire to become proficient in CAD. The course covers topics in CAD engineering software utilizing projects and examples from civil and environmental engineering. The student should have the ability to move files using Windows Explorer and be familiar with Microsoft Word.

6 hours of lab per week

CET 1031 Engineering & Surveying Computer Applications I (2) **fall**

This course provides a working knowledge of the use of computers for civil & environmental engineering. No prior computer training is required. The course introduces Excel and CAD operation for engineering applications. The fundamentals of CAD operations are presented through the use of civil and environmental engineering topics including site, structural, and environmental drawings. Major graphic subjects include creating and editing CAD primary and complex entities, dimensioning, drawing construction, layout, and output. Spreadsheets are introduced with applications appropriate to the field, including calculations, quantities, estimates, and graphs.

6 hours of lab per week
[Course fee: $35]

CET 1032 Engineering & Surveying Computer Applications II (2) **spring**

This course is a continuation of CET 1031 and provides proficiency in the creation and comprehension of working drawings related to civil engineering. Covered CAD topics include advanced CAD entity manipulation, customization, and programming. The student is introduced to a civil survey software package used for site mapping, terrain modeling, and road and utility design. Related technologies such as Geographic Information Systems (GIS), their applications, and data sources, are discussed.

6 hours of lab per week — Prerequisite: CET 1031

CET 2012 Surveying II (4) **fall**

A continuation of CET 1011, this course gives additional and more detailed information in route location and design, construction surveying, and advanced surveying topics. Specialized equipment such as electronic distance measuring instruments and state-of-the-art total stations and data collectors are used in the field labs. Lease squares adjustments are introduced. Cogo surveying software is an integral portion of the course.

2 hours of lecture, 6 hours of lab per week — Prerequisite: CET 1011,1032
[Course fee: $40] — Corequisite: MAT 1520

CET 2020 Hydraulics & Drainage (3) **fall**

This course introduces the fundamental concepts of fluids and the applications of flow mechanics in civil and environmental engineering projects. Topics include open channel flow, precipitation, stormwater runoff, infiltration, groundwater, watershed drainage systems, measuring devices, buoyancy, and steady flow. Calculations and lab work involve the use of precipitation data; culvert and stormwater system design; flume and hydraulic bench experiments; and the use of current industry standard computer programs.

2 hours of lecture, 3 hours of lab per week — Prerequisite: MAT 1312; PHY 1041
Corequisite: MAT 1520

CET 2030 Environmental Engineering & Science (3) **spring**

This course emphasizes quantitative analysis of environmental problems and introduces engineering methods for treatment and prevention of water, soil, and air pollution. Fundamental concepts of chemistry, microbiology, ecology, and statistics, which are critical to environmental analysis and engineering design, are covered. The lab includes both field and indoor testing of water quality as well as field trips to environmental facilities.

2 hours of lecture, 3 hours of lab per week — Prerequisite: CHE 1031; MAT 1520; PHY 1041

CET 2040 Statics & Strength of Materials (4) **fall**

Statics involves the study of vector forces, resultants, and moments and their effect on beams, columns, frames, and trusses. Strength of materials includes the study of material properties; tension; compression; shear and bending stresses; and the general mechanical response of materials and members to loads and the environment. This course includes methods of determining centroids and moment of inertia. Lab work includes calculation of force and stress analysis in addition to material testing.

3 hours of lecture, 3 hours of lab per week — Prerequisite: PHY 1041
Corequisite: MAT 1520

CET 2050 Civil & Environmental Design (4) **spring**

This course gives the student experience with realistic civil engineering problems that require the use of knowledge and skills obtained in previous courses. Under faculty supervision, the student designs a project that could include site development plans; buildings and parking structures; bridges; water supply and treatment facilities; and roads and highways. The student develops graphic presentations, preliminary designs, calculations, and working drawings. The final phase of some projects may include estimating and construction scheduling.

2 hours of lecture, 6 hours of lab per week — Prerequisite: CET 2012, 2020
Corequisite: CET 2030, 2110, 2120

CET 2110 Mechanics of Soils (3) **spring**

This course covers the basic principles and applications of soil mechanics used in design and construction and introduces soil and its formation, actions, and uses. Included are studies of index properties; soil classification; exploration and sampling; compaction; soil strength; erosion control; foundations; and retaining walls. Problems relating to these items are presented and solved. Lab testing is done in conjunction with lecture to give a more complete understanding of the material. Each student is required to prepare an individual technical report of each test performed.

2 hours of lecture, 3 hours lab per week — Prerequisite: CET 2040

CET 2120 Structural Design (3) **spring**

This course presents the design of structural systems, focusing on solid sawn wood and engineered wood products. Structural loads, general framing concepts, structural drawings, and (primarily) wood structural systems are presented. The design of various wood structural configurations such as tension members, beams, columns, and connections is covered in accordance with relevant design codes. Structural foundations are introduced. Lab work consists primarily of the application of building and design codes to the design and analysis of structural systems.

2 hours of lecture, 3 hours lab per week — Prerequisite: CET 2040
[Course fee: $10]

CET 3010 Evidence & Procedures for Boundary Line Location (3) **spring**

This course familiarizes the land surveying student with the importance of locating the original boundary line between two or more tracts of land, the evidence necessary to collect, and the procedures for this collection.

3 hours of lecture per week — Corequisite: CET 2012

Chemistry (CHE)

CHE 1020 Introduction to Chemistry **(4)** **as required**

This survey course examines atomic structure; the periodic table; chemical reactions; gases; liquids; solids; chemical equilibrium; acids and bases; bonding; and molecular structure and introduces organic chemistry.

3 hours of lecture, 2 hours of lab per week.

CHE 1031 General Chemistry I **(4)** **as required**

This course is intended for the engineering student and consists of the fundamentals of general and physical chemistry. Lab experiments reinforce concepts introduced in lectures; teach basic laboratory skills and techniques; and introduce some methods of analysis currently used in industry. Fundamental quantitation and analytical techniques are emphasized.

3 hours of lecture, 3 hours of lab per week

CHE 2060 Principles of Organic Chemistry (4) **spring**

This course enhances knowledge and skills in organic chemistry and includes a general overview of aliphatic compounds (hydrocarbons, alcohols, ethers, aldehydes, ketones, carboxylic acids, carbohydrates); cyclic compounds; and combinations of aliphatic and cyclic structures (including amino acids and nucleic acids). Important areas of organic chemistry are covered, including polymerization, hydrogenation, isomerization, photochemistry, and stereochemistry.

3 hours of lecture, 3 hours of lab per week — Prerequisite: CHE 1031

Computer Science (CIS)

CIS 1041 Computer Applications **(3)** **fall**

This course is a hands-on introduction to information processing using the Windows operating system and application software designed for computers and mobile devices. The course covers file management, presentation graphics, word processing, and spreadsheets. Basic algebra skills are recommended.

1 hour of lecture, 2 hours of lab per week

CIS 1042 Computer Applications II (3) **spring**
In this course, the student learns advanced information processing skills using the Windows operating system and common applications for business including word processing, spreadsheets, database management, presentation graphics, publishing, and digital image manipulation.
1 hour of lecture, 2 hours of lab per week Prerequisite: CIS 1041

CIS 1050 Introduction to Spreadsheets **(1)** **fall/spring**
This course covers the concepts, knowledge, and skills necessary to design, create, organize, store, and utilize spreadsheets in varied settings. The student explores concepts and skills such as user-made functions, translation to graphs, using library macros, user macro development, and what-if scenarios. The successful student is prepared to generate and use spreadsheets to process information rapidly in virtually any setting and obtains the performance of a professional in the workplace. This course is conceptual in nature and includes direct application to hands-on real-world settings.
1 hour of lab per week

CIS 1080 Introduction to Spreadsheets & Database Management (2) **fall/spring**
This course introduces the student to email, Web Services, the internet, spreadsheets, and databases. Spreadsheet topics include all functions necessary to build a spreadsheet and create graphs. Database topics include the fundamentals of computer database design and management.
2 hours of lab per week

CIS 1120 Introduction to Information Science & Technology (3) **fall**
This course introduces the student to the world of IST across a broad range of topics including the history of computing, computing in society, career paths in computing, and the use of computers in the workplace.
3 hours of lecture per week

CIS 1151 Website Development **(3)** **fall/spring**
This course introduces webpages for commercial websites including use of and design with Hypertext Markup Language (HTML), text, and graphics; applying appropriate design, color, and art; size and placement of graphics (including image maps) in a webpage; creation of advanced tables (including nested tables); creation of forms that contain advanced input types and attributes, text areas, and advanced lists; and use of a validation tool to debug an HTML document.
2 hours of lecture, 2 hours of lab per week/ online: 3 hours of lecture per week

CIS 1152 Advanced Website Development (3) **spring**
This course teaches the student how to implement, monitor, and deploy a complete website and integrate the website with a database. Emphasis is on the PHP language and server side processing. JavaScript is used when it's suited to the desired task. Topics include authentication methods; form processing; form validation using HTML 5, JavaScript, and PHP; an overview of databases; PHP functions to interface with a database; and website security.
2 hours of lecture, 2 hours of lab per week Prerequisite: CIS 1151

CIS 2010 Computer Organization (4) **spring**
In this course, the student gains a basic understanding of computer hardware through introduction to binary data representation, pointers, and memory through the C programming language. This knowledge expands to include the functioning of the CPU including registers, ALU, and simple I/O and culminates in an introduction to assembly language.
3 hours of lecture, 2 hours of lab per week Prerequisite: *C*- or better in CIS 2025 or 2262 or 2271
Corequisite: CIS 1120 or MAT 2120

CIS 2025 C Programming (3) **fall/spring**
This course teaches the student to write programs using the C language. All fundamental features of C are covered including arrays, functions, pointers, file I/O, string manipulation, and preprocessor directives. This course emphasizes good software design techniques, programming style, and documentation. No prior programming experience is required.
2 hours of lecture, 2 hours of lab per week
[Course fee: $75]

CIS 2151 Computer Networks I (4) **spring**
This course introduces the student to network protocols and covers physical, data link, network, transport, and application layer protocols. The TCP/IP protocol suite is discussed in detail. Topics include Ethernet, connectionless protocols, connection-oriented protocols, and application protocols such as DNS, DHCP, and HTTP. The student learns about both hardware and software troubleshooting tools, security issues, and current topics such as IPv6. Hands-on experience with networking equipment and use of network simulation tools are used throughout the course.
3 hours of lecture, 2 hours of lab per week

CIS 2230 System Administration (4) **fall**
In this course, the student explores the basics of system management. The course provides the student with enough theory to understand how operating systems work and to interpret the output of various management tools. It also covers practical issues in system administration including process, memory, and file system moni-

toring and performance tuning. Computer security is also discussed.
3 hours of lecture, 2 hours of lab per week Prerequisite: C- or better in CIS 2025 or 2262 or 2271

CIS 2235 Advanced System Administration (4) **spring**
This course focuses on management tasks and considerations for enterprise-level information technology systems. Topics include network infrastructure components, security devices, VoIP systems, service delivery systems, and system management applications.
3 hours of lecture, 2 hours of lab per week Prerequisite: CIS 2151, 2230

CIS 2260 Object-Oriented Programming (3) **fall**
This course introduces the student to the use of strong specifications and abstract data types in object-oriented programming as well as the basics of object-oriented design.
3 hours of lecture per week Prerequisite: C- or better in CIS 2262 or 2271

CIS 2261 Introduction to Java Programming I (4) **fall**
This course is the first of a two-semester series that introduces the basic concepts and techniques of Java. Essential topics include program structure; primitive and string data types; operators; expressions; control structures; static methods (including an introduction to recursion); and classes and objects.
3 hours of lecture, 2 hours of lab per week

CIS 2262 Introduction to Java Programming II (3) **spring**
This course is a continuation of CIS 2261 and covers additional concepts in object-oriented programming such as inheritance and polymorphism; exceptions and exception handling; the Java collections framework (lists, sets, maps, and iterators); creating and using packages; and creating graphical user interfaces.
3 hours of lecture per week Prerequisite: CIS 2261

***CIS 2271 Java Programming* (4)** **fall**
This course introduces the basic concepts and techniques of Java, including object-oriented programming (OOP). Essential topics include program structure; primitive and string data types; operators; expressions; control structures; static methods (including an introduction to recursion); exception handling; use of library packages; and top-down design. OOP concepts include classes and objects; instance methods and constructors; inheritance; polymorphism; and an introduction to object-oriented design. Time permitting, the course may cover the basics of graphical user interface construction.
3 hours of lecture, 2 hours of lab per week

CIS 2320 Software Quality Assurance & Testing (3) **fall**
This course introduces the student to the concepts, techniques, and tools used for evaluating and ensuring the quality of computer software. Topics include dimensions and implications of quality, code reviews, test construction, test coverage metrics, partition testing, website testing, and current test support tools, including issue tracking systems.
3 hours of lecture per week Prerequisite: C- or better in CIS 2025 or 2262 or 2271

CIS 2450 Advanced Web Technologies (3) **spring**
This course introduces the student to advanced use of web technologies methods and practices. Discussion includes the use of technologies such as JavaScript, jQuery, CSS preprocessors, web APIs, and major web development frameworks which are all implemented in the lab.
2 hours of lecture, 2 hours of lab per week Prerequisite: CIS 1151

CIS 2730 Software Engineering Projects (3) **spring**
This capstone course involves the development of a group project. The development effort is combined with an introduction to systems development and life cycle. The student receives an introduction to oral presentations of technical information to a technical audience.
2 hours of lecture, 2 hours of lab per week Prerequisite: C- or better in CIS 2025 or 2262 or 2271

CIS 3010 Database Systems (4) **spring**
This course covers methods for designing relational databases; the use of SQL to define and access a database; and the use of production-level database management systems to implement a relational database system. The student is required to complete a project in which they either implement a real-world example relational database or research a specific database topic not covered during class. Additional topics that may be discussed as time and class interest permit include: integrating databases into applications or websites; alternative database paradigms; database design/engineering tools; and underlying implementation of databases.
3 hours of lecture, 2 hours of lab per week Prerequisite: CIS 1151; C- or better in CIS 2262 or 2271

CIS 3012 C++ Programming (3) **spring**
This course covers the syntax and semantics of the major C++ features. Topics include data abstraction, object-oriented programming, and generic programming, including the use of the standard template library. C++ 2011 is used and features added to that standard are described. Discussion of C++ best practices and design techniques is incorporated throughout.
3 hours of lecture per week Prerequisite: CIS 2010 or 2025; CIS 2260

CIS 3030 Programming Languages (3) **fall**
This course covers fundamental concepts in programming language design from the perspective of the practi-

cal programmer. Topics include the syntactic representation of programs; functional programming; static vs. dynamic programming languages; selected advanced object oriented topics; and an introduction to the theory of computation as it applies to programming languages. The student gains useful experience with at least two new languages: one the focus of the instructor and one chosen by the student for a project.
3 hours of lecture per week Prerequisite: CIS 2260
Corequisite: CIS 3050

***CIS 3050 Algorithms & Data Structures* (3)** **fall**
This course focuses primarily on the implementation of various important algorithms and data structures. It contains some theory, but the theory content is minimized in favor of a more rigorous treatment of implementation techniques. The course covers classic topics such as lists, trees, hash tables, graphs, sorting, and string matching. Other topics such as encryption, data compression, and image processing are covered as time allows.
3 hours of lecture per week Prerequisite: CIS 2010; CIS 2025 or 2260

CIS 3152 Network Programming (3) **as required**
This course in network programming includes topics such as client/server programming with sockets for TCP and UDP; programming at least one application level protocol such as HTTP or SMTP/MIME; an introduction to character sets; and at least one remote procedure call system (ONC RPC, Ice, etc.) An introduction to XML and the use of XML libraries are also presented. Proper error handling techniques are discussed throughout.
3 hours of lecture per week Prerequisite: CIS 2151; CIS 2010 or 2025; CIS 2262 or 2271

CIS 3170 The History of Computation (3) **fall**
This course examines the history of computers and early calculators. The student learns the principles of early computational devices and investigates how the concepts inherent in these devices are implemented in modern computers. Particular attention is focused on Boolean logic, Frege formula language, flow charts, state machines, and Turing machines. The implications of Shannon’s law and Moore’s law are presented.
3 hours of lecture per week

CIS 3210 Network Routing & Switching Concepts (4) **fall**
This course teaches the student the operation and configuration of routers and switches in a network architecture. Concepts such as virtual LAN (VLAN) configurations; routing concepts; inter-VLAN routing; static routing; introduction to OSPF; access control lists and implementation; and configuration of DHCP and NAT in a network configuration are covered along with IPv4 and IPv6 concepts.
3 hours of lecture, 2 hours of lab per week Prerequisite: CIS 2151

CIS 3250 Advanced Network Architectures (4) **spring**
This course teaches the student how to implement, monitor, deploy, and maintain a network in a converged enterprise environment. The student learns how to plan, configure, and verify the implementation of complex enterprise switching solutions. The course also covers the secure integration of VLANs, WLANs, security, and video into networks. Key concepts covered include network implementations such as HSRP, STP, EtherChannel, wireless technologies, advanced OSPF, EIGRP, and frame relay.
3 hours of lecture, 2 hours of lab per week Prerequisite: CIS 2151

CIS 3272 Advanced Java (3) **as required**
This course covers the more advanced languages features and libraries available in Java.
3 hours of lecture per week Prerequisite: CIS 2260

CIS 3310 Artificial Intelligence (3) **as required**
In this course, the student learns the algorithms and data structures used in artificial intelligence and programs a range of approaches that computers use to emulate intelligence: planning, knowledge representation, learning, decision-making, and game-playing.
3 hours of lecture per week Corequisite: CIS 3050

CIS 4011 Information Warfare (3) **spring**
This course is a strategic level examination of the use of the information instrument of national power. Topics covered include cyberspace operations, computer network operations, information operations, military strategy, and civil military relations.
3 hours of lecture per week Prerequisite: CIS 2151, 2230

CIS 4020 Operating Systems (4) **fall**
In this course, the student examines the internal workings of modern operating systems. Topics include multiprocessing, memory management, file systems, device drivers, distributed operating systems, and real time operating systems. As part of the course, the student writes a kernel module or a device driver for an operating system chosen by the instructor.
3 hours of lecture, 2 hours of lab per week Prerequisite: CIS 3050

***CIS 4040 Computer Security* (3)** **fall**
This course focuses on security issues associated with computers and computer networks. Topics covered include cryptography (symmetric and public key cryptography, digital signatures, secure hashes, random number generation, and message authentication codes); network security (secure protocols [SSL/TLS, IPsec], network attack methods, network authentication protocols [Kerberos], and firewalls); and host security (building secure

software, auditing, and intrusion detection).
3 hours of lecture per week — Prerequisite: CIS 2151, 2230; C- or better in CIS 2025 or 2262 or 2271

CIS 4050 Compiler Design (3) **spring**
This course familiarizes the student with how computer languages are implemented. The student writes a small compiler for a simplified programming language specified by the instructor, using compiler construction tools such as lexical analyzer generators and parser generators as well as creating some hand-built components. Although some theory is presented, the emphasis is on implementation. The programming is done in C or Java at the instructor's discretion.
3 hours of lecture per week — Prerequisite: CIS 3030, 3050

CIS 4080 Network Security (3) **as required**
This course teaches the student how to implement, monitor, deploy, and maintain a secure network. The student learns how to implement on Cisco routers (AAA, IP-sec, secure Layer 2 technologies); implement firewall technologies; IDS and IPS fundamentals; and mitigation technologies for email, web-based, and endpoint threats. Comprehensive assignments using the Cisco Packet Tracer network simulator emphasize hands-on learning.
3 hours of lecture per week — Prerequisite: CIS 3210 or 3250

CIS 4120 Systems Analysis & Design (3) **spring**
This course advances the student's skills to develop, refine, and communicate requirements and designs related to computer systems. This course is reading- and writing-intensive.
3 hours of lecture per week

CIS 4140 Human Computer Interaction (3) **as required**
This course covers the design, implementation, and evaluation of user interfaces for computers and other modern, complex electronic equipment.
3 hours of lecture per week — Prerequisite: CIS 1152 or 2260

CIS 4150 Software Engineering (3) **fall**
This course covers the product life cycle for a software product. Material covered includes both common current practices in a variety of industrial settings as well as more recent leading-edge advances.
3 hours of lecture per week

CIS 4210 Computer Graphics (3) **as required**
This course deals with the computer generation of realistic images of 2- and 3-dimensional scenes and involves substantial computer programing.
3 hours of lecture per week — Prerequisite: CIS 3050; MAT 1520

CIS 4220 Physical Simulations (3) **as required**
This course combines numerical programming techniques with Newtonian physics and calculus to give the student an understanding of how physical systems can be simulated on a computer. Topics include the simulation of rigid bodies, soft bodies, fluids, and collision detection. This course emphasizes applications rather than mathematical theory and involves a significant amount of programming.
3 hours of lecture per week — Prerequisite: C- or better in CIS 2025 or 2262 or 2271; MAT 1520; PHY 1041

CIS 4230 Parallel Programming (3) **as required**
This course examines the applications, algorithms, construction, configuration, and performance of parallel programs. Topics include shared memory parallelism using POSIX threads and OpenMP and multi-machine parallelism using MPI. Parallel programming on modern GPU devices is introduced.
3 hours of lecture per week — Prerequisite: CIS 2230, 3050

CIS 4240 Ethical Hacking & Network Defense (3) **as required**
This course teaches the student how hackers attack computers and networks and how to protect systems from such attacks using both Windows and Linux systems. The student learns legal restrictions and guidelines and are required to abide by them. The student performs hands-on exercises which emphasize and enforce skills such as attacking and defending; using port scans; footprinting; exploiting Windows and Linux vulnerabilities; buffer overflow exploits; SQL injection; privilege escalation; MAC spoofing; and backdoor attacks.
3 hours of lecture per week — Prerequisite: CIS 2151

CIS 4241 Advanced Ethical Hacking (3) **as required**
This class is an exploration of advanced cybertechnology threats and tactics and covers the employment of advanced tactics in the context of a penetration test. Other topics covered include planning, web threats, mobile threats, wireless hacking, protocol abuse, malware creation, social engineering, and evasion of defensive tools.
3 hours of lecture per week — Prerequisite: CIS 4240

CIS 4250 Big Data Processing (3) **as required**
This course describes techniques for processing very large data sets that are typically stored across multiple machines in a cluster. It's primarily a programming course, although some topics in cluster administration and configuration are also discussed. Technologies covered include Hadoop (MapReduce), Apache Spark, Apache Kafka, and other specialized technologies as time allows (e.g., Pig). Fluency with Java is required; experience with Scala is helpful but not essential.
3 hours of lecture per week — Prerequisite: CIS 2230, 3030

CIS 4310 Computer Forensics (3) **fall**
This class introduces digital forensic methods, practices, technology, and legal concerns. The student considers issues of incident response and handling, data collection, chain of evidence, data analysis, cryptanalysis, steganography, and report writing.
3 hours of lecture per week Prerequisite: CIS 2151, 2230

CIS 4721 CIS Senior Project I (2) **fall**
The course is largely a self-directed senior project in which the student demonstrates mastery of the subjects covered in their program. This first part of a two-part course sequence, this first semester involves defining the eventual project and learning necessary technologies.
1 hours of lecture, 2 hours of lab per week

CIS 4722 CIS Senior Project II (3) **fall/spring**
This course completes the senior project begun in CIS 4721 and culminates in a public presentation of the project.
1 hour of lecture, 4 hours of lab per week Prerequisite: CIS 4721

CIS 5020 Advanced Operating Systems (4) **fall**
In this course, the graduate student examines the internal workings of modern operating systems. Topics include multiprocessing, memory management, file systems, device drivers, distributed operating systems, and real time operating systems. As part of the course, the student writes a kernel module or a device driver for an operating system chosen by the instructor.
3 hours of lecture, 2 hours of lab per week

CIS 5050 Advanced Data Structures & Algorithms (3) **as required**
This course prepares the graduate student to understand, implement, and analyze sophisticated algorithms and data structures.
3 hours of lecture per week Prerequisite: CIS 3050

CIS 5080 Advanced Network Security (3) **fall**
This course teaches the graduate student how to implement, monitor, deploy, and maintain a secure network. The student learns how to implement on Cisco routers (AAA, IP-sec, secure Layer 2 technologies); implement firewall technologies; IDS and IPS fundamentals; and mitigation technologies for email, web-based, and endpoint threats. Comprehensive assignments using the Cisco Packet Tracer network simulator emphasize hands-on learning.
3 hours of lecture per week Prerequisite: CIS 2151

CIS 5120 Advanced Systems Analysis & Design (3) **spring**
This course advances the graduate student's skills to develop, refine, and communicate requirements and designs as related to computer systems. This course is reading- and writing-intensive.
3 hours of lecture per week

CIS 5130 Analysis of Software Artifacts (3) **fall**
The graduate student completing this course can analyze the range of artifacts created during the software development process, ranging from requirements and design documents through source code and test results. The approaches covered include both heuristic and formal analyses.
3 hours of lecture per week Prerequisite: CIS 4050, 4120, 4150

CIS 5140 Software Architecture (3) **spring**
This course is a detailed consideration of software design from the high-level perspective. The graduate student examines a range of distinct architectural styles, considering their appropriateness for a range of problems.
3 hours of lecture per week Prerequisite: CIS 4120, 4150

CIS 5150 Advanced Software Engineering (3) **fall**
This course covers the product life cycle for a software product. Material covered includes both common current practices in a variety of industrial settings as well as more recent leading-edge advances.
3 hours of lecture per week

CIS 5210 Advanced Computer Graphics (3) **as required**
This course deals with the computer generation of realistic images of 2- and 3-dimensional scenes and involves substantial computer programing.
3 hours of lecture per week Prerequisite: CIS 3050; MAT 1520

CIS 5220 Advanced Physical Simulations (3) **as required**
This course combines numerical programming techniques with Newtonian physics and calculus to give the graduate student an understanding of how physical systems can be simulated on a computer. Topics include the simulation of rigid bodies, soft bodies, fluids, and collision detection. This course emphasizes applications rather than mathematical theory and involves a significant amount of programming.
3 hours of lecture per week Prerequisite: C- or better in CIS 2025 or 2262 or 2271; PHY 1041

CIS 5230 Advanced Parallel Programming (3) **spring**
This course examines the applications, algorithms, construction, configuration, and performance of parallel programs. Topics include shared memory parallelism using POSIX threads and OpenMP and multi-machine paral-

lelism using MPI. Parallel programming on modern GPU devices is introduced.
3 hours of lecture per week Prerequisite: CIS 2230, 3050

CIS 5250 Advanced Big Data Processing (3) **as required**
This course describes techniques for processing very large data sets that are typically stored across multiple machines in a cluster. It's primarily a programming course, although some topics in cluster administration and configuration are also discussed. Technologies covered include Hadoop (MapReduce), Apache Spark, Apache Kafka, and other specialized technologies as time allows (e.g. Pig). Fluency with Java is required; experience with Scala is helpful but not essential.
3 hours of lecture per week Prerequisite: CIS 2230, 3030

CIS 6050 Advanced Compiler Design (3) **spring**
This course familiarizes the graduate student with how computer languages are implemented. The student writes a small compiler for a simplified programming language specified by the instructor, using compiler construction tools such as lexical analyzer generators and parser generators as well as creating some hand-built components. Although some theory is presented, the emphasis is on implementation. The programming is done in C or Java at the instructor's discretion.
3 hours of lecture per week Prerequisite: CIS 3030, 3050

CIS 6140 Advanced Human Computer Interaction (3) **as required**
This course covers the design, implementation, and evaluation of user interfaces for computers and other modern, complex electronic equipment.
3 hours of lecture per week Prerequisite: CIS 1152 or 2260

CIS 6721 Master's Project (1) **as required**
This course supports a significant practical individual or small group project taken to completion and then presented to the community.
1 hours of lab per week

CIS 6740 Graduate Seminar I (1) **fall**
This is a paper-reading and discussion course in which the instructor chooses a selection of papers appropriate to the class members.
1 hour of seminar per week

CIS 6741 Graduate Seminar II (1) **spring**
This is a paper-reading and discussion course and each student is responsible for choosing at least one paper and leading a discussion on that paper.
1 hour of seminar per week Prerequisite: CIS 6740

Construction Management (CPM)

CPM 1000 CM Freshman Seminar (1) **fall**
This course facilitates a successful transition to college and focuses on orientation to college and academic success strategies. Topics include student rights and responsibilities; student grading and graduation requirements; student information technologies and database orientation; campus resources; time management; note taking; introduction to career opportunities; and program-specific topics including construction program issues, the building construction industry, and professional development. Pass/No Pass.
1 hour of seminar per week

CPM 1010 Electrical/Mechanical Systems (3) **spring**
In this course, the student is introduced to the major environmental systems in a building: plumbing; heating, cooling, and ventilation; and electrical and illumination. An introduction to the influence of the natural environment on the built environment and a consideration for how these effect energy use and conservation is included. The student also studies the building codes that govern the design of the various environmental systems.
2 hours of lecture, 3 hours of lab per week Prerequisite: CPM 1021, 1031

CPM 1021 Construction Graphics I (2) **fall**
This course prepares the student to interpret construction drawings by teaching them to make basic architectural drawings by hand. The student learns to draw plans, elevations, sections, and details and to understand how they relate to each other. Informal sketching techniques are practiced and used throughout. Spreadsheets are introduced with applications appropriate to construction including calculations, quantities, and estimates.
1 hour of lecture, 2 hours of lab per week

CPM 1022 Construction Graphics II (2) **spring**
This course is a continuation of CPM 1021 in which the student experiences blueprint reading of residential and commercial construction plans using classroom instruction, drawing of print details, and plan-reading exercises. The student performs basic material takeoff techniques used in estimating and applies CAD basic 2D mechanical drafting techniques to drawing plans and design details.
1 hour of lecture, 2 hours of lab per week Prerequisite: CPM 1021

CPM 1031 Residential Construction Systems (3) **fall**
In this course, the student examines residential construction methods and materials; wood frame construction

of floors, walls, and roofs; structural soils; and an introduction to concrete foundations. The student is introduced to estimating, building codes material takeoff, and structural loads. Stairs and roof rafters are also explained.
3 hours of lecture per week — Corequisite: CPM 1032

CPM 1032 Construction Lab (2) fall
This course introduces the student to construction materials and methods, tools, and safety. The student works on small building projects and mock-ups to learn material placement, concrete work, carpentry, siding, and roofing techniques in jobsite conditions.
6 hours of lab per week — Corequisite: CPM 1031

CPM 1111 Commercial Construction Systems (4) spring
This course introduces the student to the construction materials and installation methods used in commercial projects. The student studies soils and foundation types; heavy timber frame construction; masonry, concrete, and steel construction systems; and commercial roofing, insulation, and cladding systems as well as the International Building Code.
4 hours of lecture per week — Prerequisite: CPM 1031

CPM 2010 Construction Estimates I (3) fall
This course introduces the estimating principles and procedures used to determine detailed cost estimates for construction bidding purposes. Both residential and light commercial applications are addressed. Topics presented include organizing an estimate; methods of pricing labor, materials, and equipment; direct and indirect overhead costs; units of measure; computer spreadsheets; and profit. An introduction to contracts and types of bids is provided along with familiarization with computer estimating software applications.
2 hours of lecture, 3 hours of lab per week — Prerequisite: CPM 1022, 1111; MAT 1210 or 1311

CPM 2020 Construction Project Management (3) fall
This course introduces the student to the principles of construction project management. Included are design and construction processes; contract documents; organization of the construction firm; subcontractor relationships; records and reports; cost control methods and procedures; schedule control; construction safety; and quality control. Bar chart and critical path method scheduling are covered and an introduction to design-build and construction manager contracting is included.
3 hours of lecture per week

CPM 2030 Elementary Theory of Structures (4) spring
This course introduces the student to preliminary analysis of the structural design of building components and frames and serves as an introduction to statics and strengths of materials, including properties of materials used in residential and commercial construction. The course is an in-depth study of building static loads referencing concrete, steel, wood, and pre-engineered wood products.
3 hours of lecture, 3 hours of lab per week — Prerequisite: CPM 1111; MAT 1210 or 1311; PHY 1030

CPM 2050 Construction Management Software (1) fall
This course exposes the student to the software used in construction management, particularly spreadsheets and scheduling. Direct instruction is provided by working through tutorial exercises and creating functional spreadsheets and project schedules.
2 hours of lab per week — Prerequisite: CPM 1022

CPM 2060 Field Engineering (3) fall
This course introduces the student to the fundamentals of construction field engineering, survey, and building layout. The student learns the use and care of survey equipment while performing field practices such as distance measuring; building layout; profile and cross-sectional leveling; and traversing. Trigonometry and geometry are used to balance angles, make distance corrections, and compute areas and volumes.
2 hours of lecture, 3 hours of lab per week — Prerequisite: MAT 1210
[Course fee: $25]

CPM 2720 Construction Supervision (1) fall
This is an elective course for construction seniors. The student gains practice supervising first-year students in CPM 1032 and managing a jobsite. The course is repeatable for additional credit.
3 hours of lab per week

CPM 2730 Construction Seminar & Project (3) spring
This seminar weaves prior coursework into workplace-ready application. The student reads and interprets contracts and specifications for commercial projects of significant scope and develops an estimate of construction time, a project schedule, a schedule of values, and a safety plan through individual and group work.
2 hours of lecture, 3 hours of lab per week

CPM 2801 Construction Internship (0) summer
This course is a required part of the CPM curriculum and involves a 320-hour summer cooperative education experience that broadens the student's understanding of real-world construction and management. The internship review takes place in CPM 2802 in the subsequent fall term. Pass/No Pass.

CPM 2802 Construction Internship Review (1) **fall**
This course is the review portion of the internship in CPM 2801. Pass/No Pass.
1 hour of seminar per week Prerequisite: CPM 2801
[Course fee: $250]

CPM 3010 Construction Estimates II (3) **spring**
This course provides an advanced understanding of the theory and practice of construction estimates. Estimating means and methods of a broad range of construction projects is included. Industry projects and case studies demonstrate advanced estimating concepts and processes. Building Information Modeling, quality takeoff, and estimating software are utilized.
2 hours of lecture, 2 hours of lab per week Prerequisite: CPM 2010

CPM 3020 Construction Documents (3) **spring**
This course covers analysis, creation, and organization of construction documents. The student conducts takeoffs and divisional cost controls; creates and tracks submittals; shops drawings; makes requests for information and proposals; interprets specifications, contracts, and architectural, civil, and structural drawings; and interprets LEED, International Building Code, and local zoning and life safety requirements.
3 hours of lecture per week Prerequisite: CPM 2020

CPM 3030 Concrete & Steel Lab (2) **spring**
This course prepares the student for the American Concrete Institute's Field 1 Concrete Certificate. The student interoperates soil sieve analysis relative to concrete characteristics. Concrete batch and strength are examined. Methods of testing are taught and practiced through laboratory experience and analytical reporting. Structural and thin-walled steel are presented and the student works with these products in the lab setting. A visit to a batch plant or bridge reconstruction usually concludes the lab.
1 hour of lecture, 2 hours of lab per week Prerequisite: CPM 1111
[Course fee: $150]

CPM 3130 Construction Soils (3) **fall**
In this course, the student develops a basic understanding of soils in construction and engineering industries. The course stresses the applied aspects of soil as a building material and as a medium in other industries such as wastewater design, wetlands, and hazardous waste spills. Topics include excavation; grading; soil investigation techniques; erosion prevention and control; compaction; and foundations in addition to soil basics of texture, structure, soil formation, soil water movement, and soil classification. This course focuses on hands-on familiarity with soils, soil characteristics, maps, tools, and resources with some technical writing.
2 hours of lecture, 3 hours of lab per week Prerequisite: MAT 1210 or placement level 2

CPM 4010 Contract Negotiations (3) **fall**
This course improves the student's skills in all phases of negotiations: understanding negotiation theory as it applies to single and multiparty negotiations; buyer-seller transactions and the resolution of disputes; development of negotiation strategy; and the management of integrative and distributive aspects of the negotiation process. The course is based on a series of simulated negotiations in a variety of contexts including one-on-one, multiparty, third-party, and team negotiations.
3 hours of lecture per week Prerequisite: CPM 2020, 2730
[Course fee: $60]

CPM 4030 Construction Safety & Risk Management (3) **fall**
This course is a study of safety problems in the construction and manufacturing environment with emphasis on the day-to-day activities of the construction safety coordinator. Ethical, moral, productivity, and monetary implications of the practices of safety are considered. The course culminates in the creation of a workplace safety plan.
3 hours of lecture per week

CPM 4040 Construction Scheduling (3) **fall**
This course explores time management of construction projects. Topics include project scheduling; durations and dependencies; efficiency calculations; critical path method; and cost control models. Industry examples and case studies are used to demonstrate resource allocation, dispute resolution, and productivity. Computer applications for construction scheduling are used to create Gantt charts, network diagrams, and progress reports.
2 hours of lecture, 2 hours of lab per week Prerequisite: CPM 2020, 2730, 3010; CPM 2802 or 4802

CPM 4120 Project Planning & Finance (3) **spring**
This course is an examination of issues in project planning and financial management, along with running a successful construction company. The student learns markups; margins; pricing; fixed and variable costs; and cost controls. The course uses computerized construction management and accounting software.
3 hours of lecture per week Prerequisite: ACC 1020; BUS 3230

CPM 4130 Construction Superintendency (3) **spring**
This course covers the duties and responsibilities of on-site construction leaders. Emphasis is on the procedures, methods, and administration documentation system used by the construction contractor during construction and post-construction phases of a project. Quality control and reporting and motivational and leadership concepts are discussed as they apply to construction.
3 hours of lecture per week

CPM 4140 Construction Contracts (3) **spring**
This course provides an in-depth study of the role of contracts in the construction industry. The course focuses on the different contractual terms and how those terms control risk allocation and the relationships between parties. Legal considerations of standardized construction contracts are examined. The student develops skills in analyzing contracts with an emphasis on dispute prevention.
3 hours of lecture per week Prerequisite: BUS 2440; CPM 3020

CPM 4730 Preconstruction Services (3) **fall**
This course focuses on the development of comprehensive preconstruction proposals for horizontal and vertical construction. It includes presentation skills and practice to tailor detailed cost analyses, schedules, labor requirements, and methods of construction for multiple construction projects.
3 hours of lecture per week
[Course fee: $200]

CPM 4801 CPM Senior Summer Internship (0) **summer**
This internship is an optional introduction to commercial construction workplaces. Emphasis is on field operations and management applications as they apply to commercial, retail, healthcare, industrial, or heavy/highway construction projects. Pass/No Pass.

CPM 4802 CPM Senior Summer Internship Review (1) **fall**
This course is used to review and evaluate the effectiveness of the internship experience in CPM 4801 and to quantify learning outcomes as they pertain to the major and to the construction practices career field. Pass/No Pass.
[Course fee: $250] Prerequisite: CPM 4801

Dental Hygiene (DHY)

DHY 1011 Pre-clinical Dental Hygiene (5) **fall**
This course provides an introduction to the didactic and clinical framework necessary to the practice of dental hygiene. The didactic component consists of learning units covering preventive dental hygiene theory. The primary emphasis of the clinical component is learning the techniques of basic dental hygiene instrumentation. The student begins to integrate knowledge of theory and practice through simulated patient experiences on manikins and student partners.
3 hours of lecture, 6 hours of lab per week Corequisite: DHY 1021
[Course fee: $115]

DHY 1012 Clinical Dental Hygiene I (5) **spring**
This course is a continuation of DHY 1011 and provides the clinical and didactic framework necessary to the practice of dental hygiene. Emphasis is on the clinical component of dental hygiene practice. The student integrates knowledge of dental hygiene theory and practice by providing dental hygiene care to consumer patients during the second half of the semester. The didactic and clinical components of this course challenge students to develop problem-solving and critical-thinking skills.
2 hours of lecture, 8 hours of clinic per week Prerequisite: DHY 1021
[Course fee: $75] Corequisite: DHY 1022

DHY 1021 Oral Tissues I (3) **fall**
This course introduces the student to the common terms used in dental hygiene. The anatomy of the teeth and oral structures are examined. Identification of primary and permanent teeth is emphasized. The course includes an introduction to general histology and embryology with emphasis on the microscopic structures of enamel, dentin, pulp, cementum, periodontal ligament, alveolar bone, gingiva, oral mucosa, and the tongue.
2 hours of lecture, 2.5 hours of activity per week Corequisite: DHY 1011

DHY 1022 Oral Tissues II & Medical Emergencies (3) **spring**
This course prepares the student to prevent and manage life-threatening medical emergencies in dental practice. Emphasis is on reducing the likelihood of life-threatening emergencies; recognizing early warning signs and symptoms; implementing appropriate measures for prevention; and proper management of medical emergencies. Basic cell histology, salivary gland histology, and paranasal sinuses and skeletal, muscular, cardiovascular, lymphatic, and nervous systems as they relate to the head and neck are presented. Study of the embryologic development of the face, palate, tongue, and odontogenesis are covered in detail.
2 hours of lecture, 2 hours of activity per week Prerequisite: DHY 1021
Corequisite: DHY 1012

DHY 1030 Dental Radiology (3) **fall**
Dental Radiology is the study, demonstration, and practice of the fundamentals of dental x-ray production and intraoral and extra-oral radiographic techniques utilizing digital imaging. The student learns to recognize the radiographic appearance of normal anatomical structures and common oral disorders.
2 hours of lecture, 2 hours of lab per week Prerequisite: DHY 1022
[Course fee: $50] Corequisite: DHY 2721

DHY 2010 Dental Materials (3) **spring**
This course emphasizes the clinical and theoretical concepts of dental materials and their clinical application.

The fundamental concepts of modern chemistry as they relate to the manipulation and use of dental materials are also addressed. The study of dental materials and their properties provides the student with knowledge of oral health and disease as a basis for assuming the responsibility of assessment, planning, and implementation of preventive and therapeutic services in dental hygiene practice.
2 hours of lecture, 2 hours of lab per week — Prerequisite: DHY 2721
[Course fee: $25] — Corequisite: DHY 2722

DHY 2020 General Pathology & Clinical Dental Pharmacology (3) **spring**
This course introduces clinical pathology and pharmacological management in the treatment of dental patients. The student learns to integrate medical diseases commonly found in dental hygiene clinical practice with the pharmacological agents used in the management of those diseases.
3 hours of lecture per week — Prerequisite: BIO 2120; DHY 1030, 2721
Corequisite: DHY 2722

DHY 2030 Periodontics (3) **fall**
This course guides the student toward an in-depth understanding of the recognition, progression, and treatment of periodontal diseases. Since the dental hygienist provides direct communication to patients in regard to education, prevention, and control of both periodontal diseases and dental caries, they must possess sufficiently detailed knowledge to assist any patient to better understand their specific dental condition. Insufficient, inadequate, or faulty understanding on the part of the hygienist regularly shows itself in varying degrees of unsuccessful prevention and incomplete care for patients.
3 hours of lecture per week — Prerequisite: DHY 1022
Corequisite: DHY 1030, 2721

DHY 2210 Community Oral Health I (2) **fall**
This course introduces the concepts of community oral health with emphasis on advanced research designs, community health issues, and the function of public health programs. It also introduces sociological study with emphasis on core models and concepts associated with dominant sociological perspectives.
2 hours of lecture per week — Prerequisite: DHY 2722
Corequisite: DHY 3821

DHY 2211 Community Oral Health II (1) **spring**
The student uses knowledge gained in DHY 2210 to plan, implement, and evaluate a semester-long community outreach project.
1 hour of lecture per week — Prerequisite: DHY 2210, 3821
Corequisite: DHY 2220, 3822

DHY 2220 Oral Pathology (3) **spring**
Oral Pathology assists the student to integrate knowledge gained from general pathology and basic anatomical, physiological, and dental sciences with the concepts of diseases. Emphasis is on helping the student understand the etiology, histopathology, and treatment of specific oral diseases. The course supports the importance of a comprehensive medical and dental history, as well as the recognition of clinical signs and symptoms of oral pathology. The process of formulating a differential diagnosis of oral lesions based on this information is also emphasized. Oral neoplasia, pulpal pathology, temporomandibular joint disorder, microbial diseases, and selected systemic diseases are highlighted.
3 hours of lecture per week — Prerequisite: DHY 3821
Corequisite: DHY 3822

DHY 2721 Clinical Dental Hygiene II (4) **fall**
This course blends lectures with group discussions to stimulate interest in current clinical situations, theories, and concepts. Emphasis is on the clinical care of special populations, adjunct therapies, and expanding the student's dental hygiene knowledge base.
1.5 hours of lecture, 8 hours of clinic per week — Prerequisite: DHY 1012
[Course fee: $140] — Corequisite: DHY 2030

DHY 2722 Clinical Dental Hygiene III (4) **spring**
This course is a continuation of DHY 2721 and involves clinical practice with patients from Class 0 to Class 5 periodontal conditions. Children, adults, and special populations are treated. Administration of local anesthetics is included in the course.
1.5 hours of lecture, 8 hours of clinic per week — Prerequisite: DHY 2030, 2721
[Course fee: $75] — Corequisite: DHY 2010, 2020

DHY 3010 Evidence-Based Decision-Making in Dental Hygiene (3) **fall**
This course provides fundamental knowledge about evidence-based decision-making and provides tools and skills needed to locate and review research articles and abstracts quickly and easily so that the student can interpret the literature to provide the best possible care and achieve optimum outcomes for patients.
3 hours of online delivery per week

DHY 3015 Contemporary Issues in Dental Hygiene (3) **fall**
This course examines current societal and professional issues and their impact on practice. The student examines the role of the dental hygienist in increasing access to dental care; researches and compares traditional

and alternative practice models; and proposes changes to the health care system to improve delivery. Changing technology in dentistry and dental hygiene; political advocacy; demographic shifts; ethics and professionalism; and the aging of America and its impact on the delivery of dental care are also discussed.
3 hours of online delivery per week

DHY 3020 Advanced Periodontics (3) **spring**
This course expands upon the student's existing knowledge of current concepts in periodontology including etiology; associated risk factors; periodontal medicine; assessment; treatment planning; implementation and evaluation of contemporary treatment modalities; and maintenance therapy. The interrelationship of periodontal treatment with other dental specialties is discussed along with an investigation of the periodontal literature. Emphasis is on the dental hygienist's role in periodontal therapy.
3 hours of online delivery per week — Prerequisite: DHY 2030, 3010

DHY 3030 Dental Hygiene Methodology & Leadership (3) **spring**
This course introduces educational concepts and theory relative to dental hygiene education as well as theories, concepts, and principles of leadership for dental hygiene educational and clinical settings. Topics include leadership theories; educational unit lesson plan development and design; goals and objectives; principles of learning; learning styles and motivation; and classroom instruction using educational media and software.
3 hours of online delivery per week — Prerequisite: DHY 3010

DHY 3821 Clinical Dental Hygiene IV (6) **fall**
This course is a continuation of DHY 2722 involving clinical practice with patients from Class 0 to Class 5 periodontal conditions treating children, adults, and special populations. The administration of local anesthetics is also incorporated.
1.5 hours of lecture, 12 hours of clinic per week — Prerequisite: DHY 2722
[Course fee: $165] — Corequisite: DHY 2210

DHY 3822 Clinical Dental Hygiene V (6) **spring**
This course is a continuation of DHY 3821 and involves clinical practice with patients from Class 0 to Class 5 periodontal conditions treating children, adults, and special populations.
1.5 hours of lecture, 12 hours of clinic per week — Prerequisite: DHY 3821
[Course fee: $100] — Corequisite: DHY 2220

DHY 4010 Advanced Community Oral Health (3) **fall**
This course provides a comprehensive introduction to evidence-based public health practices through the study and evaluation of existing public health programs. Emphasis is on the role of evidence-based research as the key to startup and maintenance of successful dental public health programs. The various components of this course aim to stimulate interaction among learners around important problems and issues facing public health with an emphasis on community oral health practices.
3 hours of online delivery per week — Prerequisite: DHY 3010

DHY 4213 Practice Management (3) **spring**
This course enhances the ability of the student to provide optimum care while functioning within an interdisciplinary dental team or alternative practice settings through learning skills including communication, teamwork, funding, and business and management practices. Focus is on the skills and knowledge necessary for managing a dental practice or an alternative practice setting in order to understand those functions necessary to improve the delivery of services to patients. The student researches traditional and alternative practice settings and develops and presents their own ideal practice plan.
3 hours of online delivery per week — Prerequisite: DHY 3010

DHY 4237 Introduction to Dental Hygiene Research Methods (3) **spring**
This course includes strengths and limitations of quantitative and qualitative research methods while developing methodological skills and proficiencies related to research. Development of a review of the literature, a research proposal, and completion of survey research are included.
3 hours of online delivery per week — Prerequisite: DHY 3010

Diesel (DSL)

DSL 1001 Commercial Driver's License Training (4) **fall**
In this course, the student receives the training and seat time necessary to take and pass Vermont's Commercial Driver's License B exam.
3.5 hours of lecture, 1.8 hours of lab per week
[Course fee: $1,200]

DSL 1010 Steering, Suspension Systems, & Alignment (3) **fall**
This course provides a comprehensive study of the theory, design, construction, and repair of suspension, steering, and braking systems in diesel-powered equipment and trucks. Topics include steering systems; conventional suspension systems; air suspension systems; wheels and tires; and alignment.
2 hours of lecture, 3 hours of lab per week

DSL 1020 Diesel Power Systems (4) **fall**
This course provides a comprehensive study of the theory, design, construction, and repair of the diesel power

plant. Topics include fixed and mobile diesel power systems; engine design (types and components); definition of power and calculations; engine disassembly, reconditioning, and reassembly; cooling and lubrication systems; breathing and retarding systems; and run-in, performance, maintenance, and failure analysis.
3 hours of lecture, 3 hours of lab per week

DSL 1030 Diesel Electronics Lab (1) **fall**
This course is the diesel companion lab to GTS 1120 and includes the practical application of Ohm's law; Kirchhoff's law; analysis, diagnosis, and repair of faulty electrical circuits; and the diagnosis, replacement, and repair of electrical and electronic components.
3 hours of lab per week
[Course fee: $50] Corequisite: GTS 1120

DSL 1050 Preventive Maintenance (3) **spring**
This course presents the development and administration of preventive maintenance programs. Topics include PM schedules; types of services; record-keeping; out-of-service vehicles; winterizing; coolants and additives; oil and lubricants; analysis and additives; contamination control; and track maintenance.
2 hours of lecture, 3 hours of lab per week
[Course fee: $50]

DSL 1070 Diesel Electrical Systems Lab (1) **spring**
This course is the diesel companion lab to GTS 1040. The student engages in lab exercises designed to address specific diesel electrical topics including operation and testing of storage batteries, starting systems, charging systems, and basic accessory systems. The student becomes familiar with various types of test equipment, diagnostic charts, and vehicle wiring schematics.
3 hours of lab per week Corequisite: GTS 1040

DSL 1110 Heavy Duty Braking Systems (3) **spring**
This course provides a comprehensive study of the theory, design, construction, and repair of braking systems in diesel-powered equipment and the performance of wheel alignments on trucks. Topics include alignment; air braking systems; hydraulic and air-over-hydraulic braking systems; ABS and electronic brakes; and noise, vibration, and harshness.
2 hours of lecture, 3 hours of lab per week Prerequisite: DSL 1010

DSL 2010 Fuel Systems (4) **fall**
This course provides a comprehensive study of the theory, design, construction, and repair of diesel fuel systems. Topics include an overview of diesel fuel injection systems; the chemistry of combustion; diesel fuel and alternatives; fuel transfer systems; mechanical injector nozzles and Unit Electrical Injectors (UEI); Bosch, Detroit Diesel, Caterpillar, and Cummins DFI systems; governors; system diagnosis and service; and computerized fuel control systems. Light-duty diesel fuel systems are also presented.
3 hours of lecture, 3 hours of lab per week

DSL 2020 Chassis Electrical & Electronic Systems (4) **spring**
This course gives the student a thorough understanding of advanced diesel chassis electrical and electronic systems and teaches diagnostic and troubleshooting skills. Topics include advanced networks and multiplexing, instrument panels, and AC, lighting, wiper/ washer, alarm, collision avoidance, supplemental restraint, ground-based communication, satellite-based communication, and accessory systems.
3 hours of lecture, 3 hours of lab per week Prerequisite: DSL 1020
[Course fee: $15]

DSL 2030 Hydraulics (3) **spring**
This course provides a comprehensive study of the theory, design, construction, and repair of mobile hydraulic systems. Topics include hydraulic systems and components; hydraulic symbols and engineering drawings; pilot systems; and electronic control systems.
2 hours of lecture, 3 hours of lab per week Prerequisite: DSL 1020

DSL 2040 Power Transmission (3) **spring**
This course gives the student a thorough understanding of power transmission systems and teaches diagnostic and troubleshooting skills. Topics include an introduction to power transmissions; clutches and torque converters; manual transmissions; gear theory; planetary gear theory; hydraulic planetary controls and support systems; powertrain management and electronically controlled transmissions; the Allison commercial Electronic Control (CEC) system; the Eaton AutoShift transmission; drive shafts; final drives; and tracks.
2 hours of lecture, 3 hours of lab per week Prerequisite: DSL 1030
Corequisite: DSL 2020

DSL 2801 DPT Summer Internship (0) **summer**
This course requires a 400-hour internship at a diesel repair facility or OEM dealership. Pass/No Pass.

DSL 2802 DPT Summer Internship Review (1) **fall**
This course provides a critique for the internship in DSL 2801. Pass/No Pass.
[Course fee: $250] Prerequisite: DSL 2801

Economics (ECO)

ECO 2060 Survey of Economics (4) ***fall***

This course studies both micro- and macroeconomic principles and concepts. Course topics include scarcity; human economic behavior; supply and demand; economic markets; gross national product; business cycles; unemployment and prices; recession and inflation; fiscal and monetary policy; and international trade.

4 hours of lecture per week

Education (EDU)

EDU 2051 Teaching Methods I (3) **as required**

This course improves the competence, self-efficacy, and career commitment of new CTE teachers entering from their professions so that their students are intellectually and emotionally engaged in rich, academically rigorous activities in which they develop twenty-first century skills.

45 hours of lecture per term

EDU 2052 Teaching Methods I *(continued)* (3) **fall**

This course is a continuation of EDU 2051. The second of four courses to prepare new CTE teachers in teaching methods, it focuses on further skills to manage the classroom; develop and implement curriculum; and engage in best teaching practices.

45 hours of lecture per term Prerequisite: EDU 2051

EDU 2061 Teaching Methods II (3) **as required**

This course is a continuation of EDU 2052. The third of four courses to prepare new CTE teachers in teaching methods, it focuses on further skills to manage the classroom; develop and implement curriculum; and engage in best teaching practices. This course requires an online component in which the student should participate effectively.

45 hours of lecture per term Prerequisite: EDU 2052

EDU 2062 Teaching Methods II *(continued)* (3) **summer**

This course is a continuation of EDU 2061. The final of four courses to prepare new CTE teachers in teaching methods, it focuses on further skills to manage the classroom; develop and implement curriculum; and engage in best teaching practices. This course revisits the year's curriculum, its application to the classroom, and further improvement based on knowledge and experience.

45 hours of lecture per term Prerequisite: EDU 2061

EDU 2115 Issues & Trends in Technical Education (3) **fall**

This course covers current issues in technical education and includes an in-depth examination of state and federal laws and policies that impact Vermont's career and technical education centers and how these centers can create welcoming, safe, and respectful learning environments for all students. Additional topics include harassment and bullying laws and complaint processes, professional ethics, and state and federal CTE requirements, trends, and funding.

45 hours of lecture per term

EDU 2135 Instruction for Students with Special Needs (3) **as required**

This course teaches technical educators how students learn differently with an overview of applicable education laws for students with and without disabilities and how schools must provide multiple layers of support for students; discussion of assessment, eligibility, the special education process, and the components of an Individualized Education Plan, as well as 504 and EST plans; and how technical educators may provide an environment that's more focused on students' strengths than weaknesses. Also addressed is the collaborative role the technical instructor plays in the education plan developed for these learners.

45 hours of lecture per term

EDU 2200 Assessment in the CTE Classroom (1) **spring**

This course is for educators in career and technical education environments who are striving to implement a proficiency-based learning and assessment approach. Educators use their program's intended learning standards/skills, scope, and sequence documentation and targeted assessments and begin to analyze and adjust assessments to show evidence of proficiency in order to better promote student learning and accountability within the context of proficiency-based learning.

15 hours of lecture per term

EDU 2650 Education Capstone (1) **spring**

This course helps the student create a professional portfolio for Level I Vermont Teacher Licensure. It reviews the Results Oriented Program Approval manual, which serves as a guide to compiling a targeted, thorough, and reflective portfolio.

15 hours of lecture per term
[Course fee: $25] Corequisite: EDU 2061

EDU 2802 Educational Externship (1) **fall**

This is an education externship for the CTE student.

Electromechanical Engineering Technology (ELM)

ELM 3015 Sensors & Instrumentation (3) **fall/spring**
This course introduces the types of sensors used in research and industry to measure physical and mechanical parameters and the standard methods of interfacing these devices. Discussion includes investigation of the underlying physical phenomenon which each transducer exploits and various signal conditioning and interfacing strategies. Typical devices covered include strain gages, LVDTs, load cells, pressure transducers, tachometers, accelerometers, temperature sensors, level sensors, and optical sensors.
2 hours of lecture, 3 hours of lab per week — Prerequisite: ELT 1110 or 2072; MAT 1520; PHY 1042,
[Course fee: $375] — Corequisite: CIS 2025; ELT 1032; MAT 2532

ELM 4015 Electromechanical Power Systems (3) **fall**
This course provides a detailed analysis of the components in high-power hydraulic, pneumatic, and electrical systems. Topics include pumps, pneumatic circuits, safety valves, actuators, electric motors, generators, transformers, relays, solenoids, and high-power semiconductors. Emphasis is on specifications (power ratings), typical uses, and energy conversion issues. Programmable controllers are introduced to demonstrate control and sequencing in these systems.
3 hours of lecture per week — Prerequisite: ELM 3015; MAT 3170
Corequisite: ELM 4241

ELM 4231 Control Systems I (3) **fall**
This course introduces analytical system modeling and the design of controllers for closed-loop electrical and mechanical systems. Topics include finite state machine design and implementation; the development of dynamic systems models using Laplace techniques; block diagram system representation; time-domain and frequency-domain system analysis; the determination of system stability; system error computation; an introduction to controller design; and an introduction to the design of discrete-time controllers using z-transform methods. MATLAB with Simulink is required.
3 hours of lecture per week — Prerequisite: ELT 2061; MAT 3170

ELM 4232 Control Systems II (3.5) **spring**
This course is a continuation of ELM 4231 and introduces advanced system design methodology for complex second-order and higher-order systems. Topics include system modeling methods, performance parameter design trade-offs, the design of multiple feedback loop controllers, z-transforms, and state-space design.
3 hours of lecture, 1.5 hours of lab per week — Prerequisite: ELM 4231
[Course fee: $125]

ELM 4241 Senior Lab (1) **fall**
Lab projects performed in this course are designed to enhance the classroom learning in ELM 4015 and ELM 4231.
3 hours of lab per week — Corequisite: ELM 4015
[Course fee: $125]

ELM 4701 Electromechanical Project I (2) **fall**
This course emphasizes project design, planning, and manufacturing issues. Topics include planning and budgeting; safety in the design; design for manufacturability; fabrication techniques; testing for safety and reliability; and quality control. The student gets a small electrical/electromechanical design on which to apply the lecture material. The student also selects and begins planning a team-oriented project that's completed in ELM 4702. The project must have major software, electrical, and mechanical components.
1 hour of lecture, 3 hours of laboratory per week — Prerequisite: ELT 1032, 2041, 2050, 2061; MEC 1020, 2010, 2071
[Course fee: $250] — Corequisite: ELM 4015, 4231

ELM 4702 Electromechanical Project II (3) **spring**
This course is a continuation of ELM 4701 dealing primarily with issues of large-scale projects. Coordination between members of the design teams is stressed with frequent seminars and mini-presentations to communicate the team's progress. A major presentation of the team project is required at the end of the semester.
1 hour of lecture, 6 hours of laboratory per week — Prerequisite: ELM 4701
[Course fee: $200] — Corequisite: ELM 4232, ELT 3040

Electrical Engineering Technology (ELT)

ELT 1015 Introduction to Engineering (1) **fall**
This course facilitates a successful transition to college and introduces engineering tools and strategies needed as a freshman in ECET programs. The course focuses on orientation to college, academic success strategies, professional development, and an introduction to a degree program. Topics include student rights and responsibilities; student grading and graduation requirements; campus/site resources; time management; note taking; introduction to career opportunities, and program-specific topics. This course provides hands-on experience using technical software and creating technical documentation using many different software programs including Word, Excel, LabVIEW, and Multisim. Topics include terminology, layout, chart creation, effective chart usage, and integrating text and graphics.
3 hours of lab per week
[Course fee: $50] — Corequisite: ELT 1031; MAT 1311

ELT 1031 Electrical Circuits I (4) **fall**
This course introduces DC and AC electrical circuits. Content includes the basic ideas of electrical charge, current, voltage, resistance, energy, power, capacitance, inductance, and the transient behavior of RC and RL circuits. For AC, the concepts of frequency, period, phase, and magnitude of sine waves are developed. The electrical circuit parameters are studied as phasors and complex numbers and expressed in polar and rectangular form. Major AC topics studied include reactance, impedance, power, and resonance. Electric circuit theory includes Ohm's law; Kirchhoff's laws; series and parallel circuits; and electrical sources. Also introduced are voltage and current dividers and Thevenin's Theorem. Lab exercises develop the use of basic measurement equipment, such as the ammeter, voltmeter, and oscilloscope.
3 hours of lecture, 3 hours of lab per week
[Course fee: $50] Corequisite: ELT 1015; MAT 1311

ELT 1032 Electrical Circuits II (4) **fall/spring**
This course is a continuation of ELT 1031 and introduces circuit analysis using advanced network theorems and techniques. It covers topics such as superposition; mesh and nodal analysis; Thevenin's theorem; controlled sources, bridges, power factor correction, transformers, polyphase circuits, filters, parallel resonance, frequency response, and response to non-sinusoidal signals. Lab exercises provide experience in using oscilloscopes, function generators, and frequency counters on circuits.
3 hours of lecture, 3 hours of lab per week Prerequisite: ELT 1031, 2071
[Course fee: $50]

ELT 1110 Introduction to Digital Circuits (3) **spring**
This course introduces basic logic principles, logic circuit definition, and binary number theory. The concepts of combinational logic circuits are developed along with logic circuit generation, minimization, and construction. The course deals with memory and sequential logic circuits including counters, shift registers, and random access memories. State machines are discussed and illustrated through more complex systems. A strong working knowledge of modern CAD tools and technologies, including VHDL and circuit simulators, as well as the function and application of programmable logic devices (PLDs) is developed in the lab.
2 hours of lecture, 3 hours of lab per week
[Course fee: $120]

ELT 1710 Industrial Electricity Safety (2) **fall/spring**
This course provides a survey of various codes applied to the electrical construction industry. Topics include the structure of the National Electrical Code (NFPA 70); various articles and subparts of the NEC; the basic components (conductors, raceways, grounding) that relate to safety; the importance of OSHA, IEEE, ANSI, UL, and other organizations to electrical safety; the importance of arc flash safety; short circuit and ground fault protection; overload protection; and various circuit protection devices and schemes.
2 hours of lecture

ELT 2015 Introduction to Projects (1) **fall**
This course introduces the student to electrical product development and fabrication. Topics include introduction to schematic and circuit layout software and conventions, printed circuit board assembly, enclosures, connectors, scheduling, budgeting, and documentation. Each student works on a common product of reasonable complexity; develops and assembles a printed circuit board; and documents and presents the finished product. The lab portion is intended to develop practical skills in circuit board layout and fabrication, time management, and technical presentation.
3 hours of lab per week Prerequisite: ELT 1110, 2041
[Course fee: $75]

ELT 2041 Electronic Circuits I (4) **spring**
This is an introductory course in electronic circuits that extends DC-AC circuits into active devices and their associated circuitry. Topics include diodes; bipolar junction and field-effect transistors, four-layer devices; the transistor as a small signal amplifier and as a switching element; op-amp circuits; oscillators; switching amplifiers; and interfacing circuits common to computer applications.
3 hours of lecture, 3 hours of lab per week Prerequisite: ELT 1031
[Course fee: $50] Corequisite: MAT 1312

ELT 2042 Electronic Circuits II (4) **spring**
This course is a continuation of ELT 2041 and addresses electronics from a system and applications view rather than a device view. Topics include system issues such as two-port networks, cascaded amplifiers, frequency response, Bode plots, and related topics. Additional topics include differential and operational amplifiers; active filters; linear and switching power supplies; oscillators; and modulation.
3 hours of lecture, 3 hours of lab per week Prerequisite: ELT 2041; MAT 1520
[Course fee: $50]

ELT 2050 Microcomputer Techniques (4) **fall**
This course introduces the use of microcontrollers in electronic circuits and covers concepts of computer architecture such as CPUs, memory, digital input/output, interrupts, and A/D conversion. The student uses microcontrollers with applications such as PWM motor control, OLED displays, analog sensors, pulse counting, switch, and keypad inputs and advances their ability to program embedded electronic devices using state machines

and timing considerations.
3 hours of lecture, 3 hours of lab per week — Prerequisite: CIS 2025 or 2262 or 2271; ELT 1110 or 2072
[Course fee: $175]

ELT 2061 Electromechanical Systems I (4) **spring**
This course starts with an overview of control systems using block diagrams for description and analysis. It introduces electronic operational amplifier circuits at an early stage due to their prevalence in conditioning transducer signals and as analog controller elements. The student uses Laplace transform techniques to predict both first and second order system responses for the typical input functions and examines steady state error and stability and makes algebraic prediction of closed loop responses. The student uses Bode Plot analysis in the frequency domain as an alternative method to the time domain response. PID Controller functions are covered. Programming uses MATLAB; MATLAB with Simulink is required.
3 hours of lecture, 3 hours of lab per week — Prerequisite: ELT 1031 or 2071; MAT 1520; PHY 1042
[Course fee: $50]

ELT 2071 Basic Electricity (3) **fall**
This course introduces the physical concepts of electricity and electrical devices. Fundamentals of power, resistance, inductance, capacitance, motors, and generators are covered from the standpoint of their relationship to mechanical applications.
2 hours of lecture, 3 hours of lab per week — Prerequisite: MAT 1312
[Course fee: $50]

ELT 2072 Electronics (3) **spring**
The student examines linear and digital electronics, including PLCs, from the standpoint of the electrical-mechanical interface. Topics include concepts of sensors and transducers, relays, diodes, power supplies, solid state switches, and integrated logic circuits.
2 hours of lecture, 3 hours of lab per week — Prerequisite: CIS 1050; ELT 2071 or MEC 1050
[Course fee: $50]

ELT 2073 LabVIEW (3) **as required**
This course introduces the basics of LabVIEW, the program and system design platform. The student develops and uses a series of VIs, test, and control systems within the LabVIEW environment. The student explores advanced data analysis using built-in program libraries with results displayed on user-defined graphical readouts. myRIO is required.
2 hours of lecture, 3 hours of lab per week — Prerequisite: ELT 1031 or 2071
[Course fee: $300]

ELT 2075 Programmable Logic Controllers (3) **spring**
The course presents PLC design methodology, programming procedures, and practical system implementation topics in an interactive lecture setting. The design principles discussed during lecture are reinforced with demonstrations and participative exercises.
3 hours of lecture per week — Prerequisite: ELT 1031; MAT 1312

ELT 2130 Industrial Electronics (4) **spring**
This multi-purpose course acquaints the student with the electronic devices, circuits, and computer techniques used to control industrial operations. Topics include sensors and related instrumentation; power switching devices; DC and AC motors; stepping and brushless motors; and PLCs. The student investigates application and control issues involved with these devices as time permits.
3 hours of lecture, 3 hours of lab per week — Prerequisite: ELT 1032, 2041; MAT 1520
[Course fee: $50] — Corequisite: ELT 2042

ELT 2210 Introduction to Solid State Lighting (3) **fall**
This course introduces the fundamentals of solid state lighting systems. The student gains experience using various LEDs, optics, and heat sinks to create a total lighting solution and studies various applications for using LEDs for lighting.
2 hours of lecture, 2 hours of lab per week — Prerequisites: MAT 1312; PHY 1041 or 2041
[Course fee: $150]

ELT 2720 Electrical Project (2) **spring**
This course introduces the student to electrical product development and fabrication. Topics include schematic and circuit layout conventions; printed circuit board assembly; enclosures; connector and cabling options; and scheduling, budgeting, and documenting the project. Each student works on a product of reasonable complexity; develops and assembles a printed circuit board; and documents and presents the finished product.
1 hour of lecture, 3 hours of lab per week — Prerequisite: ELT 2015, 2041, 2050
[Course fee: $150] — Corequisite: CIS 2151 or ELT 2130

ELT 3010 Digital Circuits II (3) **fall**
This course extends the student's skill with digital hardware. It covers more advanced topics including advanced digital design techniques. The student examines various design methodologies such as state machine design and hardware description languages. Applications focus on the design of computer hardware subsystems like arithmetic logic units and memory. Labs illustrate the various methods for design entry such as schematic entry

and VHDL, simulation, and testing. Designs are implemented using commercial PLDs.
2 hours of lecture, 2 hours of lab per week — Prerequisite: ELT 2050
[Course fee: $100]

ELT 3040 Electronic & Data Communications (3.5) **spring**
This course introduces concepts necessary to understand data communications in today's networked world, including both analog and digital communications. Topics include media characteristics; Fourier series analysis; frequency division multiplexing, noise, and modulation techniques; network protocols; data encoding techniques; error detection and correction; encryption; and data compression.
3 hours of lecture, 1.5 hours of lab per week — Prerequisite: CIS 2025; ELT 2050; MAT 1520
[Course fee: $50]

ELT 3050 Microprocessor Techniques II (4) **spring**
This course expands the ability to use microcontrollers gained in ELT 2050. Topics include proper embedded software techniques, real time operating systems, use of state machines, applications using common communication protocols, interfacing to sensors, and display devices. The student learns how to create mixed-language applications using both C and assembly in a structured programming environment.
3 hours of lecture, 3 hours of lab per week — Prerequisite: ELT 2050
[Course fee: $150]

ELT 3053 Electronics III (4) **fall**
This course builds on the introduction to solid state devices and analog systems in ELT 2041 and ELT 2042 and incorporates current devices and techniques in the industry. The course is divided into four main topics: power management (including buck and boost switching power supplies, switched capacitor, low-voltage power control circuitry, and drivers); noise, electromagnetic frequency spectrum, AM modulation, frequency modulation, and receivers; RF concepts and high-frequency behavior of passive components and transmission line concepts; and phase lock loop and frequency multipliers. MATLAB with Simulink is required.
3 hours of lecture, 3 hours of lab per week — Prerequisite: ELT 2042; PHY 1042
[Course fee: $50]

ELT 3070 Semiconductor Technology (3) **fall**
This course gives the student a broad background in semiconductor technologies that are at the foundation of all computer and communication systems in existence today. It begins with a survey of the unit processes involved in creating CMOS semiconductor chips like lithography, reactive ion etch, and ion implant. It then migrates to the tools and methodologies involved in creating more complex semiconductor circuits such as creation of standard logic libraries, schematics, and layout. Along the way, the student examines electrical properties of materials and the DC and digital circuit concepts that motivate much of the activity to understand the challenges facing manufacturers and designers in this globally vital industry.
3 hours of lecture per week — Prerequisite: MAT 1312

ELT 4010 Computer Architecture (3) **fall**
This course discusses the architecture of computer systems, both inside and outside the CPU. Topics include pipelines, cache, floating-point unit, RISC vs. CISC architecture, branch prediction, pipeline interlocks, and coordinating SMP machines. Additional topics cover the system at large (busses of various types, memory architecture, disk controllers, NICs, etc.) The emphasis is on real systems and characteristics of current technology.
3 hours of lecture per week — Prerequisite: ELT 3050

ELT 4020 Digital Signal Processing (3) **spring**
This course covers DSP theory and applications from an introductory to an intermediate level. The implementation of DSP algorithms and mathematical functions such as IIR and FIR filters, correlation routines, DFTs, and IDFTs are examined. MATLAB with Simulink is required.
3 hours of lecture per week — Prerequisite: ELT 2050; MAT 2532

ELT 4701 Electrical Project I (2) **fall**
This course emphasizes project design, planning, and manufacturing issues. Topics include planning and budgeting; safety in the design; design for manufacturability; fabrication techniques; testing for safety and reliability; and quality control. The student gets a small electrical/electromechanical design on which to apply the lecture material. Students also select and begin planning a major, team-oriented project with major software and electrical components that's completed in ELT 4702.
1 hour of lecture, 3 hours of lab per week
[Course fee: $250] — Corequisite: ELM 4015, 4231

ELT 4702 Electrical Project II (3) **spring**
This course is a continuation of ELT 4701 and deals primarily with issues of large-scale projects. Coordination between members of design teams is stressed with frequent seminars and mini-presentations to communicate the design and team progress. A major presentation of a team project is required at the end of the semester.
1 hour of lecture, 6 hours of lab per week — Prerequisite: ELT 4701
[Course fee: $250] — Corequisite: ELM 4232; ELT 3040

Emergency Medical Services (EMS)

EMS 1020 The Art of Paramedicine (2) fall
This interactive course prepares the student to manage human relations challenges. Discussions encourage broader views and an awareness of the uniqueness of self and humankind and explore the finer aspects of communication, listening, assertiveness, and documentation. The student learns the importance of confidentiality; legal and ethical behavior; stress management; scene management; and the roles and responsibilities of the paramedic. Other topics covered include public health; workforce safety and wellness; the impaired provider; research in EMS; the history of EMS; and EMS systems.
2 hours of lecture per week — Corequisite: EMS 1050

EMS 1030 Pharmacology & Medication Administration for the Prehospital Professional (3) fall
This course covers the concepts of pharmacology needed to understand and safely administer standard prehospital medications. Topics covered include pharmacokinetics, pharmacodynamics, medication administration, drug dosage calculations, pharmacological terminology, drug legislation, drug references, toxicology, vascular access, and blood products.
3 hours of lecture per week — Corequisite: BIO 2011; EMS 1050

EMS 1040 Airway Management for the Prehospital Professional (1) fall
This course prepares the student to manage adult, pediatric, and infant airways. Emphasis is on excellent Basic Life Support skills and progresses through the techniques of common prehospital Advanced Life Support airway skills. The student uses scenarios and simulation prior to advancing to clinical and field opportunities to demonstrate ALS skills.
1 hour of lecture per week — Corequisite: BIO 2011; EMS 1050

EMS 1050 Paramedic Principles & Practices I (2) fall
This interactive lab-based course assesses the student's Basic Life Support skills including BLS management, CPR, AED, and oxygen therapy. The student learns Medical Assessment and Trauma Assessment at the ALS provider level and uses simulation and scenario-based activities to incorporate this new knowledge. Upon successful completion of the applicable portions of this course, the student is allowed to advance to the clinical setting (OR and ED). Paramedic lab kits are required. Pass/No Pass.
4 hours of lab per week — Corequisite: EMS 1020, 1030, 1040
[Course fee: $100]

EMS 1210 Medical Emergencies for the Prehospital Professional (4) spring
This course covers common medical complaints encountered by the paramedic. The student uses critical thinking skills to develop differential diagnoses and plans of care. Topics covered include respiratory, immunology, hematology, sepsis, endocrine, gastrointestinal, genitourinary, non-traumatic musculoskeletal disorders, allergic reactions, psychological, and neurological emergencies and conditions. The course reinforces and enhances knowledge of anatomy, physiology, and pharmacology and includes Advanced Medical Life Support (AMLS). Classroom, simulation, and lab experiences prepare the student for clinical application of knowledge and skills.
4 hours of lecture per week — Prerequisite: EMS 1801
Corequisite: BIO 2012; EMS 1240

EMS 1230 Cardiology for the Prehospital Professional (3) spring
During this intensive course, the student gains in-depth knowledge of cardiac electrophysiology; static and dynamic cardiac rhythm interpretation; arrhythmia management; and assessment and management of common prehospital cardiac-related problems. Topics include 12-lead EKG interpretation; Acute Coronary Syndrome and ST Elevation Myocardial Infarction management; and Advanced Cardiac Life Support (ACLS). Lecture, scenarios, and simulation opportunities are included to enhance learning.
3 hours of lecture per week — Prerequisite: EMS 1801
Corequisite: EMS 1240

EMS 1240 Paramedic Principles & Practices II (2) spring
This is the lab and clinical component of EMS 1210 and EMS 1230. The student experiences a variety of medical scenarios and simulations requiring paramedic-level assessments and interventions and demonstrates communication skills, teamwork, documentation, and transfer of theory into practice in the lab setting. The student participates in clinical rotations in the ED, OR, ICU, maternity, pediatric, and psychiatric units. Paramedic lab kids and uniform are required. Pass/No Pass.
4 hours of lab per week
[Course fee: $100] — Corequisite: EMS 1210, 1230

EMS 1290 Paramedic Clinical Time (Extended) (1) as required
The student who didn't complete all of the clinical objectives in the 240 scheduled hours during the regular didactic portion of the program may schedule additional time to complete the necessary objectives. Locations and times are on a case-by-case basis depending on what objectives still need to be achieved. Paramedic lab kids and uniform are required. These hours must be completed prior to the start of the next semester. Pass/No Pass.
Prerequisite: Completion of all didactic work

EMS 1310 Obstetrics, Gynecology, & Pediatrics for the Prehospital Professional (3) summer
During this lecture-based course, the student learns to assess and manage gynecological and obstetrical emer-

gencies and childbirth and to care for the pediatric patient from birth through age 18. The material includes topics of abuse and neglect, pediatric resuscitation, neonatal resuscitation, and technology-dependent children.
3 hours of lecture per week Prerequisite: EMS 1802
Corequisite: EMS 1350

EMS 1320 Trauma Management for the Prehospital Professional (3) summer
This course guides the student through the skills and knowledge needed to assess and manage a patient with traumatic injuries and shock. Topics include trauma systems; hemorrhage and shock; special considerations; and the following types of trauma: blunt force; penetrating; soft-tissue; burn; orthopedic; thoracic; abdominal; head, face, neck, and spinal; nervous system; and environmental.
3 hours of lecture per week Corequisite: EMS 1350

EMS 1330 Emergency Medical Services Operations (2) summer
The student develops their role as Emergency Medical Services leaders in this course, learning about operations for ground and air ambulances; responding to Multiple-Casualty Incidents, Incident Management and the Incident Command System; Special Rescue Operations; dealing with hazardous materials on emergency scenes; crime scene awareness; special considerations for rural EMS; and terrorism. HazMat awareness, ICS, and NIMS are completed via distance learning.
2 hours of lecture per week Corequisite: EMS 1350

EMS 1340 Special Considerations for the Prehospital Professional (1) summer
During this highly interactive course, the student explores challenges when dealing with geriatric, bariatric, and disabled clients. The course presents normal differences based on age, size, and underlying medical problems and the student is challenged to think critically about providing the best care possible. Topics also include technology-dependent patients and the logistics of emergency calls versus transfers.
1 hour of lecture per week Corequisite: EMS 1350

EMS 1350 Paramedic Principles & Practices III (2) summer
This is the lab and clinical portion of EMS 1310, 1320, 1330, and 1340. The student experiences a variety of trauma, special circumstances, and EMS operations scenarios and simulations to enhance their ability to respond appropriately to similar situations in the field. During these 10 weeks, the student spends time in the OR; ICU; ED; Pediatrics; Labor and Delivery; and mental health. Pass/No Pass.
4 hours of lab per week
[Course fee: $100] Corequisite: EMS 1310, 1320, 1330, 1340

EMS 1801 Paramedic Field Experience I (1) fall
The first semester field experience transitions the student from the role of helper/BLS-provider to team leader. During this first semester, the student rides a total of 36 hours with a paramedic preceptor. The student incorporates skills learned in first semester classes. Vermont Tech Paramedic uniform is required. Pass/No Pass.
36 hours of field experience per term Corequisite: BIO 2011; EMS 1020, 1030, 1040, 1050

EMS 1802 Paramedic Field Experience II (1) spring
In the second semester, the student demonstrates an expanded depth of skills and knowledge, including application of new information gained in EMS 1210 and EMS 1220. The student continues to work with a preceptor to meet the objectives, including providing safe and therapeutic care, effective communication, and demonstrating an understanding of the material covered in class. Vermont Tech Paramedic uniform is required. Pass/No Pass.
36 hours of field experience per term Corequisite: BIO 2012; EMS 1210, 1230

EMS 1803 Paramedic Field Experience III (1) summer
In the third semester, the student spends an additional 36 hours riding with their paramedic preceptor, learning how to act as the team leader on calls and honing their professional communication skills. Assessment is based on the student's ability to perform the functional job description of a paramedic, as well as their ability to coordinate and manage a scene, the patient, and provide safe and effective care. Vermont Tech Paramedic uniform is required. Pass/No Pass.
36 hours of field experience per term Corequisite: EMS 1310, 1320, 1330, 1340, 1350

EMS 1804 Paramedic Field Internship (0) as required
The student who has successfully completed all didactic portions of the program may enroll in this course. During this immersion experience, the student acts as a paramedic under the supervision of a preceptor. The student acts as the team leader: managing the scene, patient, and crew. This session is a minimum of 240 hours. Time is extended as needed to meet the objectives of the internship portion. Assessment is based on the student's ability to perform the functional job description of a paramedic, as well as their ability to coordinate and manage a scene, the patient, and provide safe and effective care. This course must be completed prior to the start of the next semester. Vermont Tech Paramedic uniform is required. Pass/No Pass.
Minimum of 240 hours, maximum of 1 year drive time Prerequisite: EMS 1803

English (ENG)

ENG 1042 Introduction to College English (3) fall/spring
In this course, the student develops their reading skills by analyzing examples of professional writing and develops their writing skills through internal writing and at least five essays. The student reviews principles of grammar

and sentence construction and is introduced to rhetorical strategies. Emphasis is on the process of revision through class editing of essays. Word processing and computer network skills are taught in the lab.
3 hours of lecture, 1 hour of lab per week

ENG 1060 Freshman Composition (3) **as required**
In this course, the student thinks and reads critically, writes effectively, and understands the fundamentals of literary analysis and written composition. Classroom discussion of assigned readings and the construction of related essays are stressed. A required research paper demonstrates the student's use of appropriate research materials in terms of locating, organizing, and presenting their materials in standard MLA format. The writing graduation standard and information literacy standard are assessed in this course.
3 hours of lecture per week

ENG 1061 English Composition **(3)** **fall**
In this course, the student reads and thinks critically, writes effectively, and understands the fundamentals of literary analysis and written composition. Classroom discussion of assigned readings and the construction of related essays are stressed. A required research paper demonstrates the student's use of appropriate resource materials in terms of locating, organizing, and presenting their materials in an accepted format. The writing graduation standard and information literacy standard are assessed in this course, which is writing-intensive.
3 hours of lecture per week

ENG 2080 Technical Communication (3) **as required**
This course is a comprehensive study of the principles, methods, and forms needed to produce clear and effective communications and technical reports, both written and oral. The course stresses business correspondence and the use of graphics in documents and oral presentations. A major technical report is also required and is used for assessment of the VTC writing graduation standard.
3 hours of lecture per week Prerequisite: ENG 1061

ENG 3590 The Films & Novels of Stephen King (3) **as required**
This course offers a critical inquiry into the films, novels, life, and works of bestselling author Stephen King. Through critical analysis of films such as *Carrie*, *Stand by Me*, *Misery*, *The Shining*, and *Storm of the Century,* the student explores their personal relationship to horror fiction while entertaining a central, pivotal question: what does horror manifestation in popular culture reveal about the American psyche? This course seeks to unravel our cultural fascination with themes of horror fiction while exploring King's works as both a continuation of the literary Gothic canon and a driving force in the cinematic tradition of American horror films.
3 hours of lecture per week Prerequisite: ENG 1061

Equine Studies (EQS)

EQS 1010 Introduction to Equine Studies I (4) **fall**
This course introduces the student to the history of the horse, the equine industry, and basic stable management principles. The student combines theory and practice by providing daily horse care and stable maintenance under supervision. Topics include the industry and careers; structure and anatomy; regular health assessment; first aid; bandaging; use of restraints; safe handling practices; deworming schedules; clipping; and basic hoof care.
3 hours of lecture, 2 hours of lab per week
[Course fee: $100]

EQS 1012 Introduction to Equine Studies II (2) **spring**
This course introduces the student to the college and provides an overview of the program. Topics covered include an examination of the equine industry in the US; equine safety and ethics; the equine in human history; equine psychology; fundamentals of equine behavior and training; breeds and conformation; disciplines; equine management; and career options in the equine industry.
2 hours of lecture per week
[Course fee: $50]

EQS 1032 Stable Management (3) **spring**
This course places the student in a position of responsibility for daily horse care under the supervision of a supervisor. Lecture topics include insurance; contracts; facilities; arena footing; fencing; pasture management and rotation; basic feeding principles; fire safety; manure management; and trailering.
2 hours of lecture, 2 hours of lab per week
[Course fee: $100]

EQS 1220 Horse Judging (1) **spring**
This course introduces the analysis of conformation, movement, and function as well as the theory and practice of horse and horse show judging. The course prepares the student to participate on the Vermont Tech horse judging team or pursue certifications in judging.
3.5 hours of instruction per month
[Course fee: $50]

EQS 2011 Equine Training I (3) **fall**
The student learns safe and effective techniques for training the green or unbroken horse for various disciplines and develops skills to critically analyze various trainers and strategies. The course includes discussion sessions

during which the student views and evaluates equine behavior and the training methods of professional trainers. The lab includes hands-on practice in groundwork including round-penning, classical lunging, and long-lining with a strong emphasis on safety and developing a positive attitude in the horse. The training horses are introduced to tack and equipment as well as desensitization training.
2 hours of lecture, 2 hours of lab per week
[Course fee: $200]

EQS 2020 Equine Lameness (3) fall
This course teaches the student to recognize lameness and gait abnormalities in the horse. They learn how to evaluate lameness using physical examination, palpation, and gait evaluation and see veterinary diagnostic methods. They also learn treatments for common skeletal, muscular, neurological, and hoof-related issues. The student becomes a well-educated equine professional who can recognize lameness, handle the horse appropriately, and make educated decisions about treatment options.
2 hour of lecture, 2 hours of lab per week Prerequisites: EQS 1032; VET 1020
[Course fee: $200]

EQS 2025 Equitation (1) fall/spring
In this riding course, the student develops at their own pace and learns a variety of riding methods. The student learns about correct use of tack for various disciplines or purposes as well as correct technique in their choice of dressage, jumping, hunt seat equitation, or stock seat/western. Not all topics are covered in each course, but all topics are addressed within the sequence, which every student must complete in the correct order. All students are encouraged to take at least one semester of dressage and western horsemanship. This course is repeatable for credit. Pass/No Pass.
2 hours of activity per week
[Course fee: $600]

EQS 2041 Equine Massage I (3) fall
This course introduces the theory and practice of equine massage. It includes an intensive study of equine anatomy, including muscular and skeletal structures with a focus on identifying soreness and other problems affecting the equine athlete, developing strategies for addressing the problems, and applying therapeutic massage to improve the horse's mobility, range of motion, and general well-being.
2 hours of lecture, 2 hours of lab per week Prerequisite: VET 1020
[Course fee: $100]

EQS 2801 EQS Internship (0) summer
In this internship, the student participates in an experience of their own choosing and coordinates with the Program Director about the terms of the internship, including number of hours and responsibilities. The student keeps a daily log of hours and activities in addition to completing other required documents. Pass/No Pass.
45 hours minimum per term

EQS 2802 EQS Internship Review (1) fall
This is the review portion of EQS 2801. Pass/No Pass.
[Course fee: $300] Prerequisite: EQS 2801

EQS 3012 Equine Training II (3) fall
This course focuses on refining the green-broke and the trained horse. Attention is given to producing lightness; correcting head and body position; using the horse's body correctly; achieving balanced and correct gaits; and developing smooth transitions.
2 hours of lecture, 2 hours of lab per week Prerequisite: *C* or better in EQS 2011
[Course fee: $200]

EQS 3031 Riding Instruction I (3) fall
This course exposes the student to the standards of three equitation seats: dressage, western, and hunt seat. The student participates in detailed analysis of human and equine biomechanics; organization and planning of lessons; and implementation of skills and techniques common to all disciplines as well as hands-on problem-solving of biomechanical problems.
2 hours of lecture, 2 hours of lab per week
[Course fee: $200]

EQS 3032 Riding Instruction II (3) spring
The student focuses on the processes of learning and teaching, the way that people process information, and the elements necessary for excellent instruction. The course incorporates knowledge of human and equine biomechanics from EQS 3031 using communication skills; evaluating and working with different learning modalities; and the analysis, organization, and planning of lessons.
2 hours of lecture, 2 hours of lab per week Prerequisite: EQS 3031
[Course fee: $200]

EQS 3042 Equine Massage II (3) spring
This course builds upon the foundations established in EQS 2041 with increased attention to muscle and other tissue loosening and alignment to improve equine movement, performance, and comfort. Topics include massage practices, stretching, saddle fit (English and western), and conformation evaluation. Lab sessions provide the

student with increasing responsibility for determining areas of concern, developing plans for improvement, and implementing and assessing such measures.
2 hours of lecture, 2 hours of lab per week — Prerequisite: EQS 2041
[Course fee: $100]

EQS 4110 Equine Health & Diseases (3) **spring**
This course provides an in-depth exploration of issues relating to equine health management, including signs of health and illness; diseases and their causes; preventive and maintenance care measures; and emergency care for horses.
2 hours of lecture, 2 hours of lab per week
[Course fee: $100]

EQS 4610 Equine Studies Senior Seminar (3) **spring**
In this capstone course, the student proposes, gains approval for, and completes a research project on a specific area of the equine industry. The project includes a hands-on component and concludes with a substantive written report and an oral presentation. Classes include employment search strategies, guest speakers from various areas of the equine industry, and discussions of current issues within the industry.
3 hours of lecture per week
[Course fee: $100]

Fire Science (FSC)

FSC 1010 Principles of Building Construction & Fire Protection (3) **fall**
This course explores the components of building construction that relate to fire and life safety and how understanding building types and construction principles improves fire suppression and fire ground safety. The elements of construction and design of structures are key factors when inspecting buildings, pre-planning fire operations, and operating at emergencies. The emphasis of this course is firefighter safety.
3 hours of lecture per week

FSC 1030 History & Impact of Fire in America (3) **fall**
This course provides an overview of the history and impact of fire in American society. Course material includes a general understanding of fire and combustion; the history of fire fighting in the US; analysis of significant fires in American history and their impact; discussion of the catastrophic theory of management as it pertained to these fires; the impact of the urban wildfire interface; and how fire affects society and the family unit.
3 hours of lecture per week

FSC 1220 Fire Service Leadership (3) **spring**
This course develops a foundation of leadership skills for the firefighter and officer. Course content includes the identification of leadership styles, group dynamics, diversity, conflict resolution, managing change, and problem solving. This course emphasizes personal leadership development and supervisory skills using applied research, readings, group exercises, and classroom discussion.
3 hours of lecture per week

FSC 1221 Firefighting Services I (3) **fall**
This course provides an overview of fire services; career opportunities in related fields; the philosophy and history of fire protection and service; fire loss analysis; the organization and function of public and private firefighting services; the fire department as part of local government; laws and regulations affecting the fire service; fire protection systems; and fire strategy and tactics. The student learns basic fire suppression, rescue, and extrication skills. This course includes the competency-based skill development necessary to perform fire/rescue duties and leads to Vermont Pro-Board Certification as a Firefighter I through the Vermont Fire Academy.
2 hours of lecture, 1 hours of lab per week, some weekend training required
[Course fee: $100]

FSC 1222 Firefighting Services I (Continued) (3) **spring**
This course is a continuation of FSC 1221.
2 hours of lecture, 1 hours of lab per week, some weekend training required — Prerequisite: FSC 1221
[Course fee: $100]

FSC 2020 Fire Service Hydraulics & Water Supply (3) **spring**
This course provides a foundation of theoretical and mathematical knowledge to understand the principles of fluids and the use of water in fire protection. The student applies hydraulic principles and formulas to analyze, plan, and solve water supply problems. Fire ground applications include pump operations; hose lines; nozzle pressures and providing adequate water supply for fire suppression; tanker shuttles; and large diameter hose.
3 hours of lecture per week — Prerequisite: MAT 1210

FSC 2210 Fire Administration (3) **spring**
This course introduces the student to the organization and management of a fire department and the relationship of government agencies to the fire service. Development of fire service leadership traits are viewed from the perspective of the chief officer. Classroom content includes grant writing; extensive budget development and a budget presentation project; public presentation skills; and analysis of the fire department as a business.
3 hours of lecture per week

FSC 2220 Firefighting Strategy & Tactics (3) **fall**
This course provides an in-depth analysis of the principles of fire control through utilization of personnel, equipment, and extinguishing agents on the fire ground. The student makes and documents decisions based on computer generated scenarios. This course is a capstone course in the Fire Science program, drawing on knowledge and understanding of fire dynamics obtained in other courses.
3 hours of lecture per week

FSC 2230 Chemistry of Hazardous Materials (3) **spring**
This course explores basic fire chemistry relating to the categories of hazardous materials including problems of recognition, reactivity, and the health hazards encountered by firefighters. It also prepares the student to determine an initial course of action for emergency responders and understand strategies, tactics, and resource management techniques for handling hazardous materials incidents.
3 hours of lecture per week Prerequisite: CHE 1020

FSC 2240 Fire Protection Systems (3) **spring**
This course focuses on the features of the design and operation of fire alarm systems; water-based and special hazard fire suppression systems; and water supply. Classroom activities involve the use of fire extinguishers, wet/dry/residential sprinkler systems, and alarm notification systems.
3 hours of lecture per week

FSC 2250 Fire & Life Safety Educator (3) **fall**
This course focuses on the history and philosophy of fire prevention; the organization and operation of a fire prevention bureau; use of fire codes; identification and correction of fire hazards; use of the NFIRS system; and the relationships of fire prevention with built-in fire protection systems, fire investigation, and fire and life-safety education in community schools. The student prepares presentations, conducts a safety day community program, and studies the effects of tragic fires which led to new fire safety standards.
3 hours of lecture per week

FSC 2260 Career Wellness: CPAT Prep (3) **spring**
This course provides the student with information regarding health and wellness related to the field of public safety. The knowledge gained through this class serves as a foundation for mental and physical fitness with the goal of preparation for the Candidate Physical Agility Test (CPAT). While some of the topics in this class are specific to firefighting, ties can be drawn between all sectors of public safety.
3 hours of lecture per week

FSC 2820 FSC Internship (3) **as required**
This internship provides an employment experience with one of several career fire departments or other emergency service organizations.
Prerequisite: FSC 1021

Ground Transportation Services (GTS)

GTS 1040 Vehicle Electrical Systems (3) **spring**
This course gives the student a thorough understanding of electrical systems and teaches diagnostic and troubleshooting skills. Topics include the operation and testing of storage batteries, starting systems, charging systems, ignition systems, and basic accessory systems. The student becomes familiar with various types of test equipment, diagnostic charts, and vehicle wiring schematics.
3 hours of lecture per week
[Course fee: $50] Corequisite: ATT 1110 or DSL 1070

GTS 1120 Vehicle Electronics (3) **fall**
This course introduces the student to general vehicle electrical and electronic principles, theory, and components. Topics include Ohm's law, circuit analysis, basic circuits, diodes, transistors, relays, and solenoids.
3 hours of lecture per week
[Course fee: $75] Corequisite: ATT 1090 or DSL 1030

History (HIS)

HIS 2140 The Civil War **(3)** **as required**
This course covers three episodes in American history encompassing the Civil War period: the events causing tension between the North and South and the primary cause of the war; military and political aspects of the war for both the Northern and Southern armies and governments; and the aftermath of the war and how it affected minorities in the United States.
3 hours of lecture per week Prerequisite: ENG 1061

HIS 3056 Race in America **(3)** **as required**
This course uses a multidisciplinary lens to analyze American racial attitudes and beliefs over time. The course emphasizes the historical roots of American racism and how the racial perceptions of various types of Americans have evolved as material circumstances and ideological traditions changed. Readings, lectures, discussion, and guest speakers address both progressive and regressive racial attitudes. The student explores how racial attitudes have interacted with culture, politics, work, gender relations, violence, religion, and ethnicity to profoundly

shape twenty-first century America.
3 hours of lecture per week | Prerequisite: ENG 1061

HIS 3165 Vermont History **(3)** **as required**
This course introduces the student to the major historical themes and questions that have shaped the state of Vermont over time and provides a close look at Vermont's historical, social, and economic development; its problems as a republic; the struggle for statehood; and its constitution and government today. The instruction observes Vermont's place in American civilization from its inventive, cultural, educational, literary, and political contributions.
3 hours of lecture per week | Prerequisite: ENG 1061

Humanities (HUM)

HUM 2020 Bioethics **(3)** **as required**
This course explores ethical issues and decision-making processes involved in biomedical research and practice as viewed from legal, medical, social, and philosophical perspectives. The student applies philosophical frameworks, theoretical approaches, argument development skills, and critical thinking to address moral questions pertaining to the beginning and end of life; biotechnology and genetic experimentation; justice in healthcare; responsibilities of physicians; environmental health; and other pertinent subjects.
3 hours of lecture per week | Prerequisite: ENG 1061

HUM 2040 The Holocaust **(3)** **as required**
This course explores the Holocaust from historical, political, moral, and religious perspectives. The student uses historical documents, film, literature, and art to explore various dimensions of this watershed event in western civilization.
3 hours of lecture per week | Prerequisite: ENG 1061

HUM 3025 Myth: The Ties That Blend & Bind (3) **as required**
This course encourages the student to explore a variety of myths from ancient cultures with special attention to their influence on and reflection of social beliefs and structures. The course highlights the common elements shared by all mythic structures as a means of examining the global human experience and search for meaning throughout the ages. This course is writing-intensive.
3 hours of lecture per week | Prerequisite: ENG 1061

HUM 3050 Theories of Science & Technology (3) **as required**
This course explores a variety of historical and philosophical perspectives on science and technology. Special emphasis is on the relationships of science; technology; social and political structures; and individual responsibility. Topics include the nature of science and technology; elitism in science and technology; goals and control; and the role of the individual scientist or technician.
3 hours of lecture per week | Prerequisite: ENG 1061

HUM 3060 Cyberethics (3) **as required**
This course introduces the student to fundamentals of ethical inquiry and the ethical implications of current computing technologies and applications.
3 hours of lecture per week | Prerequisite: ENG 1061

HUM 3070 The Vampire in Literature, Culture, & Film (3) **as required**
The image of the vampire has long held sway with popular imagination. Since the publication of Bram Stoker's *Dracula* in 1897, the vampire has become a staple of popular culture, appearing in literature, advertisements, cartoons, music, television shows, and film. This course examines the role of the vampire in literature, culture, and film. Through the reading of texts and the viewing of films, the student understands the fundamental aspects of Gothic literature and formulates their own ideas as to the importance of the vampire archetype. In addition, the student learns to identify vampiric elements in literature and film and enhances their knowledge and understanding of the vampire's role in popular culture. This class is writing-intensive.
3 hours of lecture per week | Prerequisite: ENG 1061

HUM 3210 Folklore, Literature, & Legends of New England (3) **as required**
Grounded in academic theory and focusing on the literature, folklore, and legends of New England, this course explores broad issues of representation, cultural, social, and political issues and the shaping of a uniquely New England culture and people. Through the study of folklore in its various forms; classic and contemporary literature by New England authors; and oral legends, the student gains a broader understanding of New England, its history and culture and of their own role in shaping the culture and world in which they live. A field trip immerses the student in the living history of New England. This class is writing-intensive.
3 hours of lecture per week | Prerequisite: ENG 1061

HUM 3490 Crime & Punishment in Film & Literature (3) **as required**
This course introduces the student to the fundamental legal and ethical issues in American crime and criminal justice through film and literature and examines dilemmas in crime and punishment. The student discusses literature and films in the context of the humanities.
3 hours of lecture per week | Prerequisite: ENG 1061

HUM 4010 East & West Holistic Healing (3) **as required**
This course introduces the student to holistic healing; complementary and alternative therapies; energy and elemental work; multicultural perspectives; and traditional healers. The student understands, evaluates, and appreciates traditional holistic models of health and healing, as well as complementary and alternative therapies, and learns and applies at least one chosen modality in their healing work.
3 hours of online instruction per week Prerequisite: ENG 1061

Interdisciplinary (INT)

INT 0010 Effective Learning (2) **fall/spring**
This course introduces the student to behaviors and skills necessary for academic success. Through a series of readings, journals, lectures, and essays, the student develops skills in setting goals; developing a sense of personal ownership and responsibility; and developing self-awareness, along with the more mechanical skills of note-taking and organization. Particularly appropriate for the student on academic probation, the learning acquired in this course enables them to achieve and maintain good academic standing. Credits don't count toward graduation.
2 hours of lecture per week

INT 1005 Self, Career, & Culture (3) **spring**
This interdisciplinary course designed for freshman investigates the relationships between individuals, their careers, and the social environments in which they live. The course explores the interactions between Self and Society and helps to explain the nature of the individual as a student; the nature and impact of the student's program on society; the relationship among educational disciplines and society; the role of the individual and the student's career in society; and the responsibilities of citizenship.
3 hours of lecture per week

INT 1021 Creativity & Innovation (3) **fall**
This course is a foundation course in the Entrepreneurship major. The student learns techniques for improving the flexibility and originality of their thinking and explores approaches used by managers and organizations to create and sustain high levels of innovation. Topics include personal thinking preferences; everyday creativity and eliminating mental blocks; creative thinking techniques; idea selection approaches; teaming techniques for creativity; conditions that promote creativity; design for interaction; disruptive technologies; and intellectual property. The course uses fun hands-on activities to stimulate innovation.
3 hours of lecture per week

INT 2660 Class & Educational Success (3) **fall**
In this course, framed by the work of Ruby Payne, the student understands the dynamics of poverty, particularly generational poverty, and the economic class systems in work and school environments. The student explores the history of Lyndon Johnson's "War on Poverty" and the TRiO programs developed at that time by the federal government to alleviate the challenges poverty poses for the student attempting to obtain higher education. The student has the opportunity to discuss how these theories relate to their own experience. Finally, each student has the opportunity to practice the skills needed to effectively communicate and work with people from a wide variety of backgrounds to be effective in today's workforce.
3 hours of lecture per week Prerequisite: ENG 1060

INT 3060 Leadership Studies (3) **as required**
This course delivers a diverse, interdisciplinary approach to leadership instruction. The curriculum combines the study of great leaders portrayed in the humanities by writers, historians, and film-makers from ancient times to modern-day: a novel and experiential learning approach to defining and rediscovering leadership qualities.
3 hours of lecture per week

Landscape (LAH)

LAH 1020 Introduction to Horticulture (3) **fall**
This survey course introduces the principles and practical applications of horticulture. The student becomes familiar with the basic science that forms the foundation of horticulture and uses this information to understand how horticulture is applied. Topics include fields of horticulture; plant classification; plant structures; plant physiology and development; plant environments; plant propagation; and crop improvement.
3 hours of lecture per week

LAH 1021 Landscape Graphics (3) **fall**
This course familiarizes the student with a broad range of graphic techniques and specific tools necessary for each. Coursework includes freehand drawing; an introduction to mechanical, technical, and computer aided drafting; the conventions of landscape/architectural drawing, including its intentions, capabilities, and use (i.e., a thorough understanding of plan, section and elevation); three-dimensional drawing techniques: axonometric and perspective (both constructed and freehand); tonal value and texture rendition; shade and shadow; and architectural lettering.
6 hours of studio per week
[Course fee: $20]

LAH 1030 Woody Ornamentals (3) **fall**
This course covers the identification of approximately 90-120 native and cultivated woody plants found in northern New England. In addition, plant nomenclature; plant characteristics and requirements (environmental, cultural, and design/ornamental); plant associations; and horticultural and planting design issues are explored. Emphasis is on both plant identification and plant selection. Drawing as part of learning is encouraged. Offered every other year.
2 hours of lecture, 3 hours of lab per week

LAH 1031 CAD for Landscape Applications (2) **spring**
This course introduces the use of CAD as a drafting, documentation, production, and presentation tool for landscape design. The student becomes familiar with a variety of software applications such as Photoshop, InDesign, Illustrator, and SketchUp. Specific coursework covers topics such as photo overlay; manipulation; layout; file management; image management and interpretation; composition; and presentation drawings. All work builds upon foundational understanding of digital files, organizational systems, and protocols.
3 hours of studio per week — Prerequisite: LAH 1021

LAH 1040 Greenhouse Management (3) **spring**
This course covers the fundamentals of commercial greenhouse production, control of the greenhouse environment, and the effects that this has on plant growth. The student learns about greenhouse construction; heating and cooling; growing media; fertilization; watering; pest control; and the production of container-grown crops. Lab exercises are conducted in the greenhouse or at the facilities of local growers.
2 hours of lecture, 3 hours of lab per week

LAH 1050 Introduction to Soils (4) **spring**
This course covers soil formation and classification and the ways in which chemical, physical, and biological properties of soil affect plant growth. It also examines issues related to soil temperature, aeration, organic matter, and tilth. Practices best suited to erosion control and nutrient management are explored. The student learns about soil testing and the most effective liming and fertilizing practices for sustainable management. The college, home gardens, and local farms are used in soil and fertilizer analysis.
3 hours of lecture, 2 hours of lab per week

LAH 2010 Landscape Construction Practices (3) **fall**
This course introduces the materials and methods of landscape construction and management. Emphasis is on how general intentions are developed at the plan and detail level, resolved through sound principles of construction, and professionally documented according to conventional standards. Specific coursework includes surveying; map-making; construction of freestanding retaining walls; construction of patios and walkways; grading earthworks; and the principles of statics and mechanics as they apply to landscape design.
6 hours of studio per week — Prerequisite: LAH 1050, 2011
[Course fee: $20]

LAH 2011 Introduction to Landscape Design (3) **spring**
This course introduces the student to the basic principles of landscape design in order to build a fundamental knowledge of and fluency in the issues and language of landscape design and its application. The coursework is based on a progression of basic design principles that build to an increasingly sophisticated understanding of design and its application, with a strong emphasis on the interrelatedness of architectural built form and landscape built form. Throughout the course, verbal and graphic communication of ideas and solutions are emphasized. Individual design projects are developed under faculty supervision and are then presented to a jury of faculty and distinguished practitioners. Additionally, the student receives an overview of landscape architectural history and examines the work of practitioners in the field.
6 hours of studio per week — Prerequisite: ARE 1210 or CPM 1021 or LAH 1021
[Course fee: $20]

LAH 2012 Landscape Design II: Planting Design (3) **spring**
This course focuses on the art and science of planting design with emphasis on site analysis; design process and synthesis; development of an appropriate plant palette; production of planting plans; specifications and contract documents; and cost estimating and bid documents. The student develops appropriate plant palettes that are responsive to site characteristics, cultural requirements of individual plant species, aesthetic qualities of individual plant species, and design intent. Assignments focus on design principles and elements in planting designs, historical precedent, and current issues relevant to planting design. The student observes, assesses, and practices design as a method of gaining knowledge about the theory and practice of planting design.
6 hours of studio per week — Prerequisite: LAH 2011
[Course fee: $20]

LAH 2020 Plant Propagation (3) **fall**
This course presents the principles that explain and control plant propagation. Propagation by seeds, cuttings, grafting, layering, and other common methods is explored in the lab. Emphasis is on the newest technologies, including tissue culture.
2 hours of lecture, 3 hours of lab per week — Prerequisite: LAH 1020
[Course fee: $10]

LAH 2030 Herbaceous Plant Materials (3) **fall**
This course familiarizes the student with 100-150 herbaceous plants including perennials, annuals, biennials, bulbs, and turfgrass. Emphasis is on identification; aesthetic and functional use in the landscape; plant culture and maintenance; transplanting; and plant design and composition. Offered every other year.
2 hours of lecture, 3 hours of lab per week

LAH 2801 LDSH Summer Internship (0) **summer**
After successful completion of the first year core curriculum, the student is required to experience horticulture or design in an employment setting. With the aid of program faculty and staff, the student arranges a summer job or practicum that broadens their understanding of real world horticulture and design. Pass/No Pass.
Prerequisite: LAH 1031, 1050, 2011

LAH 2802 LDSH Summer Internship Review (1) **fall**
This is the review portion of LAH 2801. Pass/No Pass.
[Course fee: $250] Prerequisite: LAH 2801

Mathematics (MAT)

MAT 1040 Mathematics for Allied Health (2) **spring**
This course introduces basic concepts in general math: ratio; proportions, variation; statistics; two- and three-dimensional geometry (especially as related to volume); dosages and solutions; and US-metric conversions.
2 hours of lecture per week Prerequisite: Placement level 1

MAT 1210 Principles of Mathematics (3) **as required**
This course reviews general math principles and introduces concepts for the solution of agricultural and business problems. Topics covered include calculator use; basic algebraic operations, solution of linear and quadratic equations; geometry concepts of line, area, and volume; variation; trigonometry of right triangles; growth; compound interest; debt amortization; probability; and statistics.
3 hours of lecture per week Prerequisite: Placement level 2

***MAT 1221 Finite Mathematics* (3)** **fall/spring**
This course introduces the student to a variety of mathematical tools to solve applied problems. Topics may include functions; graphing; linear models; matrices and linear systems of equations; linear programming; exponential models; elementary probability and statistics; and the mathematics of finance.
3 hours of lecture per week Prerequisite: Placement level 3 or *C*- or better in MAT 1210

MAT 1311 Precalculus I (3) **fall/spring**
This course is the first in a two-semester sequence of technical mathematics that stresses the relation of mathematics to engineering applications and an appreciation of the importance of precision in mathematical thought. It covers the use of a graphing calculator; basic geometry; solutions of linear and quadratic equations; right triangle trigonometry; algebraic fractions; and solving logarithmic and exponential equations.
3 hours of lecture per week Prerequisite: Placement level 4 or *C*- or better in MAT 1210

MAT 1312 Precalculus II (3) **as required**
This course is the second in a two-semester sequence of technical mathematics that stresses the relation of mathematics to engineering applications and an appreciation of the importance of precision in mathematical thought. It covers the use of a graphing calculator; algebraic fractions; exponents and radicals; proportions and variations; trigonometric functions; law of sines and cosines; vectors; operations with complex numbers; trigonometric identities and equations; and graphs of the trigonometric functions.
3 hours of lecture per week Prerequisite: MAT 1311

MAT 1340 Algebra & Trigonometry (5) **fall/spring**
This course covers the necessary topics in algebra and trigonometry to provide skill for MAT 1420 and is a bridge course for the students who has completed a lower level math or who's off-sequence and hasn't placed into MAT 1311. Credit isn't awarded for both MAT 1312 and MAT 1340 toward graduation.
5 hours of lecture per week Prerequisite: *C*- or better in MAT 1210 or 1221

MAT 1420 Technical Mathematics (5) **fall/spring**
This course stresses the relation of mathematics to engineering applications and an appreciation for the importance of precision in mathematical thought. It covers the use of a graphing calculator; solutions of linear and quadratic equations; exponents and radicals; logarithms; exponential functions; right triangle trigonometry; laws of sines and cosines; vectors; operations with imaginary numbers; trigonometric identities and equations; and graphs of the trigonometric functions.
5 hours of lecture per week Prerequisite: *C*- or better in MAT 1340

MAT 1520 Calculus for Engineering (4) **as required**
This course presents basic concepts of plane analytical geometry and calculus. Topics include differentiation and integration of algebraic, trigonometric, exponential, and logarithmic functions with an emphasis on technical applications; maximum and minimum word problems; related rates; and applications of the integral to include area and volume.
4 hours of lecture per week Prerequisite: Placement level 5 or *C*- or better in MAT 1420

***MAT 2021 Statistics* (3)** **as required**
This course introduces the basic ideas and techniques of probability and statistics. Topics may include numerical and graphical descriptive measures, probability, random variables, the normal distribution, sampling theory, estimation, hypothesis testing, correlation, and regression. The use of technology may be required.
3 hours of lecture per week — Prerequisite: *C-* or better in MAT 1210

MAT 2120 Discrete Structures (3) **spring**
This course introduces discrete structures in computer science and covers topics such as sets, set logic, relations, functions, proof techniques, induction, logic, graphical representations, and algorithms.
3 hours of lecture per week — Prerequisite: Placement level 3 or *C-* or better in MAT 1210, 1221, or 1311

***MAT 2532 Calculus II* (4)** **as required**
This course includes techniques and applications of integration, indeterminate forms, and improper integrals, sequences, and series.
4 hours of lecture per week — Prerequisite: *C-* or better in MAT 1520

***MAT 2533 Calculus III* (4)** **fall/spring**
The topics in this course include the calculus of vector-valued functions; tangent and normal vectors; velocity; acceleration and applications; functions of several variables; partial derivatives; gradients; extreme values and applications; and multiple integration. Additional topics may include line and surface integrals; parametric surfaces; the theorems of Gauss, Green, and Stokes; and differential equations.
4 hours of lecture per week — Prerequisite: *C-* or better in MAT 2532

MAT 3170 Applied Mathematics for Engineering (3) **spring**
This course introduces selected topics of advanced mathematics and applies them directly to areas of electrical and mechanical engineering analysis. The curriculum includes key methods of solution of both first and second order differential equations that are most useful in engineering analysis. Electrical and mechanical systems are modeled and their outputs are predicted using systems of integral and differential equations. Laplace transforms and numerical methods of solution are also covered.
3 hours of lecture per week — Prerequisite: *C-* or better in MAT 2532

MAT 3720 Topics in Discrete Mathematics (3) **spring**
This course introduces fundamental topics in discrete mathematics that offer theoretical support for a variety of computer applications. Applications such as algorithm development and analysis, error analysis, and data encryption are best understood with a foundation in logic and writing proofs, set theory, combinatorics, probability, number theory, and abstract algebra. Additional topics may be covered depending on the interests of the class.
3 hours of lecture per week — Prerequisite: MAT 2532 or *C-* or better in MAT 1312 and 2120 or MAT 1520

Mechanical Engineering Technology (MEC)

MEC 1010 Introduction to Mechanical Engineering Technology (1) **fall**
This course introduces the field of mechanical engineering technology; the knowledge and skills that define the discipline; and possible career options. The student practices the use of spreadsheets to present and analyze information related to the field. Exercises are based on the field of mechanical engineering and expose the student to various topics (materials, energy, strength, fluids, heat, etc.) where information and numerical data are acquired, organized, analyzed, and presented. Other topics include career options, professional development, ethics, leadership, teamwork, and time management.
2 hours of lab per week

MEC 1011 Design Communication I (2) **fall**
This course provides a basic understanding of the principles and technology of mechanical drawing and computer modeling as methods of documenting and communicating mechanical designs. It covers the concepts of geometric construction and orthographic, sectional, auxiliary, and assembly views and introduces dimensioning methods and types of fasteners. The student gains basic proficiency in using a solid parametric three-dimensional CAD program to build parts, assemblies, and detailed working drawings.
6 hours of lab per week

MEC 1012 Design Communication II (2) **spring**
Parametric, three-dimensional solid modeling is the premiere design tool used around the world to create innovative product designs. This course develops the techniques necessary to model complex parts, surfaces, and assemblies and focuses on the problem-solving and critical-thinking skills necessary to generate effective rapid prototyping strategies. Greater attention is given to the creation of sheet metal parts; the application of virtual stress analysis; and the generation of industry-standard engineering drawings. Emphasis is on using design tables and parametric databases to develop part and feature libraries. Greater focus is placed on the generation of ANSI and ISO standard working drawings and exploded assembly drawings. Geometric Dimensioning and Tolerancing (GD&T) techniques and standards are emphasized. The skills and techniques taught in this course are transferrable to any parametric, three-dimensional design software. Special attention is paid to creating models and assemblies that can be easily modified and changed. Kinematic, dynamic, and finite element analysis techniques are introduced.
6 hours of lab per week — Prerequisite: MEC 1011

MEC 1020 Manufacturing Processes (2) fall/spring
This hands-on course introduces the student to a wide variety of manufacturing processes. Although heavily focused on traditional machine tools (lathes, mills, grinders, etc.), the course also explores the processes of casting, welding, molding, and industrial cutting (plasma, water-jet, and laser). The student works in a small group to produce functional products using today's manufacturing standards. Safety and skilled operation are the focal points of this class.
1 hour of lecture, 3 hours of lab per week
[Course fee: $50]

MEC 1021 Manufacturing Processes Lab (1) fall/spring
This course introduces the student to machine tools, measuring instruments, and machine operation and how they relate to the manufacturing process.
3 hours lab per week
[Course fee: $35]

MEC 1040 Introduction to Materials Science & Engineering (3) spring
This course introduces the nature and properties of materials that are used in engineering applications. Materials are studied from the perspective of properties, processing, and structure and how they're interrelated. Topics common to all materials are covered including crystalline structure, mechanical behavior, and property testing. Topics related to metals are studied extensively including defects, phase formation, heat treating, the steel system, and alloy systems. The properties and structure of ceramics, polymers, and composites are also covered.
2 hours of lecture, 3 hours lab per week — Prerequisite: PHY 1041
[Course fee: $20]

MEC 1060 Metrology & Inspection Techniques (3) fall
This course provides the student with the fundamental concepts of modern dimensional metrology and related inspection techniques. Topics covered include the language and system of measurement; tolerances; metrology; statistics of metrology; measurement with graduated scales and scaled instruments; Vernier instruments; micrometer instruments; the development and use of gage blocks; measurement by comparison and high-amplitude comparators; pneumatic measurement; and calibration.
2 hours of lecture, 3 hours of lab per week

MEC 1070 Tool Geometry & Productive Metal Cutting (1) as required
This course presents the theory and practical applications of modern cutting-tool technology. After successfully completing this course, the student can recognize and define the various geometries associated with cutting tools and how they relate to the material and manufacturing process.
4 hours of lab per week

MEC 1180 Introduction to Welding Processes (3) as required
In this course, the student learns the fundamentals of oxy-acetylene brazing, welding, and cutting processes; SMAW (Shielded Metal Arc Welding or stick); GMAW (Gas Metal Arc Welding or MIG); and GTAW (Gas Tungsten Arc Welding or TIG) welding and plasma cutting processes. A major component of the lab is lab safety. This course prepares the interested student for American Welding Society (AWS) entry-level certifications.
2 hour of lecture, 3 hours of lab per week
[Course fee: $450]

MEC 1190 Advanced Welding Processes (2) as required
This course allows the student to pursue advanced welding techniques in the welding processes covered in MEC 1180 that lead to AWS pre-certification skills. The student learns blueprint reading for welders and the application of required national codes. Safety, liability, and business ethics are significant elements of this course.
1 hour of lecture, 3 hours of lab per week — Prerequisites: MEC 1180
[Course fee: $450]

MEC 2010 Fluid Mechanics & Fluid Systems (3) fall
This course examines the interrelationships between the nature of fluid properties; the behavior of fluids at rest and in motion; and the utilization of fluids to effectively accomplish a wide range of useful purposes. Lab experience and observation develops a working knowledge of fluid properties, fluid behavior, and fluid systems for power transmission and control.
2 hours of lecture, 3 hours of lab per week — Prerequisite: CIS 1050 or MEC 1010; PHY 1041
[Course fee $20] — Corequisite: MAT 1520

MEC 2035 Statics & Strengths of Materials (4) fall
This course focuses on two related topics: the analysis of mechanical systems under static load conditions and the resulting stress in the structures and materials. The course follows introductory physics and emphasizes problem-solving skills while addressing commonly used structures and mechanisms. The course begins with the analysis of forces and moments on static structures and mechanisms and then applies the methods of statics to analyze the stresses and strains in material structures due to tension, compression loads, shearing, and bending. Stress analysis is used to evaluate material strength and design limitations of structures and mechanisms.
3 hours of lecture, 3 hours of lab per week — Prerequisite: MEC 1011; PHY 1041
[Course fee: $20] — Corequisite: MAT 1520

MEC 2040 Computer-Aided Technology (2) **fall**
This course presents software-linked CAD programs with CNC machines and flexible machining systems and the student develops the skills to program CNC lathes and milling machines. In addition, the student is kept up-to-date on current developments in computer-aided technology.
1 hour of lecture, 3 hours of lab per week Prerequisite: MEC 1011, 1020
[Course fee: $50]

MEC 2050 Thermodynamics & Heat Transfer (4) **spring**
This course familiarizes the student with the first and second laws of thermodynamics, the equations of state, perfect gas processes, and various power cycles. The student applies these principles to the analysis of devices which utilize the power cycles such as the Otto, Diesel, Rankine, and vapor-compression cycles. It also introduces conduction, convection, and radiation heat transfer.
3 hours of lecture, 3 hours of lab per week Prerequisite: MAT 1520; MEC 2010; PHY 1041
[Course fee $20]

MEC 2065 Kinematics & Dynamics (3) **spring**
In dynamic systems where objects and mechanical assemblies are moving, the accelerations and velocities are considered in order to analyze the motion and forces on an object. The student in this course acquires a thorough understanding of the displacement, velocity, acceleration, and force characteristics of plane motion and the associated graphical and computer-aided methods of analysis.
2 hours of lecture, 3 hours of lab per week Prerequisite: MAT 1312; MEC 1011; PHY 1041
[Course fee $20]

MEC 2070 Machine Design Components (3) **as required**
This course familiarizes the student with the various types of machine elements that are used in mechanical design and helps them understand the design intent based on functionality, strength, and durability.
2 hours of lecture, 3 hours of lab per week
[Course fee $150]

MEC 2071 Machine Design (2) **spring**
In this course, the student gains understands the application of mechanical parts such as screws, gears, shafts, bearings, chains, belts, clutches, and brakes to the design of mechanical devices.
2 hours of lecture per week Prerequisite: MEC 2035
Corequisite: MEC 2065

MEC 2150 Introduction to Solar Photovoltaic Technology (3) **spring**
This course introduces the basics of solar photovoltaic (PV) technology including solar resource assessment; PV materials and modules; systems components; system sizing and design basics; mechanical mounting systems; installation methods; and performance analysis. Advanced topics current to the industry are also discussed. The course prepares a student to take the NABCEP PV Solar Entry-Level Knowledge Certificate exam.
2 hours of lecture, 2 hours of lab per week Prerequisite: ELT 1031
[Course fee $25]

MEC 2720 Mechanical Projects (3) **spring**
In this course, the student understands the application of mechanical parts such as screws, gears, shafts, bearings, chains, belts, clutches, and brakes to the design of mechanical devices. A central component of the course is a team-based project to design and fabricate a mechanical system. This course is the capstone experience for the Mechanical Engineering Technology program.
2 hours of lecture, 3 hours of lab per week Prerequisite: MEC 1020, 2035
[Course fee: $75]

MEC 3010 Wind Power (3) **fall**
This course introduces the concepts of wind power and associated technology. Topics addressed include the principles of wind energy and resource assessment; rotor and blade designs; the mechanical and electrical principles of wind turbine systems; types of applications; and the economics and current policies related to wind power. The lab portion of the course involves the installation of anemometry equipment and data evaluation; fabrication and testing of simple rotors; turbine systems; and monitoring and evaluation of installed systems.
2 hours of lecture, 2 hours of lab per week Prerequisite: PHY 1041
[Course fee $25]

MEC 3021 Manufacturing Processes II (3) **fall**
This course focuses on advanced manufacturing and production processes. Topics include concurrent and reverse engineering methods; automation in manufacturing; abrasive and grinding techniques; electrical discharge machining; hot wire; CNC welding and plasma processes; 3D printing; and other emerging methods.
2 hours of lecture, 2 hours of lab per week Prerequisite: MEC 1011, 1020
[Course fee $75]

MEC 3031 Materials Processes (3) **fall**
A fundamental aspect of manufacturing is the processing of materials into products. This course focuses on the processes by which materials are economically processed into different shapes. The student understands the principles and practical knowledge of different materials processes and applies that knowledge when consid-

ering the geometry, functionality, and materials required for a product. Topics covered address processes for metal, polymers, and ceramics and include machining, casting, forming, joining, sheet metal, extrusion, additive methods (3D printing), and coating processes.
2 hours of lecture, 2 hours of lab per week — Prerequisite: MEC 1020
[Course fee $100]

MEC 3040 Bioenergy (3) **fall**
This course examines bioenergy technologies to replace fossil fuel-based heating systems while contributing to the production of renewable electricity and transportation fuels. Solid, liquid, and gaseous biofuels are introduced, though the course focuses on wood and grass biomass and anaerobic digestion of organic wastes. A variety of feedstock resources, processing, and characterization methods are covered along with various systems used for energy conversion by combustion/oxidation. Policy, permitting, transportation, economics, nutrient recovery, carbon cycling, and life cycle analysis are compared and contrasted. Case studies focus on systems installed in Vermont. Successful completion of CHE 1020 or CHE 1031 is recommended.
2 hours of lecture, 2 hours of lab per week — Prerequisite: PHY 1041; SSC 2030
[Course fee $15]

MEC 3041 Advanced CNC Machining (3) **spring**
In this course, the student develops proficiency using professional grade computer-aided manufacturing software and using and operating CNC machine tools. Topics include the history and development of CNC machining, current technology, development of programs, setups, tool lists (cutting, precision measurement), material lists, fixtures, schedules, orders of operation, safety hazards, and preventive maintenance.
1 hour of lecture, 4 hours of lab per week — Prerequisite: MEC 2040
[Course fee $75]

MEC 3120 Advanced Manufacturing & Automation (3) **spring**
In this course, the student explores the mechanical aspects of machines and the associated electronic, pneumatic, and fluid-powered components working together as needed for automated manufacturing and production control. This includes drive mechanisms for feeds, speeds, and power utilization for each component in the manufacturing line such as conveyors, robotic arms, PLCs, machine tools, and workstations. The course incorporates the variability in products manufactured in relationship to the equipment capacities. The student learns computer simulation and engages in hands-on production set-ups as well as automated visual and tactile inspection techniques that guarantee product quality. Each mechanism applies the learned aspects to the specifications, functions, and safe operation associated with modern advanced manufacturing. Throughout the course, emphasis is on effective workplace skills including teamwork, problem solving, integrity, and dependability. FANUC robotic arm certification is an option for all participants.
1 hour of lecture, 4 hours of lab per week — Prerequisite: MEC 2040, 3021
[Course fee $50]

MEC 3170 Renewable Energy Heating (3) **spring**
This course provides an overview of heating systems that utilize solar, biomass, and geothermal energy. The principles of each type of technology are discussed as well as common topics including hydronic heating; system sizing; pumps and circulators; heat exchangers and storage tanks; sensors and controllers; plumbing components; integration; and performance analysis.
2 hours of lecture, 2 hours of lab per week — Prerequisite: ARE 2031; PHY 1042
[Course fee $25] — Corequisite: ARE 3050 or MEC 2050

MEC 4010 Lean Manufacturing (3) **spring**
In this course, the student develops proficiency in the methods and processes used for lean manufacturing. Topics include the fundamental principles of lean methods including the continuous recognition and elimination of waste in operations and reducing time from order to delivery while maintaining or improving product quality. The course focuses on understanding lean principles, practices, and techniques from both a technical standpoint and a people perspective, which is needed in order to effectively lead an organization to lean operation and sustain the improvement.
3 hours of lecture per week — Prerequisite: MAT 2021

MEC 4020 Quality Assurance (3) **fall**
This course examines the principles and methods of quality assurance including measurement, control, improvement, and management, focusing on applications in the manufacturing field. The course introduces the scope and function of quality assurance, including basic definitions; statistics; quality policy and objectives; manuals and procedures; concept of variation; inspection and sampling techniques; metrology process control; methods; and the elements of reliability. Current TQM and ISO 9000 standards are reviewed.
3 hours of lecture per week — Prerequisite: MAT 2021

MEC 4120 Renewable Energy Modeling (3) **fall**
This course focuses on methods and tools used for modeling the performance of renewable energy (RE) systems. Topics include physical modeling of solar, wind, and bioenergy technologies; using renewable energy resource data in modeling RE systems; and using commercial tools for performance prediction.
1 hour of lecture, 4 hours of lab per week — Prerequisite: MAT 1520, 2021; MEC 2150, 3170
Corequisite: MEC 3010, 3040

MEC 4220 Product Design & Production (3) **fall**
This course focuses on product design, advanced manufacturing, and production processes. Topics include concurrent and reverse engineering methods; advanced metrology; automation in manufacturing; abrasive and grinding techniques; water jet machining; 3D printing; and other emerging methods. The student engages in a variety of individual and team-based projects that allow them to expand upon their prior manufacturing and materials processing knowledge and experience while developing marketable workforce skills in advanced manufacturing. The final project for this course is an entrepreneurial endeavor where the student designs, develops, manufactures, markets, and sells a consumer product with the goal of making a profit.
1 hour of lecture, 4 hours of lab per week Prerequisite: MEC 1040, 1060, 3021, 3031, 3041
[Course fee: $100]

MEC 4721 Manufacturing Capstone Project (3) **spring**
This is a required capstone course for the Manufacturing Engineering Technology program that provides the student with an opportunity to apply a combination of skills and knowledge to solve an industrial or real world manufacturing problem. The student works in a group to tackle an integrated, technical problem presented by regional industry and approved by program faculty. Topics include manufacturing materials and processes, design, quality, lean manufacturing, and automation.
1 hour of lecture, 4 hours of lab per week Prerequisite: Completion of 40 credits toward major; MEC 1040, 3021, 3041
Corequisite: MEC 4010, 4020

MEC 4722 Renewable Energy Capstone Project (3) **spring**
In this course, the student applies knowledge and skills to a project that addresses a renewable energy system or process problem. This capstone project may involve engineering design; scientific research; modeling and simulation; policy and regulations; economic analysis; environmental analysis; operations and management planning; or other activities. If possible, the work is done in a team and includes identifying project scope and specifications; researching and proposing a technical solution; completing a design or process plan that addresses the problem; and communicating through oral and written reports.
1 hour of lecture, 4 hours of lab per week Prerequisite: MEC 4120

MEC 4801 MEC Internship (0) **summer**
This internship requires the student to spend at least 200 hours in a professional setting related to their field of study. This broadens the student's understanding of a potential career path and applies gained knowledge and skills in a professional environment. Pass/No Pass.
Prerequisite: Completion of 60 credits toward major

MEC 4802 MEC Internship Review (1) **fall**
This course reviews the activities and responsibilities that the student experienced in MEC 4801 and is offered in the subsequent semester to award credit for completed work. Pass/No Pass.
Prerequisite: MEC 4801

Music (MUS)

MUS 1028 Introduction to Rock & Roll (3) **as required**
This course is a survey of rock and roll music from its origins through contemporary rock. The student discusses the social, economic, and political conditions that influenced the development of rock music and the artists who contributed to its form. Through extensive listening, the student explores a variety of rock styles from the 1950s through the present.
3 hours of lecture per week

Nursing (NUR)

NUR 0111 Principles & Practices of Nursing I Lab (4) **fall**
This is the lab component of NUR 1111. Pass/No Pass.
12 hours of clinical/lab per week
[Course fee: $110] Corequisite: NUR 1111

NUR 0121 Principles & Practices of Nursing II Lab (4) **winter**
This is the lab component of NUR 1121. Pass/No Pass.
12 hours of clinical/lab per week Corequisite: NUR 1121

NUR 0131 Principles & Practices of Nursing III Lab (4) **spring2**
This is the lab component of NUR 1131. Pass/No Pass
18 hours of clinical/lab per week
[Course fee: $70] Corequisite: NUR 1131

NUR 1010 Pharmacology for Nursing (3) **winter**
This course teaches the classifications of drugs according to body systems and the use of these drugs for the purpose of restoring or maintaining health. Orem's theory is integrated into practical application based on a client's needs. The course begins with basic terminology and progresses to medication administration and standards and legislation as they relate to drugs. Topics include the role of the nurse, the nursing process, nutrition, and principles of ethics. A basic study of pharmacokinetics helps the student to understand how drugs are

absorbed, transported, metabolized, and excreted. A review of pharmacotherapeutics focuses on how drugs are utilized by the human body and how the client's age and unique characteristics affect this process.
3 hours of lecture per week Prerequisite: BIO 2011; NUR 0111, 1020, 1111
Corequisite: BIO 2012

NUR 1020 The Nurse-Client Relationship (3) fall
This course assists the student in coping with the human relations challenges encountered in their nursing career. Discussions encourage the student to broaden their views and develop an awareness of the uniqueness of humanity. The course implements the philosophy and objectives of the program by stressing the importance of Orem's self-care deficit theory for the psyche as well as the body and presents basic principles, concepts, and information regarding communication, listening, and assertiveness. The student learns the importance of confidentiality and ethical behavior as part of the interdisciplinary team. Additional presentations include the community; the family; cultural diversity; sexual harassment; death and dying; and the impaired professional.
3 hours of lecture per week Corequisite: NUR 0111, 1111

NUR 1111 Principles & Practices of Nursing I (5) fall
This course provides the selected knowledge and skills necessary to meet the basic self-care needs of the assigned client in both long-term and acute care settings. Course content emphasizes the role of the practical nurse in the recognition, description, and maintenance of health. Orem's self-care deficit theory is integrated into practical application during lectures and in NUR 0111. Application of the nursing process in the care of clients with self-care deficits is the focus and emphasis on data collection. Additional topics include the roles of various health care team members, concepts of effective communication, and effective maintenance of a safe and therapeutic environment.
5 hours of lecture per week Corequisite: BIO 1030, 2011; NUR 0111, 1020
[Course fee: $110]

NUR 1121 Principles & Practices of Nursing II (5) winter
In this course, the student reinforces and builds upon previously learned information to provide safe, competent, standard nursing interventions to clients experiencing recurring healthcare problems in acute and long-term care settings. The student learns to care for groups of clients utilizing the nursing process to organize and implement nursing care and selects appropriate goals to meet the client's self-care needs. Observational experiences are provided in certain specialty areas. The student demonstrates increasing ability to perform standard nursing interventions in the clinical environment with decreasing need for supervision.
5 hours of lecture per week Prerequisite: BIO 1030; NUR 1020, 1111
Corequisite: BIO 2012; NUR 0121, 1010; PSY 1050

NUR 1131 Principles & Practices of Nursing III (5) spring2
This course explores integrative concepts in nursing and in the developing family. The student expands their knowledge and increases skills necessary to meet the self-care deficits of individuals experiencing common healthcare problems, with emphasis on parent/child care and mental health. In addition to the nursing lab, the student also learns through selected clinical experiences in obstetric, pediatric, and medical-surgical settings. The student demonstrates skills in problem solving through the use of the nursing process with a focus on implementation and evaluation of nursing care.
7.5 hours of lecture per week Prerequisite: NUR 1121; PSY 1050
[Course fee: $70] Corequisite: NUR 0131

NUR 2010 LPN to RN Transition/Trends in Nursing (2) fall
In this course, the student learns to recognize personal and professional challenges that arise in the process of transitioning from the role of the practical nurse to the registered nurse. Issues and trends important to contemporary nursing are evaluated and analyzed. Theories regarding the transition process, role development, and the process of change are applied to personal adaptation, professional issues, and role differentiation in terms of responsibilities and scopes of practice for the LPN and ADN. Current issues are examined through assigned reading, written submissions, and lively discussions. The student ultimately develops an individual philosophy of differentiated nursing practice.
2 hours of lecture per week Corequisite: NUR 2040

NUR 2011 Advanced Pharmacology (1) spring
This course builds on NUR 1010 and presents a body-system-oriented approach to analyzing the use of particular medications for complex medical/surgical conditions in clients across the lifespan. The student integrates and evaluates the effectiveness of each client outcome as it relates to their pharmacologic needs.
1 hour of lecture per week Prerequisite: NUR 2040
Corequisite: NUR 2140

NUR 2030 Principles & Practice of Nursing IV (3) fall
This course is divided into three content areas: health promotion and physical assessment (3 weeks); psychiatric nursing (6 weeks); and maternity nursing (6 weeks). The health promotion and physical assessment portion of this course assumes prior knowledge of normal physiological and developmental parameters, so it focuses on assessing abnormal conditions and encouraging a maximum level of self-care by promoting healthy behaviors. Topics include the importance of an accurate and complete health history, including a psychosocial, cultural, and spiritual assessment and a health risk appraisal. In the psychiatric nursing portion, the student assesses,

plans, and evaluates interventions in the care of the client population dealing with mental health needs. The student selects an appropriate role to assume in assisting clients to meet their mental health self-care needs. The maternity portion assumes prior knowledge of normal and expected conditions relating to the maternity client. Topics include assessment of, planning care for, implementing interventions for, and evaluation of the normal antepartal, intrapartal, and postpartal client at the level of the registered nurse. The content builds on this and focuses on abnormal conditions. Students assist the maternity client and family to recognize their self-care needs.
3 hours of lecture per week
[Course fee: $110] Corequisite: NUR 2010, 2040

NUR 2040 Principles & Practices of Nursing IV Lab (2) fall
Lab and clinical experiences reflect the material presented in NUR 2030. The student assists the client and family to recognize their self-care needs. In the clinical, the student assesses, plans, and evaluates interventions in the care of client populations in general medicine, maternity, and mental health settings. Multiple inpatient and outpatient areas provide observational experiences. The student demonstrates skills in decision-making through the use of the nursing process with an emphasis on implementation and evaluation and selects the appropriate roles to assume in meeting the patient's self-care needs. The student performs therapeutically in the clinical area with decreasing need for instructor supervision. Pass/No Pass.
6 hours of clinical per week
[Course fee: $60] Corequisite: NUR 2030

NUR 2130 Principles & Practices of Nursing V (5) spring
This course presents patients across the lifespan experiencing complex acute medical/surgical illnesses and chronic self-care deficits. Observational experiences are provided in multiple areas such as intensive care, the emergency room, recovery room, clinics, and home health agencies. The student demonstrates skills in decision-making through the use of the nursing process with an emphasis on implementation and evaluation and selects the appropriate roles to assume in meeting the patient's self-care needs.
5 hours of lecture per week Prerequisite: BIO 2120; NUR 2040
[Course fee: $330] Corequisite: NUR 2140

NUR 2140 Principles & Practices of Nursing V Lab (4) spring
Lab and clinical experiences reflect the material presented in NUR 2130. The student performs therapeutically in the clinical area with decreasing need for instructor supervision. Pass/No Pass.
12 hours of clinical per week Prerequisite: NUR 2040
[Course fee: $70] Corequisite: NUR 2011, 2130

NUR 3100 RN to BSN: Online Transition (1) as required
This is the first class in the progression to the BSN program and includes orientation to the program; orientation to the library and student resources; discussion and use of effective online communication and netiquette; and development and presentation of baccalaureate-level presentations.
1 hour of lecture per week

NUR 3110 Nursing Informatics (3) as required
This course presents ethics, safety, research, professional networking, telemedicine, and the future of informatics in nursing. The student understands the ways information technology supports the acquisition of nursing knowledge with specific consideration given to the nursing role as a knowledge worker. The student appreciates the application of nursing informatics in achieving patient-centered care.
3 hours of lecture per week Corequisite: NUR 3100

NUR 3120 Palliative & End-of-Life Care (3) as required
This course examines pain control, symptom management of various organ systems, and therapeutic communication with patients and their families. The course details collaborations with ancillary teams and options for non-medicinal approaches to symptom management. Through a series of case studies and online discussions, the student has a chance to role play encounters and detail interventions in complex cases using current evidence-based practices.
3 hours of theory per week Corequisite: NUR 3100

NUR 3121 Transitions of Care in Healthcare Reform (3) as required
This course teaches practicing nurses to effectively coordinate patient care transitions between care providers and settings as condition and care needs change. Online and observational experiences facilitate bridging the gap between providing nursing care in single settings to coordinating care across settings. Topics include health care reform; nursing role evolution and transformation; risk identification; care coordination; data measurement; and quality improvement. The student examines care transition models, including evidence-based methods and tools used by hospitals and community agencies across the nation to facilitate effective care transitions. Emphasis is on patient-centric care provided through effective communication and care coordination among healthcare professionals, caregivers, and patients.
3 hours of online lecture per week Corequisite: NUR 3100

NUR 3140 Pathophysiology & Assessment (4) as required
This course refines the student's physical assessment skills, focusing on the assessment differences needed to recognize abnormal findings across the lifespan, especially in at-risk populations. The student explores commu-

nication, health histories, and psychosocial impacts in the development of holistic health assessment skills. Additionally, this course introduces the basic concepts of pathophysiology. The student examines the phenomena that produce alterations in human physiologic function and the resulting human responses.
4 hours of theory per week | Prerequisite: NUR 3110
Corequisite: NUR 3100

NUR 3210 Healthcare Systems (3) **as required**
In this course, the student understands the ways healthcare is delivered, with emphasis on cost, access, the impact of globalization on healthcare, and outcomes. The student explores the role of the nurse within the healthcare delivery system and with respect to other members of the healthcare team and explores the disparity of healthcare that exists in the US. The student examines the history of healthcare delivery in the US and evaluates the efficacy of this system. At the completion of the course, the student articulates a vision of healthcare delivery that examines the contributions of nursing professionals.
3 hours of theory per week | Corequisite: NUR 3100

NUR 4011 Teaching/Learning in Healthcare for Allied Health (3) **as required**
Healthcare providers have a philosophic basis and a long history of providing patient education. This course provides the students with the ability to recognize the teaching and learning needs of their patients.
3 hours of theory per week | Prerequisite: NUR 3100, 3110

NUR 4012 Health Promotion Across the Lifespan (3) **as required**
This course focuses on the role of the nurse in promoting health and reducing risk behaviors of individuals and families across the lifespan. Examples of nutrition, physical activity, and stress management are examined with emphasis on the impact of genetics, values, lifestyle, environmental, and cultural influences. The course also emphasizes collaboration with other healthcare providers; integration of practice and policy while developing interventions; and patient teaching as essential functions of the nurse.
3 hours of theory per week | Prerequisite: NUR 3110, 3120, 3140
Corequisite: NUR 3210; PSY 3070

NUR 4110 Research & Evidence-Based Practice (4) **as required**
Nursing is both an art and a science which is delivered using evidenced-based nursing practices. This course increases the student's knowledge of the process of evidence-based practice, which is defined as the synthesis of scientific evidence, clinical judgment, patient preferences, and available resources. The student formulates clinical questions, performs database searches, appraises retrieved evidence, and develops a quality improvement project on a topic of interest.
4 hours of theory per week | Prerequisite: MAT 2021; NUR 3100, 3110

NUR 4130 Nursing Leadership & Management (6) **as required**
This course prepares the student to assume nursing leadership and management roles with focus on their interactions with the healthcare team members. It familiarizes the student with management theories; organizational and behavior theories; and leadership styles that are relevant to the practice of nursing management. It explores the elements of the management process as well as change management strategies and their applications. It enhances the student's leadership skills in maintaining best practices and standards of care. Nursing units in hospitals are the framework used for the application of the theories and knowledge base included in this course.
3 hours of theory, 3 hours of preceptorship per week | Prerequisite: NUR 3100, 3110

NUR 4210 Global Health & Population-Based Healthcare (3) **as required**
There's a great need for nurses who understand global connectedness and the causes and consequences of the distribution of health, illness, injury, and disease. The health of the world's inhabitants has been impacted by pandemics, environmentally caused disease, terrorism, and disasters and nurses are being called upon to care for and improve the lives of affected individuals. This course presents an overview of global health from the viewpoint of nursing. It introduces the student to the main concepts of the public health field and the critical links between global health and social and economic development. The emphasis is on underdeveloped countries and topics include measures of disease burden; ethics and human rights; environmental health and safety; disparities in the health of women and children; communicable diseases; nutritional challenges; intercultural communication; health and literacy of the marginalized adult; and cultural competency skills.
3 hours of lecture per week | Prerequisite: NUR 3100

NUR 4410 Community Health (6) **as required**
This course explores the role of the nurse generalist in the community setting and focuses on prevention of disease and promotion of health in population aggregates. Additionally, the course examines community theory, change theory, epidemiology, and healthcare resources which support disease prevention and health promotion. These healthcare resources provide a basis for public health nursing and the ability to care for, promote, maintain, and restore the health of communities Emphasis is on effective community health practice through assessment, program planning, and nursing care for individuals, families, and vulnerable populations. The changing needs of an increasingly culturally diverse population within the social context of community systems are also examined along with environmental, economic, political, and legal constraints to the health of community systems. Course content integrates concepts from nursing and public health sciences. The student conducts an in-depth community assessment employing basic epidemiological principles and data collection strategies. The student utilizes the nursing process while engaging in health promotion and maintenance

strategies in a variety of community health settings and in assessing and planning interventions for high-risk populations. The student implements a community change project utilizing change theory and based on their assessment of their community.
4 hours of theory, 2 hours of preceptorship per week — Prerequisite: NUR 3100, 3110; MAT 2021; SOC 1010

Philosophy (PHI)

***PHI 1040 Introduction to Ethics* (3)** — **as required**
This course introduces some of the major ethical theories about morally right action, the morally good person, and the just society. Such theories include ethical absolutism, ethical relativism, ethical egoism, utilitarianism, formalism, and rights theory. Topics may be drawn from contemporary moral issues such as capital punishment, abortion, and euthanasia.
3 hours of lecture per week

Physics (PHY)

PHY 1030 General Physics (4) — **fall/spring**
This general physics course introduces the student to basic classical physics. Topics include Newtonian mechanics, elasticity, fluids, heat transfer, and DC circuits.
3 hours of lecture, 3 hours of lab per week — Prerequisite: MAT 1210

***PHY 1041 Physics I* (4)** — **as required**
This course gives the engineering technology student a thorough study of the basic principles of physics. Topics include systems of measurement; dynamics, including motion, acceleration, forces producing motion, work, energy, and power; momentum and the conservation laws; statics, including concurrent and noncurrent forces; and fluids, including properties of gases, fluid pressure, density, buoyancy, and hydraulics. Prior successful completion of a physics course is recommended.
3 hours of lecture, 3 hours of lab per week

***PHY 1042 Physics II* (4)** — **as required**
This course is a continuation of PHY 1041 and emphasizes basic physical concepts that relate both to practical situations and to subsequent technical courses. The fundamental structure of the course provides the student with a firm foundation for understanding semiconductor physics. Topics include thermodynamics; wave motion; electrical and magnetic field theory; light; and solid-state physics.
3 hours of lecture, 3 hours of lab per week — Prerequisite: PHY 1041
Corequisite: MAT 1420

PHY 2041 Fundamentals of Physics with Calculus I (4) — **fall/spring**
This course is an alternative for PHY 1041 intended to give the engineering technology student with strong verbal and math skills a course with the application of calculus as its math component. Topics covered include system of measurement; dynamics, including motion, acceleration, forces producing motion, work, energy, and power; momentum and the conservation laws; statics, including concurrent and non-concurrent forces; and fluids, including properties of gases, fluid pressure, density, buoyancy, and hydraulics. Prior successful completion of a physics course is recommended.
3 hours of lecture, 3 hours of lab per week — Corequisite: MAT 1520

PHY 2042 Fundamentals of Physics with Calculus II (4) — **fall/spring**
This course is a continuation of PHY 2041 and emphasizes basic physical concepts that relate both to practical situations and to subsequent technical courses. The fundamental structure of the course provides the student with a firm foundation for understanding semiconductor physics. Topics include thermodynamics; wave motion; electrical and magnetic field theory; light; and solid state physics.
3 hours of lecture, 3 hours of lab per week — Corequisite: MAT 1520

***PHY 3121 Introduction to Modern Physics* (3)** — **spring**
This calculus-based course continues the study of classical physics and introduces the student to topics in modern physics such as special relativity, atomic theory, solid state physics, nuclear physics, and elementary particle theory.
3 hours of lecture per week — Prerequisite: MAT 1520; PHY 1042

Political Science (POS)

***POS 1020 American Politics & Government* (3)** — **as required**
This course observes the origin, structure, and operation of the American political system in the context of federalism, constitutional law, and the obligations and rights of the citizen.
3 hours of lecture per week

***POS 2110 State & Local Government* (3)** — **as required**
This course studies the principles and problems of American government at the state and local level.
3 hours of lecture per week — Prerequisite: ENG 1061

Psychology (PSY)

PSY 1010 Introduction to Psychology **(3)** **fall/spring**
This course introduces the student to the concepts, issues, research, and scientific methods upon which our knowledge of human thought and behavior are built. The course provides the basis for further study of psychology as well as a sense of how psychological issues are involved in a variety of academic fields and the student's personal life. Course content is selected from topics including research methods, neurophysiology, states of consciousness, learning, memory, theories of personality, motivation, social psychology, and abnormal behavior.
3 hours of lecture per week

PSY 1050 Human Growth & Development **(3)** **winter**
This course offers an overview of the human developmental process throughout the life cycle, which includes the social, moral, emotional, cultural, physical, and cognitive aspects of growth. The student is encouraged to explore their own development. The theories of Erikson, Freud, Kohlberg, Piaget, and others are integrated into the life-span overview.
3 hours of lecture per week

PSY 2110 Educational Psychology **(3)** **spring**
This course examines the psychological constructs surrounding instruction and learning in the classroom. Concepts and principles addressed include personality theory, motivation, cognition, and a variety of developmental issues. Strategies to create healthy relationships are a central focus of the course. The dynamics of such issues as family systems, class discipline, hope, anger, sexuality, gender, change, collegiality, parental interaction, etc. are also examined.
45 hours of lecture per term

PSY 3070 Abnormal Psychology **(3)** **summer**
This course focuses on the symptoms, causes, and treatment of a wide variety of psychological disorders such as mood, personality, somatoform, dissociative, childhood, eating, and sexual disorders; anxiety; schizophrenia; and organic brain syndromes. It also explores historical views of understanding and treating abnormal behavior and diagnostic methods used to classify disorders.
3 hours of lecture per week — Prerequisite: PSY 1010

Respiratory Therapy (RSP)

RSP 1010 Foundations of Respiratory Care (3) **fall**
This course introduces cardiopulmonary anatomy and physiology as the basis for understanding clinical applications of respiratory care, thus encouraging the student to understand the rationale for making clinical decisions that involve patient assessment and therapeutic measures.
3 hours of lecture per week — Corequisite: RSP 1011

RSP 1011 Respiratory Care I (5) **fall**
This course introduces the student to allied health communication along with legal and ethical issues confronting the respiratory therapist. The student learns to perform the basic assessment skills required to make an objective evaluation of a patient's condition or response to therapy and begins to develop the competence required to deliver specific respiratory care therapeutics to patients.
4 hours of lecture, 3 hours of lab per week
[Course fee: $125] — Corequisite: RSP 1010

RSP 1012 Respiratory Care II (4) **spring**
In this course, the student learns the skills and techniques of managing and treating patients with respiratory needs. The course explores the clinical effects of various types of respiratory therapy and diagnostic techniques. Oxygen therapy, aerosol therapy, and respiratory drugs are thoroughly discussed and hyperinflation therapy, pulmonary hygiene, chest physical therapy, and techniques of airway management are included.
4 hours of lecture, 3 hours of lab per week — Prerequisite: BIO 2011; RSP 1010, 1011
Corequisite: RSP 1210, 1601

RSP 1210 Respiratory Anatomy & Physiology (3) **spring**
This course teaches the basic physiology of the pulmonary system and details the physiological principles underlying various therapeutics, diagnostic, and monitoring procedures in respiratory care. The student interprets patient data, solves problems, and analyzes patient cases using these physiological concepts.
3 hours of lecture per week — Prerequisite: BIO 2011; RSP 1010, 1011
Corequisite: RSP 1012, 1601

RSP 1601 Respiratory Clinical Field Experience (2) **spring**
This is a one day per week field experience that allows the student to become familiar with the hospital setting and perform basic respiratory therapy in acute care areas of the hospital. Pass/No Pass.
8 hours of clinical per week — Prerequisite: BIO 2011; RSP 1010, 1011
Corequisite: RSP 1012, 1210

RSP 2011 Cardiopulmonary Disease I (4) **fall**
Analysis of respiratory disturbances requires an understanding of the etiology, pathophysiologic, and clinical

signs of the disease. The study of cardiopulmonary disease begins with a presentation of advanced clinical assessment techniques. Measures used to evaluate oxygenation, ventilation, electrophysiology of the heart, and hemodynamics are discussed in relation to respiratory assessment of the critically ill patient.
4 hours of lecture per week — Prerequisite: RSP 2801
Corequisite: RSP 2013, 2602

RSP 2012 Cardiopulmonary Disease II (4) — **spring**
This course is a continuation of RSP 2011 and presents diseases affecting the pulmonary system. For each disease, emphasis is on etiology and pathogenesis, pathology, pathophysiology, and clinical features. A case study approach is utilized to enhance the student's ability to exercise judgement in handling patient complaints; collect and examine data; formulate treatment options; assess patient responses to treatment; and modify therapy. The course also prepares the student for the NBRC Board Examination.
4 hours of lecture per week — Prerequisite: RSP 2801
Corequisite: RSP 2603, 2802

RSP 2013 Respiratory Care III (5) — **fall**
This course leads the student through an ordered approach to modern ventilator care. A systematic development of mechanical ventilation competencies is laid out concept upon concept. Noninvasive and invasive monitoring of the patient on mechanical ventilation are also presented. In the classroom, the student applies these concepts to patient care scenarios. In the lab, students complete a series of mechanical ventilation, intubation, extubation, and critical care monitoring competencies.
4 hours of lecture, 3 hours of lab per week — Prerequisite: RSP 2801
Corequisite: RSP 2011, 2602

RSP 2602 Respiratory Clinical Field Experience II (4) — **fall**
This is a two days per week field experience that allows the student to work in acute care, critical care, and specialty service areas of the hospital and in the community. The student is directly and indirectly observed performing respiratory care in the assigned clinical settings. Pass/No Pass.
16 hours of clinical per week — Prerequisite: RSP 2801
Corequisite: RSP 2011, 2013

RSP 2603 Respiratory Clinical Field Experience III (6) — **spring**
This course provides a supervised clinical experience in the critical care and specialty service areas of the hospital and the community. There's a strong emphasis on intensive care techniques and procedures. Instruction takes place in the adult, pediatric, and neonatal areas. The student is introduced to infant and pediatric mechanical ventilation and continues to gain proficiency in adult care throughout the medical system. Pass/No Pass.
24 hours of clinical per week — Prerequisite: RSP 2801
Corequisite: RSP 2012, 2802

RSP 2801 Respiratory Internship (0) — **summer**
The summer field experience is two days per week and allows the student to practice in clinical areas in which they have received instruction. The student is introduced to mechanical ventilators in a lab setting, explores non-traditional roles for respiratory therapists, volunteers their time in a selected area of practice outside the traditional hospital practice, and summarizes their experiences in written and oral reports. The student creates a case study presentation while applying evidence-based medicine guidelines. Pass/No Pass.
16 hours of clinical per week, 32 volunteer hours prior to graduation — Prerequisite: BIO 2012; RSP 1601
[Course Fee: $]

RSP 2802 Respiratory Internship Review (1) — **spring**
This course provides the cumulative completion of RSP 2801. Pass/No Pass.
Prerequisite: RSP 2801
[Course fee: $250] — Corequisite: RSP 2603

Sociology (SOC)

***SOC 1010 Introduction to Sociology* (3)** — **fall**
This course is a survey of the basic issues, concepts, theories, and methods of sociology. The student learns to think critically about the nature of society and social institutions and the relationship among individuals and groups. Topics include social organization; socialization and social change; social stratification; class and class conflict; gender, race; and ethnicity.
3 hours of lecture per week

Social Science (SSC)

SSC 2030 Energy Systems & Sustainability (3) — **fall**
This course covers the historical, societal, economic, and technological factors that drive the development of sustainable energy infrastructure.
3 hours of lecture per week — Prerequisite: ENG 1060

SSC 2720 The Social Ecology of Food (3) — **fall**
This course examines social, cultural, political, economic, environmental, and ethical issues related to agriculture

and food production, distribution, and consumption and invites the student to consider more mindful approaches to food in their own life.
3 hours of lecture per week — Corequisite: ENG 1061

SSC 3010 Community Service: Local & Global (3) — **as required**
This course explores the concepts of community, service, and honor through rigorous study of current cultural events and trends; literature (political, religious, and aesthetic); and the student's own ethics and values. The course begins with an overview of historical definitions of service so that the student can better understand their opinions and actions within a historical and global context. A major segment of this course involves direct service, providing the student with ongoing hands-on experience for reflection and analysis along with reading, writing, research, and classroom discussion.
3 hours of lecture per week — Prerequisite: ENG 1061

SSC 3045 News & Newspapers (3) — **as required**
This course explores the nature of news: what news is, who controls it, how it's presented, and the many ways that news and newspapers affect our daily lives. Emphasis is on how news can contributes to an informed citizenship as well as how news can be manipulated to influence public opinion and policy.
3 hours of lecture per week — Prerequisite: ENG 1061

SSC 3120 Gothic Themes & Social Issues in Film (3) — **as required**
Since the creation of the earliest copyrighted motion picture, filmmakers have chronicled the fears, anxieties, and cultural changes inherent within American culture. History and film scholars both contend that horror films provide one of the best measures of the American consciousness. This course examines the changes and shifts in American cultural attitudes and values and explores the fears that accompany them. It asks the student to reflect on how these attitudes, values, and fears are reflected in pertinent films of each decade and to what extent these films also validate and cause further shifts within American culture. The course is offered online and is writing-intensive.
3 hours of lecture per week — Prerequisite: ENG 1061

Veterinary Technology (VET)

VET 1020 Animal Anatomy & Physiology (4) — **spring**
This course covers the anatomy and physiology of organs and organ systems in animals with an emphasis on basic physiology common to domestic animals.
3 hours of lecture, 3 hours of lab per week — Prerequisite: BIO 2320
[Course fee: $25]

VET 1030 Animal Care & Restraint (3) — **fall**
This course teaches the principles of management which are fundamental to animal health and introduces the basics of animal behavior, feeding, housing, and disease prevention. Labs stress hands-on experience with handling, restraint, physical exam, and administration of medications to common domestic species and lab animals. Proficiency in performance of lab tasks is evaluated.
2 hours of lecture, 3 hours of lab per week
[Course fee: $25]

VET 1040 Animal Diseases (4) — **spring**
This course explores bacterial, viral, fungal, and parasitic diseases with a review of disease prevention practices. Labs concentrate on diagnostic techniques including microbiology; fungal cultures and evaluations; parasitological specimen collection and processing; necropsy procedures; specimen handling; and shipping specimens to other laboratories.
3 hours of lecture, 2 hours of lab per week — Prerequisite: BIO 2320; VET 1030
[Course fee: $25]

VET 1051 Animal Care I (1) — **fall**
This course gives the student hands-on experience in the daily care and maintenance of farm, lab, and pet animals. The student is assigned times to care for the colony dogs, cats, rodents, birds, sheep, horses, and dairy animals under supervision. The course is repeatable for credit.
[Course fee: $25]

VET 1052 Animal Care II (1) — **spring**
This course gives the student hands-on experience in the daily care and maintenance of farm, lab, exotic, and domestic animals. The student learns requirements for properly documenting all interaction with animals housed in the college facility and works with a partner to encourage teamwork. The course is repeatable for credit.
[Course fee: $25] — Prerequisite: VET 1051

VET 1060 Veterinary Lab Techniques (4) — **spring**
In this course, the student learns to perform venipuncture, complete blood counts, urinalysis, serum chemistry, and supplemental hematologic evaluation on all species studied in VET 1030. Emphasis is on proficiency in performing lab tasks.
3 hours of lecture, 3 hours of lab per week — Prerequisite: BIO 2320; VET 1030
[Course fee: $25]

VET 2011 Veterinary Clinical Techniques I (4) **fall**

In this course, the student learns the stages of anesthesia and how to induce and monitor anesthesia under direct supervision of a veterinarian. Surgical nursing skills associated with aseptic technique and proper protocols in the surgery suite are covered as well as pre- and post-op monitoring, record keeping, and client education skills. The student performs blood work, urinalysis, and fecal examination on animals that are scheduled for anesthesia as medically indicated. Some preparatory work and patient monitoring is required outside of scheduled lab time.

3 hours of lecture, 3 hours of lab per week — Prerequisite: VET 1020, 1040, 1060, 2801

[Course fee: $25]

VET 2012 Veterinary Clinical Techniques II (3) **spring**

This course covers radiography of both large and small animals. The labs review anesthesia while the student learns to position animals for radiographs and develop, handle, and store the films. Ancillary techniques such as dentistry procedures are also covered. The student performs blood work, urinalysis, and fecal examination on animals that are scheduled for anesthesia as medically indicated and performs post-anesthesia monitoring. Some preparatory work and patient monitoring is required outside of scheduled lab time.

2 hours of lecture, 3 hours of lab per week — Prerequisite: VET 2011, 2050, 2070

[Course fee: $25]

VET 2030 Animal Nutrition (2) **fall**

This course covers various nutrients and their metabolism and diet formulation for common domestic and lab animals, including species variation in nutritional requirements. Practical information regarding client education for feeding both large and small animals is presented, as is the use of prescription diets for small animals. Nutrition-related diseases are also discussed.

2 hours of lecture per week — Prerequisite: VET 1020

VET 2040 Reproduction & Genetics (3) **spring**

This course provides instruction in genetics and comparative reproductive physiology of domestic animals and covers reproductive management, including heat detection; determination of pregnancy; management of pregnant animals and parturition; and reproductive failure. The student learns how to assist a veterinarian with reproductive and obstetrical procedures.

3 hours of lecture per week — Prerequisite: VET 2070

VET 2050 Veterinary Applied Lab Methods (4) **fall**

In this course, the student learns medical nursing skills including bandaging, responding to medical emergencies, performing CPR, handling trauma cases, preparing animals for specific diagnostic procedures, obtaining an EKG, completing blood transfusions, and offering fluid therapy. The student also collects and evaluates cytological specimens.

3 hours of lecture, 3 hours of lab per week — Prerequisite: VET 1020, 1040, 1060

[Course fee: $25]

VET 2060 Veterinary Office Procedures (3) **spring**

In this course, the student reviews material on professionalism and interactions with clients that they have been introduced to in other courses before progressing to new information on interpersonal communication, professional correspondence, legal issues regarding medical records, organizing an office, financial record keeping, OSHA compliance, evaluating a potential job position, and getting and keeping a job.

3 hours of lecture per week

VET 2070 Veterinary Pharmacology & Toxicology (3) **fall**

This course reviews dose calculation, dispensing, administration of medications. The metabolism of commonly used veterinary medications and their beneficial and potential harmful effects on the body are covered. The student becomes familiar with common poisonous substances and plants and learns how to assist a veterinarian in treating toxicity cases.

3 hours of lecture per week — Prerequisite: VET 1020, 1040, 1060

VET 2080 Animal Behavior (2) **fall**

This course gives the student a grounding in the natural behaviors of common domestic species including neural, genetic, and endocrine bases for these behaviors. In addition, many aspects of clinical behavioral medicine are covered, including patient history-taking; reviews of common behavioral problems of dogs and cats; patient evaluation; behavior modification; and drug therapy.

2 hours of lecture per week

VET 2090 Veterinary Technician National Exam Prep Seminar (1) **spring**

This course is a comprehensive review of the core curriculum material presented in the first three semesters of the program to prepare the student for standardized professional examinations such as the Veterinary Technician National Exam (VTNE).

2 hours of seminar per week — Prerequisite: VET 2011, 2030, 2050, 2070

VET 2720 Veterinary Supervisor (1) **fall/spring**

This supervisory course is required for all veterinary technology students and is repeatable for credit.

Prerequisite: 2 semesters of VET 1051

VET 2801 Summer Externship (0) **summer**
The student enrolls in this externship after successful completion of the first-year core curriculum. The externship consists of a summer practicum of a minimum of 300 hours. The student may attend one or more sites in order to gain the appropriate experiences. Successful completion of the externship is required for graduation. Pass/No Pass.

VET 2802 Summer Externship Review (1) **fall**
This course is the review portion of VET 2801.
[Course fee: $250] Prerequisite: VET 2801

Special Topics (XXX)

XXX X610 Special Topics **as required**
These courses are for one-time or special offerings that don't have an approved course number. They may be in any subject area and the credits may vary. The special topics course requirements and evaluation criteria are developed by the instructor, subject to department approval. Details of specific course content are available from the Department Chair for the subject offered.

XXX X620 Special Topics **as required**
These courses are for one-time or special offerings that don't have an approved course number. They may be in any subject area and the credits may vary. The special topics course requirements and evaluation criteria are developed by the instructor, subject to department approval. Details of specific course content are available from the Department Chair for the subject offered.

XXX X710 Special Topics **as required**
These courses are for one-time or special offerings that don't have an approved course number. They may be in any subject area and the credits may vary. The special topics course requirements and evaluation criteria are developed by the instructor, subject to department approval. Details of specific course content are available from the Department Chair for the subject offered.

XXX X720 Special Topics **as required**
These courses are for one-time or special offerings that don't have an approved course number. They may be in any subject area and the credits may vary. The special topics course requirements and evaluation criteria are developed by the instructor, subject to department approval. Details of specific course content are available from the Department Chair for the subject offered.

Vermont Tech People

VSC Board of Trustees

Senior Staff

Patricia Moulton
President

Sarah A. Ballou
Admissions Specialist, VSEA Representative

Sarah Billings-Berg
Associate Dean of Nursing

Amanda Chaulk
Director of Marketing & Communications

Jean-Marie Clark
Dean of the Williston Campus

Dwight Cross
Associate Dean of Enrollment & Alumni Relations

Maureen Hebert
Associate Dean of Industry Relations
& Workforce Development

Jay Paterson
Dean of Student Affairs

Kelly Rue Riso
Director of Payroll & Employee Services

Allan Rodgers
Interim Dean of Academic Affairs & Strategic Planning

James Smith
Chief Technology Officer

John Littleton Tyler
Dean of Administration

Jessica Van Deren
Assistant Dean of Admissions, VSC UP Representative

Administrators

Steven Airoldi
Assistant Director of Secondary Education

Preston Allen
Automotive Technology Lab Technician

Nate Ball
Assistant Director of Admissions

Katherine Barwin
Project Manager, CEWD

Kenneth Bernard
Instructional Technology Specialist

Stephen Bohnyak
Assistant Chief Technology Officer

Karry Booska
Director of Career Development

Anna Bouchard
Coordinator of Student Activities
Residence Hall Director

Rick Brown
Diesel Technology Lab Technician

Beth Camp
Student Success Specialist

Bonnie Chamberlin
Education Training Manager, CEWD

Jill Chapleau
Veterinary Technology Lab Technician

Caitlyn Clark
International Student Resource Coordinator

Carrie Clement
Assistant Director of Marketing & Communications

William Coberly
LAN/System Administrator

Mary Cooper
CAS Coordinator

Julie Cote
Nursing Site Director, NEK Region

William Crossman
Director of the Anaerobic Digester

Charles Dana
Field Foreman

Erica Dana
Academic Scheduler

Zina Dana
Landscape & Horticulture Lab Technician

Elizabeth Demers
Project Manager, CEWD

Rosemary Distel
Associate Academic Dean

Caitlin Edney
Librarian I

Skye Erskine
Academic Counselor
Coordinator of Grant Data

Paul Evans
Senior Desktop Support Technician

Nick Farrington
Grounds Supervisor

Geoffrey Finkels
Architectural & Civil Engineering Lab Technician

Emile Fredette
Director of Public Safety

Susan Fredette
Assistant Director of Admissions

Leah Gifford
SHAPE Facilities Manager & Intramurals Coordinator

Jennifer Gile
Assistant Director of Admissions

Denise Giroux
Dental Hygiene Clinical Administrator

Julia Goldstein
Project Manager, CEWD

Robin Goodall
Learning Specialist

Michelle Graham
Executive Assistant to the President

Ellen B. Grimes
Director of Dental Hygiene

Nancy Guild
Assistant to the Dean of Student Affairs

Robin Guillian
Aviation Program Director

Angela Hildenbrand
Coordinator of Student Accounts

James Hill
Assistant Director of Facilities

Racheal Hill
Assistant to the Dean of Administration

Cassandra Holbrook
Assistant to the Academic Dean

Benjamin Hulbert
Assistant Director of Admissions

William Ix
Senior Helpdesk Technician

Caitlin Janus
Stable Manager

James Jarvis
Lab Technician

Mary Kathryn Juskiewicz
Director of Residence Life

Jane Kearns
Director of the Hartness Library

Rachel Krevetski
Chemical Hygiene Officer & Science Lab Technician

Hilary Linehan
Director of Athletics

Bonnie Lord
Librarian II

Judy Luce
Assistant Director of Financial Aid

Cory Lussier
Assistant Director of Admissions & Campus Visit & Outreach Coordinator

Theodore C. Manazir
Coordinator of Student Affairs & Residence Director

Theodore R. Manazir
Director of the Physical Plant

Jessica Mascola
Human Resources Specialist

Kathleen Mason
International Student Resource Coordinator

Catherine McCullough
Director of Financial Aid

Shawn McElwain
Assistant Director of Admissions & Transfer Coordinator

Tracy McGuiness
Director of Clinical Education, RSP

Andrea Morgan
Assistant Stable Manager

Stephanie Nault
Farm Manager

Curtis Ostler
Associate Dean of Research Development

Dianne Percy
Education Training Specialist, CEWD

Sue Polen
Director, CAS

Steven T. Prochet
Librarian I

Rebecca Randall
Nursing Site Director, SW Region

Robert Royce
Electrical Engineering Lab Technician

David Rubin
Associate Dean of Administration

Shelly Russ
Registrar

April Shaw
Librarian II

Savannah Simonds
Marketing Coordinator

Robert Sivret
Health Services Coordinator

Michelle Stearns
Simulation Program Director

Elizabeth Steele
Nursing Site Director, SE Region

Jamie Stone
Project Manager, CEWD

Lisa Sullivan
Nursing Site Director, NW Region

Mary Jeanne Taylor
Conference, Events, & Camp Coordinator

Donna Teasdale
Business Manager, Williston

Faye Tolar
Coordinator of Respiratory Therapy

Alex Tyrrell
Student Life Associate

Cheyanne Warren
Director of Dental Therapy

Molly Willard
Project Manager, Agricultural Training, CEWD

Amanda Williams
Veterinary Technology Lab Technician

Paul Winters
Assistant Director of Admissions & IT Recruitment Specialist

Linda Segovia Wise
STEM Specialist

Carrie Wright
Project Manager, CEWD

Michael Wright
Mechanical Engineering Lab Technician

Staff

Ghislaine Baker
Student Services Consultant

Schneida Bruny
Administrative Assistant, Admissions

Gordon D. Burch
Custodian/Housekeeper II

Francis Chase
Digester Transfer Technician

Michael Chase
Farm Technician

Thor E. Christensen
Security Officer II

Gerri-Lyn Cohen
Nursing Program Staff Assistant

Florence (Maria) Cornell
Mailroom Supervisor

Douglas Currier
Security Officer II

Candy Daniels
Acquisitions Coordinator

Dominic Delia
Security Officer II

Patricia Gast
Records Specialist III

Veronica Golden
Circulations Coordinator

Sefik Gosto
Security Officer II

Kim Hannon-Brobst
Remote Access Services Coordinator

John Hernandez
Security Officer II

Brian Ingalls
Security Officer

Darlene Jones
Records Specialist III

Violeta Kribstock
Custodian/Housekeeper II

Asa Leavitt
Maintenance Technician II

Cecilia Legacy
Custodian/Housekeeper II

Leigh Lyon
Custodian/Housekeeper III

Pamela Mandell
Nursing Program Staff Assistant

Eric Maxham
Security Officer II

Marc McPhetres
Vehicle Mechanic Technician

Laura McNally
Dental Hygiene Staff Assistant

Jeffrey Metzler
Librarian II

Corey Morrill
Custodian/Housekeeper II

Zyla Nuite
Senior Mechanical Systems Technician

Christina Potwin
Custodian/Housekeeper III

David Race
Mechanical Systems Technician I

Gary Rogler
Security Officer II

Rita Rotta
Custodian/Housekeeper II

Sandra Sargent
Nursing Program Staff Assistant

Troy Seckington
Security Officer II

Denise Taff
Nursing Program Staff Assistant

Julie Taylor
Technical Services Librarian

Karen Tetreault
Senior Staff Assistant

Marla Tillberg
Student Services Consultant

Curt Ukasick
Senior Mechanical Systems Technician

Elizabeth Whooley
Financial Aid Specialist II

Richard Wright
Custodian & Grounds

Emeritus Faculty

Byron H. Angell
Professor Emeritus: Mathematics
BA, University of Vermont
MAT, Norwich University

Calvin Blessing
Professor Emeritus: Agriculture
BS, Lafayette College
DVM, Cornell University

Paul Calter
Professor Emeritus: Mathematics
BS, Cooper Union School of Engineering
MS, Columbia University

Ned E. Herrin, Jr., PE *(deceased)*
Professor Emeritus: Civil & Environmental
BSCE, University of New Hampshire
MSCE, Purdue University

Alan W. Ricketts *(posthumous)*
Professor Emeritus: Electrical & Computer
BS, MS, EE, Mass Institute of Technology

Kenneth J. Vandermark
Professor Emeritus of Electrical & Computer
BS, Clarkson College of Technology
MS, Rensselaer Polytechnic Institute

Harold G. Wirtz, PE
Professor Emeritus: Civil & Environmental
BSCE, University of Iowa
MS, University of Wisconsin

W. Robert Wonkka
Professor Emeritus: Mathematics
AB, Wesleyan University
MEd, Harvard University

Faculty

Sheila C. Bannister (2007)
Associate Professor: Dental Hygiene
BS, Northeastern University
MEd, Johnson State College

Sherry Barnard (2013)
Assistant Professor: Nursing
BSN, Sacred Heart University
MSN, Walden University

Stephen P. Belitsos (2000)
Professor & Chair: Diesel
BS, University of Massachusetts , Amherst

Carl Brandon (1977)
Professor: Science
BS, Michigan State University
MS, PhD, University of Massachusetts

Sally Caldwell (2015)
Assistant Professor: Science
BS, Northwestern Oklahoma State University

Peter C. Chapin (1986)
Professor: Computer & Information Systems
BSEE, Western New England College
MSEE, University of Illinois
PhD, University of Vermont

Jeremy Cornwall (2013)
Assistant Professor & Chair: Mechanical, Manufacturing
BS, MS, University of California: Davis

J. Mark Corrao (1976)
Professor: Electrical & Computer
BSEE, University of Maine
MSEE, Purdue University

Karen Cote (2016)
Assistant Professor: Nursing
LPN, ADN, New Hampshire Technical College
BSN, Franklin Pierce University

Aimee Creelman (2015)
Assistant Professor: Nursing
BA, Denison University
MS, San Francisco State University

Kimberly Crowe (2013)
Assistant Professor & Chair: Agriculture
BS, University of Illinois: Chicago
DVM, St. Matthews University

Bethany Crowley (2018)
Assistant Professor: Nursing
BSN, University of Massachusetts, Amherst

Susan Currier (2018)
Faculty Librarian
BA, Keene State College
MEd, Trinity College

Craig A. Damon (2007)
Professor: Computer & Information Systems
BA, Bowdoin College
PhD, Carnegie Mellon University

Leslie Damon (2018)
Assistant Professor: Computer & Information Systems
BA, Bowdoin College
MS, University of Vermont

Linda M. Davis (1989)
Professor: Mathematics
BS, SUNY Albany
MA, Norwich University

Catherine Dewey (2016)
Assistant Professor: Nursing
BS, MS, Norwich University

John W. Diebold, LS (2005)
Professor: Civil & Environmental
AE, Vermont Technical College
BS, Norwich University
MS, University of Vermont

Stephanie Dorosko (2012)
Associate Professor: Science/Vet Technology
BA, Trinity College
DVM, PhD, Tufts University

Fen Du (2016)
Assistant Professor: Mechanical
BS, MS, Huazhong University of Science & Technology
PhD, New Jersey Institute of Technology

Marlys E. Eddy (2007)
Associate Professor & Chair: Landscape
BA, MS, University of Vermont

Ralph M. Esposito (2002)
Professor & Chair: Electrical & Electromechanical
BEE, Villanova University
ScM, PhD, Brown University

Mary E. Findley (2007)*
Professor: EHSS
BA, Southern Vermont College
MA, Norwich University

Matthew D. Gallagher (2003)
Professor & Chair: Computer Engineering
BS, University of Vermont
PhD, Dartmouth College

Christopher Gray (2016)
Assistant Professor: Mechanical
AS, BS Keene State College
MA, Norwich University

Jean F. Hakim (2009)
Associate Professor & Chair: Computer & Information Systems
BS, Seton Hall University
MS, New Jersey Institute of Technology

Linda Havey (2015)
Assistant Professor: Nursing
ADN, Vermont Technical College
BSN, Drexel University
MSN, Norwich University
DNP, Duquesne University

Thomas Hecimovich (2018)
Assistant Professor: Veterinary Technology
BA, Dartmouth College
DVM, University of Minnesota

Jeffrey Higgins (1987)
Professor & Chair: EHSS
BS, SUNY, Plattsburgh
MS, Iowa State University
EdD, University of Vermont

Mary K. Hill (2010)
Associate Professor: Nursing
BSN, MSN, South University

Leslie Hills (2004)
Professor: Dental Hygiene
BS, MEd, University of Vermont

Gregory Hughes (1991)
Professor & Co-chair: Business
BS, Villanova University
MBA, University of Vermont
JD, Vermont Law School

David B. Jarmy (1979)
Professor: Electrical & Computer
BS, University of Wales, College of Swansea

Ethan Johnson (2011)
Assistant Professor: Automotive
AS, Vermont Technical College

John N. Kidder, Jr. (2002)
Professor: Mechanical, Chair: Renewable Energy
BA, Occidental College
MS, University of Vermont
PhD, University of Washington

Virginia Kittell (2016)
Assistant Professor: Nursing
AS, Vermont Technical College
BSN, Chamberlain College of Nursing
MSN, Norwich University

John H. Knox (1972)
Professor: Mathematics
BS, Norwich University
MA, University of Vermont

Josephine Kruse (2016)
Assistant Professor: Nursing
BA, Hampshire College
BS, Duquesne University
MSN, New York University

Jason LaCroix (2004)
Professor & Chair: Mathematics
BA, Western New England College
MS, University of Vermont

Ross Lieb-Lappan (2017)
Assistant Professor: Science
BA, Middlebury College
MS, University of Vermont
PhD, Dartmouth College

Sosten Lungu (2007)
Associate Professor: Agriculture
BS, University of Zambia
MS, PhD, Mississippi State University

Michael Marceau (2002)
Professor: Electrical & Computer
BS, MS, University of Vermont

Tina K. Marshall (2004)
Professor: Dental Hygiene
AS, BS, MEd, University of Vermont

Brad J. Miller, PE (1989)
Professor: Architectural & Building
BS, Kansas State University
MA, California State University
MA, Norwich University

Russell Mills (1981)
Professor: EHSS
BA, Wesleyan University
MS, Rensselear Polytechnic University
PhD, Indiana University

Andrew R. Myrick (2005)
Professor & Chair: Construction
BS, MA, University of Vermont

John J. O'Donnell, Jr. (1984)
Professor: Science
BS, University of New Hampshire
MS, Michigan State University

Mary L. O'Leary (2009)
Associate Professor & Chair: Civil & Environmental
BA, SUNY, Buffalo
MS, Cornell University

Jeremy Ouellette (2013)
Assistant Professor: Computer & Information Systems
BS, St. Lawrence University
PhD, Dartmouth College

Robert L. Palmer (2007)
Associate Professor & Chair: Automotive
AS, Vermont Technical College
BA, Johnson State College

Jason Pelletier (2014)
Assistant Professor: Nursing
ADN, Vermont Technical College
BSN, University of Vermont
MSN, University of Phoenix

Amanda Perkins (2013)
Assistant Professor: Nursing
AS, LPN, ADN, Vermont Technical College
BSN, MSN, Chamberlain College of Nursing

Connie Powell (2014)
Assistant Professor: Nursing
AS, Illinois Central College
BSN, MSN, Franklin Pierce University

J. Chris Reilly, PE (2007)
Associate Professor & Chair: Architectural
BS, MS, University of Kentucky

Rachel E. Repstad (2005)
Professor: Mathematics
BS, Johnson State College
MS, University of Vermont

Gordon P. Reynolds, PE (2016)
Associate Professor: Construction
BS, University of Alabama
MCE, Norwich University

Joan Richmond-Hall (2001)
Professor: Science
AB, Smith College
PhD, Boston University

Jessica Riley (2010)
Associate Professor & Program Director: Equine Studies
AS, Vermont Technical College
BS, University of Vermont
MA, Johnson State College

Lori A. Rivers (2009)*
Associate Professor: Business
BS, Castleton State College
MFA, Vermont College of Norwich University

Scott A. Sabol, PE (1999)
Professor: Architectural
BA, BE, Dartmouth College
MS, Pennsylvania State University

Michelle Sama (2012)
Associate Professor: Science
BS, Marist College
PhD, University of Kentucky

Anna Seaver (2015)
Assistant Professor: Nursing
BA, Mount Holyoke
BSN, UMass: Amherst
MSN, UMass: Boston

John F. Skoda (2016)
Assistant Professor: Computer
BA, Vermont College of Norwich University
MA, Union Institute

Christopher J. Smith (2009)
Associate Professor: EHSS
BA, Green Mountain College
MEA, Goddard College
MEd, PhD, Union Institute & University

Inge Smith-Luce (2012)
Associate Professor: Nursing
ADN, Vermont Technical College
BA, University of Vermont
BSN, Chamberlain College of Nursing
MSN, University of Phoenix

Andre J. St. Denis (1982)
Professor: Electrical & Computer
BA, SUNY, Plattsburg
MS, University of Illinois

Craig S. Stalnaker, RVT (1995)
Professor: Veterinary Technology
BS, MS, Texas A&M University

Carolyn V. Stannard-Carlo (1998)
Professor: Nursing
BS, SUNY, Plattsburgh
MS, SUNY, Institute of Technology at Utica/Rome

Deborah L. Swartz (1994)
Professor: Nursing
BSN, University of Vermont
MSN, University of Phoenix

Sara Tator (2018)
Assistant Professor: Nursing
BS, Massachusetts College of Liberal Arts
BSN, Southern Vermont College
MSN, Chamberlain College of Nursing

Joyce W. Twing (1989)*
Professor & Co-chair: Business
AAS, Berkshire Christian College
BS, Central Connecticut State College

Chengjun Wang (2012)
Assistant Professor: Computer & Information Systems
BS, Shandong University
ME, Chinese Academy of Science
PhD, Auburn University

Joseph T. Witt, III (2006)*
Professor: Construction
AS, BS, Vermont Technical College
AS, University of Massachusetts

Eric Wolinsky (2009)
Associate Professor: Construction
BA, Ohio State University
MEd, Vermont College

**Instructor is on sabbatical for all or part of the year*
For part-time faculty, see the college directory.

Advisory Committees

Agribusiness Management
Dairy Farm Management
Diversified Agriculture

Michael Audet
Ledge Haven Farm, Orwell, VT

Ransom Conant
Riverview Farm, Richmond, VT

Brett Denny
VT Dairy Herd Improvement Association, White River Jct, VT

Alison Hooper
Ayers Brook Goat Dairy, Randolph, VT

Keith Sprague
Sprague Ranch, Brookfield, VT

Architectural & Building Engineering Technology

David Anderson '96
Green Mountain Coffee Roasters, Waterbury, VT

David Burley
Department of State Buildings, Montpelier, VT

Michael Buscher
T. J. Boyle & Associates, Burlington, VT

Pete Gagnon '04
ENGVT, Richmond, VT

Peter Gibbs
Engineering Ventures, Inc., Burlington, VT

David Gover
PC Construction Co., Essex Junction, VT

Jay Pilliod
VEIC, Burlington, VT

Keith Robinson, AIA '86
Black River Design, Montpelier, VT

David Roy '87
Wiemann-Lamphere Architects, Colchester, VT

Automotive Technology

Teve Bingham
Hartford Area Career & Tech Center, Hartford, VT

Rodney Brooks
Performance Unlimited, Bridgewater, VT

Dan Camber
Lyndon Institute, Lyndonville, VT

Bob Cody, Jr.
Cody Chevrolet, Montpelier, VT

Jonathan Dufour
Village Auto & Tire, Randolph, VT

George Dykstra
VT Auto Dealers' Association, Montpelier, VT

Mat Gilman
Mat's School Street Garage, Randolph, VT

Seayra Gilman
Matt's School Street Garage, Randolph, VT

Joel Greene
Snap-On Industries, Colchester, VT

Larry Hart
Randolph Auto & Truck Supply, Randolph, VT

Steve McInstry
Central Vermont Technical Career Center, Barre, VT

Marilyn Miller
VTAuto Dealers' Association, Montpelier, VT

Brian Nadeau
Almartin Volvo, South Burlington, VT

Casey Northrup
KC Performance, East Montpelier, VT

Baxter Weed
Cold Hollow Career Center, Enosburg Falls, VT

Business Technology & Management

Steve Beaulieu
Sentinel Funds, Inc., Montpelier, VT

Christine Gray
Hewlett-Packard Co., Brookfield, VT

Bruce MacDonald
Crystal Rock/VT Pure Springs, Burlington, VT

Bonnie Mallin
People's Bank, Burlington, VT

Frank G. McDougall, Jr.
Dartmouth Hitchcock Medical Center, Lebanon, NH

Connie Peck
Blue Cross/Blue Shield of VT, Berlin, VT

David Sanguinetti
National Life of VT, Montpelier, VT

Civil & Environmental Engineering Technology

Jaqueline Dagesse
EIV Technical Services, Williston, VT

Kim Greenwood, '99
Agency of Natural Resources, Montpelier, VT

Jeffrey Greer,
Pike Industries, Inc., Waterford, VT

Dave Hoyne, PE
Agency of Transportation, Montpelier, VT

Patricia Kules, RLS
Little River Survey Company, Stowe, VT

Gary A. Santy, PE *'78*
Stantec Consulting, South Burlington, VT

Rob Townsend, RLS, PE
American Consulting Eng & Surv, Williamstown, VT

Mike Weigand, PE
Carrara & Sons, Middlebury, VT

Computer Engineering Technology

Jeremy Audette
Red Hat, South Burlington, VT

Wolfgang Hokenmaier
Green Mountain Semiconductor, Essex Jct., VT

Doug Lewellen
Nania Memories, Williston, VT

Cody Orr
State of VT, Montpelier, VT

Michael Premsegar
IBM (Global Foundries), Essex Jct., VT

Colin Riggs
Greensea Systems Inc., Richmond, VT

Brendan Simpson
Alegra Microsystems, Manchester, NH

Jack Smith
IBM (Global Foundries), Essex Junction, VT

Computer & Information Systems

Aaron Archibald
IPNetVoice LLC

Jeff Bamberger
NuHarbor Security

Eric H. Bokelberg, PMP
IBM Corporation, Essex Junction, VT

Tyler Carr
Systems & Software, Colchester, VT

Matthew Collins
VSECU, Montpelier, VT

Tom Cook
IBM Corporation, Essex Junction, VT

Gabe Giacomo
Red River, Claremont, NH

Wes Gruber
MyWebGrocer

Lou Krieg
Green Mountain Software, Colchester, VT

Peter C. Nikolaidis
Paradigm Consulting Co., Bethel, VT

Reed Parker
People's United Bank, Burlington, VT

Dave Robideau
IBM Corporation, Essex Junction, VT

Steve Ruegsegger
People's United Bank, Burlington, VT

Kevin Thorley
Dealer.com

Matt Ward
Green Mountain Software, Colchester, VT

Construction Management

Katie Bancroft *'08*
E.F. Wall & Associates, Inc., Barre, VT

David Bogue
Professional Construction, Colchester, VT

Robert Carrera, Jr.
Carrera Construction, Rutland, VT

John Connor
Connor Contracting, Inc., Berlin, VT

Chad Contaldi *'99*
Miller Construction, Inc., Windsor, VT

Marc Kerner
Infinite Construction, New York, NY

Jon Pizzagalli, PC
Burlington, VT

Joe Poston
Wright Construction Co., Inc., Mt. Holly, VT

Tim Regan
Whiting Turner Company, Towsen, MD

Eugene Reid
Canaan High School, Canaan, VT

Dan Stover
ABC NH/VT, Concord, NH

Richard Wobby
AGC VT, Montpelier, VT

Dental Hygiene

Sheila Bannister, RDH, MEd
Northfield, VT

Cassandra Coakley, DDS
Montpelier, VT

Becky Diedrich
Montpelier, VT

Jane Geider, RDH
Barre, VT

Gabriel Mannarino, DDS
Williston, VT

Jade Piette, SDH

Amy Rodjenski, RDH
Williston, VT

Brad Turner, DDS
Burlington, VT

Diesel Power Technology

Ron Barton
Milton Cat, Inc., Milford, MA

Ward Butler
Milton CAT, Inc., Richmond, VT

Tom Chase
Bellevance Trucking, Barre, VT

Randy Clark
Clark's Truck Center, Underhill, VT

Bill Cleary
J&B International Trucks, Colchester, VT

George Dykstra
VT Auto Dealers' Association, Montpelier, VT

Joel Green
Snap-On Industries, Colchester, VT

Rich O'Neill
Ryder Transportation Systems, Manchester, NH

Steve Root
J&B International Trucks, Colchester, VT

Mike Sheldon *'79*
Sheldon Trucks Inc., Williston, VT

Devin Siva
Casella Waste Systems, Inc., Rutland, VT

Ken Thomas
Woods CRW Corp., Williston, VT

Electrical Engineering Technology

Frank Bachilas
United Technology Corp., Vergennes, VT

Ted Beach
Creare, Hanover, NH

Sam Colwell
LED Dynamics, Randolph, VT

Roger Dandurand
Global Foundries, Essex Junction, VT

Travis Dudley
Control Technologies, South Burlington, VT

Danielle Gleim
Hypertherm, Hanover, NH

Orville Johnson
Federal Aviation Administration, S. Burlington, VT

Kelly Koloski
Creare, Hanover, NH

Paul Kutchukian
United Technology Corp., Vergennes, VT

Doug Lewellen
Nanya Technology Corp., Burlington, VT

Medina Maric
Dynapower Company, LLC, S. Burlington, VT

Ed McGann
VT Electric Power Co., Inc., Rutland, VT

Don Pakbaz
Global Foundries, Essex Junction, VT

Tate Picard
Hypertherm Inc., Hanover, NH

Bruce Pilvelait
Creare, Inc., Hanover, NH

Matt Stacy
SBE, Inc., Barre, VT

Dale Tucker
United Technology Corp., Vergennes, VT

Dale Williams
NRG Systems, Inc., Hinesburg, VT

Electromechanical Engineering Technology

Ted Beach
Creare, Hanover, NH

John Butterfield, P.E.
Hallam Associates, South Burlington, VT

Sam Colwell
LED Dynamics, Randolph, VT

Roger Dandurand
Global Foundries, Essex Junction, VT

Travis Dudley
Control Technologies, South Burlington, VT

Kelly Koloski
Creare, Hanover, NH

Doug Lewellen
Nanya Technology Corp., Burlington, VT

Medina Maric
Dynapower Co., LLC, South Burlington, VT

Jeff Petter
Northern Power, Waitsfield, VT

Glenn Peura
United Technology Corp., Vergennes, VT

Bruce Pilvelait
Creare, Inc., Hanover, NH

Peter Rowan
Hazelett Strip-Casting Corp, Colchester, VT

Matt Stacy
SBE, Inc., Barre, VT

Gene Steinfeld
Rhino Foods Inc., Burlington, VT

Scott Teuscher
Applied Research Associates, Inc., Randolph, VT

David Timian
Applied Research Associates, Inc., Randolph, VT

Dale Williams
NRG Systems, Inc., Hinesburg, VT

Equine Studies

Ann Williams Clafin
River Run Farm, Bradford, VT

Karen Clark
Colchester, VT

Michelle Kingston
Brandon, VT

Mary Jane Nau
Shelburne, VT

Tracy Ostler
White River Jct., VT

Terry Rose
Braintree, VT

Katherine Selby
The Equestry, New Haven, VT

Fire Science

Chief Peter Lynch
VT Fire Academy, Pittsford, VT

John Moniz
Burlington Fire Department, Burlington, VT

Chief Ken Morton
Williston Fire Department, Williston, VT

Captain Bradley Reed, PFFV
St. Johnsbury Fire Department, St. Johnsbury, VT

Captain James Wheatly
Lebanon Fire Department, Lebanon, NH

Landscape Design & Sustainable Horticulture

Andre Blais
Stowe, VT

Nate Carr
Church Hill Landscape, Charlotte, VT

Cal Felicetti
Chippers, Woodstock, VT

Sarah Holland
River's Bend Design, Moretown, VT

Joan Lynch
Inner Gardens, Middlebury, VT

Charlie Nardozzi
Shelburne, VT

Dr. Leonard Perry
UVM Extension, Colchester, VT

Jack Rossi
Woodstock, VT

Manufacturing Engineering Technology

Ron Aldrich
North Hartland Tool, North Hartland, VT

Joseph Ciambra
Hypertherm, Lebanon, NH

Andrew Davidson
Superior Technical Ceramics, St. Albans, VT

Emir Heco
Heco Engineering, Essex Jct., VT

Tim Holmes
GW Plastics, Bethel, VT

Zac Kerin
N.H. Industries, Lebanon, NH

Randall Ouellette
GE Aviation, Rutland, VT

Phil Pouech
All Earth Renewables, Williston, VT

Frank Romano
Woodstock, VT

John Silvia
GW Plastics, Bethel, VT

Mechanical Engineering Technology

John Currier
Dartmouth College, Hanover, NH

Dana Howe '99
G. W. Plastics, Bethel, VT

Zac Kerin
N.H. Industries, Lebanon, NH

Jason Rittenour
Applied Research Associates, Randolph, VT

Rob White
Hazelett Strip Casting, Colchester, VT

Nursing

BSN

Billie-Lynn Allard, RN, MSN
Southern VT Medical Center, Bennington, VT

Susan Boyer, RN, MEd, FAHCEP
VT Nurses in Partnership, Windsor, VT

Saleem R. Choudhury, DNP, MBA, CEN, FAEN
Northeastern VT Regional Hospital, St. Johnsbury, VT

Lynn Dickinson
VSC Board of Trustees, St. Albans, VT

Anna Gerac, RN, MSN
Randolph, VT

Eileen Grover, RN, MSN
Brattleboro Retreat, Brattleboro, VT

Debra P. Hastings, PhD, RN-BC, CNOR
Dartmouth Hitchcock Medical Center, Hanover, NH

Pat Menchini, RN, MSN
Randolph, VT

Mary Val Palumbo, DNP, APRN, GNP-BC
UVM, Burlington, VT

Lori Profota, RN, DNP
Copley Hospital, Morrisville, VT

Barbara Richardson, RN, MS
Southwestern VT Medical Center, Bennington, VT

Lisa Strate, RN, DNP
UVM Medical Center, Burlington, VT

Tracey Toner, RN, MSN
UVM Medical Center, Burlington, VT

Mary Urquhart, RN, MSN
Brattleboro Memorial Hospital, Brattleboro, VT

Central Region

Nancy Baker, RN, '10
Woodridge, Barre, VT

Mary Ellen Bean
Central VT Career Center, Randolph, VT

Melissa Carpenter
Randolph Technical Center, Randolph, VT

Brooks Chapin
Menig Nursing Home, Randolph Ctr, VT

Mary Anne Douglas, RN, BS, CPHN
VA Medical Center, White River Jct, VT

Anna Gerac, RN, MSN
Randolph, VT

Pat Menchini, RN, MSN
Randolph, VT

David Mitchell
VT Psychiatric Care Hospital, Berlin, VT

Walter Peterson, RN
Stowe, VT

Barbara Quealy, RN
Gifford Medical Center, Randolph, VT

Dessa Rogers
Gifford Medical Center, Randolph, VT

Jessica Ryan
Gifford Medical Center, Randolph, VT

Jessica Sherman
Central VT Medical Center, Barre, VT

Amy Thornton
Menig Nursing Home, Randolph Ctr, VT

Gail Washburn
Central VT Medical Center, Barre, VT

Northeast Kingdom Region

Thomas Anderson
Lyndon State College, Lyndonville, VT

Nolan Atkins, PhD
Northern Vermont University, Lyndonville, VT

Celine Champine, RN
North Country Career Center, Newport, VT

Seleem Choudhury, DNP, MBA, CEN, FAEN
Northeast VT Regional Hospital, St. Johnsbury, VT

Avril Cochran, RN, MSEd, CPHS, CPHRN
North Country Hospital, Newport, VT

Jennifer Gundy
Community College of VT, St. Johnsbury, VT

Debra P. Hastings, PhD, RN-BC, CNOR
Dartmouth-Hitchcock Medical Center, Lebanon, NH

Diana Lafountain, MSN, RN
The Pines, Lyndonville, VT

Kathleen McIsaac
Community College of VT, Newport, VT

Ellen Niles, RN
Maple Lane Nursing Home, Barton, VT

Deanna Orphanidis, MS, RN
Mt. Ascutney Hospital, Windsor, VT

Laura Remick, MEd, CHES
Area Health Education Center, St. Johnsbury, VT

Patricia Russell, RN
Union House, Glover, VT

Wendy Windsor, MAPC
Dartmouth-Hitchcock Medical Center, Lebanon, NH

Northwest Region

Jane Catton, RN, MSN
Northwestern Medical Center, St. Albans, VT

Amanda St. Cyr
Birchwood Terrace Healthcare, Burlington, VT

Darlene Murphy
Community College of VT, Winooski, VT

Ellen Read, RN
Franklin Cty Home Health Agency, St. Albans, VT

Michelle Parent
VT Interactive Technologies, Williston, VT

Janet McCarthy, BSN, MSA, RN
Franklin County Home Health, St. Albans, VT

Suzanne K. Murdock, RN, MSN
UVM Medical Center, Burlington, VT

Marilyn Savoy
Franklin Grand Isle Workforce, St. Albans, VT

Jane Suder, MSN, RN
Franklin County Rehab Center, St. Albans, VT

Douglas Sutton
UVM Medical Center, Burlington, VT

Southeast Region

David Alstadt
SEVCA, Westminster, VT

Beth Brothers
Southern VT Area Health Ed Center, Springfield, VT

Rebecca Burns, RN
Pine Heights, Brattleboro, VT

Eileen Glover, MSN, RN-BC
Brattleboro Retreat, Brattleboro, VT

Susan Lawson Kelleher
Youth Services, Brattleboro, VT

Laurie Madden, RN, BSN
Cedarcrest Ctr for Children w/ Disabilities, Keene, NH

Nathan Olmstead
Grace Cottage Hospital, Townshend, VT

Wanda Scully, RN
Vernon Green Nursing Home, Vernon, VT

Mary Urquhart, RN
Brattleboro Memorial Hospital, Brattleboro, VT

Tom Yahn
Windham Regional Collegiate HS, Brattleboro, VT

Southwest Region

Billie Lynn Allard, RN, MS
Southern VT Healthcare, Bennington, VT

Megan Beattie-Cassan, RN *'05*
Northshire Medical Center, Manchester, VT

Gail Colgan, BSN, RN
Bennington Health & Rehabilitation Center, Bennington, VT

Pat Crossman, RN *'06*
VT Veterans' Home, Bennington, VT

Christina Cullinane, RN, BSN, CCRC
VT Veterans' Home, Bennington, VT

Peg Daly RN BS SD-CLTC
Southwestern VTHealthcare, Bennington, VT

Colleen Dewey, RN
VT Veterans' Home, Bennington, VT

Millie Dunn, MS, RN
Manchester Home Health, Manchester, VT

Barbara Fane, MS, RN
Centers for Living & Rehabilitation, Bennington, VT

Carol Hoard
Southwestern VT Medical Center, Bennington, VT

Juli House, RN
Manchester Health Services, Manchester Center, VT

Jeannie Jenkins, MS
Community College of VT, Bennington, VT

Barbara Richardson, MS, RN-BC, CCRN
Southern VT Healthcare, Bennington, VT

Kathryn Slade, RN, BSN
Southwest VT Career Development Center, Bennington, VT

Drew Totten, RN, BSN, BS
Southwestern VT Medical Center, Bennington, VT

Professional Pilot Technology

Kathy Daily
Vermont Flight Academy

Jennifer Davis
Vermont Aviation

Captain Eric Doze
White Mountain Insurance, Norwich, VT

Ted Dudley
Delta Air Lines, Inc, Colchester, VT

Richard Ferno *'64*
VT Flight Academy, Burlington, VT

Captain Steve Guillian
jetBlue Airways, Burlington, VT

Jennifer Hoy
Republic Airways, Burlington, VT

Captain Steve Krieger
jetBlue Airways, Burlington, VT

Julian Kulski
Continental Airlines, Burlington, VT

Captain Larry Miller
jetBlue Airways, Burlington, VT

Jon Pizzagalli
Pizzagalli Construction, VT

Captain Larry Stoneking
Charlotte, VT

Hobart Tomlinson
Heritage Aviation Safety Officer, Burlington, VT

Chris Weinberg
FlightSafety International, Jericho, VT

Renewable Energy

Trevor Atkinson
Northern Power Systems, Barre, VT

David Franks
Sunwood Systems, Waitsfield, VT

David Blittersdorf
All Earth Renewables, Williston, VT

Dana Kinney
Catamount Solar, Randolph, VT

Martha Staskus
VERA Renewables, Waterbury, VT

William White
SEI, Montpelier, VT

Respiratory Therapy

Becky Bacon, RRT
Champlain Valley Physicians Hospital, Plattsburgh, NY

Emily Burnett, MS, RRT
Vermont Tech, Wilder, VT

Ryan Clouser, MD
Dept. of Medicine, UVM, Burlington, VT

Karen Cutting, RRT
Dartmouth Hitchcock Medical Center, Lebanon, NH

Elizabeth Denton, RRT
UVM Medical Center, Burlington, VT

Jason Fahey, RRT
Central Vermont Medical Center, Berlin, VT

Susan Fredette
Vermont Tech, Randolph Center, VT

April Gagne, RRT
UVM Medical Center, Burlington, VT

Jennifer Gile
Vermont Tech, Randolph Center, VT

Michelle Hickey, AS, RRT
Rutland Regional Medical Center, Rutland, VT

Brad Holcomb, BS, RRT
UVM Medical Center, Burlington, VT

Ben Hulbert
Vermont Tech, Williston, VT

Steven Hurd, AS, RRT
North Country Medical Center, Newport, VT

Veronika Jedlovsky, MD
North Country Medical Center, Newport, VT

Hannah Magro
Rutland Regional Medical Center, Rutland, VT

Matt McNally, RRT
Dartmouth Hitchcock Medical Center, Lebanon, NH

Tracy McGuinness, MEd, RRT
Vermont Tech, Williston, VT

Betsy McLane
Burlington Technical Center, Burlington, VT

Patricia Moulton
Vermont Tech, Randolph Center, VT

Major Munson, AS, RRT
UVM Medical Center, Burlington, VT

Robert Noel, RRT
Champlain Valley Physicians Hospital, Plattsburgh, NY

Allan Rodgers
Vermont Tech, Randolph Center, VT

Rebecca Ryan
American Lung Association, VT Chapter, Williston, VT

Faye Tolar, MEd, RRT
Vermont Tech, Williston, VT

Patrick Von Kannewurff, RRT
Dartmouth Hitchcock Medical Center, Lebanon, NH

Veterinary Technology

Ruth Blauwiekel, DVM, PhD
UVM, Burlington, VT

Nancy Clements
Berlin Veterinary Clinic, Montpelier, VT

Abbey Dattilio
Neurology Dept, UVM, Burlington, VT

Kristin M. Haas, DVM
Agency of Agriculture, Montpelier, VT

Karen Gabarino
Johnson, VT

Ted Johnson, DVM
VT-NH Veterinary Clinic, East Dummerston, VT

Betsey Kelley
Randolph, VT

Steven B. Metz, DVM
Shelburne Veterinary Hospital, Shelburne, VT

Thomas L. Munschauer, DVM
Middlebury Animal Hospital, Middlebury, VT

Martha Rose
Butler Company, Orford, NH
Kurt S. Schultz, DVM, MS, DACVS

Index

A

Academic Advising 20
Academic Affairs 20-34
Academic Calendar 3-5
Academic Counseling 31
Academic Dismissal 24
Academic Dismissal, Appeal of 24
Academic Probation 24
Academic Recognition 7
Academic Standing 23-24
Accounting Courses 121
Accreditation 7
Activity Fee 41
ADN Clinical Excellence Award 27-28
Add/Drop Period 22
Additional Admissions Requirements, ADN 12-13
Additional Admissions Requirements, BSN 13
Additional Admissions Requirements, PMD 11
Administrators 180-181
Admissions 11-19
Admission Deposits 15
Advanced Software Development Certificate 51
Advanced Standing 12
Advisory Committees 185-190
Agribusiness Management Program 52-53
Agriculture & Animal Science Courses 125-127
Allied Health Science Courses 128
Alpha Delta Nu 26
American Society of Civil Engineers Award 28
American Society of Heating, Refrigeration, & Air-Conditioning Engineers Award 28
Angus A. Murray Award for Excellence In Writing 28
Appeal of Academic Dismissal 24
Appeal Denial, SAP 46
Appeal Process, SAP 46
Application Deadlines 11
Applied Business Management Program 54
Appropriate Dress (Aviation) 38
Architectural Engineering Technology Courses 128-131
Architectural & Building Engineering Technology Program 55-56
Architectural Engineering Technology Program 57-58
Arts & Humanities Electives 49
Assignment Requirements 20
Assistive Technology 31
Associate Degree in Nursing Program 105-106
Associate Degree Requirements (Gen Ed) 48
Atmospheric Sciences Courses 131
Attendance Requirements 20
Auditing Courses 21
Automotive Technology Courses 131-133
Automotive Technology Program 59
Aviation Courses 121-125
Aviation Flight Fees 37
Aviation Program 109-110
Awards 27-31

B

BSN Nurse Leadership Award 28
Bachelor’s Degree in Nursing Program 106-107
Bachelor’s Degree Requirements (Gen Ed) 48-49
Bennington Campus 8-9
Biological Sciences Courses 133-134
Board 40
Board of Trustees, VSC 180
Bookstore 41
Brattleboro Campus 9
Business Courses 134-136
Business Technology & Management Faculty Award 28
Business Technology & Management Program, AAS 60-61
Business Technology & Management Program, BS 62, 63

C

Calculators 49
Calendar, Academic 3-5
Calendar, PN 4-5
Career Development Center 32
Center for Academic Success 31-32
Challenge Examination 23
Challenge Exam Fee 40

Change in Degree Programs (Financial Aid) 46-47
Changing Programs 24
Chemistry Courses 138
Civil & Environmental Engineering Technology Courses 136-138
Civil & Environmental Engineering Technology Program 64-65
Class Level 23
Class Listings 16
Colgate STAR Award 28
Collection (Library) 33
Computer Engineering Technology Award, AE 28
Computer Engineering Technology Award, BS 28
Computer Engineering Technology Program, AE 66
Computer Engineering Technology Program, BS 67
Computer Information Technology Program, AS 68
Computer Information Technology Program, BS 69
Computer Networking Certificate 70
Computer Science Courses 138-144
Computer Software Development Certificate 71
Computer Software Engineering Program, AS 72
Computer Software Engineering Program, BS 73
Computer Software Engineering Program, MS 74
Concentration in Entrepreneurship 50
Concentrations 50
Consortium Agreement, VSC Enrollment 33-34
Construction Management AAS Academic Excellence Award 28
Construction Management AAS Greatest Academic Development Award 28
Construction Management Courses 144-147
Construction Management Program, AAS 75
Construction Management Program, BS 76-77
Cost Charts 35-37
Counseling 32
Course Abbreviation Key 120
Course Descriptions 120-179
Course Fee 40
Credit by Challenge Examination 23
Credit Overload 23
Criminal Background Checks, Nursing 13
Critical Thinking Requirements 49
Cum Laude 27
Cybersecurity Certificate 78

D

Dairy Farm Management Program 79
Dean's List 26
Deferred Payment Fee 40
Definition of the Educated Person 48
Definition of a Vermont Resident 17
Dental Hygiene Applicant Requirements 12
Dental Hygiene Cost Chart 35
Dental Hygiene Courses 147-149
Dental Hygiene Program 80-82
Deposits 15
Diesel Courses 149-150
Diesel Power Technology Program 83
Diesel Technology Certificate 84
Direct Loans 43-44
Direct Progression Policy, Nursing 13
Directory Information, Public Notice Designating 33
Disabilities, Services for Students with 32
Diversified Agriculture Program 85-86
Disciplinary Dismissal 24
Dismissal, Academic 24
Dismissal, Disciplinary 24
Dorothy Wootton Outstanding Clinician Award 28
Dorothy Wootton Scholarship 29
Dropping a Course 22
Drug Screening, Nursing 13
Dual Degree 25
Dual Enrollment 15
Dual Major 25

E

E.H. Jones Award 29
ESOL 14, 31
Economics Courses 151
Education Courses 151
Edward F. Kibby Memorial Award 29
Electrical Engineering Technology Courses 152-155

Electrical Engineering Technology Department Award, AE 29
Electrical Engineering Technology Department Award, BS 29
Electrical Engineering Technology Faculty Award for Technical Excellence 29
Electrical Engineering Technology Greatest All-Around Academic Development Award 29
Electrical Engineering Technology Program, AE 87-88
Electrical Engineering Technology Program, BS 89
Electromechanical Engineering Technology Department Award 29
Electromechanical Engineering Technology Courses 152
Electromechanical Engineering Technology Program 90-91
Emergency Medical Services Courses 156-157
Emeritus Faculty 182
English Courses 157-158
English Requirements 49
Enrollment Consortium Agreement, VSC 33-34
Entrepreneurship Program, AAS 92
Entrepreneurship Program, BS 93, 94
Equine Studies Courses 158-160
Equine Studies Faculty Award 29
Equine Studies Program 95
Estimated Costs of Attendance 35
Expected Family Contribution 43
Explanation of Fees 40-41

F

FAA Examiner Fees 37
FAA Medical Examination 37
FAA Written Exam Fees 37
FAFSA 43
FERPA 33
FSEOG 44
Facilities 8-10
Facilities Fee 40
Faculty 183-185
Faculty Award 29
Faculty Memorial Scholarship Fund 29
Federal Financial Aid 43-44
Federal Supplemental Education Opportunity Grant 44
Fee Reductions for Withdrawal 42
Fees 39
Financial Aid 43-47
Financial Aid Appeal Denial 46
Financial Aid Probation 46
Financial Aid Refunds 42
Financial Aid Warning 46
Fire Science Courses 160-161
Fire Science Program 96
First-Year Applicant Requirements 11
Flight Fees 37
Forestry Program 97
Foreword 2

G

GI Bill® 45
GPA Calculation 20
GPA Requirement of SAP 46
General Education Requirements 48-49
General Engineering Technology Program 98
General Information 6-7
Good Neighbor Policy 18
Good Standing 23
Grade Amelioration 20
Grade Point Average Calculation 20
Grades & Credits (Financial Aid) 47
Grading System 21
Graduate Cost Chart 36
Graduation Fee 40
Graduation Honors 27
Graduation Participation Requirements 26
Graduation Requirements 25
Graduation Requirements, Time Limitation on 25-26
Graduation Standards 25
Ground Transportation Services Courses 161

H

Hartness Library 32-33
Health Insurance Fee 40
High Honors 27
History, VTC 6-7
History Courses 161-162
Honesty & Ethics 31

Honor Societies 26-27
Honors 27
Housing Deposit 15
Humanities Courses 162-163

I

Incomplete Work 21
Information Literacy 33
Information Technology Requirements 49
Institutional Lab Fee 40
Institutional Values 6
Insurance (Aviation) 37-38
Interdisciplinary Courses 163
International Applicant Requirements 13
International Cost Chart 36
iPhones & iPads (Aviation) 38

J

J. Edward Marceau Memorial Scholarship 29

K

Keene/Monadnock Site 9
Key to Course Subject Abbreviations 120

L

Lambda Beta 26
Landscape Courses 163-165
Landscape Design & Sustainable Horticulture Program 99
Late Financial Clearance Fee 40
Leaves of Absence 22
Library 32-33
Location of Campuses 8-10
Lyndon Site 9

M

Magna Cum Laude 27
Majors 1
Manufacturing Engineering Technology Academic Excellence Award 29
Manufacturing Engineering Technology Program 100-101
Master's Degree Applicant Requirements 14
Mathematics Courses 165-166
Mathematics Requirements 49
Matriculation 25
Matriculation Fee 40
Maximum Time Frame of SAP 46
Meal Plans 40
Mechanical Engineering Technology Courses 166-170
Mechanical Engineering Technology Faculty Award 29
Mechanical Engineering Technology Program 102-103
Middlebury Site 9
Minor in Entrepreneurship 50
Minors, Concentrations, & Specializations 50
Mission Statement, VSC 6
Mission Statement, VTC 6
Monadnock/Keene Site 9
Morrisville Site 9
Music Courses 170

N

Natural Sciences Requirements 49
Newport Site 9
Non-Degree Students 19
Non-Discrimination & Equal Opportunity Statement 2
Non-Returning Students 23
Notice of College Regulations 2
Notice of Federal Student Financial Aid Penalties for Drug Law Violations 47
Nursing & Allied Health Campuses & Sites 8-10
Nursing Applicant Requirements 12
Nursing Cost Chart 35-36
Nursing Courses 170-174
Nursing Direct Progression Policy 13
Nursing Policy for Criminal Background Checks & Drug Screening 13
Nursing Programs 104-107

O

Online Cost Chart 37
Online Support Fee 40
Orientation 15
Other Credits 42
Other Estimated Expenses 38
Other Expenses 41
Other Fees 38
Other Financial Aid Sources 45

Outstanding Community Service Leader Award 29-30
Outstanding Student in Professional Pilot Technology Award 30
Overload, Credit 23
Overnight Rooms for Emergencies 38

P

PLUS Loans 44
PN Academic Calendar 4-5
PN Re-entry 19
Pace/Time Progression of SAP 46
Paramedicine Certificate, Additional Applicant Requirements 11
Paramedicine Cost Chart 36
Paramedicine Courses 156-157
Paramedicine Certificate 108
Participation Requirements, Graduation 26
Payment Authorization 41
Payment Plans, Semester 41-42
Pell Grant 43
Per Credit Tuition & Fees 39
Phi Theta Kappa 26-27
Philosophy Courses 174
Physics Courses 174
Pilot Equipment 37
Placement Testing 15
Political Science Courses 174
Portfolio Assessment Fee 41
Practical Nursing Certificate 104
Practical Nursing Clinical Excellence Award 30
President 180
President's List 26
Probation, Academic 24
Professional Pilot Technology Courses 121-125
Professional Pilot Technology Fees 37-38
Professional Pilot Technology Outstanding Student Award 30
Professional Pilot Technology Program 109-110
Programs 1
Program Prerequisites 16-17
Psychology Courses 175
Public Notice Designating Directory Information 33

R

RSP-Approved Programs 17-18
Randolph Center Campus 8
Readmission & Reactivation 19
Records Release 33
Records Review 33
Reductions for Withdrawal 42
Reference Services (Library) 33
Registration Fee 41
Registration 16
Rena Katz Chernick Memorial Scholarship Award 30
Renewable Energy Program 111-113
Repeated Courses 22
Residency Requirement & Matriculation 25
Resident, Definition of a Vermont 17
Respiratory Therapy Applicant Requirements 12
Respiratory Therapy Clinical Excellence Award 30
Respiratory Therapy Courses 175-176
Respiratory Therapy Program 114
Respiratory Therapy Re-entry 19
Returned Payment Fee 41
Returning After Dismissal 24
Review of Awards (Financial Aid) 47
Right-to-Know 33
Robert S. Brady Award
Room Rates 38
Room & Board Rates 38
Room & Board Reductions for Withdrawal 42
Rule for Subsidized Loans, 150% 44
Ruth Freeman Memorial Award for Architectural & Building Engineering Technology 30

S

Safety & Security Fee 41
Satisfactory Academic Progress (SAP) 45-46
Schedules 16
Scholarships 45
Semester Payment Plans 41-42
Senior Citizen Discount 40
Senior Staff 180

Services for Students with Disabilities 32
Sigma Phi Alpha 27
Sigma Phi Alpha Dental Hygiene Honor Society Board Award Scholarship 30
Sigma Theta Tau 27
Social Science Courses 176-177
Social Sciences Electives 49
Society of Manufacturing Engineers Award 30
Sociology Courses 176
Software Development Certificate 71
Sources of Financial Aid 43-45
Special Circumstances, SAP 46
Special Topics Courses 179
Specialization in Small Business Planning 50
Specializations 50
Springfield Site 9
St. Albans Site 10
Standardized Testing 11
Staff 182
Stanley G. Judd Memorial Fund Award 30
State Financial Aid 44-45
State of Vermont Agency of Transportation: Aviation Recognition Award 30
Student Activity Fee 41
Student Engineering Technician of the Year Award 30
Student Records Review & Release Policy 33
Student Right-to-Know 33
Student Support Services/TRiO 32
Subsidized Loans, 150% Rule for 44
Substitution of Courses 23
Summa Cum Laude 27
Summer Costs 39-40
Support & Counseling 32

T

TRiO 32
Tau Alpha Pi 27
Technical Education Program 115
Telepresence 8
Term Honors 26
Textbooks & Supplies 41
Therapists 32
Time Limitation on Graduation Requirements 25-26
Title IX 2
Transcript Fee 41
Transcripts 20
Transfer Applicant Requirements 11
Transfer Credit 12
Transfer Students (Financial Aid) 47
Trustees, VSC Board of 180
Tuition 39
Tuition & Fees 35-42
Tuition Reductions for Withdrawal 42
Tutoring 32

U

Undeclared Major 116

V

VAST 14-15
VAST Applicant Requirements 14-15
VSAC 43, 44
VSC Board of Trustees 180
VSC Enrollment Consortium Agreement 33-34
Vermont Agency of Transportation (Aviation Division) Award 30
Vermont Automobile Dealers Association Award 30
Vermont Auto Enthusiasts Award 31
Vermont Dental Hygienists Association Membership Spirit Award 31
Vermont Incentive Grants 44
Vermont National Guard State Educational Assistance Program 45
Vermont Nursery & Landscape Association Student Merit Award 31
Vermont Resident, Definition of a 17
Vermont Tech Fire Science Special Recognition Award 31
Vermont Tech People 180-190
Veterans' Education Benefits 45
Veterinary Technology Courses 177-179
Veterinary Technology Department Greatest All-Around Academic Development Award 31
Veterinary Technology Department Highest Academic Average Award 31

Veterinary Technology Program	117-118

W

W. Newton Ryerson Award for Excellence in Math & Physics	31
Waiver of Courses	23
Web Development Certificate	119
White River Junction Site	10
Williston Campus	8
Withdrawals	22
Work-Study Program	44