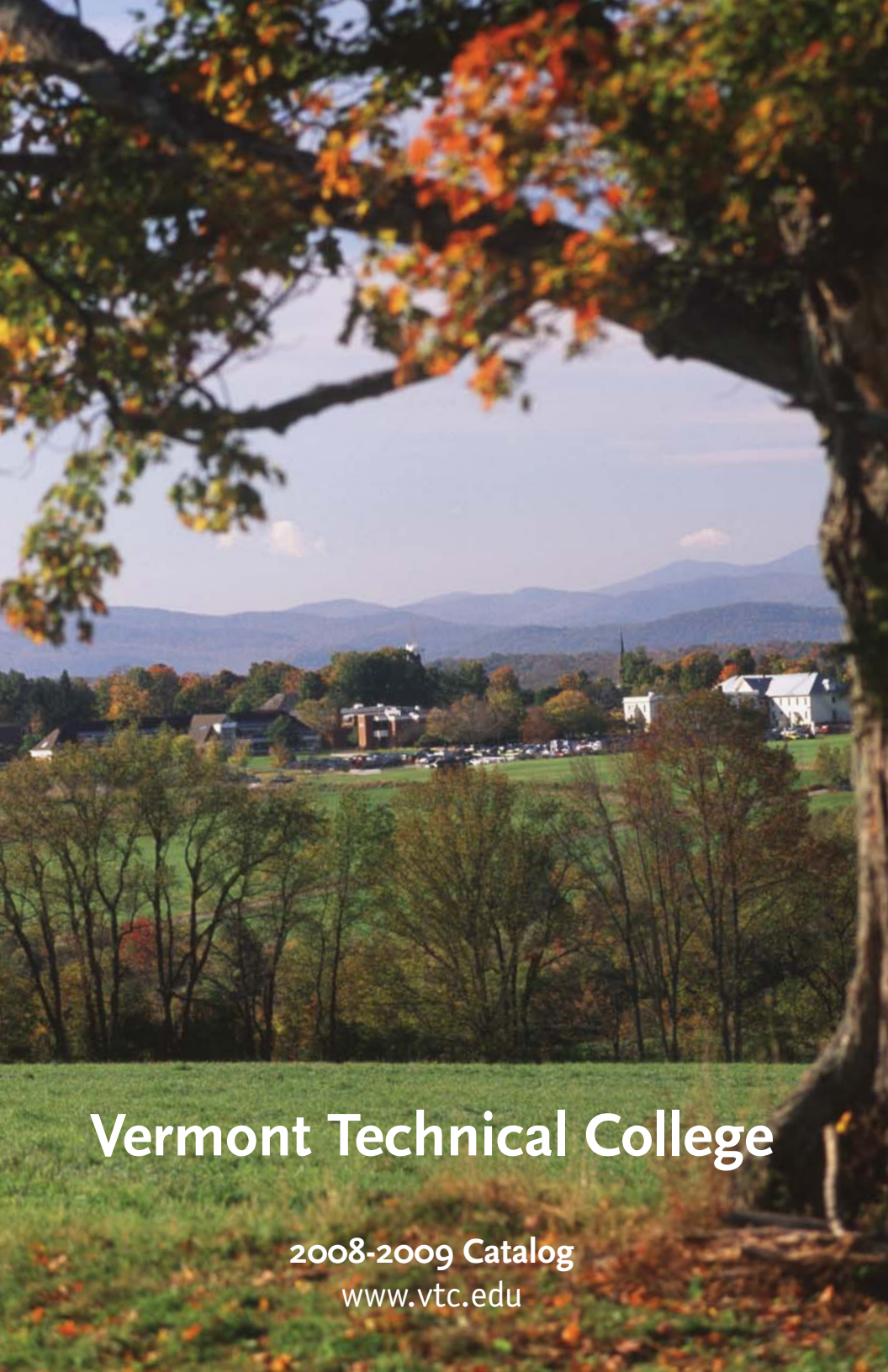

Vermont Technical College

2008-2009 Catalog

www.vtc.edu

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Vermont Technical College

Catalog 2008-2009

Bachelor of Science

Architectural Engineering Technology
Business Technology and Management
Computer Engineering Technology
Computer Information Technology
Computer Software Engineering
Dental Hygiene
Electromechanical Engineering Technology
Equine Studies
Sustainable Design and Technology

Associate of Applied Science

Agribusiness Management Technology
Architectural and Building Engineering Technology
Automotive Technology
Business Technology & Management
Construction Practice and Management
Dairy Farm Management Technology
Diesel Power Technology
Fire Science
General Engineering Technology
Landscape Development and Ornamental Horticulture
Telecommunications Technology
Veterinary Technology

Associate of Science

Computer Information Technology
Computer Software Engineering
Dental Hygiene
Nursing
Respiratory Therapy

Associate of Engineering

Civil and Environmental Engineering Technology
Computer Engineering Technology
Electrical Engineering Technology
Mechanical Engineering Technology

Certificate

Practical Nursing

Foreword

This catalog has been prepared to give prospective students at Vermont Technical College a comprehensive preview of the college, its entrance requirements, programs offered, grading system–in short, a complete picture.

The college recommends that prospective students and their parents make full use of the guidance services offered by their high school. Prospective students who do not have access to high school guidance services can find assistance at the college. Successful applicants for admission should retain a copy of this catalog for future reference.

While the information contained in this catalog was accurate at the time of printing, it is subject to change without notice. For the information, refer to the Vermont Tech website at **www.vtc.edu**.

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 at any time. Students will be deemed to have had sufficient notice of all official regulations when such are contained in official publications or posted on the college's web site, **www.vtc.edu**

Should you have questions not answered in this catalog, please write to:

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

or email admissions@vtc.edu

Office Hours: 8 a.m.-4:30 p.m., Monday-Friday, except holidays

Telephone:	Vermont Tech:	(802) 728-1000
	Admissions Office:	1 (800) 442-8821
		(802) 728-1444
	Fax:	(802) 728-1390

Non-discrimination and Equal Opportunity Statement

Every member of Vermont Technical College 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 will provide 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 will make reasonable accommodations to the known disability of an otherwise qualified applicant or employee.

Additionally, the Vermont State Colleges will 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 Vermont State Colleges 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: Ombudsperson, Vermont Technical College; the Vermont State Colleges Office of the Chancellor in Waterbury; the Vermont Office of the Attorney General; or the Equal Opportunity Employment Commission in Washington, D.C.

If auxiliary aid or service is needed to apply for admission or employment, please contact Vermont Tech's Learning Skills Specialist at 728-1396. For questions related to Title IX, please contact Michael Van Dyke, Dean of the College and Title IX coordinator at (802) 728-1213 or via mail at PO Box 500, Randolph Center, Vermont 05601.

2008-2009 Academic Calendar

2008 Fall Term

Thursday	August 14	Williston Campus Student Orientation 3:00 to 7:00 PM VAST Orientation for students on the Williston campus 3:00 to 7:00 PM
Tuesday	August 19	New Faculty Orientation
Thursday	August 21	VAST Orientation for students on the Randolph campus
Friday	August 22	New Students Arrive Practical Nursing Orientation (PN) Randolph campus Residence halls open for new students at 10 a.m.
Saturday	August 23	All Faculty Meeting 8:30 a.m. New Student Orientation and First Year Student Advising Advising Day for All Degree Students
Sunday	August 24	Returning Student Orientation Registration Day for Non-Degree Students Residence halls open for returning students at 9 a.m.
Monday	August 25	Classes Begin for all students at all campuses
Friday	August 29	Last day to add course(s)
Monday	September 1	Labor Day – No Classes
Saturday	October 4	Open House/Alumni Day
Friday	October 10	Mid-Term Warnings posted. Deadline for "I" grades from Spring or Summer Vacation begins after last class for non-PN students
Monday	October 13	Residence hall open at 1:00 p.m. for PN students only Dining hall opens at 5 p.m. PN Columbus Day - No classes
Sunday	October 19	Residence halls open at 1 p.m. Dining hall opens for dinner at 5 p.m.
Monday	**October 20**	**Last day for PN students to withdraw with a "W" grade** Classes Resume for non-PN students. Last day for PN program students to drop courses with a "W" grade
Monday	October 27	Student Evaluations begin
Monday	**November 3**	**Last day for students to drop course with a "W" grade (not practical nursing students)**
Thursday	November 6	Pre-registration for Winter & Spring terms begin
Friday	November 21	Student Evaluations end Thanksgiving Recess begins for all students after last class Pre-registration for Winter & Spring ends
Sunday	November 30	Residence halls open at 1 p.m. Dining hall opens for dinner at 5 p.m.
Monday	December 1	Thanksgiving Recess ends; classes resume.
Friday	December 5	PN Fall Term Ends
Monday	December 15	Last day of classes for term.
Tuesday	December 16	Final exams and presentations week begins
Saturday	December 20	Final exams and presentations week ends Residential halls close at 5:00 PM
Tuesday	December 23	Academic Planning

2008 Winter Term (PN students only)

Monday	December 8	PN classes begins
Friday	December 19	PN Vacation break begins
Monday	January 5	PN classes resume
Friday	February 2	PN mid-term warnings posted Deadline for make-up of grades from Fall PN courses
Friday	February 13	Vacation begins after last class
Sunday	February 22	Residence halls open at 1 p.m. Dining hall opens for dinner at 5 p.m.
Monday	February 23	PN Student Evaluations begin Classes Resume
Tuesday	**February 24**	**Last Day to withdraw with a "W" grade**
Monday	March 2	Pre-registration for Spring2 Nursing Term begins
Friday	March 13	PN Student Evaluation period ends Pre-registration for Spring2 ends
Friday	March 27	Vacation begins after last class
Sunday	April 5	Residence halls open at 1 p.m. Dining hall opens for dinner at 5 p.m.
Monday	April 6	Classes resume
Friday	April 10	PN second term ends

2009 Spring Term

Sunday	January 11	Registration Day for Non-Degree Students Placement Testing for New Students Residence Halls open. New Student Orientation begins at 9 a.m. Dining Hall opens for lunch at 11 a.m.
Monday	January 12	Classes begin Late Student Registration begins at 8 a.m.
Friday	January 16	Last day to add course(s)
Friday	February 13	Vacation begins after last class.
Sunday	February 22	Residence halls open at 1 p.m. Dining hall opens for dinner at 5 p.m.
Monday	February 23	Classes resume
Friday	March 6	Mid-Term warnings posted Deadline for make-up of grades from Fall Graduation applications due for May commencement
Monday	March 16	Student Evaluations begin
Monday	**March 23**	**Last day to withdraw with a "W" grade**
Thursday	March 26	Pre-registration for Summer and Fall Begins
Friday	March 27	Vacation begins after last class
Sunday	April 5	Residence halls open at 1p.m. Dining hall opens for dinner at 5 p.m.
Monday	April 6	Classes resume
Friday	April 10	Student Evaluations end
Friday	April 17	Pre-registration for Fall Ends

2008 Spring Term Continued

Friday	May 1	Last day of classes
Monday	May 4	Final Exams begin
Friday	May 8	Final Exams end Dining hall closes after lunch. Residential halls close at 5:00 PM
Saturday	May 16	Verification of degree candidates Commencement at 2 p.m.
Tuesday	May 19	VAST Graduation
Wednesday	May 20	Academic Planning

2009 Spring2 (PN Only)

Monday	April 13	PN classes begin
Friday	April 17	Graduation applications due for June commencement
Friday	May 15	Deadline for "I" grades from Winter term
Monday	May 18	PN Student Evaluations begin
Friday	May 22	PN mid-term warnings posted
Monday	May 25	No classes – Memorial Day
Tuesday	May 26	**Last day for PN students wo withdraw with a "W" grade**
Friday	June 5	PN Student Evaluations end
Thursday	June 18	PN term ends
Saturday	June 20	11 AM PN Commencement

2009 Summer Term

Monday	May 18	First Summer classes begin
Friday	June 26	Vacation begins after last class
Monday	July 6	Classes Resume
Tuesday	**July 14**	**Last Day to Drop with a "W" grade**
Monday	July 20	Summer Bridge Begins
Friday	August 14	Summer Bridge ends
Monday	August 17-21	Calculus Review
Friday	August 21	Summer Term Ends

General Information

Vermont Technical College is a public, co-educational, two- and four- year technical college with a rural residential campus located in Randolph Center, Vermont; a Williston campus with limited residential housing in Williston, Vermont and seven satellite nursing campuses located throughout the state. It is part of the Vermont State Colleges system that includes Castleton State College, Johnson State College, Lyndon State College, and the Community College of Vermont. Vermont Tech offers collegiate-level programs leading to an associate's degree with majors in applied technologies and related fields; to a bachelor's degree in Architectural Engineering, Business Technology & Management, Computer Engineering, Dental Hygiene, Electromechanical Engineering, Equine Studies, Information Technology, Sustainable Design & Technology, and Software Engineering; and to a certificate in Practical Nursing.

The college provides students with a rigorous, broad-based background in the engineering technologies and applied sciences. Graduates are well prepared to work with scientists, engineers, and other professionals in meeting the challenges of today's high-tech workplace. They find career opportunities in business, industry, commerce, transportation, agriculture, health care, construction, and government.

A major advantage of the associate's degree is that it affords the choice of entering employment upon graduation or continuing toward a bachelor's degree. The majority of Vermont Tech graduates go directly to work. A significant number enter bachelor's degree programs after graduation.

Mission Statement

Vermont Technical College (Vermont Tech) is an integral and unique college within the Vermont State Colleges education system, offering associate and baccalaureate degrees, certificates, and continuing education in career-oriented technologies such as agriculture, applied sciences, business, engineering, and health sciences.

Vermont Tech serves its students, the state of Vermont, and the region by providing high quality, accessible, post-secondary education through broad-based curricula that prepare graduates for the workplace, for continuing formal education, and for lifelong learning.

Vermont Tech undertakes its mission guided by institutional values and focused by institutional objectives.

Institutional Values

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

Vermont Tech is dedicated to its tradition of helping students reach their full potential by developing their academic and scholarly proficiencies, 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.

Institutional Objectives

- Establish a high quality academic environment
- Broaden students' experiences, both academically and socially
- Emphasize the combination of theoretical concepts and practical applications in the curriculum
- Prepare students to adapt to changing technology
- Offer academic and personal support services that enhance student learning
- Furnish placement and transfer services for students, graduates, and alumni seeking employment and further education
- Afford opportunities for faculty and staff development
- Pursue strong liaisons with Vermont elementary and secondary schools (K-12)
- Inform the general public and potential students of opportunities at Vermont Tech
- Encourage a large and diverse population to enter Vermont Tech
- Strengthen relationships with our community partners
- Provide outreach programs to meet the needs of entrepreneurs, employers, and employees
- Maintain continuing communication and relationships with alumni

Vermont State Colleges Mission Statement

For the benefit of Vermont, the Vermont State Colleges provide affordable, high quality, student-centered, and accessible education, fully integrating professional, liberal, and career study.

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

1. Demonstrate competence in communication, research, and critical thinking
2. Practice creative problem-solving both individually and collaboratively
3. Be engaged, effective, and responsible citizens
4. Bring to the workplace appropriate skills and an appreciation of work quality and ethics
5. Embrace the necessity and joy of lifelong learning

The Vermont State Colleges also offer numerous opportunities for others to engage in continuous learning to meet their specific goals.

History

Vermont Technical College is one of the five member institutions of the Vermont State Colleges system.

In Public Act No. 1 of 1866, the Vermont legislature established in Randolph Center the first public school in Vermont devoted to the education of teachers. The Randolph State Normal School served this function until 1910, when the legislature determined that there was a need for a state agricultural school and established the Vermont School of Agriculture at the Normal School site by legislative act (November 29, 1910).

Over the long years of its existence, the Vermont School of Agriculture–VSA–graduated many Vermonters distinguished by their numerous and notable contributions to agriculture and government.

In response to evolving educational needs in the state, technical courses were added to the offerings of the school in 1957, and a new name, (Vermont Agricultural and Technical Institute), reflected this expanding mission. The Vermont Agricultural and Technical Institute opened on September 9, 1957 as the first technical institute in Vermont, with an initial enrollment of approximately 75 students.

By act of the 1961 Legislature, VATI and the then state teacher colleges (Castleton, Johnson, 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 the degree of Associate of Applied Science with a major in the program pursued. The Associate of Engineering degree was first granted in 1965 and the first one-year certificate was awarded in 1986. Another milestone came on May 7, 1993 when the Vermont State Colleges Board of Trustees approved the college's first baccalaureate degree program–the Bachelor of Science in Architectural Engineering Technology. A second baccalaureate curriculum, the Bachelor of Science in Electromechanical Engineering Technology, began instruction in fall of 1995 and the Bachelor of Science in Computer Engineering Technology in fall of 2000. Beginning in 2005 the college offered a Bachelor of Science in either Software Engineering or Information Technology. In June 2007, these additional baccalaureate degrees were added: Dental Hygiene, Equine Studies, and Sustainable Design & 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 fall of 1996, Practical Nursing became a credit-bearing program that can also be applied toward a two-year associate's degree in nursing from Vermont Tech.

Location

The Vermont Technical College main campus is located on 544 acres in the rural village of Randolph Center, near the geographical center of the State of Vermont. Interstate 89 passes within one mile of the campus. Visitors should use exit 4 and travel east up the hill on Route 66 to Randolph Center.

Two branches of the state highway system serve the town of Randolph; Route 12 passes through the village of Randolph and Route 14 through the village of East

Randolph. The distance from either village is about four miles. Buses from the metropolitan areas serve the Randolph area and Amtrak's Vermonter stops downtown twice daily.

Vermont Tech also is located in Williston, Vermont. The Williston campus is accessible from exit 12 of Interstate 89. Seven nursing satellite campuses are located throughout the state.

Academic Recognition

By authority conferred by the legislature of the State of Vermont, the Trustees of Vermont State Colleges have authorized Vermont Technical College 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 Technical College has Independent School Approval for grade 12 from the Vermont State Board of Education.

Vermont Technical College 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 Technical College is accredited by the New England Association of Schools and Colleges.

The following programs are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET): Architectural & Building Engineering Technology; Architectural Engineering Technology; Civil & Environmental Engineering Technology; Computer Engineering Technology; Electrical Engineering Technology; Electromechanical Engineering Technology; Mechanical Engineering Technology. The Technology Accreditation Commission of the Accreditation Board for Engineering Technology may be contacted at 111 Market Place, Suite 1050, Baltimore, Maryland 21202-4012, telephone (410) 347-7700.

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

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

The Practical Nursing and Associate of Science in Nursing programs are approved by the Vermont State Board of Nursing and accredited by the National League for Nursing Accrediting Commission, Inc. (NLNAC), 61 Broadway, 33rd Floor, New York, New York 10006. The Vermont State Board of Nursing may be contacted at the Office of Professional Regulation, National Life Building, North FL2, Montpelier, VT 05620-3402.

The Respiratory Therapy program is accredited by the Commission on Accreditation of Allied Health Programs, in collaboration with the Committee on Accreditation for Respiratory Care Programs, 1248 Harwood Rd., Bedford, Texas 76021-4244.

Technology Extension Division

The College's Technology Extension Division seeks opportunities to extend Vermont Tech's professional services and custom education and training programs throughout Vermont and has established off-campus associate's degree and certificate programs in response to industry and public demand. The General Engineering Technology degree programs are industry-sponsored and offered primarily at the facilities of sponsoring organizations.

Through this division, the college has reached out to the business community and the state's growing numbers of adult learners with programs offered at times and locations convenient for working people.

The Technology Extension Division serves the college by providing information about the current and future technical needs of Vermont's business and industrial communities and by providing assistance and leadership in the development of new programs and curricula.

Nursing Programs

The Vermont Technical College Nursing Program is offered at four permanent locations in the state:

- Fanny Allen/Williston Campus
- Putnam/Bennington Campus
- Thompson/Brattleboro Campus
- Randolph Center Campus

In addition, the Nursing Program uses selected outreach locations as needed with instruction delivered over Vermont Interactive Television. Through a collaboration with the Community College of Vermont, locations around the state vary according to program need.

All sites offer an accredited program of educational preparation for students seeking entry-level nursing opportunities. The Practical Nursing programs are designed for completion over a 10-1/2 month period by full-time students. The schools also offer a second year of nursing studies leading to the associate's degree in nursing (ADN).

Associate's Degree in Nursing graduates with a GPA of 2.50 or higher may transfer to the baccalaureate in nursing program at the University of Vermont.

Student housing is available on the main campus and the Williston Campus.

The Department of English, Humanities, and Social Sciences

The Department of English, Humanities, and Social Sciences offers liberal arts courses which are the foundation for education and which give breadth and depth to all degrees. Liberal arts courses introduce students to the core knowledge and concepts of the arts, humanities, and social sciences; foster an appreciation for the major domains of

human achievement and inquiry into the human condition; provide a common educational experience; refine communication and information literacy skills; celebrate common values and diversity of experiences and viewpoints; develop critical thinking and ethical reasoning; nurture civic responsibility; and encourage life-long learning.

The faculty of the Department of English, Humanities, and Social Sciences believes that all college graduates must be introduced to the knowledge, concepts and methodologies of the two key subject areas of the liberal arts: social sciences and arts & humanities. While the nature of Vermont Technical College's program precludes students from exploring these areas in depth, the department requires the following:

- All associate's degree students must take one Social Sciences (SS) and one Arts & Humanities (AH) elective
- All bachelor's degree students must take a minimum of four electives outside their program of study: SS and/or AH, and at least one 3000 level course, (12 credits minimum)

Vermont Academy of Science and Technology

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. Additionally, because Vermont state law allows VAST students to transfer Vermont Tech credits back to their sending high schools, the students may receive a second high school diploma from that school.

Entry into VAST is competitive. Students should have a strong academic high school transcript and PSAT scores of 55 or higher for each sub-score (writing, reading comprehension, and math). Applicants should be able to meet the program entry requirements for specific majors listed in the table in the admissions section of this catalog. VAST students are expected to maintain at least a 2.0 GPA while attending Vermont Technical College and will be required to return to their sending high school if they cannot maintain good academic standing. VAST students also are expected to adhere to all policies and procedures outlined in the student handbook. For the application requirements, please refer to the Admissions section of this catalog under the Vermont Academy of Science and Technology heading.

Upon completion of the one-year program, students may remain at Vermont Tech to complete a degree or transfer to another institution.

The Vermont Legislature has provided that 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 fees, including room and board for students who choose to live on campus, are the responsibility of the student.

International Students

If you are applying as an international student you are required to submit the following:

- Completed Application (please type or print)
- $36 application fee (payable to Vermont Technical College)
- Official secondary school transcript. The transcript must arrive directly from the school on official letterhead in a sealed envelope. We also request that it be translated into English
- Official college/university transcript (if applicable) with course by course evaluation by ECE*, WES** or equivalent international transcript evaluator
- Official TOEFL scores if English is a second language. The minimum score required on the TOEFL test is 500 for the paper test and 173 for the computer based test
- Official financial statement indicating your ability to pay one full year of tuition, room and board. Proof must be provided on official blank letterhead and is needed before an I-20 can be issued
- 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 $500 deposit before issuing your I-20. The $500 will be credited to the fall semester bill
- Please contact admissions at 1-800-442-8821 or Admissions@vtc.edu

English for Speakers of Other Languages

According to language acquisition experts, non-native speakers of English need 5 – 7 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 writing placement test determines the student's appropriate English course. If student's English skills are below the minimum level, he or she will be required to take ESL-1041. The ESOL student must achieve at least a "B" and demonstrate improved skills in two post-course placement tests in order to advance into ENG-1042.
- ESOL students who place in higher English course levels will benefit from committing to structured time at the Writing and Communication Centers. Tutors work with students to improve reading and writing skills. In addition, ESOL software in vocabulary, grammar, and pronunciation are available for study and practice.
- Students that do not place into ENG-1061 or its equivalent, may require extra terms to complete their degree program.
- Students at all sites have access to ESOL support. Contact the site director or Writing and Communication Centers.

*Educational Consultants and Evaluators International; www.eceinternational.com; admin@eceinternational.com

**World Education Services; www.wes.org; online@wes.org

Campus Facilities

Administrative Center Constructed in 1949 as a dairy barn for the college farm, this building later served as the maintenance facility before undergoing major renovations in 1986-87. As the "front door" to the campus, the modern structure houses the Admissions and reception area, the Financial Aid and Registrar's offices, most administrative offices, Student Affairs, and a conference room.

Automotive Technology Center Completed in 1989 to support the Automotive Technology curriculum, this building houses two classrooms, an audio/video resource room, and a lab area with computerized diagnostic equipment. A 1,600 square foot addition to the Auto Tech Center was completed in 2003 that provides laboratory space for the Construction Practice and Management program. Newly completed in 2004, a 900-square-foot student garage gives students a place to work on individual vehicles.

College Farmstead Vermont Tech's farm, built in 1967, is an integral part of the agricultural curriculum. Facilities include a classroom, computers with applications specific to agriculture, and practical lab equipment needed to learn productive farming. The farm is also a resource for Veterinary Technology students. Since 1967, there have been three major renovations of farm facilities, largely in response to changes in agricultural technology. The dairy herd consists of 75 milk cows and 70 head of young stock, all registered Holsteins. There are 225 acres in tillable land and 245 acres of woodland, including an apple orchard and a sugarbush.

Conant Hall Named in memory of Edward Conant, who devoted his life to Vermont education, this academic center was constructed in 1966 and renovated in 1987. The building contains a classroom, a large lecture hall, three computer laboratories, the Learning Center, Academic Support Services Office, MSUB, and faculty and staff offices.

Green Hall Named for Leland G. Green, former principal of the Vermont School of Agriculture, the forerunner of Vermont Tech. This academic center, completed in 1970, contains six classrooms; a greenhouse; electrical, civil engineering and computer labs; and the offices of the Dean of Academic Affairs.

Hartness Library Located in the heart of the Randolph Center campus, the library is the administrative and service center of the Vermont Community & Technical Colleges Library, serving the communities of Vermont Tech and the Community College of Vermont. Open more than 80 hours per week during the academic year, Hartness houses an extensive collection of print, microform, and audio/video media and offers professional staff assistance with library research and information literacy skills. Through the library's website, students can access thousands of full-text periodicals, consult reference resources, and request books online 24 hours per day, seven days per week from any location. A toll-free number (1-800-431-0025) gives access to a team of library professionals who can provide reference and research assistance whenever the library is open. The library web page provides round-the-clock access to research

resources. At any time of day and from any location, Vermont Tech students can use the library web page to search the library catalog and place an interlibrary loan request, complete a research project using the thousands of full-text journals and books available online, or follow the selected hypertext links to reference materials or databases relevant to the academic programs at Vermont Tech. Hartness Library is a learning resource that students use throughout their college careers.

Judd Hall Built in 1957 and named for Stanley G. Judd, principal of the Vermont School of Agriculture, Judd houses VMEC, as well as a practice gymnasium frequently used for intramural activities or as an auditorium. The college bookstore is located in Judd, facing the plaza.

Keenan Hall This residence hall, named in memory of the late Maurice Keenan, a member of Vermont State Colleges Board of Trustees until his death in 1965, was completed in 1968. Keenan Hall accommodates 161 students and also houses the campus Health Center. .

Langevin House The historic Langevin House was built in 1802-03 by the Rev. Tilton Eastman as the parsonage for the first church parish of Randolph town, later called Randolph Center. Its front entrance is on the old Stage Road, one of several post roads that connected central Vermont with Boston and Montreal. The beautifully renovated farmhouse now serves as a campus conference and meeting center, as well as a training facility.

Maintenance Building Completed in 1985, this facility provides space for the physical plant office, the mechanical and electrical shops, and vehicle maintenance. The building adjoins the heating plant.

Morey Hall Named in honor of Captain Samuel Morey, an early Vermont marine inventor, it was completed in 1966. This residence hall houses 137 students. The campus dining hall on the first floor accommodates approximately 600.

Morrill Hall–Constructed in 1962, this building was named in memory of U.S. Senator Justin Morrill from Vermont, author of the Morrill Land Grant Colleges Act of 1861. Renovated in 1987 and in 2000, it contains physics, chemistry, life science, metallurgy, thermodynamics, strength of materials, manufacturing, robotics, and veterinary technology laboratories. Morrill also houses modern drafting studios, the IT department, faculty offices, and the headquarters studio for the statewide Vermont Interactive Television system.

Morrill Hall Addition Completed in summer of 2000, the college's newest academic building houses classroom and laboratory space for the program in nursing, as well as seven general computing and CAD labs, faculty offices, and lounge areas. The building's mechanical infrastructure (HVAC, plumbing, lighting, telecommunications) serves as a “working lab” for Architectural Engineering Technology students.

Nutting Hall Completed in 1970, Nutting Hall honors the memory of William Nutting, who, upon graduation from Dartmouth in 1807, became the first head of the Orange County Grammar School, another Vermont Tech forerunner. The newest and largest residence hall, Nutting houses 170 students.

Old Dorm The oldest building on campus, Old Dorm was built in 1918 and renovated in 1988. Old Dorm can house 90 students, and its main lounge is regularly used for conferences and meetings. At the time of its construction, the building was the only student residence hall and also housed the dining hall, bookstore, and library.

Red Schoolhouse Built in 1903, the Randolph Center Red Schoolhouse was deeded to Vermont Technical College in 2001. The first floor was renovated in 2002 and contains two classrooms. Plans for the building include the renovation of the second floor, as well as the basement.

Student Health and Physical Education (SHAPE) Completed in 1990 and expanded in 2007, SHAPE contains a 25-yard, 6-lane swimming pool, double-court gymnasium, and two racquetball courts. Work completed in the fall of 2007 added a personal fitness area, wireless student café-lounge, and dining area.

Other Campuses

Williston Campus/Williston Located at Taft's Corners, Blair Park business complex, in Williston, Vermont in the heart of Chittenden County's new shopping and entertainment area, Vermont Tech's Williston campus is our newest campus, offering a wide array of degree and certificate programs for part-time or full-time students. This campus has been designed to make our top-notch technical education programs available to students throughout northwestern Vermont.

The Williston campus is rapidly expanding with new electrical, physics, anatomy, biology, and chemistry laboratories and state-of-the-art CAD and computer labs. It currently houses all of the college's allied health programs including dental hygiene, nursing, and respiratory therapy. Also available are degree programs in electrical engineering technology, computer engineering technology, aeronautical engineering technology, and business management and technology. The campus also maintains a Vermont Interactive Television studio and supports a wide array of degree and non-degree workforce-education programs for area businesses.

Fanny Allen/Williston Campus The Fanny Allen Memorial School for Practical Nursing was founded on June 28, 1957 and the first class entered on November 18, 1957. The school was housed in the Fanny Allen Hospital.

The original curriculum was based on the National Association for Practical Nursing Education and Service (NAPNES) statement that said, "Candidates will be trained in the care of medical and surgical patients, in the diet kitchens, with the aged, with mothers, with newborn infants, and with children."

Putnam/Bennington Campus–The Putnam Memorial School of Practical Nursing was established in 1946 by the Board of Corporators of the Putnam Memorial Hospital. It was the eighth school of practical nursing in the country to be nationally accredited by the National Association for Practical Nurse Education and Service.

In the early years, the students were involved in an apprentice-style service oriented program where licensure was permissive rather than mandatory. In 1970, the Board of Corporators of the hospital, through Bennington County legislators, petitioned the state legislature for additional financial assistance to operate the school. In 1971, the school's parent organization became the Vermont State Department of Education. In July 1994, Putnam Memorial School of Practical Nursing became a program of Vermont Technical College.

The Putnam Memorial School of Practical Nursing has been the recipient of four Helene Fuld Trust grants. These funds have been used to buy nursing arts laboratory equipment, computers, office and kitchen equipment, and student lounge furniture.

The school is on the grounds of the Southwestern Vermont Medical Center in downtown Bennington, Vermont. All clinical facilities are within walking distance, and daycare is located in the school building.

Thompson/Brattleboro Campus Opening in 1907, the Thompson School for Practical Nurses is the oldest continuously operating school for practical nurse education in the United States. It was started in response to the needs of birthing mothers and the needs of women joining the workforce as shop girls, needle women, and seamstresses during the Industrial Revolution.

During the summer of 1861, while the North and South were in the throes of civil war, Mr. and Mrs. Thomas Thompson vacationed in Brattleboro, Vermont. Mrs. Thompson became very interested in the women who gathered in Brattleboro to sew garments for the soldiers for very little pay. In time, Mr. and Mrs. Thompson dedicated their considerable wealth to establish a trust fund for the relief of poor seamstresses, needlewomen, and shop girls in Brattleboro and Rhineback, New York. By court decree, two-thirds of the income from the estate was to go to Brattleboro, and one-third to Rhineback. Although the sewing women were named as special beneficiaries, the court ruled that the Will allowed for other activities, including the building of a hospital in Brattleboro.

Brattleboro Memorial Hospital did not have a resident trained nurse when it opened in 1904. A group of fifteen local churchwomen were called together in 1907 by Richard Bradley, one of the first three trustees appointed for administrating the Thomas Thompson Trust Fund. This group, the Brattleboro Mutual Aid Association, had as its objective to supply those needs in sickness that were not then properly covered by current hospital service, visiting nurses, or by unorganized private nursing.

From a house on Harris Place, a nurse training course began. The graduates were called Mutual Aid Nursing Attendants and they cared for the sick in their homes. From this humble beginning, the Thompson School for Practical Nurses began. In 1998, the school relocated to new facilities in the Vermont Agriculture and Business Education Center.

Admissions

The admissions process includes a review of all transcripts, letters of recommendations, prior work or extra-curricular experiences, and performance on standardized tests, if applicable. Admission is offered to those candidates whose credentials indicate the greatest promise of success in their chosen academic pursuits.

Applicants who do not meet the normal admissions requirements may be admitted on a provisional status. Provisional acceptances may include such requirements as summer coursework prior to enrolling or additional coursework while enrolled.

Application Deadlines

Vermont Tech's policy of rolling admissions means that we process applications throughout the year until we determine that we have filled each semester's class. We reserve the right to close admission once the class is filled. Applicants will be notified promptly of admission status after review of a complete student file. However, because admission to selected programs is exceptionally competitive, decisions on applications to these programs are not normally made until the entire applicant pool has been reviewed. Traditionally, applications are reviewed beginning February 1 for Practical Nursing (P.N.), Construction Management, Equine Studies, . and Vet Tech applicants; March 1 for Dental Hygiene program applicants; and late March for Associate Degree Nursing (ADN) applicants. Please call the Office of Admissions to confirm these deadlines.

Admission Deposit

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 will be accepted on a space-available basis. The deposit is credited toward the first semester's bill.

Testing Requirements

All freshman admission candidates are required to take either the SAT I or the ACT. Applicants who are already out of high school are not normally required to take either exam. The College Entrance Examination Board code for Vermont Tech is 3941. The ACT code number is 4323.

First-Year Applicants

If you have never previously attended any college or university, please submit:

- Completed Application (please type or print)
- Application is available on-line at www.vtc.edu
- $37 application fee (payable to Vermont Technical College)
- Official high school transcript, with at least the first marking period grades of the senior year, or official scores from a high school equivalence exam (G.E.D.)
- SAT I or ACT results

Transfer Applicants

If you have previously enrolled or taken college-level course work at another college or university, please submit:

- Completed Application (please type or print)
- Application is available on-line at www.vtc.edu
- $37 application fee (payable to Vermont Technical College)
- Official high school transcript, or official scores from a high school equivalency exam (G.E.D.)
- Official transcript(s) from ALL colleges previously attended, whether seeking transfer credit or not
- Official transcript(s) from any other Vermont State College attended for course work completed prior to the 2002 summer term
- SAT I or ACT results, if available

Nursing, Allied Health, Respiratory Therapy, and Dental Hygiene Applicants

If you are applying to one of the Allied Health programs, please submit:

- Completed Application (please type or print), including location to which you seek admission, as the nursing programs are offered at multiple locations in Vermont. Indicate any alternate locations you would consider attending.
- $37 application fee (payable to Vermont Technical College)
- Official high school transcript or official scores from a high school equivalency exam (G.E.D.)
- Official transcript(s) from all colleges previously attended, whether seeking transfer credit or not
- SAT I or ACT results, if available
- Two signed letters of recommendation, dated within the past six months, on letterhead. Leters should address your: :
  1) Work ethic
  2) Communication skills
  3) Potential for adaptation to a fast-paced clinical environment
  4) Potential to competently/compassionately deliver health care to clients across the lifespan

  Letters from family members cannot be accepted

- Vermont Tech Placement Tests; Acceptance guidelines for nursing and respiratory therapy include placement into freshman level English and minimum accuplacer score of at least 70 on arithmetic and at least 40 on algebra (Testing may be waived if an applicant has previous assessment testing from another Vermont State College or if the applicant has approved transfer credit in math and English; please contact Admissions Office for decision)
- (Nursing Only) Prior to start of classes, provide proof of current Health Provider CPR (CPR designated for health care personnel)
- (Nursing only) If returning to complete a Practical Nursing program after a year but not longer, students must perform a demonstration of all skills learned in the appropriate lab/clinical course from the year before. This must be done prior to reentry. If a student is unable to perform these skills satisfactorily he/she will not be readmitted to the program. Students who have been out of the program for more than a year must repeat all nursing clinical courses in the program.

Additional Requirements for Associate's Degree in Nursing

- A copy of your current LPN license (without any sanctions/restrictions)
- If a graduate of a non-college PN program or a graduate of a Vermont LPN program prior to 1997, you must show completion of college-level equivalency for: Anatomy & Physiology (8 credits); Nutrition (3 credits); and Concepts of Human Growth & Development (3 credits)
- Pass the PN National Council Licensure Exam (N-CLEX-PN) prior to entry
- If a current PN student, you must attain a first semester PN GPA of 3.2 or higher. If a LPN graduate, you must have a GPA of 3.0 in you LPN coursework. The following courses: BIO 2120, ENG 1061, MATH 1040, PSY 1010 and an approved Arts/Humanities elective may be taken after LPN graduation to improve your GPA to a 3.0 level
- LPN students attempting to complete courses for the ADN Program may not enroll in any spring or summer courses at any VSC institution until completing their spring term
- Provide signed recommendations on letterhead that address your:
  1) Clinical competence
  2) Work ethic
  3) Potential transition to RN role, particularly with respect to leadership, management, and accountability
  4) Interpersonal skills

  Current PN student must have recommendations from at least one current faculty member and one healthcare employer/colleague. LPNs must have recommendations from two healthcare employers/colleagues.

Three-Year Options

Vermont Technical College has developed three-year options (3YO) in selected associate's degree programs for applicants who need to complete math, science, or English prerequisites. The 3YO provide students with the solid background in these subjects needed to succeed in a demanding technical curriculum while easing the academic load during the first few semesters. They are designed to provide an academic challenge appropriate to a student's prior experience in each subject area. Students enjoy full freshman status in their chosen majors from the first day of classes and experience the curriculum in the same sequence as their peers beyond the introductory courses.

A student may choose the 3YO upon applying, or the college may place students in a three-year curriculum based on the Vermont Tech Placement Test results. For more information, contact the Office of Admissions.

If a prospective student lacks any of the requirements for admission to an associate's degree program, he/she should consider the three-year options offered in selected programs.

Vermont Academy of Science & Technology

If you are applying to this accelerated high school program, please submit:

- Completed Application (please type or print)
- $37 application fee (payable to Vermont Technical College)
- Official high school transcript, with at least the first marking period grades of the junior year, or a home school plan
- PSAT or SAT I or ACT results
- Two letters of recommendation on official letterhead, one from a teacher and one from a guidance counselor or principal
- Personal Interview
- Vermont Tech Placement Test results
- An essay about why you are applying to the Academy. Discuss: 1) How do you think attending the Academy will help you reach your goals?
  2) What can you contribute to the Vermont Tech community?
  3) Describe a significant event in your life and how it has affected you

Tech Prep / Dual Enrollment

In cooperation with participating secondary technical centers, Vermont Tech has developed a tech prep / dual enrollment program which encourages secondary school students to combine both college prep and vocational-technical coursework in preparation for technical careers. After high school graduation, students in the program have the option of going directly to work or to college.

Students enrolled in the Tech Prep / Duel Enrollment program are able to receive college credit for approved courses. While this may not reduce the financial expense, it does provide more flexibility in their schedules. Students are encouraged to continue a strong math and English curriculum while attending their tech center.

For more information about the Tech Prep / Duel Enrollment initiative in your area, please contact your local tech center or high school advisor. Acceptance of transfer credits is at the discretion of the receiving post-secondary institution. Visit us on-line at fastforward.vsc.edu

Vermont Tech Program	Degree	Mathematics, Science & other requirements (in addition to English & History/Social Science normally required for high school graduation).
Agribusiness Management Technology	AAS	Algebra I; Algebra II recommended (Chemistry preferred)
Architectural & Building Engineering Technology	AAS	Algebra I; Algebra II; Geometry; Lab Physics or Lab Chemistry (physics preferred)
Architectural Engineering Technology	BS	Same as above, or completion of Vermont Tech's AAS program in Architectural/Building or Civil/Environmental Engineering Technology (or equivalent)
Automotive Technology	AAS	Algebra I and Geometry; Algebra II recommended; Lab Physics or Lab Chemistry recommended
Business Technology & Management	AAS	Algebra I; Algebra II recommended
Business Technology & Management	BS	Same as above or a two-year degree in Applied Science or Engineering; computer skills including proficiency in keyboarding, word processing, and spreadsheets
Civil & Environmental Engineering	AE	Algebra I; Algebra II; Geometry; Lab Physics or Lab Chemistry
Computer Engineering Technology	AE	Algebra I; Algebra II; Geometry; Lab Physics or Lab Chemistry (physics preferred)
Computer Engineering Technology	BS	Completion of Vermont Tech's A.E. in Computer Engineering Technology or equivalent
Construction Practice & Management	AAS	Algebra I and Geometry; Algebra II recommended; Lab Physics or Lab Chemistry recommended
Dairy Farm Management Technology	AAS	Algebra I; Algebra II recommended; two years of science (Chemistry preferred)
Dental Hygiene	AS	Algebra I; and II; Geometry; Biology w/Lab; Chemistry w/Lab; two letters of recommendation; freshman level English placement; and criminal background investigation
Dental Hygiene	BS	Same as above or an a ssociate's degree in Dental Hygiene and Department recommendation
Diesel Power Technology	AAS	Algebra I and Geometry; Algebra II recommended; Lab Physics or Lab Chemistry recommended.
Electrical Engineering Technology	AE	Algebra I; Algebra II; Geometry; Lab Physics or Lab Chemistry (physics preferred)

Vermont Tech Program	Degree	Mathematics, Science & other requirements (in addition to English & History/Social Science normally required for high school graduation).
Electromechanical Engineering AE program in Technology	BS	Same as above or completion of Vermont Tech's Electrical Engineering Technology or Mechanical Engineering Technology (or equivalent)
Equine Studies	BS	Biology; Chemistry with lab; Algebra I; Algebra II recommended.
Fire Science	AAS	Algebra I and Geometry; Algebra II recommended; Lab Physics or Lab Chemistry recommended.
General Engineering	AAS	Algebra I; Algebra II; Geometry; Lab Physics or Lab Chemistry (Physics preferred).
Computer Information Technology	AS	Algebra I; Algebra II; Geometry; Lab Physics or Lab Chemistry
Computer Information Technology	BS	Same as above or completion of Vermont Tech's AS in Information Technology or equivalent
Landscape Development & Ornamental Horticulture	AAS	Algebra I, Algebra II recommended: two years of science (lab course preferred)
Mechanical Engineering Technology	AE	Algebra I; Algebra II; Geometry; Lab Physics or Lab Chemistry (physics preferred)
Nursing**	AS	LPN licensure with 3.2 minimum GPA after first semester and 3.0 GPA in LPN coursework or equivalent; Minimum accuplacer scores of 70 for Arithmetic and 40 for Algebra; Freshman level English placement; 2 letters of recommendation; high school level Chemistry (with lab) or college level Microbiology; and criminal background investigation
Practical Nursing**	C	Strongly recommend minimum of high school level Chemistry, Biology, and Algebra I (within last 10 years); Minimum accuplacer scores of 70 for Arithmetic and 40 for Algebra; Freshman level English placement; 2 letters of recommendation; and criminal background investigation
Respiratory Therapy	AS	Strongly recommend minimum of high school level Chemistry, Biology, and Algebra I (within last 10 years); Minimum accuplacer scores of 70 for Arithmetic and 40 for Algebra; Freshman level English placement; 2 letters of recommendation; and criminal background investigation
Computer Software Engineering	AS	Algebra I; Algebra II; Geometry; Lab Physics or Lab Chemistry
Computer Software Engineering	BS	Same as above or completion of Vermont Tech's AS in Software Engineering or equivalent

Sustainable Design and Technology	BS	Associate's degree in Architecture; Civil, Electrical, or Mechanical Engineering; Landscape Development and Ornamental Horticulture; or Dairy Farm Management; Department recommendation
Telecommunications Technology*	AAS	Algebra I; Algebra II; Geometry; Lab Physics or Lab Chemistry
Veterinary Technology**	AAS	Biology; Chemistry with lab; Algebra I; Algebra II recommended.

AAS: Associate of Applied Science
AS: Associate of Science
C: Certificate Program
AE: Associate of Engineering
BS: Bachelor of Science

* Industry-sponsored program offered at the facilities of sponsoring organizations. Contact the Technology Extension Division for questions.
** Apply early, admission competitive

Bachelor Degree Options for Associate's Graduates

All students with an associate's degree may continue their education at Vermont Tech in at least one bachelor's degree program. The chart below lists the bachelor's programs available, based on field of study during the associate's program.

Any major	Business Technology & Management
Architectural & Building	Architectural Engineering Technology Business Technology & Management Sustainable Design & Technology
Civil & Environmental	Architectural Engineering Technology Business Technology & Management Sustainable Design & Technology
Computer Engineering	Business Technology & Management Computer Engineering Technology Electromechanical Engineering Technology Computer Information Technology Computer Software Engineering
Computer Information Technology	Business Technology & Management Computer Information Technology Computer Software Engineering
Computer Software Engineering	Business Technology & Management Computer Information Technology Computer Software Engineering
Dairy Farm Management	Business Technology & Management Sustainable Design & Technology

Continued on next page

Dental Hygiene	Business Technology & Management Dental Hygiene
Electrical Engineering	Business Technology & Management Electromechanical Engineering Technology Sustainable Design & Technology
Landscape Development & Ornamental Horticulture	Business Technology & Management Sustainable Design & Technology
Mechanical Engineering	Business Technology & Management Electromechanical Engineering Technology Sustainable Design & Technology

Although some students may have additional course work that was required at the associate's level, the above transitions can normally be completed within four terms at the bachelor's level.

Acceptance of an Offer of Admission

A qualified applicant will be sent an offer of admission and follow-up materials which include a Room and Board Contract, a Health Record and Physical Examination Form, and a Placement Test Registration Form.

A place in the entering class will be reserved when the applicant returns these completed forms and the required fees (as explained below) by the dates indicated in the offer of admission. The college reserves the right to cancel an offer of admission at any time until the applicant meets these conditions:

- A $200 advance tuition deposit, which is a token of a student's good faith and intention to register, is applied to the first semester's tuition
- A $100 non-refundable room deposit must accompany the Room and Board Contract. Students residing on campus are required to participate in a meal plan
- A $25 non-refundable transcript evaluation fee is required for students seeking transfer credit for work completed outside of the Vermont State Colleges system. This evaluation is normally completed after the student's acceptance of the offer of admission and the fee is billed to the student's account. Early transcript evaluation can be made for applicants who pay the evaluation fee in advance.
- A mandatory attendance at an informational session is required for the following programs: Practical Nursing, Nursing, Dental Hygiene, Respiratory Therapy, and Veterinary Technology

Final acceptance is contingent upon the satisfactory completion of the applicant's high school or any other current program of study.

Placement Testing

Students who are provisionally accepted are required to take placement tests in writing and mathematics. The test is scheduled during the spring and summer. Test results are used to ensure that students are placed in the correct courses at registration.

Students who have completed bachelor's degrees in the United States and/or have met the English and mathematics program requirements may be exempted.

If a student's skills are below minimum levels, he or she will be required to take developmental courses in the appropriate areas. This would result in additional coursework and, in most instances, a lengthening of the time required to graduate.

A student has the right to appeal the results of the placement test by contacting the Office of the Academic Dean. Students with disabilities should contact a Learning Skills Specialist to discuss possible test accommodations.

Students who place into a three-year mathematics or English sequence may still be accepted into programs that do not offer the three-year option. These students may require an additional year to complete their associate’s degree requirements.

Orientation

New student orientation is an important phase of each student's development at Vermont Tech and is required for all. It affords entering students the opportunity to meet the members of the Vermont Tech community, to understand the expectations for a successful college experience, to sign up for extracurricular activities, and to settle in before beginning the first semester. A mailing is sent to students prior to the semester with information on orientation dates and activities.

Prior to the start of the fall and spring terms, the college will send accepted applicants detailed instructions on orientation and class registration. This will include information on housing assignments, recommended room furnishings, rules for cars on campus, and other general items.

Student Registration Schedules/Class Listings

Vermont Tech courses are available online at: http://blackboard.vsc.edu. Click on the *VSC Courses/Catalog* tab at the top of the page.

Students who have a user name and password may view schedules, grades, and limited demographic data. New students who do not have a user name or password may view course offerings for the upcoming semester using the *Search for Sections* without logging in.

All of the Vermont Tech terms start with the letter "T" For example, the code T08FA translates to the Fall 2008 term at Vermont Tech.

First-year students will be registered by staff and faculty after placement testing results have been reviewed, prior credit information received, and the tuition deposit has been paid. Registration for continuing students is completed in the prior term.

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

Non-Degree Students

Non-degree students may register two weeks prior to the start of the term. Students who wish to enroll for a course or courses but not for a program must meet the prerequisite requirements for the course(s) for which they register and are subject to the same academic regulations and standards as degree students.

Registration for courses is subject to the availability of those courses, with initial priority being given to degree students. Non-degree students may register for classes through the Registrar's Office. Note: Non-degree students are not eligible for federal financial aid.

Related Academic Information

Transfer Credit

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

There is a $25 fee for evaluation of transcripts of work completed outside of the Vermont State Colleges system. This evaluation is normally completed after the student's acceptance of the offer of admission and the fee is billed to the student's account. Early transcript evaluation can be made for applicants who pay the evaluation fee in advance.

Generally, credit for applicable college courses taken may be granted for those courses completed with a grade of "C-" or better*; however, the transferred grades will not be computed into a student's Vermont Technical College grade point average. Courses taken at an accredited institution on a pass-fail basis may be transferred. For programs that require a "C" or better, the minimum grade for acceptable transfer credit will be "C". *However, Vermont Technical College may require the student to obtain a grade equivalent in the course from the institution at which the course was taken. Examinations may be required to show competence of subject material. Vermont Technical College will be the final judge as to what transfer credit it accepts.

Transfer credit varies depending upon a number of factors, such as the student's academic record, the college or university selected, and the program selected. Credits earned at Vermont Tech and the Vermont State Colleges are transferable to other colleges or universities only at the discretion of the receiving institution.

**For programs with coursework that requires a "C" or better, the "C-" credit will not meet program requirements, although the credits may be accepted in transfer.*

Advanced Standing

Admission candidates may be granted advanced standing in a degree program by:

- Transfer of courses from other accredited post-secondary institutions (see *Transfer Credit* above); advanced placement examination (e.g. CEEB, CLEP); recognized equivalent military or similar courses; credit by challenge examinations (see *Credit by Challenge Exam*); and previous relevant experience
- Consideration of previous relevant experience for credit is initiated by a completed academic portfolio to the department heads through the Dean of Academic Affairs. If approved, the portfolio will be returned to the Registrar's Office with the signatures of approval from the program's department head, the credit-granting department, and the Dean. The college may require a challenge exam in these cases

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
- No more than 50% of the total technical course credits in an academic program may be obtained by advanced standing

Summer Programs

Vermont Tech offers a number of summer courses which usually include physics, calculus, technical communication, English for speakers of other languages, and computer programming. There is also an intensive, four-week summer bridge program. This is a preparatory program in math, physics, computers, and English.

Academic Affairs

Academic Advising

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

Students having academic or personal difficulties can get extra help from faculty advisors to identify problem areas, clarify educational and personal goals, resolve difficulties, and obtain referrals to other campus services. If students need to change their advisor, they should contact the Office of the Registrar.

Attendance Requirements

a. Students are expected to meet the attendance requirements set by each instructor for each class in which they are enrolled.

b. Students who do not meat attendance requirements may be dropped from the class roster without punitive grades through the 60% point of the course. After the 60% point, students may be dismissed from the course with failing grades

c. In cases of excessive and willful absences and upon the recommendation of the instructor's department chairperson, students may be dismissed from the College, as per Academic Dismissal, page 39.

d. The make-up of any work (including study assignments, homework, reports, and examinations) missed for any reason will be at the discretion of the instructor. Any time a student misses a class, laboratory, or other scheduled event, it is his/her responsibility to inform the instructor or individual in charge and to make satisfactory arrangements for any make-up work

Participation in varsity athletic contests may be considered excused absences; practices are not excusable absences. Athletes are responsible for all work missed and 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.

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 by challenge, advanced placement, waiver, etc.	0.0
TR Transfer Credit Received	0.0

Official grades are issued online at the end of each semester. In addition, unofficial academic warnings are issued online at the mid-point of each term.

Grade Point Average (GPA) Calculation

The grade point average 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 courses taken count as GPA credits only in the term taken. They are not calculated in the cumulative GPA.

To calculate cumulative GPA, divide the term quality points by the term GPA credits attempted.

Transcripts

Credits earned within the Vermont State College system (Castleton State College, Johnson State College, Lyndon State College, Community College of Vermont) are not considered transfer credit. All VSC courses taken starting in the 2002 summer term will be included and count in the determination of quality points and GPA on the Vermont Tech transcript.

Grade Amelioration Policy/Forgiveness or Non-use of Grades

One time in an academic career, a student who is changing programs or VSC schools may, with the proper approval(s), have selected grades excluded from the calculation of his or her cumulative Grade Point Average in the new academic program. Grades may only be excluded for courses required in the old program that are not required in the new or subsequent four-year programs for that degree. Elective credits are not eligible for amelioration. All credits earned in courses excluded from the calculation are lost. This policy does not apply to electives or credits used for any diploma, certificate, or degree already awarded.

For students attempting to ameliorate grades, the approval of the student's new program department chair or director is required.

The student must have:

- One term of at least 6 credits of satisfactory academic progress (a term GPA of 2.00 or better) following the term for which amelioration is requested
- Must receive approval from the academic dean of the home institution in consultation with the other VSC academic dean whose grades are to be ameliorated

Auditing Courses

Tuition charges for an audit course will be 50% of the full applicable per-credit rate. Students registering to audit a course must do so by the end of the add/drop period.

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. The audit course credit hours will not be applied for determining student load or status.

Instructors, in giving permission for an audit, will specify the expectations for student participation as an auditor. Students who successfully audit a course will receive an "AU" grade, which carries no credit or quality points. Students who do not meet expectations of the audit will be dropped from the course with no grade or a "W" grade. Students may not change to audit status to avoid receiving less than desirable final grades.

Incomplete Work

A grade of Incomplete ("I") applies to work in a course which has not been completed because of illness or other satisfactory reasons. The incomplete work must be made up as specified by the instructor, and no later than halfway through the following term.

The grade for the course will be determined by the quality of the work that is made up, along with previously completed work. The instructor will determine a default grade that will be entered upon the student's transcript in the event the student fails to complete the assigned work. A student receiving an "I" grade may enroll in courses for which the "I" grade course is a prerequisite. Continued enrollment in the course is contingent on completion of the course with a passing grade.

Repeated Courses

When a course is repeated and is completed, the initial grade remains on the record but does not count in the grade point average or for credit. The most recent grade earned in a course will be entered on the record and used in computing the term and cumulative grade point averages and class rank. (If a grade other than an earned grade [W, NG] is recorded in the repeated course, all attempts will appear on the record, and the most recent earned grade will be used in computing the cumulative grade point average.)

The English, Mathematics, Electrical, and Physics departments all have courses that have been created for students pursuing the three-year options in various majors; these are "stretched" versions of courses in the two-year programs. If a student who has taken a course designed for the three-year option repeats the equivalent course(s) in the two-year format, or vice-versa, the more recent grades and credit will be substituted in computing the 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. During the second week, degree students may drop with the advisor's permission. To add a class after the first week, students must also have permission from both their advisor and the instructor.

A fee is charged for adding or dropping after the second week. Students are responsible to 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:

1. during the normal add/drop period will be dropped from the roster and will receive no grade
2. after the normal add/drop period, and until the 60% point of a course, will receive a grade of "W"
3. after the 60% point students may not drop and will receive an earned grade whether they attend the remaining classes or not
4. students who fail to drop a course and remain enrolled past the 60% point will receive an earned grade whether they attend classes or not. They are also responsible for costs incurred.

If a student successfully completes a course before withdrawing from the College, he/she will receive from that course's instructor an appropriate grade. An example of this case is a student who withdraws from the College before the end of the term having passed a self-paced mathematics course before he/she withdraws.

Students who drop courses after the first two weeks of class will not be reimbursed unless they withdraw from all their courses for the term.

Withdrawal from Vermont Tech

To withdraw from Vermont Tech once the term has started, a student must give written notification to the Office of the Registrar or off-campus site office. A parent or guardian must approve withdrawal requests made by minors. A student who stops attending classes after add/drop and does not inform the College will be considered to have withdrawn after the 60% point of the term if the last date of an academically related event cannot be determined.

Students will receive grades based on the guidelines specified in *Dropping a Course.*

Non-Returning Students

Students who plan to complete the term and then transfer or otherwise do not return to Vermont Tech for the subsequent term should:

1. complete a non-returning student form, available at the Office of the Registrar or site office
2. complete an exit interview, available through the Financial Aid Office

Leave of Absence from Vermont Tech

To take a leave of absence once the term has started, a student must request the leave in writing through the Office of the Registrar or the appropriate site office for off-campus programs. A parent or guardian must request the leave for a minor. The leave requires the approval of the Academic Dean.

If the request is for a medical leave of absence, a letter from the student's health practitioner may be required. Students approved for a medical leave of absence based on a letter from their health practitioner must have a time chosen when they are able to return to a normal class schedule.

For a leave of absence to be approved, it is expected that coursework incomplete at the time of the leave can be satisfactorily completed upon a student's return and prior to the expiration of the subsequent term.

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

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

College policy will be followed for students required by the college to take a mandatory leave of absence. (see Policy 102 or 116)

Credit by Challenge Examination

Students who can document course work, private study, or on-the-job or similar experiences judged to be equivalent to a Vermont Technical College course may, with approval from the respective department chairperson, receive credit by examination upon satisfactory completion of an "equivalence" examination administered as below:

1. Documentation is submitted at least three weeks prior to planned date of testing to the appropriate department chairperson
2. Documentation is reviewed and accepted as satisfactory by the department chairperson
3. Application for credit by examination is submitted with payment of a Challenge Exam fee
4. The examination is satisfactorily completed. The format of such examination is recommended by the respective department chairperson and approved by the Academic Dean
5. A maximum of 12 credits may be earned toward any one program by challenge exam and these credits are subject to Advanced Standing restrictions
6. Challenge exams that are taken to replace failed course work must comply with all of the above criteria and must document new course work, private study, or on-the-job experience since the failure occurred

Waiver of Courses

A student may have a specific course waived. A student can initiate a course waiver by an academic petition to the Department Chairs 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 have to be replaced by an alternative course.

Substitution of Courses

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

Student 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. There are two sets of class levels used at Vermont Tech, one for Three-Year Option students and a second for all others. Non-degree students have no class standing.

3YO Programs	Earned Credits	Level
1st year	0-25.99	3FR
2nd year	26-50.99	3SO
3rd year	Above 50.99	SO

All Other Programs	Earned Credits	Level
1st year	0-29.99	FR
2nd year	30-59.99	SO
3rd year	60-89.99	JR
4th year	Above 89.99	SR

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 or greater may be approved for a load of up to 24 credits in a term.

Students with a cumulative GPA from 2.00 to 2.99 may be approved for a load up to 21 credits in a term.

Students with a cumulative GPA below 2.00 will not be approved for a term credit overload.

Students with overloads will be 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, Academic Probation, and Academic Dismissal.

Good Standing

Degree students are in good standing if they meet the enrollment criteria for the term and have a cumulative GPA of 2.0 or better (1.75 for students with less than 30 GPA credits).

Academic Probation

Degree students who are allowed to enroll and who have a cumulative GPA below that required for good standing will be on probation.

Students returning from academic dismissal will be on probation for a minimum of one term.

Probation is not a punitive measure, but rather is used to identify students who may need additional services or help.

Academic Dismissal

Degree students may be academically dismissed for a minimum of one term for:

1. Receiving a term or cumulative GPA below .70
2. Not achieving Good Standing while on probation
3. Withdrawing from Vermont Tech while on probation

Students may also be dismissed at anytime when the Department Chair and/or Academic Dean determine(s) that continued enrollment would not be appropriate. Student dismissed during the term will receive grades of "F" or "NP" in any incomplete coursework at the time of dismissal. Students who are dismissed may not enroll in any Vermont Tech course for a minimum of one term. This applies to consortium enrollment from other VSC institutions as well.

Appeal of Academic Dismissal

A student who believes that he or she has been dismissed according to Vermont Tech policies, but who has significant mitigating circumstances shall submit a letter to: Academic Appeals Committee (AAC), c/o Vermont Technical College, PO Box 500, Randolph Center, VT 05061. This letter will include the student's full name, address and college identification number. It will fully explain the circumstances surrounding the appeal. The AAC will meet and make a recommendation to the Academic Dean, who will make a final decision regarding the appeal. This decision will be final and will not be subject to further appeal. (To read about this process more fully, please see the 2008-2009 Vermont Technical College Student Handbook).

Students reinstated on appeal will normally be reinstated on academic probation. Students must also appeal to Financial Aid to have their aid reinstated. This is a separate process from the academic appeal. (Refer to Statement of *Satisfactory Progress for Financial Aid* section)

Disciplinary Dismissal

Students who are dismissed from Vermont Technical College for non-academic reasons are no longer matriculated students. They are not eligible to enroll in Vermont Technical College courses. These students may apply for readmission through the Admissions Office after they have met the conditions set for them at the time of dismissal. Readmission requires the approval of the Dean of the College.

Returning Students

Previously matriculated students who have not attended Vermont Tech for one term or more (even in instances of courses in a major not being offered) should contact the Vermont Tech Admissions Office by phone, email, or in person and inform them of their intention to return to Vermont Tech. Admissions will advise them whether they need to complete a new application or whether they can preregister for the upcoming semester with the Office of the Registrar. This determination is based on length of absence, the program requirements, and other academic considerations.

Returning After Dismissal

Students who have been dismissed from Vermont Technical College may return to Vermont Tech under the following conditions:

1. Students have met the requirements placed upon them at the time of dismissal
2. Students notify Admissions in writing (by October 15 for spring, or by March 15th for fall) of their intent to return to Vermont Tech
3. Students are approved for re-admission by the Office of Admissions

Upon receiving notification from Admissions, the department chair or program coordinator will determine whether a fall or spring re-admission is most appropriate and send a preregistration to Admissions outlining course work and/or suggested course work prior to re-admission. Admissions will forward returning student information to the Office of the Registrar, Student Housing, and the Office of Financial Aid.

- Returning students desiring financial aid will have to appeal to Financial Aid to have their aid reinstated
- Returning students must complete a housing contract to live on campus
- Returning students will be on probation and receive increased supervision and academic support for a minimum of one semester

Changing Programs

If a student wishes to change programs, he/she must petition through the Office of the Registrar and be approved by the appropriate Department Chairperson(s).

Dual or Multiple Majors

If a student wishes to receive credit for a second degree or major, he or she must petition through the Office of the Registrar. If approved, the student must successfully complete at least 15 credit hours for an associate or 30 credit hours for a bachelor of course work beyond the first major for each successive major. This course work will include, as a minimum, all courses required in the successive major(s) not required in the first.

Course schedules are optimized for students with one program and major taking a full course load; because of this, dual majors typically require a minimum of an extra year at Vermont Tech.

A students with multiple majors will be awarded one degree with the additional majors annotated on his or her diploma.

Graduation Standards

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

All degree students will be required to demonstrate competence in written communications, information literacy, quantitative reasoning, and oral communication at the appropriate level for their degree program. Students will 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
- per VSC policy, a student who has completed the assessments at another VSC college
- a student who is granted a special exemption by the Dean of Academic Affairs

Procedures for completing the graduation standards are outlined in the Student Handbook.

Graduation Requirements

1. Have a 2.00 cumulative GPA
2. Complete 30 of the last 39 credits at Vermont Tech
3. Complete at least 50% of the coursework at Vermont Tech or 15 credits minimum for programs of less than two years
4. Satisfy all financial obligations to Vermont Technical College
5. Apply for graduation

The department chairperson will approve 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

Normally, a student is expected to finish a degree program with continuous enrollment in the specified number of terms outlined in the curriculum for his or her program. Students who leave the college for a full-term will be assigned the requirements for the catalog that is in effect in the year of their return and will be 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’s, or six years for a bachelor’s, the degree requirements have not 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 have not been met, the student must satisfy the graduation requirements in effect during the student's year of graduation.

Requirements for Participating in Graduation

Commencement is an important celebration of a student's academic success, as well as an opportunity for family, friends, and future employers to recognize those efforts in a formal manner. Academic credentials such as a certificate, associate's, and bachelor's degrees are important benchmarks in student learning. All students are strongly encouraged to attend commencement.

1. Students who successfully complete all graduation requirements and are recommended by their departments will graduate and receive a diploma
2. Students who have completed all but a few of the graduation requirements, have applied to walk or graduate on their application, and have the recommendation of their department and the college faculty may participate as "walkers". Although "walkers" participate in the graduation ceremony, they will not actually graduate until they have successfully completed all the graduation requirements and are so recommended by their departments
3. "Walkers" who subsequently complete their degree requirements must apply for a diploma that will be mailed after college faculty approval and the next commencement

Term Honors

At the end of each term, degree students who have attained the following term grade point average while carrying 12 or more letter graded credit hours and who have not received a failing or incomplete grade in any subject during that semester will be accorded academic honors:

3.5 Deans' List 4.0 President's List

There is one exception to the above: full time nursing students are eligible for term honors while enrolled in a non-graded clinical course.

Honor Societies

Vermont Technical College students may qualify for membership in three national honor societies: the Beta Beta Lambda Chapter of Phi Theta Kappa, the Vermont Alpha Chapter of Tau Alpha Pi, and the Sigma Phi Alpha Dental Hygiene Honor Society.

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:

- 3.5 cumulative GPA with no incomplete grades
- Sophomore status
- Must be working toward an associate's degree with a **minimum of 12 credits completed at Vermont Tech**

Tau Alpha Pi is the 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:

- 3.5 cumulative GPA 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 3.3 or better cumulative GPA

Sigma Phi Alpha is the 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 qualities 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.

Graduation Honors

To be eligible for graduation honors, a degree student must:

1. Have 30 credits for an associate degree and 60 credits for a bachelor degree completed within the VSC
2. Have achieved the following cumulative GPA for all coursework:

3.5	Cum Laude
3.7	Magna Cum Laude
3.9	Summa Cum Laude

To be eligible for graduation honors, a certificate student must:

1. Complete 50% of the degree requirements within the VSC system
2. Have achieved the following cumulative GPA for all coursework:

3.0	Honors
3.5	High Honors

Awards

Each year a number of students receive awards for distinguished performance, noteworthy improvement, and/or 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 are eligible for these awards:

- **The American Society of Civil Engineers Awards** to graduating seniors for the highest academic average and greatest all-around academic development in the Civil and Environmental Engineering Technology program.

- **The American Society of Heating, Refrigeration, and Air-Conditioning Engineers Award**, sponsored by the Champlain Valley Chapter, to a deserving senior graduating from a Bachelor of Science in Architectural Engineering Technology program, based on factors such as participation in student and parent chapter activities and interest and excellence in building mechanical engineering systems. Award given most but not every year.
- **The Angus A. Murray Athletic Award** to the individual who demonstrates selfless dedication to the college's athletic program.
- **The Angus A. Murray Award for Excellence in Writing** to a returning student who demonstrates greatest overall excellence in writing in Vermont Tech's two required English courses.
- **The Business Technology & Management Faculty Awards** to graduating seniors for the highest academic average and greatest all-around academic development in this program.
- **The Computer Engineering Technology Awards** to graduating seniors with the highest academic average and greatest all-around academic development in this program
- **The Dental Hygiene Peer Recognition Award** to a second year dental hygiene student who, in the opinion of his/her fellow classmates, exhibits the interest, attitude, and cooperative spirit desirable in a dental hygienist. This award will be given out at the Vermont Technical College pinning ceremony on graduation day.
- **The Dorothy Wootton Outstanding Clinician Award** to the graduating student who best demonstrates outstanding clinical performance, from the faculty of the Department of Dental Hygiene.
- **The Edward F. Kibby Memorial Award** to the athlete who has displayed the most outstanding sportsmanship throughout the year, from the Vermont Tech Alumni Association.
- **The Edward H. Jones Testimonial Fund Award** to the graduating senior who has shown the greatest all-around academic development in an agricultural technology program.
- **The Faculty Award** to a graduating student who has made the greatest contribution to student activities while attending Vermont Technical College.
- **The Institute of Electrical and Electronics Engineers Awards** to graduating seniors with the highest academic average and greatest all-around academic development in the Electrical Engineering Technology program.
- **The Lambda Beta Society** is a national honor society for the profession of respiratory care and students are proposed for membership if they are in the final semester of the Respiratory Therapy program and rank in the top 25% of the graduating class.
- **The Landscape Development & Ornamental Horticulture Faculty Awards** to graduating seniors with the highest academic average and greatest all-around academic development in this program.

- **The Practical Nursing program** recognizes clinical excellence through academic awards that are specific to the individual PN nursing campuses. Graduation awards are given at the Putnam/Bennington Campus, Thompson/Brattleboro Campus, Fanny Allen/Williston Campus and at the Randolph Center Campus. Additional awards are also awarded under the college's extended campus designation.
- **The Nursing Program Awards** to graduates of the Associate's Degree in Nursing program from the Vermont State Nurses Association, for clinical excellence, and from the Nursing program, for academic excellence.
- **The Paul Calter Scholarship award** to the student who, in the opinion of the Mathematics Department faculty, has shown the best performance in the regular mathematic sequence (MAT 1420 and MAT 1520) for the last year.
- **The Respiratory Therapy Program Award** goes to a graduate of the Associate of Science degree for academic excellence.
- **The Robert S. Brady Memorial Award** to the graduating senior who has shown the greatest all-around academic development in the Architectural and Building Engineering Technology program, from the Vermont Chapter of the American Institute of Architects.
- **The Ruth Freeman Memorial Award** to the graduating senior with the highest academic average in the Architectural and Building Engineering Technology program, from the Vermont Chapter of the American Institute of Architects.
- **The Rutland County Alumni Award** to the graduating senior who is a Rutland County resident with the highest academic average.
- **Sigma Phi Alpha Dental Hygiene Honor Society** National Dental Hygiene Honor Society organized to recognize, promote, and honor outstanding scholarship, service, and character among students or graduates of dental hygiene schools in the US and Canada. Second year dental hygiene students who rank highest in scholarship and character and who exhibit potential qualities 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.
- **The Society of Manufacturing Engineers, Twin States Chapter 40, Award** to graduating seniors with the highest academic average and greatest all-around academic development in the Mechanical Engineering Technology program.
- **The Stanley G. Judd Memorial Fund Award** to the graduating senior with the highest academic average in an agricultural technology program, from the Vermont Tech Alumni Association.
- **The Student Engineering Technician of the Year Award** to a senior selected from nominations by the engineering technology departments for outstanding scholarship, character, and leadership.
- **The Vermont Association of Professional Horticulturists Student Award** to a "second-year student in the Landscape Development and Ornamental Horticulture Program who exemplifies the qualities of a professional in their 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 Automobile Dealers Association Awards** to graduating seniors for the highest academic average and greatest all-around academic development in the Automotive Technology program.
- **The Vermont Dental Hygienists Association Membership Spirit Award** to the graduating Dental Hygiene student who exhibits a high level of professional pride and enthusiasm for the profession of dental hygiene.
- **The Vermont Tech Faculty Memorial Fund Scholarship** to a student who has completed the freshman year and whose outstanding scholarship exemplifies excellence in technology; this award was created by the faculty as a living memorial to the men and women who served on the faculty and have passed away.
- **The W. Newton Ryerson Award for Excellence in Freshman Mathematics and Physics** to a returning student with a grade point average of 3.5 or higher in the freshman mathematics and physics courses who demonstrates excellence in laboratory performance and who demonstrates a positive general attitude as shown by class and/or laboratory participation and/or assisting other students.
- **Who's Who Among Students at American Junior Colleges** each department nominates students for this honor given for academic achievement, community service, leadership in extracurricular activities, and potential for success.

Honesty and Ethics

Vermont Technical College expects high standards of truthfulness and honesty in all academic work. Thus, any student who is found guilty of academic dishonesty will face disciplinary action, up to and including dismissal from the College. Cheating refers to using unauthorized aids or copying another person's work on exams, quizzes, and/or assignments.

Plagiarism means taking language, information, or ideas, either exactly or in paraphrase, from another person or from a printed (including online) source, without giving credit to the source.

Computer Software

The College has licensed (not purchased) the use of computer software for instructional use on college-owned computers. It is a criminal offense to copy this software.

Students will be allowed to use legally licensed software on the computer(s) for which it is licensed. The college will not authorize or tolerate any other use or copying of these materials.

Student Support Center

A number of services are provided by the staff at the Student Support Center to help students meet their academic, personal, and career goals.

These include academic counseling, study skill assistance, Learning Center services, services for students with disabilities, and the Student Support Services/TRIO Program. Students enrolled in programs at sites other than Randolph Center or Williston should contact their site coordinator to arrange for tutoring, career information, placement, counseling, and disabilities services.

Student Support Services/TRIO Program

The SSS/TRIO Program at Vermont Tech provides support services designed to increase student retention/transfer and graduation.

Funded by a special grant from the U.S. Department of Education, SSS/TRIO provides services to first-generation college students, low-income students, and students with disabilities. This program is widely used by students for personal, academic, and career counseling; assistance in transferring to bachelor's degree programs; improving study skills; developing reading and writing skills; individual tutoring; workshops; peer advising; support groups; cultural events; and field trips.

Academic Counseling

Academic counseling includes a variety of services designed to help students with concerns about reaching their academic goals.

Counselors provide informal academic assessments, academic and vocational counseling, and individual help with writing and study skills, such as managing time, reading textbooks, and note taking and testing.

Students with specific mental health concerns should contact the Dean of the College, who will assist them in locating appropriate community treatment resources.

Referrals for individual tutoring with professionals in specific courses are also available.

Support and Counseling

The Student Support Center focuses on wellness for emotional and mental health. The Center offers workshops, mentoring and support groups on stress, adjusting to college, academic success, test anxiety, and other issues related to student wellness. The Center also offers referrals to off-campus mental health agencies where appropriate.

Services for Students with Disabilities

Prior to enrollment, students with any type of disability are encouraged to identify their disability to the Learning Skills Specialist to arrange necessary accommodations. Incoming Vermont Tech students with pre-existing mental illness should consider contacting the Learning Skills Specialist to discuss potential residential or academic accommodations.

Interviews and phone calls to address a particular concern are welcome at any time during the admissions process and while one is a student at Vermont Tech. All information regarding a disability is kept in strict confidence and is never entered in a student's academic record.

Available services include: academic counseling; student support group; classroom accommodations (which may include, but are not limited to extended time on tests, reduced course load, use of a tape recorder for lectures, and oral exams); and assistance in obtaining auxiliary aids such as taped texts or interpreters.

Career/Transfer Center

The Career/Transfer Center provides assistance with career and college transfer decision making and job placement; occupational information, including company literature, job postings, reference books, computer software, etc.; college information, including college catalogs, applications, transfer scholarship information, articulation agreements, etc.; and individual assistance and workshops on writing resumes, job hunting strategies, and job interviews.

Because Vermont Tech maintains close ties to industry through field trips, an annual career fair, mentoring, and guest speakers, spring is a busy recruiting season on campus.

The Learning Center

The Learning Center in Conant Hall provides a wide range of academic services, including tutoring, test review sessions, supplemental instruction, and study groups.

Tutoring, offered on a drop-in, on-call, and scheduled basis, is especially popular. Many students use the Learning Center when they need to ask quick questions in physics, review for a calculus final, enhance their understanding of DC circuits, or brush up on rusty computer skills, study with classmates, or work in a quiet place.

Writing and Communication Centers

The Writing & Communication Centers (WCC), located in Conant Hall on the Randolph campus and on the Williston campus, offers one-on-one tutoring for any Vermont Tech student who wants to strengthen reading, writing, oral presentation, or study skills. The WCC also provides access to a variety of assistive technology software programs 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. In addition, the English for Speakers of Other Languages computer programs are housed in the WCCs, providing opportunities for students to study and practice vocabulary, grammar, and pronunciation.

Public Notice Designating Directory Information

Currently enrolled students may withhold disclosure of personally identifiable, directory-type information under the Family Educational Rights and Privacy Act (FERPA). To withhold disclosure, written notification must be received in the Registrar's Office prior to the start of the third full week of classes. Forms requesting the withholding of "Directory Information" are available in the Registrar's Office.

Vermont Technical College assumes that failure on the part of any student to specifically request the withholding of "Directory Information" indicates individual approval for disclosure.

Student Right-to-Know (SRK)

Students will receive graduation rate information during orientation. This information is available to prospective students upon request.

Student Records Review and Release

Annually, Vermont Technical College informs students of the Family Educational Rights and Privacy Act. 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 Family Educational Rights and Privacy Act (FERPA) Office concerning alleged failures by the institution to comply with the Act.

The Student Handbook explains in detail the procedures to be used by the institution for compliance with the provisions of the Act. The college has the policy of disclosing educational records to Vermont Tech and Vermont State College officials with a legitimate educational interest without prior consent. Questions concerning FERPA may be referred to the Registrar.

Transcripts

A transcript is a copy of a student's permanent record of attendance at the College and cannot be altered. Current or former students may request that the College issue an official transcript of his/her record to any school, employer, or other agency. For each transcript, students must submit a written, signed request to the Registrar's Office. A transcript fee will be charged.

Transcripts will be sent as soon as possible. Please allow a minimum of five days for normal processing and three weeks following the end of a term. Transcripts will not be sent for a student who has not satisfied financial obligations with the College.

Vermont State Colleges Enrollment Consortium Agreement

By agreement of the five Vermont State Colleges (Castleton, Lyndon, Johnson State Colleges, Vermont Tech, and the Community College of Vermont), students enrolled at any VSC institution may simultaneously enroll in courses at other VSC institution and receive full credit for those courses at their "home" institution. The 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 course work will meet program requirements at the home institution prior to enrolling at the other VSC institution. Registration for courses at other VSC institutions will be through the home institution.

Students enrolled in the LPN program are not eligible for the VSC enrollment consortium because of the divergent calendar of the LPN program.

Students who desire to enroll exclusively at another VSC school other than their home institution may do so for a maximum of two terms. To be eligible for this, students 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 will be included in GPA calculations at the home institution.

Students desiring to have previous VSC course work excluded from their Vermont Tech GPA after one term at Vermont Tech should review the Grade Amelioration Procedure.

Student Affairs

Student Conduct

Vermont Technical College students have a strong sense of educational purpose, cooperative spirit, and a willingness to live comfortably within the college community without losing their sense of individuality. Still, there are many adjustments that students must make to pursue a college education successfully and, at times, students need guidance in making decisions about college, their personal lives, or their overall objectives.

To help students with such decisions, the college faculty and staff stand ready to offer assistance, ranging from friendly advice to consideration of more serious problems. In some cases, we rely on community resources to augment existing campus services.

Guidelines and regulations on student conduct are published in the Student Handbook. These exist to aid students in making the transition to college life and to outline some of the characteristics a student needs to fit comfortably into campus life. These regulations are subject to change by the posting of notices on campus bulletin boards and the college web site.

All students are expected to exhibit satisfactory conduct at all times and the college reserves the right to take action, up to and including dismissal, against students whose behavior violates college regulations. In all instances of disciplinary action, the college is committed to providing the student an opportunity for due process. As an institution of higher education, the college expects its students to follow behavioral standards above those of the population in general.

In support of this concept, Vermont Technical College believes that gaining maturity is a fundamental ingredient of education and that self-reliance and self-discipline are two qualities the college tries to instill in its students.

Residential Living Mission Statement

The members of the Residential Living staff strive to promote student development on a comprehensive scale through programming, and are dedicated to encouraging students to take pride in themselves and the pursuit of a positive college experience. These staff members assist students to assume responsibility for their actions and choices.

Hall directors and resident assistants support students as they prepare themselves for future challenges by helping them to understand their limitations and to know their potential through the exploration of personal, academic, and vocational interests. Students are guided as they develop personal integrity and respect for others through an examination of individual values and goals with relation to today's changing society.

Residence Hall Occupancy

It is a condition of enrollment at Vermont Technical College that all full-time students who are not living in the immediate area (30 mile radius) of the college with their immediate families live in college housing for the first two years of enrollment. Exceptions may be made by the Director of Student Life based upon consideration of an individual's special case. In all cases of exception, written application for permission to live off campus should be made to the Director of Student Life. The written application should contain full reasons for the request and must be accompanied by documentation to support that request. The burden for providing documentation rests with the student. Application for release does not imply automatic permission to reside off campus. Students are advised not to sign contracts or leases on non-college housing until they have been formally notified of their release from the requirement.

Dining Hall

It is a condition of admission to Vermont Technical College that students living in residence halls on campus purchase a meal plan.

Students who do not live on campus are welcome to purchase a meal plan. They may also pay at the door of the dining hall for individual meals or may purchase one of three commuter meal plans at the food service office.

Care of College Property

The college provides a well-equipped and well-maintained educational plant for use by the students enrolled in its courses. The plant is an expensive one, and the students are expected to be as careful of it as is humanly possible. Students will be required to pay for property which is damaged through their negligence or carelessness. In the event of damage caused by a group, charges will be apportioned among members of the group. Vermont Technical College students are responsible for on-campus damage caused by their guests.

Student Automobiles

Students living on or off the Randolph Center campus are permitted to have one motor vehicle on campus, and all motor vehicles must be registered at the campus Public Safety Office within two business days of their arrival on campus. Public Safety will issue a parking permit for a nominal charge.

Rules for operation and parking of motor vehicles on campus are printed in the Student Handbook and must be observed.

All students must advise the college of any change of state registration number, change of motor vehicle, or change of insurance coverage. The local residential address of the student must also be provided. We also advise that a local or cell phone number be provided so that the owner can be notified in cases where lights are left on or there is an accident.

Regulations for the Williston campus and all nursing sites are available through the site directors at those sites.

Student Health

Vermont State College's policy requires that students attending Vermont Technical College must maintain personal health insurance coverage. Proof of such coverage must be furnished prior to registration. In cases where a student is not covered under his/her own or family's policy, s/he will be required to purchase the basic health policy offered through the college. Please note: most insurance carriers require that student maintain full time status (at least 12 credit hours per semester) to be eligible for continued coverage

The Randolph Center campus maintains an on-campus Health Center staffed by a nurse for 3 hours per day, Monday through Friday for consultation, referrals, and seeing students who may be ill.

In case of accidents, injury, or serious illness, students may be admitted to the Gifford Medical Center in Randolph at the request of one of the area doctors. In such cases, the student's insurance company pays for the expense incurred within the limits of the policy.

The college employs a part-time drug and alcohol counselor who is available to assist students with concerns related to substance abuse. Students can receive help with stress, relationship problems, homesickness, adjustment issues, substance use and abuse, and referral to outside agencies.

Vermont Tech maintains a close relationship with local community mental health agencies for emergency services and consultation. Community mental health services are available to provide counseling services for students in crisis and on a referral basis.

All students, regardless of age, are required to have a completed medical history form on file in the Health Center, including an up-to-date immunization record (as required by state law) and either a chest X-ray or PPD skin test for tuberculosis. Failure to do so may result in cancellation of registration. Prior to initial registration, students will receive the required medical history form from the Admissions Office.

The college reserves the right to exclude from classes and/or campus activities, or send home any student who, in the judgment of college authorities, is not medically qualified to carry on the regular duties required of Vermont Technical College students. Students returning to the college from medical leave must present a statement from the appropriate professional clinician that they are able to return to continue their studies and, if necessary, provide evidence that appropriate arrangements for follow-up treatment have been made.

The college also believes that physical activity is an integral component of student health and encourages students to use available facilities for fitness-related activities.

The college has exerted and will continue to exert every effort to avoid accidents, but incorporates the following statements as part of the understanding between itself and its students:

"The Vermont State Colleges, its officers, agents, and employees, assume no liability, expressed or implied, for the results of sickness or accidents involving personal injury to any student, whether in connection with the college instruction program wherever conducted, or incidents or other activities on the college properties or elsewhere. Filing of an application carries with it approval and consent with respect to the college policy governing accidents or illness as herein set forth."

Athletics, Intramurals, SHAPE and Community Resources

The Vermont Technical College Department of Athletics, located in the Student Health and Physical Education (SHAPE) building, maintains a variety of varsity sports programs.

At the national level, Vermont Tech competes in the National Association of Intercollegiate Athletics (NAIA) and the United States Collegiate Athletic Association (USCAA). At the regional level, the college competes in the Sunrise Conference (NAIA) and Yankee Small College Conference (USCAA). It is a requirement for participation in intercollegiate sports that a student must be enrolled full-time and maintain an acceptable level of academic performance. This standard is set forth in college Policy 311 and is available on the Blackboard portal.

Intercollegiate sports are: men's and women's soccer, men's and women's basketball, men's baseball, and co-ed intercollegiate competition in golf and cross country. Intramural and club sports compete in soccer, flag football, hockey, basketball, volleyball, softball, bowling, and tennis, although these vary from year to year depending on student interest.

The SHAPE building houses a 25-yard, 6-lane swimming pool, two racquetball courts, a double-court gymnasium, a climbing wall, a weight room and fitness facilities.

Student Council and Student Activities

The Student Council supports a variety of clubs, organizations and activities through the Student Activities Fee paid by each student.

Student chapters of professional organizations include the Society of Manufacturing Engineers, Instrumentation Society of America, American Society of Civil Engineers, National Association of Veterinary Technology of America, and the American Institute of Architects. Additionally, clubs and organizations are also available related to varied student interests and include the Hockey Club, Rugby Club, Vermont Tech First Responders, Music Club, Adventurers Guild (gaming), the campus radio station, WVTC, VTech TV, Machine Shop Club, Community Service, Gun Club, Computer Club, Climbing/Outdoors Club, LAMBDA., among others. Honor societies include Tau Alpha Pi and Phi Theta Kappa.

The Student Life staff, is responsible for providing a variety of campus-wide programs as well as residence hall programming and other campus events. In addition, there are a variety of off-campus trips including professional sporting events, holiday shopping in Boston or Montreal or night skiing at Bolton Valley or Stowe. Tickets are also made available to a variety of concerts and other cultural events. The Director of Student Life and Dean of the College office serve as resources to all student organizations and their advisors. They are able to assist organizations to function more effectively and to respond to student needs and interests.

Emergency Loans

A student who needs money for a short-term emergency may borrow up to $100. Loans must be repaid within 30 days or, in any case, prior to the student's terminating Vermont Technical College enrollment. A service fee is charged for these loans. Applications are available from the Dean of the College on the Randolph Center campus or from the Site Director.

Tuition & Fees - 2008-2009

Estimated Costs of Attendance

Students are responsible for familiarizing themselves with the costs descriptions, payment and refund policies, and the definition of residency for tuition payment purposes as detailed below. In the proceeding cost charts all charges are based on fulltime enrollment (12-19 credits per semester) and are subject to change. Part-time and non-degree students should see the "Per Credit Tuition and Fees" heading of this section of the catalog to read information on specific costs.

Cost Chart One--Fall & Spring Terms

All Programs Except Nursing & Dental Hygiene

* see cost charts two and three for nursing and dental hygiene expenses

	Vermont Residents		Non-Vermont Residents		RSP/NEBHE Program	
	Term	Year	Term	Year	Term	Year
Tuition	$4,644	$9,288	$8,856	$17,712	$6,960	$13,920
Double Room****	2,236	4,472	2,236	4,472	2,236	4,472
Board (Gold meal plan)	1,519	3,038	1,519	3,038	1,519	3,038
Student Activity Fee	98	196	98	196	98	196
Facilities Fee*	250	500	250	500	250	500
Orientation Fee**	100	200	100	200	100	200
Health Insurance***	940	1,445	940	1,445	940	1,445
Total	$9,787	$19,139	$14,005	$27,563	$12,103	$23,771

* Applies to all Matriculated Students.

** New students only; Fall semester rate is $200; Spring incoming rate is $100; one-time charge for 1st semester enrolled.

*** Required if not covered by another medical plan. You must be a full-time degree seeking student to obtain coverage. The one-semester rate of $940 applies to Spring semester incoming students only. $1,445 is the annual rate for all Fall semester students.

**** Room charges for Randolph Center campus. See Other Estimated Expenses for NECI room charges.

Other Estimated Expenses

Books, transportation, personal needs . . . . . (term) $1,325 (year) $2,650
Automotive student tools . . . . . $2,200 (year)
Equine Riding Arena Costs . . . . . $1,200 (year)
NECI Room Williston Campus . . . . . $5,662 (year)
(No meal plan at Williston campus)

Cost Chart Two–Nursing

For further information concerning estimated costs of attendance for the Nursing Programs, contact the Vermont Tech Business Office at 1-800-600-9830. Program costs here are detailed based on annual full-time cost of the program, not on a per-semester rate.

	Associate Degree Nursing (two semesters)			Practical Nursing (three semesters)		
	Vermont Residents	**Non-VT Residents**	**RSP/NEBHE Program**	**Vermont Residents**	**Non-VT Residents**	**RSP/NEBHE Program**
Tuition	$9,288	$17,712	$13,920	$12,771	$24,354	$19,140
Double Room	4,472	4,472	4,472	5,522	5,522	5,522
Board (Gold meal plan)	3,038	3,038	3,038	4,051	4,051	4,051
Student Activity Fee	196	196	196	268	268	268
Facilities. Fee*	500	500	500	689	689	689
Orientation Fee**	200	200	200	200	200	200
Health Insurance***	1,445	1,445	1,445	1,445	1,445	1,445
Total	$19,139	$27,563	$23,771	$24,946	$36,529	$31,315
Total Off Campus Room/Board**** (Gold meal plan)	$11,629 7,510	$20,053 7,510	$16,261 7,510	$15,373 9,573	$26,956 9,573	$21,742 9,573

* Applies to all Matriculated Students.

** New students only; cost is fall semester rate.

*** Required if not covered by another medical plan. Required for all full-time students.

**** Room charges for Randolph Center campus. See Other Estimated Expenses for NECI room charges.

Other Estimated Expenses

Books, transportation, personal needs . . . . . (term) $1,325 (year) $2,650
Nursing uniforms $250
NECI Room Williston Campus . . . . . $5,662 (year)

Cost Chart Three–Dental Hygiene

	Vermont Residents		Non-Vermont Residents		RSP/NEBHE Program	
	Term	Year	Term	Year	Term	Year
Tuition	$5,808	$11,616	$8,856	$17,712	$6,960	$13,920
*NECI Room	2,831	5,662	2,831	5,662	2,831	5,662
Student Activity Fee	98	196	98	196	98	196
Facilities Fee*	250	500	250	500	250	500
*Orientation Fee**	100	200	100	200	100	200
Health Insurance***	940	1,445	940	1,445	940	1,445
Total	$10,027	$19,619	$13,075	$25,715	$11,179	$21,923

* Williston based on availability. No meal plans available at Williston campus.

* Applies to all Matriculated Students.

** New students only; Fall semester rate is $200; Spring incoming rate is $100

*** Required if not covered by another medical plan. You must be a full-time degree seeking student to obtain coverage. The one-semester rate of $940 applies to Spring semester incoming students only. $1,445 is the annual rate for all Fall semester students.

Other Estimated Expenses

Books, transportation, personal needs . . . . . (term) $1,325 (year) $2,650
Clinic attire, uniforms, shoes, laundry, etc $1,000
Dental instruments & lab material $1,300
Second Year Examinations & Licensure $975

Optional Room & Board Rates Per Semester

Below are a list of fees to consider:

Double Room $2,236
Single Room. $2,831
Triple Room $2,008
Gold Meal Plan is unlimited with $50 points at snack bar $1,519
12-Meal Plan with $75 points at snack bar $1,461
8-Meal Plan with $110 points at snack bar $1,405
Overnight rooms for emergencies . . . . . $15 per night

Other Fees–All Programs

Below are a list of fees to consider:

Allied Health Programs Liability Insurance Fee $25
Application fee (due when applying for admission) $37
Course Change $16
Challenge Exam Fee $50

Deferred Payment Fee $50
Degree Audit/Graduation $70
Late Class Registration $46
Late Financial Clearance Fee $100
Non-degree Student Registration Fee (per semester) $50
Returned Check Fee $25
Parking Sticker . . . . . $50 Fall / $25 Spring
Portfolio Assessment $50
Transcript Evaluation (Incoming transfer courses) $25
Official Transcript Request Fee . . . . . $5 per copy

Per Credit Tuition and Fees

Degree-seeking students registered for 12 credit hours or more are full-time students and expenses are set forth under cost charts One through Three 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 (Non-Dental Hygiene)

In-state $387
Non-Vermont Resident $738
RSP/NEBHE Student Program $580
(Regional student program/NEBHE/GN cost shown as money due after NEBHE credit is applied.)

Dental Hygiene

Vermont Resident $484
Non-Vermont Resident $738
RSP/NEBHE Student program $580

Fees

Degree Student Activity Fee (per credit hour - max. 12 credits) . . . . . $ 8
Non-degree Student Registration Fee (per semester) $50
*Facilities Fee (Per credit hour - max. 12 credits) $21
Summer Student Activity Fee . . . . . No Charge
**All Matriculated Students*

Summer Costs 2009

Summer tuition is charged on a per-credit basis as follows:
Vermont Resident (Non-Dental Hygiene) $387
Vermont Resident (Dental Hygiene) $484
Non-Vermont Resident (All students) $580
RSP/NEBHE/GN Student Program (All students) $580

Note: There is no financial aid for summer term so payment in full is expected by the start of summer classes.

Senior Citizen Discount

Non-degree-seeking Vermont citizens age 65 and above will be given a 100% reduction on their tuition costs.

RSP-Approved Programs

Vermont Technical College 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 a program eligible for tuition reduction (indicated by "s" on the following chart) under the RSP pact. A program not generally eligible because it is also offered in a student's home state may be eligible if the student's legal residence is closer to Vermont Technical College than to the home state institution. For details, contact the Office of Admissions.

RSP-Eligible Programs 2007-2008

	CT	MA	ME	NH	RI
Agribusiness	▲	▲			▲
Architectural/Building (2 yr.)		▲			▲
Architectural Eng. Tech. (4 yr.)	▲	▲	▲	▲	▲
Automotive Technology	▲	▲	▲		▲
Business Technology & Mgt. (2 yr.)	▲	▲	▲	▲	
Business Technology & Mgt. (4 yr.)			▲	▲	
Civil/Environmental Eng Tech.					▲
Computer Eng. Tech. (2 yr.)			▲		
Computer Eng. Tech. (4 yr.)	▲		▲		▲
Construction Practice & Mgt	▲	▲			▲
Dairy Farm Management		▲	▲		▲
Dental (4 yr.)	▲	▲		▲	▲
Electrical Eng. Technology (2 yr.)	▲		▲		▲
Electromechanical (4 yr.)	▲	▲	▲	▲	▲
Equine Studies	▲	▲	▲	▲	▲
Fire Science	▲				
Information Technology			▲	▲	▲
Landscape Devel./Horticulture		▲			▲
Licensed Practical Nursing (CT)	▲	▲	▲	▲	▲
Software Engineering		▲	▲	▲	▲
Sustainable Design & Technology		▲	▲	▲	▲
Veterinary Technology					▲

New York Residents Good Neighbor Policy

Reduced tuition rates are available for residents of New York state. Please contact the Office of Admissions to see if you are eligible for the Good Neighbor Policy and reduced rates.

Explanation of Fees

Application Fee - $37

This fee is required when a prospective student applies for admission to the college. Applications which are not accompanied by the fee will not be processed.

Board

Students may choose from three meal plans. The Gold Plan ($3,038/yr)offers unlimited meals with $100 per year in debit points in the snack bar. The Base Plan ($2,922/yr) offers 12 meals per week with $150 per year in debit points at the snack bar. The 8-Meal Plan ($2,810/yr) offers 8 meals per week with $220 in debit points in the snack bar.

The dining hall will be in continuous operation from breakfast through dinner.

Challenge Exam Fee - $50

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.

Course Change Fee - $16 per change

This charge is for students who alter their schedules after the second week of classes.

Deferred Payment Fee - $50 per semester

This fee is charged to students requesting that payment of semester charges be deferred because an outside source (employer, VA benefits, etc.) will be providing payment past the normal due date.

Degree Audit/Graduation Fee - $70

All graduating students are charged a fee prior to graduation. The fee is not optional; all graduating students will pay the fee whether they are participating in the ceremony or not. Fee is charged per degree.

Facilities Fee - $500/yr

This fee is charged per semester to all matriculated students. Full-time equivalent students (12 credits or more) are charged $250 per semester. 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 or Williston campuses. In billing, the fee is referred to as "VTC Facilities Fee."

Health Insurance Fee - $1,445/yr or $940 for spring entering students

Health insurance is mandatory for all full-time students not otherwise covered. A student (or his/her parents) must present written proof certifying that he/she is covered by insurance to be exempted from the college insurance fee. A Student Waiver (Selection) Card for the Vermont State Colleges (VSC) Student Health Insurance Plan must be completed by all full-time students. This card will be enclosed with the semester billing. Students failing to return the card by the published deadline will automatically be enrolled and billed for the VSC Health Plan.

Late Payment Fee - $100

This fee is charged to students who have not paid or provided proof of how their current semester bill will be paid. Financial holds will be activated approximately 30 days into each semester and this fee charged.

Late Registration Fee - $46

This fee is an additional charge for students who do not complete their semester's class registration process by the published deadline.

Orientation Fee - $200/fall students or $100/spring students

This fee is to cover expenses incurred during the orientation activities, including meals and room.

Portfolio Assessment Fee - $50

This fee is for each portfolio submitted for review.

Registration Fee - $50

This fee is required of each non-degree student who enrolls in one or more courses during a semester.

Returned Check Fee

There is a $25 service charge on checks returned to the Business Office for insufficient funds and no future checks will be cashed.

Student Activity Fee - $196/yr

Established by vote of the student body, this fee covers the expense of student clubs, activities, and publications. It also covers admission to most campus events, such as concerts, dramatic productions, films, and lectures, as well as recreational and social activities.

Transcript Evaluation Fee - $25

This fee covers the cost of evaluating and processing transfer credit, advanced standing, and portfolio assessment (waived for transcripts from other Vermont State Colleges institutions).

Transcript Fee - $5/copy

This fee covers the cost of processing transcripts after the initial free copy.

Textbooks and Supplies

The college bookstore sells textbooks, supplies, equipment, electronic calculators, and sundries. The cost of required textbooks and supplies varies depending on the program in which a student is enrolled. Typically, these costs amount to approximately $500 per semester. The bookstore accepts credit cards, cash, and checks. Bookstore charge forms are available, upon approval, from the Business Office.

Automotive Technology and Construction Practice & Management students are required to have their own tools. Contact the directors of these programs for details.

Calculators

The Vermont Tech Mathematics Department requires all entering Vermont Technical College students to possess, a contemporary graphing calculator for use in mathematics classes. For those taking Technical Mathematics and Calculus, the mathematics faculty recommends either a TI-83 or TI-83+ or an HP-48 or HP-49. If you will be taking a business math or statistics course, the TI-83 or TI-83+ is highly recommended. Although calculators may be bought at local stores, they are also available at the Vermont Tech bookstore. Any questions may be directed to John Knox at (802) 728-1204, email jknox@vtc.edu.

Other Expenses

College students will incur a variety of other expenses such as the costs of travel, social activities, and laundry. The total of these expenses is difficult to judge and can probably best be determined by each student and his/her family. The college estimates these costs, not including books, at about $1,650 a year.

Deposits

If you are an accepted candidate for admission to the college, you are required to send a $200 tuition deposit by May 1 or within two weeks if accepted after May 1. The deposit is considered a token of a student's good faith and is applied to the first semester's tuition and fees. Students are not enrolled in classes or billed semester costs until the deposit is paid.

If a student intends to live on-campus, a $100 room deposit must be sent by May 1 (or within two weeks if accepted after May 1) and must accompany an applicant's completed Room and Board Contract. For returning students, the $100 room deposit is due in early April.

Deposits are non-refundable except for a returning student's Room Deposit if a refund is requested prior to May 1.

Payment Policy

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. A Financial Clearance Form will be included with other semester billing information mailed to students and must be returned to the Business Office by the published deadline. August 1 is the normal deadline for the fall semester. Subsequent semester billings begin four to six weeks before the end of the current semester in session and students must be financially cleared before the last day of current semester classes. The college offers a tuition payment plan administered by the Sallie Mae Tuition Pay Plan. Information on this plan is included with the first semester billing.

Veterans who are certified as eligible for the GI Educational Assistance allowance will be permitted to register upon signing an approved payment plan with the Business Office.

Employer and scholarship payments requiring final grades can be deferred. Please contact the Business Office staff for details.

Financial delinquency may serve as a basis for dismissal. Financially delinquent students will be denied enrollment for the succeeding semester, issuance of grades or transcripts, or graduation. Reasonable interest and collection costs may be added to delinquent accounts.

Withdrawal from Vermont Tech and Refunds

Tuition, Fees, Room & Board

If students withdraw or are dismissed before the 60% point of the term, they will be credited Tuition, Student Activities Fee, and Room and Board on a pro-rata basis. The date of withdrawal/dismissal is understood as the day determined by the Registrar. The pro-rata calculation will use the number of calendar days completed divided by the number of total calendar days included for the full term.

Financial Aid Recipients: Return of Funds

If a student is receiving financial aid and is eligible for credit in accordance with the above paragraph, the credit received will first be applied to financial aid sources. Federal regulations will be 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 is 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 will be 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

Board Charges

Students who withdraw or are dismissed after the 60% point of the semester will be refunded board on a per-week basis.

Other Credits

Board charges will be credited for each full week of extended illness or authorized absence.

There will be no credit of room charges for students suspended or dismissed from on-campus housing. Board charges will be credited for each full week of suspension/ dismissal from on-campus housing.

Definition of a Vermont Resident

The following criteria must be met by a student prior to being granted resident status for the purpose of admission, tuition, and other Vermont Tech charges.

- The applicant shall be domiciled in Vermont, said domicile having been continuous for one year immediately prior to the date of application unless the student has been in the Armed Services, Peace Corps, or other recognized national service organization, and has retained Vermont as his/her permanent address during the period of absence, and has returned to Vermont immediately following discharge from these services. Changes in residency status shall become effective for the semester following the date of reclassification
- Domicile shall mean a person's true, fixed, and permanent home, to which s/he intends to return when absent. A residence established for the purpose of attending an educational institution or qualifying for resident status for tuition purposes shall not of itself constitute domicile. Domicile shall not be dependent upon the applicant's marital status
- The applicant must demonstrate such attachment to the community as would be typical of a permanent resident of his/her age and education.
- Receipt of significant financial support from the applicant's family will create a rebuttable presumption that the applicant's domicile is with his/her family
- An applicant becoming a student at an institution of higher learning in Vermont within one year of first moving to the state shall have created a rebuttable presumption of residence in Vermont for the purpose of attending an educational institution.
- A student eligible for tuition purposes to enroll as a resident student in another state shall not be enrolled as a "Vermont Resident"
- A student enrolled at Vermont Technical College shall be classified by the college's Office of Admissions as a resident or non-resident for tuition purposes. The decision by the officer shall be based upon information furnished by the student and other relevant information. The officer is authorized to require such written documents, affidavits, verifications, or other evidence as he/she deems necessary
- The burden of proof shall, in all cases, rest upon the student claiming to be a Vermont resident and shall be met upon a presentation of clear and concurring evidence.
- A student with resident status will lose that status if he/she, at any time, fails to meet the above requirements. In this event, resident tuition and other charges shall continue in effect only until the end of the academic year
- The decision of the college's Office of Admission on the classification of a student as a resident or non-resident may be appealed in writing to the College's Dean of Administration

Further appeal of a student's residency classification may be made in writing to the Office of the Chancellor of the Vermont State Colleges. The decision of the Office of the Chancellor shall be final.

Financial Aid

Financial aid at Vermont Technical College is based on an assumption that a student's family will first make a 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 from the college has to be viewed only as supplemental to this family obligation.

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 will be offered financial aid, subject to the availability of these funds. The amount of any award is determined by the amount of the student's need as computed from information provided by the family on the Free Application for Federal Student Aid (FAFSA) www.fafsa.ed.gov. Recent federal regulations mandate that a needs analysis be completed for anyone who applies for federal financial aid. It is 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 will be considered for aid only after all on-time applications have been processed.

In an effort to be as consistent as possible with all students in awarding aid from the college, Vermont Tech’s Office of Financial Aid requests an official signed copy of a student's and/or family's latest federal income tax return.

Applicants can expect that a fair portion of an individual's personal savings at the time of each year's application will be applied to college expenses.

Expected Family Contribution

The needs analysis system evaluates all of the information requested and determines a reasonable contribution to be expected from the parent and student towards the student's educational expenses. 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 college aid. After filing the FAFSA, if the family financial circumstances change significantly due to loss of employment, extended illness, disability, etc., inform the Office of Financial Aid in writing as soon as possible of this situation outlining the change in resources.

Income consists of wages, salary, tips, interest, dividends, pensions, welfare, social security, etc. Deductions against income are made for taxes and an employment allowance for both parents or a single parent working outside the home, as well as an income protection allowance based upon family size and number of family members in college.

Sources of Financial Aid

When a FAFSA is filed, you are applying for the following federal, campus-based, and state aid programs and establishing eligibility for a Federal Stafford Loan.

Federal

The Federal Pell Grant Program is an entitlement program. This means that all students who are eligible will receive Federal Pell Grant awards. Pell awards are determined by the family's, as well as the student's, financial resources. Vermont Tech requires all students desiring financial aid to apply for the Pell Grant. Provision for application to this program is made on the FAFSA.

Campus-Based

The *Federal Supplemental Education Opportunity Grant* (FSEOG) is a gift of money to assist students with the cost of continuing their education. It is restricted to undergraduates and does not have to be repaid. The maximum amount awarded is up to $4,000, depending on a student's need and the availability of funds at Vermont Tech*. Students eligible for Federal Pell Grants have first consideration for Supplemental Grant funds.

The *Academic Competitiveness Grant* is funded by the Federal government and awarded to undergraduates enrolled full-time in their first or second academic year. Students must have completed a rigorous secondary school program of study and be enrolled in at least a two-year academic program acceptable for full credit toward a bachelor's degree. Students must be U.S. citizens and be Pell eligible. First year students must have a high school graduation date after January 1,2006 and have not been previously enrolled in an undergraduate program. Second year students have a high school graduation date after January 1,2005 and have at least a 3.0 cumulative GPA after their first year as an undergraduate. The award is up to $750 for first academic year undergraduate students and up to $1300 for second academic year undergraduate students.

The *National Science and Mathematics Access to Retain Talent Grant (National SMART Grant)* is funded by the Federal government and awarded to undergraduates enrolled in full-time in their third or fourth academic year. Students must be U.S. citizens and Pell Grant recipients and in an eligible degree program, majoring in physical, life, or computer sciences or engineering, technology, mathematics, or a critical need foreign language and have at least a 3.0 cumulative GPA. Students must meet grade level criteria. The award is up to $4000 for each of the third and fourth academic year.

The *Federal Perkins Loan Program* is a low-interest (5 percent) loan made directly to eligible students by the college from federal funds received for this purpose. If you qualify, you may borrow up to $15,000 during four years of college. At Vermont Tech, average loans range from $600 to $1,600 per year.

*The average award ranges between $600.00 and $1,600.00.

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 hours of work per week. Students may also use FWS funds for off-campus community service placements. Federal Work-Study earnings are never credited on a student's bill. Instead, a 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 high school institution, who has not already received a bachelor's degree, is eligible to apply.

"Financial Aid Packets for Vermont Students" are available at all Vermont high school guidance offices and Vermont Tech's Office of Financial Aid. Students are required to file supplemental information to the Vermont Student Assistance Corporation (VSAC) to be considered for a Vermont State Grant. On-line access is available at www.vsac.org.

Grants from Other States include Maine, New Hampshire, Rhode Island,Connecticut, and Massachusetts. These states offer undergraduate grants or scholarships usable at Vermont Tech. Vermont Tech encourages all students eligible for these grants to apply for them. Contact the Financial Aid Office or your high school guidance office as to which states require supplemental information.

Federal Stafford Loans

Federal Stafford Loans—both subsidized and unsubsidized—are available to qualified students at Vermont Technical College. A subsidized loan is awarded on the basis of financial need. If you qualify for a subsidized loan, the federal government pays interest on the loan until you begin repayment and during authorized periods of deferment. The student pays the interest on the Unsubsidized Federal Stafford 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 is 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 *a 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

Independent undergraduate students may borrow an additional amount of money up to $4,000 or $5,000 a year, depending on their year of study. However, through the unsubsidized loan program you can't borrow more than the cost of attendance minus any other financial aid for which you are eligible.

Both the subsidized and unsubsidized loan eligibility amounts will be offered on your award letter.

*Additional unsubsidized stafford loan limits may be increased for loans first disbursed after July 1, 2008, by $2000.–

In accordance with the laws and regulations of the Higher Education Act, borrowers have the right to choose and select the lender of their choice to process loans. On Vermont Tech's website there is a list of suggested lenders and a lender comparison chart for families to evaluate benefits and customer service options. Families are not limited to selecting from the suggested lender list and can choose the lender of their choice.

PLUS Loans enable parents with good credit histories to borrow for each child who is enrolled at least half-time and is a dependent student. Parents who wish to apply for a PLUS Loan must fill out a PLUS Loan Application, which is available through the Financial Aid Office. A PLUS loan pre-application 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 you are eligible.

Veterans' Education Benefits

Vermont Technical College programs are approved by the Vermont State Approving Agency, Office of Veterans' Affairs. These benefits are generally available to veterans who are separated from active duty within the past ten years; veterans with service-connected disabilities; and sons, daughters, spouses, and widows of deceased or totally disabled veterans.

Veterans' Benefits GI Bill (VA): Educational benefits are available to any honorably discharged veteran who enlisted for active duty and has been on active duty for at least 181 consecutive days. Students must make application to the Veterans Administration. The Department of Veterans Affairs GI bill web site, www.gibill.va.gov is the comprehensive resource for those interested in learning about and applying for these benefits.

The Vermont Technical College registrar is the college's certifying official for Veterans Administration benefits. Additional information and assistance with applying for benefits is available from the Registrar's Office.

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

First payment from the Veterans Administration normally takes 4-8 weeks from the beginning of the first term. After that, checks are normally received monthly.

Other

Scholarships administered by the college, including the Vermont Tech Scholars program, 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 the financial aid page on the college website at www.vtc.edu.

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

Financial Aid Award Notification Letter

In mid-March, students with completed applications will receive a financial aid award notification letter which will outline the amount and types of assistance to be received for the upcoming college year.

The award letter packet will include estimated amounts for tuition, fees, room and board, and average costs for books and supplies, personal expenses, and travel expenses. The costs for books, supplies, and personal expenses will vary from student to student and are not paid directly to the college. The family contribution and assistance from outside the college (including State Grants, Federal Pell Grants, and Veterans' Benefits) are considered resources. The difference between the financial aid budget and the contribution from resources is considered to be the student's level of need.

Financial aid awards are usually somewhat less than a student's need due to the large number of eligible applicants and the limited available funding.

Normally, self-help (work and/or loan) will be a part of every student's financial aid package, as we feel that all students should make a commitment of both current and future earnings in the financing of their education.

Statement of Satisfactory Progress for Financial Aid

The Federal Office of Education has stated that a student must be "maintaining satisfactory progress in the course of study s/he is pursuing, according to the standards and practices of the institution at which the student is in attendance."

In order to be eligible for financial aid at Vermont Technical College, a student must earn a grade point average consistent with the "Satisfactory Academic Standing" policies set forth in detail in the "Academic Affairs" chapter of this catalog (a qualitative measure) and must be making satisfactory academic progress toward completion of a degree, as defined below (a quantitative measure). Both measurements are reviewed in determining a student's eligibility for continued aid.

Satisfactory Academic Standing

Satisfactory academic standing is determined in accordance with the policies set forth under "Academic Standing" in the "Academic Affairs" chapter of this catalog. The Financial Aid Office is notified by the Registrar's Office of students who fall below the minimum standards. These students are notified that they have been placed on financial aid probation for one term.

If a student fails to raise his/her grade point average to that required for satisfactory academic standing by the end of their probationary period, financial aid eligibility will be suspended. Students who are academically dismissed automatically lose their aid eligibility.

Satisfactory Academic Progress

Satisfactory Academic Progress is determined by earning an accumulation of credits that apply to a student's current degree program at a rate that will allow the completion of a degree program within a specified time period.

For financial aid considerations, the maximum time frame allowed for a student pursuing an associate's degree or a “plus two” baccalaureate degree is three years (six terms) of full-time enrollment (12 or more credits per term) or the equivalent parttime enrollment.

For a student enrolled in a three-year program, the maximum time frame allowed is 4.5 years (nine terms) of full-time enrollment or the equivalent part-time enrollment.

The Financial Aid Office will review for Satisfactory Academic Progress on a semester basis.

Appeal

If a student loses eligibility for aid, s/he may appeal to have the aid reinstated by writing to the Director of Financial Aid. All appeals for reinstatement of financial aid should identify any mitigating circumstances causing the loss of eligibility and the measures adopted as corrective action.

Review of Awards

The Director of Financial Aid reserves the privilege of reviewing and possibly revising awards. Therefore, the applicant should notify the Office of Financial Aid immediately if there is a change in either the student's or the family's financial situation. This includes the receipt of non-college scholarships.

If a student receives an outside scholarship that the college does not know about at the time an award letter is prepared, s/he will be issued a revised award reflecting an adjustment to avoid an over-award situation. Any initial adjustment will be reflected in unmet need, then the self-help (loan and work) portion of the financial aid package.

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 s/he has notified us to the contrary. Thus, if a student changes his/her status from full- to part-time enrollment, an aid adjustment may result.

Career & Transfer Opportunities

Career Transfer Center

The Career / Transfer Center assists students in exploring academic and career options and developing strategies to pursue those options. Individual appointments and group counseling sessions are available for students seeking career planning assistance. This office also schedules visits by firms to recruit seniors and alumni for permanent positions. Companies come to the campus to interview students primarily in February, March, and April. Assistance includes counseling on presenting oneself in an interview, preparing a personal resume, and networking with employers.

Although the college can assist students in finding job opportunities, the primary responsibility for obtaining employment rests with the individual.

Students should seek summer employment in the field in which they are majoring, since this will increase their choice of jobs after graduation. Naturally, a major factor in employment is good on-the-job performance.

The Career Transfer Center maintains a library of employer, college, job hunting, and career information resources. Students may take advantage of an electronic job posting system called *Vermont Tech Connections*. They can create accounts, search for jobs with employers and link with alumni for mentoring. The center also has *Choices*, a computer based career and college choice guidance system. Students unsure about their major field of study can seek professional counseling.

Employment Opportunities

Engineering technology is one of the fastest growing fields of education. Several decades ago, industrial managers, pressed by the growing shortage of graduate engineers, recognized the need for engineering technicians to assist engineers in performing tasks and projects.

This recognition by industry and by education led to the development of two-year programs in engineering technology. The success of the graduates from these two-year, college-level programs created demand by industry, government, and small businesses for applications-oriented engineering technicians and for graduates such as veterinary technicians who possess related technical skills.

Aeronautical Engineering Technology graduates can find employment in aeronautical and aerospace related businesses and other job fields requiring strong skills in materials technology.

Agricultural Technology (Agribusiness Management and Dairy Farm Management) graduates take such positions as herd managers, field managers, farm managers, breeding technicians, store manager trainees, farm supply salespeople, farm owners or partners, meat inspectors, feed technologists, milk testers, or agricultural sales representatives.

Applied Technology graduates are normally employed by the sponsoring organization and are preparing for advancement within their degree field.*Automotive Technology* graduates will find ample opportunity for rewarding positions and personal growth in the automotive service industry, working for automotive manufacturers, dealerships, independent repair facilities, or equipment manufacturers. The program was developed with the support and encouragement of the Vermont Automobile Dealers Association.

Architectural and Building Engineering Technology graduates become architectural draftspeople, estimators, building materials and equipment sales representatives, contractors' assistants, plant engineering aides, construction expediters, or assistants to project managers or building inspectors.

Architectural Engineering Technology graduates can find employment in all areas of the building engineering, facilities management, or construction industries. Graduates are qualified to sit for the Fundamentals of Engineering (F.E.) examination and for work in such fields as construction, facilities management, or engineering services, experience needed by those who plan to earn the Professional Engineer (P.E.) designation and pursue engineering careers.

Automotive Technology graduates will find ample opportunity for rewarding positions and personal growth in the automotive service industry working for automotive manufacturers, dealerships, independent repair facilities, or equipment manufacturers. The program was developed with the support and encouragement of the Vermont Automobile Dealers Association.

Business Technology & Management graduates accept positions as accounting specialists, staff accountants, office managers, executive assistants, sales and customer service managers, marketing and communication coordinators, project managers, or small business owners.

Civil & Environmental Engineering Technology graduates find employment as construction surveyors, construction managers, material testers, structural engineering draftspeople, estimators, bridge and highway design technicians, environmental design technicians, or salespeople for engineering products and equipment.

Computer Engineering Technology graduates enter the number one technological growth occupation, according to the U.S. Bureau of Labor Statistics. With an integrated hardware/software background, graduates of the associate's program find positions at all levels of systems manufacturing, field service, software development, and maintenance. Bachelor's degree graduates are qualified as advanced computer hardware technicians/engineers programmers, advanced network and system administrators, or other specialized, technical positions in the broad spectrum of information technology career options.

Computer Information Technology and Software Engineering graduates are prepared for a broad range of employment opportunities, including computer and information systems managers, management analysts, computer system designers, forensic computer analysts, software engineers, website designers and developers, or software publishers.

Construction Practice & Management graduates are prepared for entry-level management positions in the construction industry or for advancement in a full range of construction organizations, specialty subcontractors as well as general contractors, large corporations as well as small proprietorships.

Dental Hygiene graduates can expect a high level of professional demand from employers in the private dental practice setting. Graduates pursuing a bachelor's degree will further expand their opportunities to work in alternative settings such as public health, education, research, or dental sales.

Diesel Power Technology graduates are prepared to enter the repair, parts, or management aspects of the diesel power service industry. There is increasing demand for skilled diesel service technicians within the agricultural, heavy-duty truck, and earthmoving equipment service industries.

Electrical Engineering Technology graduates work in jobs with titles such as electronics technician, quality control technician, design technician, assistant to an engineer, test technician, research and development technician, technical aide, computer technician, production engineering technician, field service technician, or calibration technician.

Electromechanical Engineering Technology graduates are in unprecedented demand in manufacturing, test, and development areas of companies, providing a broad range of electronics and computer related products. Manufacturing, equipment development and maintenance, product field service, engineering development support, or test and quality control are but a few of the areas of opportunity for graduates of this program.

Equine Studies graduates are prepared in direct equine service facilities, including barn manager, instructor, or assistant trainer. Job opportunities in businesses supporting the equine industry include: equine consultant, sales, marketing, specialized service provider, and many others, limited only by the graduate's imagination.

Fire Science graduates will be prepared to pursue careers in firefighting, fire protection services, or affiliated professions.

General Engineering Technology graduates are normally employed by the sponsoring organization and are preparing for advancement within their degree field.

Landscape Development & Ornamental Horticulture graduates find a variety of employment opportunities as landscape designers, contractors, maintenance personnel, greenhouse growers, plant propagators, perennial growers, nursery and garden center operators, salespeople for horticultural products, or technicians for state and federal regulatory agencies.

Mechanical Engineering Technology graduates are employed as process engineering technicians, mechanical designers, computer modeling and design technicians, engineers' assistants, field service technicians, tool designers, or industrial engineering technicians.

N*ursing* graduates are eligible to apply to take the National Council Licensure Examination for Registered Nurses and are prepared to provide nursing care to patients in hospitals, nursing homes, or other comparable health agencies under the supervision of more experienced practitioners.

Practical Nursing graduates are eligible to apply to take the National Council Licensure Examination for Practical Nurses, and are prepared for employment in hospitals, nursing homes, or other comparable health care agencies under the supervision of a registered nurse.

Respiratory Therapy graduates are employed in hospital specialty areas such as labor and delivery, intensive care units, pulmonary function laboratories, sleep laboratories, extra corporeal membrane oxygenation, or ECG testing. Respiratory therapists also may find employment in the home-care field, rehabilitation agencies, nursing homes, or physicians' offices.

Sustainable Design & Technology graduates will be prepared to work in technical fields related to their associate's degree and to work with newer sustainable technologies as project managers or technical staff.

Veterinary Technology graduates find employment with animal hospitals performing office duties, laboratory testing, and assisting veterinarians in animal care.

Transfer to Bachelor's Degree Programs

The TRIO Career/Transfer Counselor can give assistance to students who are thinking of continuing their education in a four-year program after obtaining their associate's degree. For students interested in continuing in a Vermont Tech bachelor's program refer to Vermont Tech bachelor's degree options on pages 27 and 28. For students interested in bachelor's programs other than those offered at Vermont Tech, the college has developed articulation agreements with a number of excellent colleges and universities to facilitate admission for Vermont Tech graduates who meet the program and grade point requirements of the receiving institution.

Many other institutions offering a bachelor's degree in engineering technology accept Vermont Tech graduates with full junior standing. In the agricultural technologies, full transfer credit is available at the University of Vermont and other universities. Associate's degree in nursing graduates with a 2.50 GPA or higher may transfer to the University of Vermont. However, students should be aware that transfer decisions are made by the receiving institution.

Students considering further education should discuss course selection and other academic questions with their academic advisors and the TRIO Career/Transfer Counselor, because certain courses may enhance their ability to transfer.

Academic Programs

Agribusiness Management Technology

Graduates of the Associate of Applied Science in Agribusiness Management Technology program generally pursue careers with the industries and agencies that serve production agriculture.

Some typical career choices include: sales and service representatives for feed, fertilizer and equipment industries; inspectors of milk and other agricultural products; rural credit officers; or specialists with agencies such as the Dairy Herd Improvement Association, the Soil Conservation Service, and the Peace Corps.

Students benefit from the combination of classroom instruction and practical laboratory experience, which includes use of the extensive facilities at the college farm. In addition to the important basics in plant and animal agriculture, the program emphasizes business and communication skills including computer applications.

Student learning outcomes for the associate's degree program in Agribusiness Management are:

- Understand the income and expense sources of varied agricultural business
- Adequately prepare and assess an agribusiness business plan
- Prepare income and expense accounts
- Understand marketing principles
- Understand small business management including payroll and human resources
- Competently represent agriculture in all venues

The minimum number of credits required for a degree is 67.

First Year

First Year Fall Courses	Credits	**First Year Spring Courses**	Credits
ACC 2121 - Financial Accounting	4	ACC 1010 - Computerized Accounting	3
AGR 1011 - Agricultural Techniques I	2	ACC 2122 - Managerial Accounting	4
AGR 1050 - Livestock Production	3	ENG 2080 - Technical Communication	3
ENG 10XX - English*	3-4	LAH 1050 - Introduction to Soils	4
LAH 1020 - Introduction to Horticulture	3	ELE XXXX – Elective***	2-4
MAT 1210 - Principles of Mathematics	3		16-18
	18-19		

Second Year

Second Year Fall Courses	Credits
BUS 2210 - Small Business Management	3
CHE 1020 - Introduction to Chemistry	4
CIS 1080 - Intro to Spreadsheets & Db Mgmt	2
ELE XXXX - AH/SS Elective**	3

Second Year Spring Courses	Credits
BUS 2230 - Principles of Marketing	3
BUS 2410 - Human Resources Management	3
ENG 1070 - Effective Speaking	3
ELE XXXX - AH/SS Elective**	3
ELE XXXX - Elective***	2-4
	14-16

Select two:

AGR 2020 - Farm Buildings	2
AGR 2040 - Forage Production	3
BUS 2020 - Principles of Management	3
BUS 2260 - Principles of Financial Management	3
BUS 2270 - Organizational Communications	4
ELE XXXX - Elective***	3-4
	17-19

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

***Electives approved by the department

Architectural & Building Engineering Technology

Associate degree Architectural and Building Engineering Technology graduates are prepared for a wide range of construction industry-related careers at the technical and design support level. Graduates typically fill responsible positions with architects, engineers, and building contractors and provide all levels of support to the building industry in manufacturing, sale, and governmental administration. Graduates of the program are also prepared to transfer to bachelor degree programs in architecture or engineering, including Vermont Tech's Architectural Engineering Technology program.

The curriculum, balanced between theory and application, was specifically developed to give the students a solid base in the above-mentioned fields. It includes outcomes in five required core components:

1). Graphic communication skills: ability to use freehand sketches, board drafting, presentation graphics, and CADD as tools for design and communication;

2). Communication skills: ability to communicate technical information in writing, speaking, listening, and interpersonal skills to work effectively as part of a team;

3). Technical skills: understand residential and commercial building systems, materials, and regulations; apply that knowledge to site layout and material estimating, and utilize appropriate computer applications;

4). Architectural design: with a knowledge of historical precedents and aesthetics, be able to use design principles as part of a process to create workable building designs, culminating in a capstone commercial building project.

5). Engineering design: in the areas of building structures, HVAC, plumbing, electrical, and lighting, be able to understand design principles and apply procedures in the design of building engineering systems.

Graduation from the program at the associate's level (2 or 3 yr.) allows the student the perfect opportunity to make an informed decision relative to his/her career path. Upon earning an associate's degree, students may decide to immediately enter the work force, continue their education and earn a bachelor's degree in Architectural Engineering Technology, or pursue an additional degree in other Vermont Tech engineering programs or at another institution. This "decision platform" offered to students completing the associate's degree is one of the program's greatest strengths.Students receive a thorough introduction to the fundamental skills of architectural and engineering drafting, including instruction in CAD systems along with an academic foundation in physics, mathematics, and technical writing. They are also involved with laboratory testing and field observation of construction and design. The very comprehensive two years are rounded out with extensive exposure to architectural design, history, construction

materials and methods, structural engineering, surveying, estimating, heating, ventilating, plumbing, and energy-conscious design. A program highlight is the final senior architectural design course. Working as teams on a hypothetical project in an actual Vermont town, students confer with proposed users of the building and others to determine their real life problems, aspirations, and future goals for the project. Students apply their newly-learned design principles with tasteful respect for the existing structures and test out their own planning skills, all the while conforming to building codes and other real world requirements.

Students may continue on into a Bachelor of Science degree program in Architectural Engineering Technology, Sustainable Design and Technology or Business Technology and Management. Some program graduates transfer to other schools of architecture or engineering to continue working toward a bachelor's or other degree in these fields. The program is accredited by the Technology Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).

The minimum number of credits required for a degree is 70.

Two-Year Curriculum

First Year

First Year Fall Courses	Credits
ARC 1000 - Freshmen Orientation	1
ARC 1010 - Architectural Woodframe Constr.	3
ARC 1021 - Architectural CAD I	2
CIS 1050 - Introduction to Spreadsheets	1
ENG 10XX - English*	3-4
MAT 1420 - Technical Mathematics	5
ELE XXXX - AH/SS Elective**	3
	18-19

First Year Spring Courses	Credits
ARC 1210 - Construction Materials and Methods	6
ARC 1220 - Architectural History	3
MAT 1520 - Calculus for Engineering	4
Select one	
PHY 1041 – Physics I	4
PHY 2041 – Physics I w. Calculus	4
	17

Second Year

Second Year Fall Courses	Credits
ARC 2031 - Environmental Systems I	3
ARC 2040 - Construction Practices	3
ARC 2051 - Architectural Design I	3
CET 2040 - Statics and Strength of Materials	4
ENG 2080 - Technical Communication	3
PHY 1043 - Physics II for Architectural	3
	19

Second Year Spring Courses	Credits
ARC 2032 - Environmental Systems II	3
ARC 2052 - Architectural Design II	3
ARC 2720 - Architecture Seminar	0
CET 2120 - Structural Design	4
ELE XXXX - AH/SS Elective**	3
ELE XXXX - Technical Elective***	3
	16

Three-Year Curriculum

First Year

First Year Fall Courses	Credits
ARC 1000 - Freshmen Seminar	1
ARC 1010 - Architectural Woodframe Constr.	3
CIS 1050 - Introduction to Spreadsheets	1
ENG 1041 - Basic College Writing*	4
MAT 1111 - Intro to Tech Math I	5
	14

First Year Spring Courses	Credits
ARC 1220 - Architectural History	3
ENG 1042 - Expository Writing*	4
MAT 1112 - Intro to Tech Math II	5
ELE XXXX - AH/SS Elective**	3
	15

Second Year

Second Year Fall Courses	Credits
ARC 1021 - Architectural CAD I	2
ENG 1043 - Research Writing*	4
MAT 1420 - Technical Mathematics	5
PHY 1021 - Introduction to Newtonian Mech	4
ELE XXXX - AH/SS Elective**	3
	18

Second Year Spring Courses	Credits
ARC 1210 - Construction Materials & Meth	6
ENG 2080 - Technical Communication	3
MAT 1520 - Calculus for Engineering	4
PHY 1022 - Energy Conservation and Equil	4
	17

Third Year

Third Year Fall Courses	Credits
ARC 2031 - Environmental Systems I	3
ARC 2040 - Construction Practices	3
ARC 2051 - Architectural Design I	3
CET 2040 - Statics and Strength of Materials	4
PHY 1043 - Physics II for Architectural	3
	16

Third Year Spring Courses	Credits
ARC 2032 - Environmental Systems II	3
ARC 2052 - Architectural Design II	3
ARC 2720 - Architecture Seminar	0
CET 2120 - Structural Design	4
ELE XXXX - Technical Elective***	3
	13

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms to complete the degree.

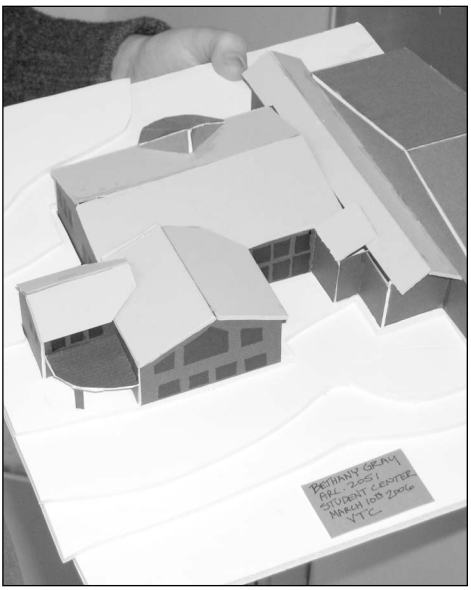
**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective. Technical elective availability depends on scheduling.

*** Choose from MAT 2532 - Calculus II; CET 2110 - Mechanics of Soils; LAH 2011 - Introduction to Landscape Design; ARC 2022 - Architectural CAD II; or ARC 3010 - Design Systems Integration. See department advisor for other acceptable technical electives.

Bachelor of Science in Architectural Engineering Technology

The Bachelor's degree in Architectural Engineering Technology provides broad-based preparation offering numerous career opportunities in the building design and construction industries. Education in this area provides the opportunity for excellent salaries and the satisfaction of seeing creative designs become reality. Within the scope of the discipline fall such diverse areas as structural engineering; heating, ventilating, and air- conditioning design; electrical and lighting design; plumbing and fire protection; design and construction management; and facilities operation, maintenance, and management.

Expanding on the components outlined above for the Associate Degree in the first two years of the program, the BSAET curriculum sequence was developed to include a balance of theory and application in six core areas:



1). Technical design: design and integration of complex systems into the building form, emphasizing human comfort and resource conservation, and culminating in a capstone project incorporating expertise in a single engineering discipline;

2). Communication skills: utilizing computer-aided design and drafting to communicate complex building systems; expanded oral presentation skills to effectively explain technical designs;

3). Structural engineering design: ability to use principles and procedures to analyze and design structures in steel and concrete;

4). Mechanical (HVAC, and plumbing systems) engineering design: ability to use principles and procedures to analyze and design building mechanical systems;

5). Electrical and lighting engineering design: ability to use principles and procedures to analyze and design building electrical and lighting systems;

6). Engineering management: ability to understand and apply the principles of management for engineering business and project administration.

The demand from employers for Vermont Tech Architectural Engineering Technology graduates is perennially strong. The demand currently greatly exceeds the number of graduates. A Bachelor of Science degree program in Architectural Engineering Technology offers educational preparation for those who will provide engineering,

design, management, and contracting services to these essential components of the building design and construction industry. Students may enroll as freshman candidates for the Bachelor of Science degree or may choose to enroll first as associate's degree candidates and defer a decision on bachelor's candidacy until the second year. This provides the option of either following a career path as a technician after two years, or continuing on an engineering technology track in the four-year program. Courses that make up the final two years leading to the bachelor's degree focus on the structural, mechanical, and electrical areas of design and construction.

Transfer students from other two-year and four-year architecture- and engineering-oriented programs are also encouraged to apply. Students may have several introductory courses to make up that can result in additional time requirements to obtain the bachelor's degree. The bachelor's program builds on the foundation established in the associate's program in structures, heating, ventilating, and air conditioning (HVAC), plumbing, electrical, and integrated design. The scope of the curriculum is also extended to include such fields as thermodynamics, fluid mechanics, electrical circuits, lighting systems, AE management, and advanced math. Advanced computer applications include CAD.

Graduates of the bachelor's degree program can look forward to a wide range of career opportunities as structural, mechanical, or electrical engineers engaged in building construction projects, as facilities managers, and as construction project managers, to name only a few examples. Graduates are allowed to sit for the Fundamentals of Engineering examination in most states (although not all of them) and after meeting state requirements for appropriate work experience (currently eight years in Vermont; varies in other states) may also be examined for the Professional Engineer (P.E.) designation. The program is accredited by the Technology Commission of the Accreditation Board for Engineering and Technology (TAC of ABET).

The minimum credits required for graduation is 130.

Four Year Curriculum

First Year

First Year Fall Courses	Credits
ARC 1000 - Freshmen Orientation	1
ARC 1010 - Architectural Woodframe Constr	3
ARC 1021 - Architectural CAD I	2
CIS 1050 - Introduction to Spreadsheets	1
ENG 10XX - English*	3-4
MAT 1420 - Technical Mathematics	5
ELE XXXX - AH/SS Elective**	3
	18-19

First Year Spring Courses	Credits
ARC 1210 - Construction Materials & Meth	6
ARC 1220 - Architectural History	3
MAT 1520 - Calculus for Engineering****	4
Select one:	
PHY 1041 - Physics I	4
PHY 2041 – Physics I w. Calculus	4
	17

Second Year

Second Year Fall Courses	Credits	**Second Year Spring Courses**	Credits
ARC 2031 - Environmental Systems I	3	ARC 2032 - Environmental Systems II	3
ARC 2040 - Construction Practices	3	ARC 2052 - Architectural Design II	3
ARC 2051 - Architectural Design I	3	ARC 2720 - Architecture Seminar	0
CET 2040 - Statics and Strength of Materials	4	CET 2120 - Structural Design	4
ENG 2080 - Technical Communication	3	MAT 2532 - Calculus II	4
PHY 1043 - Physics II for Architectural	3	ELE XXXX - AH/SS Elective**	3
	19		17

Third Year

Third Year Fall Courses	Credits	**Third Year Spring Courses**	Credits
ARC 2022 - Architectural CAD II	3	ARC 3010 - Design Systems Integration	3
ARC 3020 - Structural Analysis	3	ARC 3030 - Steel Structures Design	3
ARC 3110 - Codes and Loads	3	ARC 3040 - Electrical/Lighting Systems	3
ELT 3020 - Electrical Circuits and Controls	4	ARC 3050 - Fundamentals of Fluids & Ther	4
ENG 1070 - Effective Speaking	3	CHE 1031 - General Chemistry I	4
	16		17

Fourth Year

Fourth Year Fall Courses	Credits	**Fourth Year Spring Courses**	Credits
ARC 4010 - Concrete Structures Design	3	ARC 4040 - Plumbing Systems	3
ARC 4020 - Architectural Engineering Mgmt	3	ARC 4050 - FE Exam Survey	1
ARC 4030 - HVAC Systems	4	ARC 4720 - Senior Project	4
Select One:		**Select Two:**	
ELE 3XXX - AH/SS Elective**	3	ELEXXX - Technical Elective***	3
ELE XXXX - Technical Elective ***	3	ELEXXX - Technical Elective***	3
	16		14

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms to complete the degree.

**Students must complete a minimum of four Arts and Humanities (AH) or Social Science (SS) electives, including at least one from each discipline and one 3XXX level.

***Choose from CET 2020 - Hydraulics & Drainage; MAT 2533 - Calculus III; CET 2110 - Mechanics of Soils (Spring), or others with permission of department. Availability depends on scheduling. Students must complete a minimum of one technical elective. Electives approved by the department

Automotive Technology

Vermont Technical College provides the Automotive Technology graduates with the skill set necessary to maintain, diagnose and repair mechanical and electronic systems in any automobile or light/medium-duty truck. The generic (not manufacturer-specific) nature of the program insures that graduates are prepared to solve problems on vehicles regardless of origin.

As modern automobiles become more complex, the people who service these vehicles must possess extensive knowledge of the sophisticated mechanical, electrical, and computer systems currently used. The function of individual vehicle systems and their interrelation with other systems must be fully understood. The automotive technology program helps students to acquire the knowledge and skills needed to fulfill this professional function. The curriculum covers both theory and practical applications of a range of subjects selected to give a broad exposure to mechanical and electronic automobile devices. All mechanical systems are covered in the curriculum. Understanding electrical and electronic concepts is especially emphasized. Classroom instruction is reinforced with practical laboratory experience. Electronic control of mechanical systems, system design considerations, and the analysis and diagnosis of system failures are examined through the coursework. In the fall of 2007, a new course on hybrid and advanced technology was introduced as was a mini-seminar on high-performance preparation.

Students must have in their possession a set of required tools for personal use in the laboratory and during the summer cooperative work experience. Also required are courses in English, computer software and programming, technical mathematics, physics, technical communication, and general education. This ensures the graduate a well-rounded technical education and allows flexibility in choosing career paths. The program also includes a ten-week summer cooperative education requirement which provides students with real-world experience and the chance to explore future employment possibilities.

Throughout the curriculum, faculty and staff reinforce the application of the principles of professional ethics, critical thinking, and problem solving as they are applied to the workplace. Graduates will also have been introduced to basic business management practices. The combination of technical knowledge, program philosophy and lifelong learning prepares the Vermont Technical College Automotive Technology graduate with a solid foundation for success in all aspects of the automotive technology profession.

Student learning outcomes for the associate's degree in Automotive Technology include:

• Demonstrate an understanding of the theory of operation and diagnostic and service procedures of :

- automotive engines
- automotive brakes and suspension and steering systems
- automotive electrical and electronic systems
- automotive drive train systems
- automotive engine performance
- advanced technology vehicles
- automotive automatic transmissions
- automotive heating and air conditioning systems
- automotive engine performance

- Demonstrate the ability to communicate effectively with customers and business relations.
- Demonstrate the principles of professional conduct in all aspects of customer relations.

The program has been developed with the support and encouragement of the Vermont Automobile Dealers Association.

The minimum number of credits required for a degree is 65.

Two Year Curriculum

First Year

First Year Fall Courses	Credits
ATT 1000 - Freshman Orientation	1
ATT 1010 - Suspension and Steering	3
ATT 1020 - Engine Diagnostics & Repair	4
ATT 1120 - General Electronics	4
ENG 10XX - English*	3-4
MAT 1100 - Mathematics for Technology	3
	18-19

First Year Spring Courses	Credits
ATT 1040 - Automotive Electrical Systems	4
ATT 1050 – Alignment & Brakes	4
CIS 1050 - Introduction to Spreadsheets	1
PHY 1030 - General Physics	4
ELE XXXX - AH/SS Elective**	3
	16

First Year Summer Course	
ATT 2810 - Summer Internship	0

Second Year

Second Year Fall Courses	Credits
ATT 2010 - Engine Performance	4
ATT 2020 - Body Electronic Systems	4
ATT 2060 - Advanced Technology Vehicle	4
ATT 2810 - Internship Review	1
ENG 2080 - Technical Communication	3
	15

Second Year Spring Courses	Credits
ATT 2030 - Advanced Engine Performance	4
ATT 2040 - Automotive Drivelines	4
BUS 2210 - Small Business Management	3
MEC - 1020 Nanufacturing Process	2
ELE XXXX - AH/SS Elective**	3
	16

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms to complete the degree.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective, PSY 1010 - Intro to Psychology, strongly recommended for SS elective.

Business Technology & Management

Careers in business continue to represent one of the fastest-growing employment areas in the United States. Associate's degree Business Technology and Management graduates enjoy a wide range of career options found in business, industry, government, and public institutions. Graduates are employed in positions such as office managers, staff accountants, accounting specialists, marketing and communication coordinators, sales and customer service managers, project managers, and small business owners.

As an alternative to immediate employment, Business Technology and Management graduates may choose to continue their education by enrolling in the Bachelor of Science degree in Business Technology and Management at Vermont Technical College, or they may transfer to a bachelor program such as Accounting or Marketing.

A unique program feature is the opportunity for students to develop a broad base of knowledge for a wide range of business careers, rather than acquiring theory and skills specific to only one career area. Core objectives for all Business Technology and Management students include four components:

1. Technical skills in accounting, computer applications, and office support
2. Communication skills in writing, speaking, and listening
3. Management skills in human resources, marketing, and business law
4. Interpersonal "soft" skills in image awareness, business behavior, teamwork, and job search techniques

Highlights of the Business Technology and Management associate's degree include a formal business dinner where students dress in professional attire and learn (and practice) the rules of formal dining. Students learn parliamentary procedure and meeting management and participate in a team role play to demonstrate these skills. Students also learn resume writing and job interview skills and attend a "mocktail" reception and interview. Seniors complete a capstone project, which includes a team oral presentation judged by professionals from business and industry.

The minimum number of credits required for a degree is 66.

Two Year Curriculum
First Year

First Year Fall Courses	Credits
ACC 2121 - Financial Accounting	4
BUS 1010 - Introduction to Business	3
BUS 1051 - Information Processing I	3
ENG 10XX - English*	3
MAT 1210 - Principles of Mathematics	3
	16

First Year Spring Courses	Credits
ACC 1010 - Computerized Accounting	3
BUS 1052 - Information Processing II	3
CIS 1080 - Introduction to Sprdsht & Db Mgmt	2
ENG 1070 - Effective Speaking	3
ELE XXXX - AH/SS Elective**	3
Select One:	
ACC 2122 - Managerial Accounting	4
BUS 2150 - Office Information Systems	3
	17-18

Second Year

Second Year Fall Courses	Credits
BUS 2020 - Principles of Management	3
BUS 2131 - Bus. Communication Technology	3
BUS 2270 - Organizational Communications	4
ELE XXXX - AH/SS Elective**	3
Select One:	
BUS 2210 - Small Business Management	3
BUS 2260 - Principles of Financial Management	3
BUS 2440 - Introduction to Business Law	3
CIS 1151 - Website Design	3
ELE XXXX - Elective***	3
SCI XXXX - Science Elective***	4
	15-16

Second Year Spring Courses	Credits
BUS 2132 - Management Applications	3
BUS 2230 - Principles of Marketing	3
BUS 2410 - Human Resources Management	3
BUS 2720 - Business Seminar	3
ENG 2080 - Technical Communication	3
Select One:	
BUS 2210 - Small Business Management	3
CIS 1152 - Advanced Website Development	4
ELE XXXX - Elective***	3
SCI XXXX - Science Elective***	4
	18-19

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms to complete the degree.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.
***Electives approved by the department

Bachelor of Science in Business Technology & Management

Nearly every company relies on technology to fulfill its mission from high-tech manufacturing, where technology is the heart of the business, to service industries that depend on technical systems to manage core business functions.

The Bachelor of Science degree program in Business Technology and Management provides students with the opportunity to acquire a sought-after educational background: high tech applied skills combined with management and leadership skills directly related to the use of technology in business and industry. The course content and sequence link with functional management areas through case studies and real-world situations that occur on a daily basis. The focus throughout is how technical skills, interpersonal skills, and technology help to build a competitive strength in business.

The bachelor's degree in Business Technology and Management enhances the career options of students in a variety of ways.

- Positions graduates to assume leadership roles in an increasingly technology-focused workforce
- Boosts starting salary and increases potential for promotion
- Increases employees' contributions to their current employer
- Provides the opportunity for students to grow personally and professionally in the breadth and depth of their technical and business knowledge

Students must complete all of the required courses in the list that follows. All course work from an accredited institution not used to meet core requirements may be used toward the 120 credit minimum.

A minimum number of credits for a degree is 120.

Note: After completion of the baccalaureate degree, the graduate who meets the minimum standards as outlined in the Vermont Tech/Clarkson University articulation agreement for a One Year Masters degree in Business Administration (MBA) will be admitted into the Clarkson program.

Core Courses

Core Courses*	Credits
ACC-2121 - Financial Accounting	4
* ACC-1010- Computerized Accounting	3
BUS-2020 - Principles of Management	3
* BUS-2270 - Organizational Communication	4
* BUS-2131 - Business Communication Technology	3
* BUS-2132 - Management Applications	3
* CIS-1080 - Spreadsheets and Databases	2
BUS-2410 - Human Resources Management	3
BUS-2440 - Introduction to Business Law	3
BUS-2260 - Principles of Financial Management	3
BUS-2230 - Principles of Marketing	3
* BUS-2720 - Business Seminar	3
BUS-3150 - Production & Operations Management	3
BUS-3250 - Organizational Behavior & Management	3
BUS-3410 - Business Ethics	3
BUS-4310 - Business Information Architecture	3
BUS-4530 - Technical Project Management	3
BUS-4730 - Senior Project	3
ENG-1061XX - English Composition	3-4
ENG-1070 - Effective Speaking	3
* ENG-2080 - Technical Communication	3
ELE-XXXX - Arts/Humanities Elective	3
ELE-XXXX - Social Science Elective	3
ELE-3XXX - Arts/Humanities or Social Science Elective	3
ELE-XXXX - Art/Humanities or Social Science Elective	3
MAT-1221 - Finite Math	3
MAT-2021 - Statistics	3
SCI-XXXX - Lab Science	4
Select One:	
ECO-2020 - Macroeconomic	3
ECO-2030 - Microeconomics	3

Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition

(See English Requirements page 157). This may require summer courses or additional terms to complete the degree.

Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

All core courses or equivalent coursework must be completed. The above courses marked with an asterisk (*) will be waived for students who have an associate or bachelor degree or a minimum of 50 credits prior to entering the BS.BUS degree.

All course work from an accredited institution, not used to the meet the core requirement, may be used toward the 120 credit minimum, provided that it does not duplicate other coursework being used.

Civil & Environmental Engineering Technology

No discipline offers a greater diversity of career opportunities than does civil engineering. Civil engineers and technicians work on every phase of design and construction of buildings, roadways, bridges, public water systems, dams, landfills, and recreation facilities.

Graduates of this Associate's degree program have the opportunity to work outdoors on construction and surveying projects or indoors in design or estimating offices. Students are also well prepared to continue in Vermont Tech's Bachelor of Science program in Architectural Engineering Technology, Sustainable Design & Technology, or Business Technology & Management.

The program provides training in civil engineering design, surveying, materials testing, the construction process, structural design of buildings, water and wastewater engineering, and solid waste management. Students learn to prepare construction drawings using computer-aided drafting and design (CAD) equipment at state-of-the-art computer workstations. Graduates find work with engineering design firms, government agencies, construction firms, and testing laboratories. Some graduates go on to become licensed land surveyors or registered professional engineers.

Student learning outcomes for a degree in Civil and Environmental Engineering Technology include:

- Analyze and solve problems in solid and fluid mechanics.
- Use knowledge of materials science to solve problems appropriate to civil engineering.
- Analyze and solve well-defined engineering problems in at least four technical areas appropriate to civil engineering.
- Apply relevant techniques, skills, and modern engineering tools to solve problems.
- Develop a problem statement and solve well-defined fundamental engineering problems appropriate to civil engineering.
- Design a system or process to meet desired needs, within realistic constraints such as economic, environmental, social, political, ethical, health and safety, constructability, and sustainability.

- Analyze the results of experiments and evaluate the accuracy of the results within the known boundaries of the tests and materials in or across more than one of the technical areas of civil engineering.
- Show the relationship of engineering to critical contemporary and emerging issues including economic, environmental, political, and societal impacts.
- Define key aspects of advanced technical specialization appropriate to civil engineering.
- Organize and deliver effective verbal, written, virtual, and graphical communications.
- Explain contributions of significant individuals, events, and developments that occurred in the history of civil engineering and the impact they have on the profession.
- Analyze engineering works and services in order to function at a basic level in a global context.
- Analyze a situation involving multiple conflicting professional and ethical interests to determine an appropriate course of action.
- Discuss and explain key concepts and processes involved in public policy related to civil engineering.
- Explain key concepts and problem-solving processes used in business and public administration.
- Function effectively as a member of an intra-disciplinary team.
- Apply leadership principles to direct the efforts of a small, homogeneous group.
- Explain attitudes supportive of the professional practice of civil engineering.

The program is accredited by the Technology Commission of the Accreditation Board for Engineering and Technology (TAC of ABET)

The minimum number of credits required for a degree is 70.

Two Year Curriculum
First Year

First Year Fall Courses	Credits	**First Year Spring Courses**	Credits
CET 1000 - Freshman Orientation	1	CET 1020 - Engineering Materials	4
CET 1011 - Surveying I	3	CET 1032 - Computer Applications II	3
CET 1031 - Computer Applications I	3	ENG 2080 - Technical Communication	3
CHE 1031 - General Chemistry I	4	MAT 1520 - Calculus for Engineering	4
ENG 10XX - English*	3-4	**Select one:**	
MAT 1420 - Technical Mathematics	5	PHY 1041 - Physics I	4
	19	PHY 2041 - Physics I w/calculus	4
			18

Second Year

Second Year Fall Courses	Credits	**Second Year Spring Courses**	Credits
CET 2012 - Surveying II	4	CET 2050 - Civil and Environmental Design	4
CET 2020 - Hydraulics and Drainage	3	CET 2060 - Construction Estimates & Records	3
CET 2030 - Environmental Eng & Science	3	CET 2110 - Mechanics of Soils	3
CET 2040 - Statics and Strength of Materials	4	CET 2120 - Structural Design	4
ELE XXXX - AH/SS Elective**	3	ELE XXXX - AH/SS Elective**	3
	17		17

Three Year Curriculum

First Year

First Year Fall Courses	Credits	**First Year Spring Courses**	Credits
CET 1000 - Freshman Orientation	1	CET 1020 - Engineering Materials	4
CET 1031 - Eng & Surveying Computer Appls. I	3	ENG 1042 - Expository Writing*	4
ENG 1041 - Basic College Writing*	4	MAT 1112 - Intro to Tech Math II	5
ENG 1041 - Basic College Writing*	4	PHY 1021 - Introduction to Newtonian Mech	4
MAT 1111 - Intro to Tech Math I	5		17
	14		

Second Year

Second Year Fall Courses	Credits	**Second Year Spring Courses**	Credits
CET 1011 - Surveying I	3	CET 1032 - Computer Applications II	3
ENG 1043 - Research Writing*	4	CHE 1031 - General Chemistry I	4
MAT 1420 - Technical Mathematics	5	ENG 2080 - Technical Communication	3
PHY 1022 - Energy Conservation and Equil	4	MAT 1520 - Calculus for Engineering	4
	16		14

Third Year

Third Year Fall Courses	Credits	**Third Year Spring Courses**	Credits
CET 2012 - Surveying II	4	CET 2050 - Civil and Environmental Design	4
CET 2020 - Hydraulics and Drainage	3	CET 2060 - Construction Estimates & Records	3
CET 2030 - Environmental Eng & Science	3	CET 2110 - Mechanics of Soils	3
CET 2040 - Statics and Strength of Materials	4	CET 2120 - Structural Design	4
ELE XXXX - AH/SS Elective**	3	ELE XXXX - AH/SS Elective**	3
	17		17

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

Computer Engineering Technology

Computer technology is one of the fastest-growing career fields in the United States, according to U.S. Labor Department statistics, a good indication of a strong job market for graduates of this program. Some career opportunities include sales, service, programming, and manufacturing of computer-based systems.

Associate's degree Computer Engineering Technology students develop an understanding and working knowledge of both computer hardware and software. With a command of the total environment, a computer technician is able to relate to both programmers and hardware engineers. The theory developed in the classroom is reinforced with laboratory work, which allows students to develop confidence and skill in their newly-acquired knowledge and toand to accurately report the results of their observations. Along with two networked computer labs, students use the facilities available in three additional instrumented electronics labs.

Computer Engineering Technology students share many common first-semester courses with the Electrical Engineering Technology students. Theis first semester provides students with a firm base in fundamental principles. Subsequent semesters' offerings stress a systems approach, with students investigating computer-based applications from both a hardwarehardware and a software perspective. Interfacing computers with their peripherals and network applications are emphasized. Graduates are well prepared for admission to Vermont Tech's Bachelor of Science program in Computer Engineering Technology.

With an extra year's work, students may pursue a dual associate's degree with Electrical Engineering Technology. Contact the Office of Admissions for details on these opportunities.

Both theThe Associate and Bachelor degree programs areis accredited by the Technology Accreditation Commission of ABET, Inc.,the Accreditation Board for Engineering and Technology, 1 111 Market Place, Suite 1050, Baltimore, Maryland 21202-4012, telephone (410) 347-7700. A graduate of Vermont Tech's Computer Engineering Technology associate's degree program should be able to:

- Design and implement combinational and sequential digital circuits using simple tools and techniques.
- Interface simple analog or digital hardware to a microcontroller and manipulate that hardware using programs in both assembly language and a high level language.
- Understand port access, interrupt service routines, and hardware timing issues.
- Develop small programs written in assembly language.
- Develop small programs written in a high level language.
- Understand the basic concepts of object-oriented programming.
- Install and configure a significant operating system.
- Administer a computer system by managing its resource usage, interpreting the output of monitoring tools, and troubleshooting system problems.
- Apply knowledge of network protocols from the physical layer through the transport layer to analyze and troubleshoot TCP/IP network problems.
- Clearly communicate technical information in both oral and written form to peers

and supervisors.
- Understand the Computer Engineering Technology profession; its diversity and its related ethical and social issues.
- Function effectively on teams.
- Demonstrate a commitment to quality, timeliness, continuous improvement, and lifelong learning.

The minimum number of credits required for a degree is 69.

Two Year Curriculum
First Year

First Year Fall Courses	Credits
CIS 2025 - "C" Programming	4
ELT 1031 - Electrical Circuits I	4
ELT 1051 - Presentation Graphics I	1
ENG 10XX - English*	3-4
INT 1000 - Electrical and Computer Orientation	1
MAT 1420 - Technical Mathematics	5
	18-19

First Year Spring Courses	Credits
CIS 2280 - Perl Programming	2
ELT 1080 - Electronics for CPE	4
ELT 1110 - Introduction to Digital Circuits	4
MAT 1520 - Calculus for Engineering***	4
Select one:	
PHY 1041 - Physics I	4
PHY 2041 - Physics I w/Calculus	4
	18

Second Year

Second Year Fall Courses	Credits
CIS 2151 - Computer Networks I	4
CIS 2260 - Object-Oriented Programming	3
ELT 2050 - Microprocessor Techniques	4
ELE XXXX - AH/SS Elective**	3
Select one:	
PHY 1042 - Physics II	4
PHY 2042 - Physics II w/Calculus	4
	18

Second Year Spring Courses	Credits
CIS 2230 - System Administration	4
CIS 2720 - Computer Engineering Projects	3
ELT 2040 - Computer System & Interface	4
ENG 2080 - Technical Communication	3
ELE XXXX - AH/SS Elective**	3
	17

Three Year Curriculum
First Year

First Year Fall Courses	Credits	First Year Spring Courses	Credits
ELT 1011 - Fundamentals of Circuits I	3	CIS 1160 - Fundamentals of Programming in C	1
ELT 1021 - Fundamentals of Digital Circuits I	3	ELT 1012 - Fundamentals of Circuits II	3
INT 1000 - Freshman Orientation	1	ELT 1022 - Fundamentals of Digital Circuits II	3
ENG 1041 - Basic College Writing	4	ENG 1042 - Expository Writing*	4
MAT 1111 - Intro to Tech Math I	5	MAT 1112 - Intro to Tech Math II	5
	16		16

Second Year

Second Year Fall Courses	Credits	Second Year Spring Courses	Credits
CIS 2025 - "C" Programming	4	CIS 2280 - Perl Programming	2
ELT 1051 - Presentation Graphics I	1	ELT 1080 - Electronics for CPE	4
ENG 1043 - Research Writing*	4	MAT 1520 - Calculus for Engineering	4
MAT 1420 - Technical Mathematics	5	PHY 1022 - Energy Conservation and Equil	4
PHY 1021 - Intro to Newtonian Mechanics	4	ELE XXXX - AH/SS Elective**	3
	18		17

Third Year

Third Year Fall Courses	Credits	Third Year Spring Courses	Credits
CIS 2151 - Computer Networks I	4	CIS 2230 - System Administration	4
CIS 2260 - Object-Oriented Programming	3	CIS 2720 - Computer Engineering Projects	3
ELT 2050 - Microcomputer Techniques	4	ELT 2040 - Computer System & Interfaces	4
PHY 1042 - Physics II	4	ENG 2080 - Technical Communication	3
	15	ELE XXXX - AH/SS Elective**	3
			17

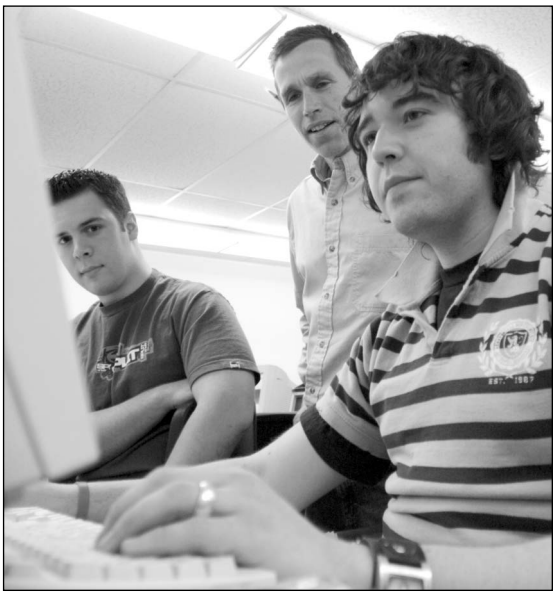
*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms to complete the degree.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

Bachelor of Science in Computer Engineering Technology

The Bachelor of Science in Computer Engineering Technology is a program that builds on the Vermont Tech associate's degree in Computer Engineering Technology or any accredited two-year associate's degree in Computer Engineering Technology.

This program offers a balanced treatment of hardware, software, and administrative (or "systems") topics. As with the two-year degree at Vermont Tech, this program explores what goes on "under the hood" of a computer system. Digital electronics and computer architecture are explored, as well as topics in programming, networks, and system administration. This broad-based approach is intended to give graduates a diverse range of career options.



Computer technology is a rapidly evolving field. Today's topics may be of no interest in 10 years. Vermont Tech's approach is to give students a good foundation in all aspects of computer technology so that they can adapt to changes in the field. Also, because hardware, software, and systems topics often overlap in the real world, Vermont Tech's preparation will equip graduates to properly evaluate the entire computer system they are working with and understand how all of its aspects interact.

Qualified students from Vermont Tech's Computer Engineering Technology three-year option and the AE.CPE program may continue in the BS.CPE program after completion of their associate's degrees. Recent graduates of other accredited two-year computer engineering technology programs should be able to enter the junior year with little or no additional coursework. However, students coming from a related two-year degree (for example electrical engineering technology) or who have been out of school for awhile might need to take some extra classes before being fully prepared for the junior year of this program. Each incoming student will be evaluated on a case-by-case basis. Prospective students are encouraged to contact the Admissions Office with any questions regarding admission into the junior year.

A graduate of Vermont Tech's Bachelor of Science in Computer Engineering Technology program should be able to:

- Design and implement digital and embedded microcontroller systems in both the hardware and software areas using industry standard tools and techniques.
- Evaluate new computer hardware technologies and make recommendations about such technologies based on features, performance, and cost.
- Design and implement simple digital signal processing systems.
- Implement standard algorithms and data structures, and develop network, multithreaded, and graphical applications.
- Understand the purpose of various programming language features and how those features are implemented.
- Use standard software engineering tools.
- Understand and evaluate system performance and security.
- Understand basic database design and administration.
- Build, test, and document operating system software, such as a device driver, that interacts directly with hardware.
- Clearly communicate technical information in both oral and written form to peers and supervisors.
- Understand the Computer Engineering Technology profession; its diversity and its related ethical and social issues.
- Function effectively on teams.
- Demonstrate a commitment to quality, timeliness, and continuous improvement, and lifelong learning.

The minimum number of credits required for the degree is 130.

Four Year Curriculum
First Year

First Year Fall Courses	Credits
CIS 2025 - "C" Programming	4
ELT 1031 - Electrical Circuits I	4
ELT 1051 - Presentation Graphics I	1
ENG 10XX - English*	3-4
INT 1000 - Freshman Orientation	1
MAT 1420 - Technical Mathematics	5
	18-19

First Year Spring Courses	Credits
CIS 2280 - Perl Programming	2
ELT 1080 - Electronics for CPE	4
ELT 1110 - Introduction to Digital Circuits	4
MAT 1520 - Calculus for Engineering***	4
Select one:	
PHY 1041 - Physics I	4
PHY 2041 - Physics I w/Calculus	4
	18

Second Year

Second Year Fall Courses	Credits
CIS 2151 - Computer Networks I	4
CIS 2260 - Object-Oriented Programming	3
ELT 2050 - Microcomputer Techniques	4
Select one:	
PHY 1042 - Physics II	4
PHY 2042 - Physics II w/Calculus	4
	19

Second Year Spring Courses	Credits
CIS 2230 - System Administration	4
CIS 2720 - Computer Engineering Projects	3
ELT 2040 - Computer System & Interfaces	4
ENG 2080 - Technical Communication	3
ELE XXXX - AH/SS Elective**	3
	17

Third Year

Third Year Fall Courses	Credits
CIS 3030 - Programming Languages	3
CIS 3050 - Algorithms and Data Structures	3
ELT 3010 - Digital II	4
MAT 2532 - Calculus II	4
ELE 3XXX – General Education Elective	3
	17

Third Year Spring Courses	Credits
BUS 2440 - Introduction to Business Law	3
CIS 3010 - Database Systems	4
CIS 3152 - Networks II	4
ELT 3050 - Microprocessor Techniques II	4
MAT 3170 - Applied Mathematics for Engineering	3
	18

Fourth Year

Fourth Year Fall Courses	Credits
CIS 4020 - Advanced Operating Systems	4
CIS 4030 - GUI Programming	3
CIS 4150 - Software Engineering	3
CIS 4711 - Project I	2
ELT 4010 - Computer Architecture	3
MAT 3720 - Topics in Discrete Mathematics	3
	18

Fourth Year Spring Courses	Credits
CIS 4040 - Computer Security	3
CIS 4050 - Compiler Design	3
CIS 4712 - Project II	3
ELT 4020 - Digital Signal Processing	4
ELE XXXX - AH/SS Elective**	3
	16

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of four Arts and Humanities (AH) or Social Science (SS) electives, including at least one from each discipline and one 3XXX level.

Computer Information Technology

All contemporary organizations have problems that can best be solved with the use of computers, databases, networking, and other information technologies. To develop these solutions, organizations need people who understand both their organization and the technology.

The Computer Information Technology aAssociate's degree prepares graduates to fill these roles by providing them with a blend of technology and business backgrounds. The Associate's degree in Information Technology introduces students to the breadth of technologies and to the basics of the business world. It adds technical background and provides an understanding of the needs of technology for the enterprise, new technical areas, (such as computer security), and exposure to more business processes and practices.

Information TechnologyThis degree is just one of a range of computing degrees offered at Vermont Technical College. Degrees in Computer Software Engineering provide more focus on programming and software development. Degrees in Computer Engineering Technology complement the programming work with a solid grounding in computer hardware. Software Engineering students may request to transfer to Information Technology after the first semester without needing any additional courses. Transferring to Computer Information

Technology after the first year may require additional course work, possibly extending the time required for the degree.

The aAssociate's dDegree in Information Technology requires all students to develop an understanding of a range of topics:

- Computer programming: All graduates must be fluent in multiple languages, including one object-oriented language and one scripting language
- Computer hardware: All graduates must understand the fundamentals of computer hardware
- Web: All graduates must be able to develop and manage complete web sites
- Networking: All graduates must understand the behaviors and implementation of computer networking
- System development: All graduates must understand basic principles for developing and deploying high quality software systems
- System Administration: All graduates must understand how to manage systems, including UNIX based computers
- Business: All graduates must have a solid background in business processes
- Theory: All graduates will have a sufficient background in the theory of computing to understand and fulfill the other requirements
- Context: All graduates must understand the historical and social context of information technology

Students can enter the degree program with a wide range of backgrounds. The student, in conjunction with the Department Chair, may develop a sequence of courses to best meet his/her background and needs that satisfies these requirements. The typical curriculum taken by students is given below. Due to the dynamic nature of the information technology field, the recommended sequence of courses is subject to change.

The minimum, number of credits required for the degree is 67.

Two Year Curriculum

First Year

First Year Fall Courses	Credits	**First Year Spring Courses**	Credits
INT 1000 - Freshman Orientation	1	ACC 1020 - Survey of Accounting	3
CIS 1120 - Intro to Inform Sys Techn	3	CIS 1152 - Adv. Website Design	3
CIS 1151 - Website Design	3	CIS 2010- Computer Organization	4
CIS 2271 - JAVA Programming	3	CIS 2280 - Perl Programing	2
MAT 1221 - Finite Math	3	MAT 2120 - Dicscrete Structures	3
ENG 10XX - English*	3-4	ELE XXXX - AH/SS Elective**	3
	16-17		18

Second Year

Second Year Fall Courses	Credits	**Second Year Spring Courses**	Credits
BUS 2020 - Principles of Management	3	CIS 2230 - System Administration	4
CIS 2151 - Computer Networks 1	4	ENG 2080 - Tech Comm	3
CIS 2260 - Object Oriented Program	3	ELE XXXX - AH/SS Elective**	3
CIS 2320 - Software QA & Testing	3	SCI XXXX - Science Elective	4
ENG 1070 - Effective Speaking	3	ACC 1010 - Computerized Accounting	3
	16		17

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

Bachelor of Science in Computer Information Technology

All contemporary organizations have problems that can best be solved with the use of computers, databases, networking, and other information technologies. To develop these solutions, organizations need people who understand both their organization and the technology.

The Computer Information Technology degree prepares graduates to fill these roles by providing them with a blend of technology and business backgrounds. The Bachelor of Science degree provides depth in both the computing technology and business aspects demanded by today's problems.

This degree is just one of a range of computing degrees offered at Vermont Technical College. Degrees in Computer Software Engineering provide more focus on programming and software development. Degrees in Computer Engineering Technology complement the programming work with a solid grounding in computer hardware. Software Engineering students may request to transfer to Information Technology after the first semester without needing any additional courses. Transferring to Computer Information Technology after the first year may require additional course work, possibly extending the time required for the degree.

The Bachelor of Science degree requires all students to develop an understanding of a range of topics:

- Computer programming: All graduates must be fluent in multiple languages, including one object-oriented language and one scripting language
- Computer hardware: All graduates must understand the fundamentals of computer hardware
- Web: All graduates must be able to develop and manage complete web sites
- Networking: All graduates must understand the behaviors and implementation of computer networking and be able to develop systems that utilize computer networking
- System development: All graduates must understand the requirements for developing and deploying high quality large scale software systems
- User Interfaces: All graduates must be able to design, implement and evaluate a user interface for a computer system
- Databases: All graduates must understand the concepts and practice of relational databases
- Security: All graduates must understand the security issues surrounding information technology and the appropriate tools and techniques to safeguard that security
- System Administration: All graduates must understand how to manage systems, including UNIX based computers
- Business: All graduates must possess depth in multiple business processes and practices

- Theory: All graduates will have a sufficient background in the theory of computing to understand and fulfill the other requirements
- Context: All graduates must understand the professional, historical and social context of information technology and be able to make reasoned judgments about the social and ethical implications of their actions

In addition, all graduates must actively participate in the design, development, and evaluation of a sizable software system and present the results of that effort. Students can enter the degree program with a wide range of backgrounds. Students may apply directly to the bachelor's degree program. Alternatively, students successfully completing the associate's degree in either Information Technology or Software Engineering at Vermont Technical College may continue directly on to a Bachelor of Science Degree in Information Technology. Students may apply to the program following the completion of an associate's degree in a related field at another institution. Such students may require additional time to complete all the requirements.

The student, in conjunction with the Department Chair, may develop a sequence of courses to best meet his/her background and needs that satisfies these requirements. The typical curriculum taken by students is given below. Due to the dynamic nature of the information technology field, the recommended sequence of courses is subject to change.

The minimum number of credits required for the degree is 130.

Computer Information Technology

Four Year Curriculum

First Year

First Year Fall Courses	Credits	**First Year Spring Courses**	Credits
INT 1000 - Freshman Orientation	1	ACC 1020 - Survey of Accounting	3
CIS 1120 - Intro to Inform Sys Techn	3	CIS 1152 - Adv. Website Design	3
CIS 1151 - Website Design	3	CIS 2010- Computer Organization	4
CIS 2271 - JAVA Programming	3	CIS 2280 - Perl Programing	2
MAT 121 - Finite Math	3	MAT 2120 - Discrete Structures	3
ENG 10XX - English*	3-4	ELE XXXX - AH/SS Elective**	3
	16-17		18

Second Year

Second Year Fall Courses	Credits	**Second Year Spring Courses**	Credits
BUS 2020 - Principles of Management	3	CIS 2230 - System Administration	4
CIS 2151 - Computer Networks 1	4	ENG 2080 - Tech Comm	3
CIS 2260 - Object Oriented Program	3	ELE XXXX - AH/SS Elective**	3
CIS 2320 - Software QA & Testing	3	SCI XXXX - Science Elective	4
ENG 1070 - Effective Speaking	3	ACC 1010 - Computerized Accounting	3
	16		17

Third Year

First Year Fall Courses	Credits	**First Year Spring Courses**	Credits
BUS 2440 - Business Law	3	BUS 3250 - Organiz Behav & Mgmt	3
CIS 4150 - Software Engineering	3	CIS 3010 - Database Systems	4
HUM 2060 - Cyberethics	3	CIS 4120- Systems Analysis & Design	3
ELE 3XXX - AH/SS Elective**	3	MAT 2280 - Statistics	3
ELE XXXX - Elective	3	BUS 2230 - Principals of Marketing	3
	15		16

Fourth Year

Second Year Fall Courses	Credits	**Second Year Spring Courses**	Credits
BUS 4310 - Business Info Arch	3	BUS 4530 - Technical Project Mgt	3
CIS 4030 - GUI Programming	3	CIS 3152 - Networks II	4
CIS 4721 - Senior Projects 1	2	CIS 3170 - History-Theory of Computing	3
ELE XXXX - AH/SS Elective**	3	CIS 4040 - Computer Security	4
SCI XXXX - Science Elective	4	CIS 4722 - Senior Projects II	3
	15		17

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms to complete the degree

**Students must complete a minimum of four Arts and Humanities (AH) or Social Science (SS) electives, including at least one from each discipline and one 3XXX level

Computer Software Engineering

Computer software is the engine that drives the modern world. The need for software developers is outpacing the demand, especially here in Vermont, where a recent survey found an anticipated shortfall of hundreds of programmers over the next few years alone.

The Associate of Science Degree in Computer Software Engineering prepares students to make meaningful contributions to a software development group. Typical jobs for graduates might include test engineer, release engineer, and customer support engineer. Students may continue on to a Bachelor of Science Degree in Software Engineering, which adds an understanding of software development and significantly more technical depth.

This degree is just one of a range of computing degrees offered at Vermont Technical College. Degrees in Information Technology combine the software focus of Computer Software Engineering with an understanding of business practices. Degrees in Computer Engineering Technology complement the programming work with a solid grounding in computer hardware. Information Technology students may request to transfer to Software Engineering after the first semester without needing any additional courses. Transferring to Software Engineering after the first year may require additional course work, possibly extending the time required for the degree. Computer Engineering students may request a transfer to Software Engineering, but are likely to need to complete a few additional courses. The associate's degree requires all students to develop an understanding of a range of topics:

- Computer programming: All graduates must be fluent in multiple languages, including one object-oriented language and one scripting language
- Computer hardware: All graduates must understand the fundamentals of computer hardware, including understanding assembly language
- Web: All graduates must be able to develop complete web sites
- Networking: All graduates must understand the behaviors and implementation of computer networking
- System development: All graduates must understand basic principles for developing and deploying high quality software systems
- System Administration: All graduates must understand how to manage systems, including UNIX based computers
- Groups: All graduates must be able to work effectively in a group software development effort
- Theory: All graduates will have a sufficient background in the theory of computing to understand and fulfill the other requirements
- Context: All graduates must understand the historical and social context of information technology

In addition, all graduates must actively participate in the design and development of a software system and present the results of that effort.

Students can enter the degree program with a wide range of backgrounds. The student, in conjunction with the Department Chair, may develop a sequence of courses to best meet his/her background and needs that satisfies these requirements. The typical curriculum taken by students is given below. Due to the dynamic nature of the software engineering field, the recommended sequence of courses is subject to change.

The minimum number of credits required for the degree is 63.

Two Year Curriculum

First Year

First Year Fall Courses	Credits
INT 1000 - Freshman Orientation	1
CIS 1120 - Intro to Information Sys Techn	3
CIS 1151 - Website Design	3
CIS 2271 - JAVA Programming	3
MAT 1221 - Finite Math	3
MAT 2120 - Discrete Structures	3
ENG 10XX - English*	3-4
	16-17

First Year Spring Courses	Credits
CIS 1152 - Adv. Website Design	3
CIS 2010 - Computer Organization	4
CIS 2280 - Perl Programming	2
ELE XXXX - AH/SS Elective**	3
Select One:	
MAT 1420 - Technical Math	5
	15-17

Second Year

Second Year Fall Courses	Credits
BUS 2020 - Principles of Management	3
CIS 2151 - Computer Networks I	4
CIS 2320 - Software QA & Testing	3
ELE XXXX - AH/SS Elective**	3
Select One:	
CIS 2260 - Object Orietnted Programming	3
MAT 1520 - Calculus for Engineering	4
PHI 1030 - Intro to Logic	3
	16-17

Second Year Spring Courses	Credits
CIS 2230 - System Administration	4
CIS 2730 - CSE Projects	4
ENG 2080 - Tech Comm	3
MAT 2021 - Statistics	3
SCI XXXX - Science Elective	4
	16

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

Bachelor of Science in Computer Software Engineering

Computer software is the engine that drives the modern world. The need for software developers is outpacing the demand, especially here in Vermont, where a recent survey found an anticipated shortfall of hundreds of programmers over the next few years alone.

The Bachelor of Science Degree in Computer Software Engineering develops a student's programming expertise along with providing significant technical depth in multiple areas.

This degree is just one of a range of computing degrees offered at Vermont Technical College. Degrees in Information Technology combine the software focus of Computer Software Engineering with an understanding of business practices. Degrees in Computer Engineering Technology complement the programming work with a solid grounding in computer hardware. Information Technology students may request to transfer to Software Engineering after the first semester without needing any additional courses. Transferring to Software Engineering after the first year may require additional course work, possibly extending the time required for the degree. Computer Engineering students may request a transfer to Software Engineering after the first semester, but are likely to need to complete a few additional courses.

The degree in requires all students to develop an understanding of a range of topics:

- **Computer programming**: All graduates must be fluent in multiple languages, including one object-oriented language and one scripting language
- **Computer hardware**: All graduates must understand the fundamentals of computer hardware, including understanding the workings of assembly language
- **Web**: All graduates must be able to develop complete web sites
- **Networking**: All graduates must understand the behaviors and implementation of computer networking and be able to develop systems that utilize computer networking
- **System development**: All graduates must understand the requirements for developing and deploying high-quality, large-scale software systems
- **User Interfaces**: All graduates must be able to design, implement, and evaluate a user interface for a computer system
- **Databases**: All graduates must understand the concepts and practice of relational databases
- **Security**: All graduates must understand the security issues surrounding information technology and the appropriate tools and techniques to safeguard that security
- **Operating Systems**: All graduates must understand the workings of modern operating systems, both in theory and in practice, and be able to work with an operating system using administrative tools
- **Technical Depth**: All students must develop significant technical depth in additional areas approved by the Department Chair

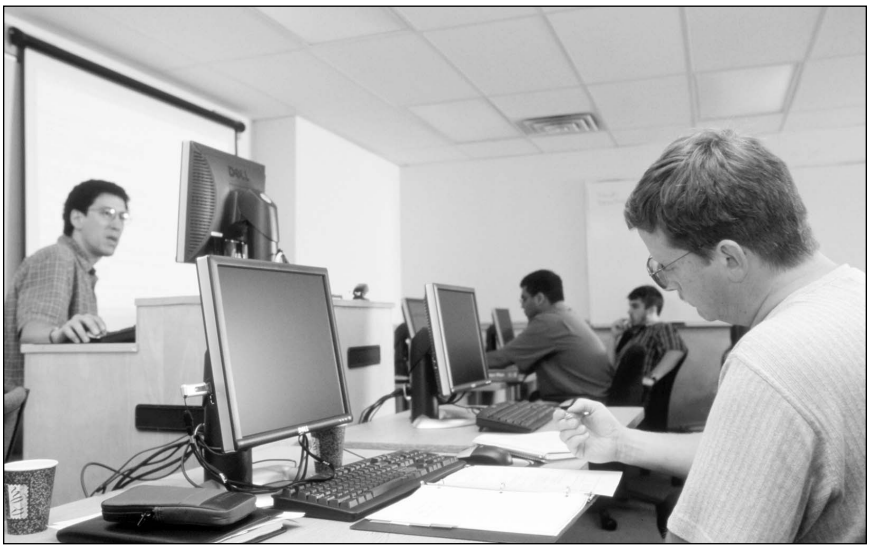
- **Groups**: All graduates must be able to work effectively in a group software development effort
- **Theory**: All graduates will have a sufficient background in the theory of computing to understand and fulfill the other requirements
- **Context**: All graduates must understand the professional, historical, and social context of information technology and be able to make reasoned judgments about the social and ethical implications of their actions

In addition, all graduates must actively participate in the design, development, and evaluation of a sizable software system and present the results of that efforts.

Students can enter the degree program with a wide range of backgrounds. Students may apply directly to the bachelor's degree program. Alternatively, students successfully completing the associate's degree in either Information Technology or Software Engineering at Vermont Technical College may continue directly on to a Bachelor of Science Degree in Software Engineering. Students may apply into the program following the completion of an associate's degree in a related field at another institution. Such students may require additional time to complete all the requirements.

The student, in conjunction with the Department Chair, may develop a sequence of courses to best meet his/her background and needs that satisfies these requirements. The typical curriculum taken by students is given below. Due to the dynamic nature of the software engineering field, the recommended sequence of courses may change.

The minimum number of credits required for the degree is 126.



Four Year Curriculum

First Year

First Year Fall Courses	Credits
INT 1000 - Freshman Orientation	1
CIS 1120 - Intro to Information Sys Techn	3
CIS 1151 - Website Design	3
CIS 2271 - JAVA Programming	3
MAT 1221 - Finite Math	3
ENG 10XX - English*	3-4
	16-17

First Year Spring Courses	Credits
CIS 1152 - Adv. Website Design	3
CIS 2010 - Computer Organization	4
CIS 2280 - Perl Programming	2
ELE XXXX - AH/SS Elective**	3
Select One:	
MAT 2120 - Discrete Structures	3
MAT 1420 - Technical Math	5
	15-17

Second Year

Second Year Fall Courses	Credits
BUS 2020 – Principles of Management	3
CIS 2151 - Computer Networks I	4
CIS 2320 - Software QA & Testing	3
ELE XXXX - AH/SS Elective**	3
Select One:	
SCI XXXX - Science Elective	4
CIS 2260 – Object-Oriented Programming	3
MAT 1520 - Calculus for Engineering	4
PHI 1030 - Intro to Logic	3
	16-17

Second Year Spring Courses	Credits
CIS 2230 - System Administration	4
CIS 2730 - CSE Projects	2
ENG 2080 - Tech Comm	3
MAT 2021 - Statistics	3
	16

Third Year

Third Year Fall Courses	Credits
CIS 3030 - Programming Languages	3
CIS 3050 - Algorith & Data Struct	3
CIS 4150 - Software Engineering	3
SCI XXXX - Science Elective	4
Select One:	
BUS 4310 - Business Info. Arch.	3
MAT 2532 - Calculus II	4
	16-18

Third Year Spring Courses	Credits
CIS 3010 - Database Systems	4
CIS 3152 - Network II	4
CIS 4120 - Systems Analysis & Design	3
ELE 3XXX - AH/SS Elective**	3
Select One:	
BUS 2230 - Principals of Marketing	3
BUS 2440 - Business Law	3
	17

Fourth Year

Fourth Year Fall Courses	Credits
CIS 4020 - Adv operating Systems	4
CIS 4030 - GUI Programming	3
CIS 4721 - Senior Projects I	2
HUM 2060 - Cyberethics	3
MAT 3720 - Topics in Discrete Math	3
	15

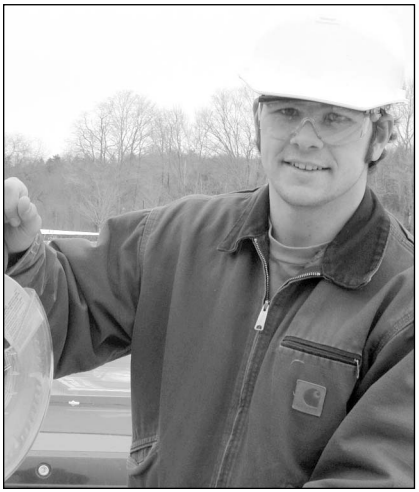
Fourth Year Spring Courses	Credits
BUS 4530 - Technical Project Management	3
CIS 4040 - Computer Security	3
CIS 4050 - Computer Design	3
CIS 4722 - Senior Projects II	3
ELE XXXX - AH/SS Elective**	3
	15

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of four Arts and Humanities (AH) or Social Science (SS) electives, including at least one from each discipline and one 3XXX level.

Construction Practice & Management

The building process is one of enormous satisfaction for those who enjoy a creative challenge and like to see the results of their work. While on-the-job- training was once the most common path of entry to a career in the building industry, the need today is for individuals with the academic background that will enable them to advance. As technology gives rise to new materials, new products, and new techniques for using them, the building industry needs people at all levels with technical knowledge and skills. In an increasingly competitive environment, business skills are essential for those who manage today's complex construction projects.



The Associate Degree in Construction Practice and Management program at Vermont Technical College was developed with these needs in mind. The program is designed to serve both recent high school graduates with limited experience in the construction field and adults already employed in the building industry who want to prepare themselves for project management and supervisory roles.

The first year of the program focuses on the skills entailed in the practice of building construction. In addition to the materials and methods of residential and light commercial construction, students study drafting, print reading, electrical and mechanical systems, math, and physics.

Job outlook, according to the US Department of Labor, is good. Nearly 8% of our Gross Domestic Product is construction related, and these jobs are difficult to export. The national average salary for Construction Management graduates is $45,000.

Areas of Study

The first year of the program focuses on the skills entailed in the practice of building construction. In addition to the materials and methods of residential and light commercial construction, students study drafting, Computer Aided Design, blueprint reading, electrical and mechanical systems, math, and physics.

The summer includes an internship with a construction company. Students have obtained positions through one of the many companies that interview on campus, or may secure a placement on their own. Recent positions have included large and small construction and related companies, located in New England as well as Connecticut, New York, Maryland, Georgia and Florida. This opportunity often leads to full time employment.

In the second year of the program, students acquire the management skills needed for supervisory positions in the building industry. Second-year students take courses in:

- Construction project management;
- Estimating;
- Field Engineering and surveying;
- Small business management, business law;
- Basic structural engineering, and safety.

Career Opportunities

Graduates of the program qualify for a range of positions in the construction field: small business owners, building materials representatives, construction supervisors, estimators, and entrepreneurs. Some students may decide to further their education in management, architectural, or civil engineering. Graduates who expect to run their own construction companies are encouraged to explore continuing their educational path in Vermont Tech's bachelor's degree program in Business Technology.

Students in this program are required to have safety glasses, work boots, speed or combo square, chalkline, a tool belt, tape measure, utility knife, and pencils.

Because of the advanced level of specialty software associated with this program (CAD, estimation, and scheduling software) these courses are held in state-of-the-art computer labs. Students are not required to purchase laptop computers prior to enrollment, however, the requirements for accessing Vermont Tech’s network are;

Windows XP operating system capable of the Office suite (Word, Excel, powerpoint

A wireless network card capable of 802.11b or 802.11g

Questions, regarding software requirements should be referred to Andy Myrick, Department Chair (amyrick@vtc.edu).

The minimum number of credits required for the associate's degree is 65.

Two Year Curriculum

First Year

First Year Fall Courses	Credits
CPM 1000 - Freshmen Orientation	1
CET 1031 - Eng and Surveying Computer Apps I	3
CPM 1021 - Construction Graphics I	1
CPM 1031 - Residential Construction Systems	3
CPM 1032 - Construction Lab	2
ENG 10XX - English*	3-4
Select One:	
MAT 1100 – Mathematics for Technology*	3
MAT 1420 - Technical Mathematics*	5
	16-19

First Year Spring Courses	Credits
CPM 1010 - Electrical/Mechanical Systems	3
CPM 1022 - Construction Graphics II	1
CPM 1111 - Commercial Construction Systems	4
MAT 1210 - Principles of Mathematics***	3
PHY 1030 - General Physics	4
ELE XXXX – AH/SS Elective**	3
	15-18

First Year Summer Course	Credits
CPM 2810 - Summer Internship	0

Second Year

Second Year Fall Courses	Credits
ACC 1020 - Survey of Accounting	3
BUS 2440 - Introduction to Business Law	3
CPM 2010 - Construction Estimates	3
CPM 2020 - Construction Project Management	3
CPM 2050 - Construction Management Software	1
CPM 2060 - Field Engineering	3
CPM 2810 - Internship Review	1
Optional	
CPM 2720 - Construction Supervision	1
	17-18

Second Year Spring Courses	Credits
BUS 2210 - Small Business Management	3
CPM 2030 - Elementary Theory of Structures	4
CPM 2730 - Construction Seminar and Project	4
ENG 2080 - Technical Communication	3
ELE XXXX – AH/SS Elective**	3
	17

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

***Students who have completed MAT 1420 do not have to take MAT 1210.

Dairy Farm Management Technology

Dairy Farm Management Technology students develop the skills and knowledge needed to operate a modern dairy farm. Graduates frequently return to their home farms, are employed as herd managers, or work as breeding technicians, DHIA testers, and Peace Corps volunteers.

The college's 500-acre working farm and registered Holstein and Brown Swiss herd are integrated into all facets of the program and students are active participants in the management and operation of the farm. Practical experience at the farm is an especially valuable aspect of the program for students who lack a farm background.

Training in dairy farm management is directed at providing production know-how along with decision-making ability. For this reason, students take courses in accounting, finance, and computer applications along with their specialized subjects in agriculture.

Students may also apply for admission to the Farm and Agricultural Resource Management Stewards (FARMS) program offered in cooperation with the University of Vermont. FARMS students make a seamless transition from dairy farm management at Vermont Tech to a second two years at the College of Agriculture and Life Sciences at the University of Vermont. Full-tuition scholarships are available to Vermont students in the FARMS Program.

Student learning outcomes for an associate's degree program in Dairy Farm Management are:

- Understand dairy cow nutrition and the ration formulation process.
- Understand dairy cow reproduction and genetics and be able to implement a breeding program
- Competently milk cows
- Competently feed cows
- Understand heifer raising
- Competently raise heifers
- Manage dairy cow transition from dry to lactating
- Understand the dairy industry and represent it knowledgeably
- Raise and store common New England forages
- Manage a dairy operation budget
- Assess a dairy business and recognize potential improvements
- Write a business plan for a dairy operation

The minimum number of credits required for the degree is 66.

First Year

First Year Fall Semester	Credits
ACC 1020 - Survey of Accounting	3
AGR 1011 - Agricultural Techniques I	2
AGR 1050 - Livestock Production	3
CIS 1080 - Intro to Sprdshts & Db Mgmt	2
ENG 10XX - English*	3-4
Select One:	
MAT 1210 - Principles of Mathematics	3
MAT 1420 - Technical Mathematics	5
	16-18

First Year Spring Semester	Credits
AGR 1012 - Agricultural Techniques II	1
AGR 1030 - Animal Reproduction and Genetics	3
AGR 2030 - Animal Nutrition	4
ENG 2080 - Technical Communication	3
LAH 1050 - Introduction to Soils	4
ELE XXXX - AH/SS Elective**	3
	18

Second Year

Second Year Fall Semester	Credits
AGR 2011 - Dairy Herd Management I	3
AGR 2020 - Farm Buildings	2
AGR 2040 - Forage Production	3
AGR 2720 - Issues and Trends in Agriculture	2
BUS 2260 - Principles of Financial Management	3
Select One:	
CHE 1020 - Introduction to Chemistry	4
CHE 1031 - General Chemistry	4
	17

Second Year Spring Semester	Credits
AGR 2012 - Dairy Herd Management II	3
AGR 2050 - Large Animal Diseases	3
BUS 2210 - Small Business Management	3
BUS 2230 - Principles of Marketing	3
ELE XXXX - AH/SS Elective**	3
	15

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

Dental Hygiene

Dental hygienists are important partners in the delivery of dental health care. These licensed health professionals work directly with patients to promote optimum oral health. The dental hygiene profession is primarily educational and preventative in nature and offers opportunities to work in a variety of health care settings, including general and specialty dental practices, community health agencies, and public schools.

Graduates with an associate's degree in dental hygiene can expect a high level of professional demand from employers in the private dental practice setting.

In addition, graduates may wish to pursue a bachelor's degree, which will provide opportunities to work in alternative settings such as public health, education, research, and dental sales.

All dental hygiene professional courses must be taken in the prescribed four 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.

Students may apply as freshman candidates, however, due to the rigor of the program, many dental hygiene students enroll in some non-professional courses prior to initiating the program. Suggested courses include college level chemistry, anatomy and physiology, nutrition, english, and psychology.

Upon completion of the required credits in the Dental Hygiene program, graduates are awarded an Associate of Science degree in Dental Hygiene. Graduates are then eligible to apply to take the National Board in Dental Hygiene Examination and a regional clinical board examination, such as the Northeast Regional Board.

For licensure in Vermont, in addition to the Dental Hygiene National Board Examination and the Northeast Regional Board Examination, graduates will also be required to take a jurisprudence examination offered by the Vermont States Board of Dental Examiners. Applicants for Vermont licensure are also required to present information regarding past history of substance abuse, prior felony convictions, and failure to pay child support and/or taxes. Other states may ask similar questions. The Board is responsible for determining eligibility for dental hygiene licensure.

The program is accredited by the American Dental Association Commission on Dental Accreditation. All students completing the program will be eligible to apply to participate in licensing examinations.

Student learning outcomes for a degree in Dental Hygiene include:

- Prepare qualified dental hygienist capable of competently performing the roles of a dental hygienist in varied situations and settings.
- Develop a graduate with the functional acuity and rationale for performing dental hygiene clinical techniques.
- Prepare a graduate who will continually promote the most current concepts of disease control and prevention.
- Educate students to assume the major responsibility for their own learning
- Develop a graduate who emphasizes and promotes ethical and responsible considerations in patient care.

NOTE: Students in this program may be exposed to blood borne pathogens. The dental hygienist must have a thorough knowledge and understanding of infectious diseases, the mechanism of disease transmission, the OSHA Blood-borne Pathogen standards, and CDC guidelines for infection control.

• Educate a graduate who will make an essential and unique contribution as an integral member of a health care team.

• Provide the graduate with a basic knowledge of legal responsibilities and ethical considerations of patient care.

• Develop a graduate who emphasizes and promotes ethical and responsible considerations in patient care.

• Educate a graduate who will make an essential and unique contribution as an integral member of a health care team.

• Provide the graduate with a basic knowledge of legal responsibilities and ethical considerations of patient care.

• Develop with the graduate a commitment to continuous and lifelong learning.

The minimum number of credits for the associate's degree is 72.

Two-Year Curriculum

First Year

First Year Fall Courses	Credits	**First Year Spring Courses**	Credits
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	4	DHY 1022 - Oral Tissues II and Medical Emergencies	3
DHY 1021 - Oral Tissues I	3	DHY 1030 - Dental Radiograghy	3
ENG 10XX - English*	3-4	PSY 1010 - Introduction to Psychology (SS)*	3
	17-18		18

Second Year

Second Year Fall Courses	Credits
BIO 2120 - Elements of Microbiology	4
DHY 2010 - Dental Materials	3
DHY 2020 - General Pathology and Clinical Dental Pharmacology	3
DHY 2030 - Periodontics	3
DHY 2721 - Clinical Dental Hygiene II	5
	18

Second Year Spring Courses	Credits
DHY 2210 - Community Oral Health	3
DHY 2220 - Oral Pathology	2
DHY 2722 - Clinical Dental Hygiene III	6
ENG 2080 - Technical Communication	3
MAT 1040 - Mathematics for Allied Health	2
ELE XXXX - Arts & Humanities Elective	3
	19

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms to complete the degree.

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

Bachelor of Science Dental Hygiene

The Bachelor of Science in Dental Hygiene degree opens up more educational and career opportunities for students who have already completed an associate's degree in Dental Hygiene. Career areas where the advanced degree would be advantageous include jobs in dental hygiene research, sales, public health, and education.

Current Vermont Technical College students may continue into the bachelor's degree program with departmental approval and do not have to make the decision until the spring of the sophomore year. Students will complete the bachelor level curriculum through a combination of on-line and transfer courses. Students have six years to complete the required courses for the bachelor's degree.

The minimum number of credits for the degree is 120.

Note: The Vermont Technical College Bachelor of Science Degree program holds articulation agreements with Quinsigamond Community College, Community College of Rhode Island and the New Hampshire Technical Institute associate degree dental hygiene programs. These agreements are designed to maximize the number of credits students will be able to transfer to Vermont Tech. Specific details regarding these agreements can be obtained by contacting Vermont Technical College's Department of Dental Hygiene at (802) 879-5643.

Four-Year Curriculum

First Year

Second Year Fall Courses	Credits	**Second Year Spring Courses**	Credits
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	4	DHY 1022 - Oral Tissues II and Medical Emergencies	3
DHY 1021 - Oral Tissues I	3	DHY 1030 - Dental Radiograghy	3
ENG 10XX - English*	3-4	PSY 1010 - Introduction to Psychology (SS)	3
	17-18		18

Second Year

Second Year Fall Courses	Credits	**Second Year Spring Courses**	Credits
BIO 2120 - Elements of Microbiology	4	DHY 2210 - Community Oral Health	3
DHY 2010 - Dental Materials	3	DHY 2220 - Oral Pathology	2
DHY 2020 - Pathology and Pharmacology	3	DHY 2722 - Clinical Dental Hygiene III	6
DHY 2030 - Periodontics	3	ENG 2080 - Technical Communication	3
DHY 2721 - Clinical Dental Hygiene II	5	MAT 1040 - Mathematics for Allied Health	2
	18	ELE XXXX - Arts & Humanities Elective	3

Third Year

Second Year Fall Courses	Credits
DHY 3010 - Evidence Based Decision Making	3
ENG 1070 - Effective Speaking	3
ELE 3XXX - AH/SS Elective**	3
PSY 1050 - Human Growth and Development	3
	12

Second Year Spring Courses	Credits
CHE 1020 - Intro to Chemistry	4
CIS 1080 - Intro to Sprdst & Database Mgmt	2
DHY 3020 - Advance Periodontics	3
DHY 3030 - Educational Methodology and Leadrshp	3
	12

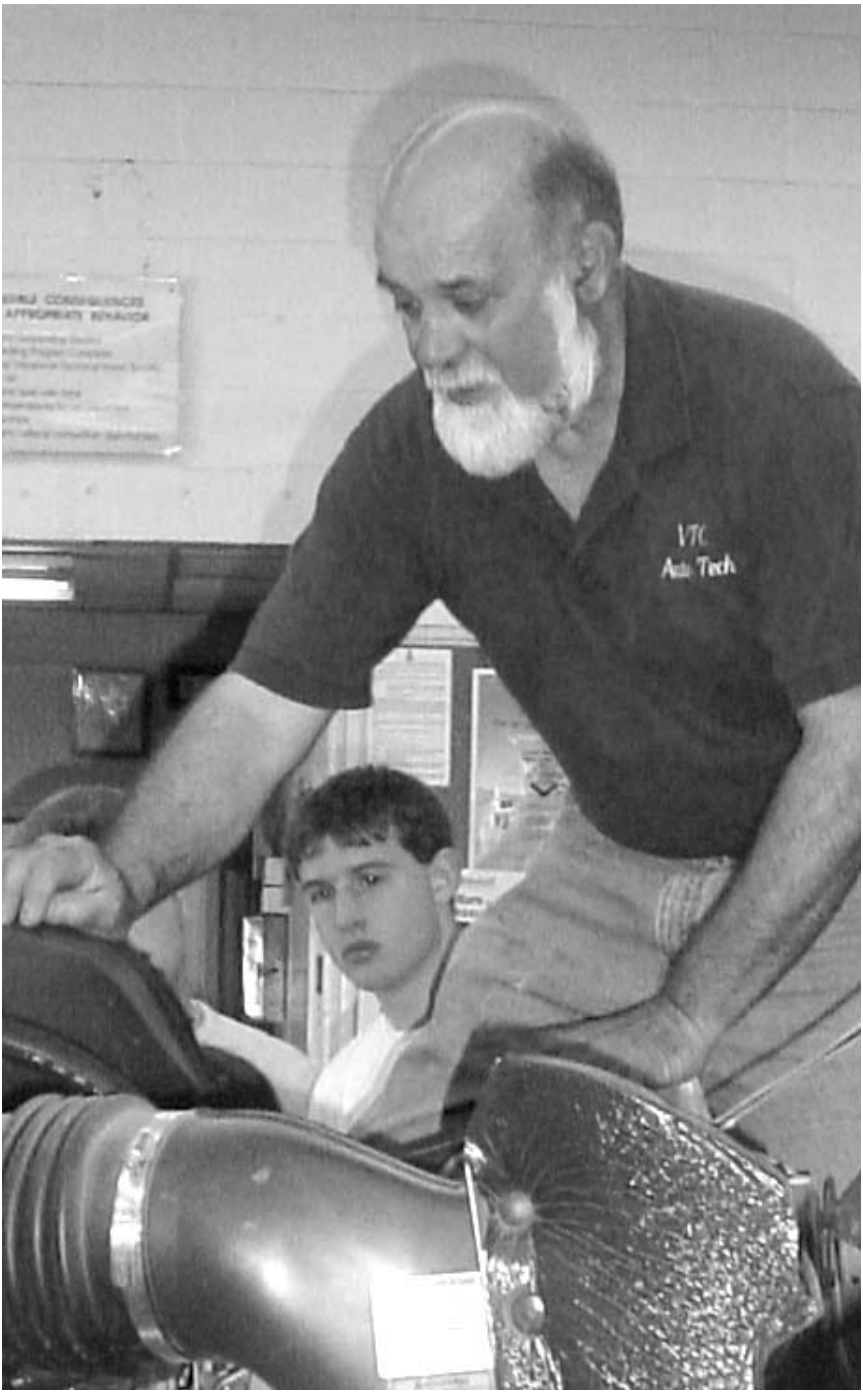
Fourth Year

Second Year Fall Courses	Credits
DHY 4010 - Advance Community Oral Health	3
ELE XXXX AH/SS Elective**	3
Select One	
HUM 2020 - Bioethics (AH)	3
PHI 1040 - Intro to Ethics (AH)	3
Select One:	
XXXXXXX - Critical Thinking Elective	3
MatXXXX - Math Elective	3
	12

Second Year Spring Courses	Credits
DHY 4810 - Practicum	6
ELE 3XXX - Elective	3
POS XXXX - Policital Science Elective	3
	12

* In addition to the associate requirements, bachelor's s*Students must complete a minimum of two Arts and Humanities (AH) or Social Science (SS) courses, including one at the 3XXX level.

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


VTC
Auto Tech

Diesel Power Technology

The Associate degree program in Diesel Power Technology answers an increasing need for skilled diesel service technicians for the growing agricultural, heavy-duty truck, and earthmoving equipment service industry. Graduates are prepared to enter the repair, parts, or management aspects of the diesel power service industry. Job categories include general repair technician, parts professional, service advisor, and, with experience, specialty or lead technician, parts manager, or service manager. Self employment is also possible.

The program covers all significant skill areas of the repair industry and includes modules on parts, record keeping, customer relations, and preventive maintenance. Electronic control of mechanical systems, system design considerations, and the analysis and diagnosis of system failures are examined through the coursework. Students are exposed to the agricultural equipment, earthmoving equipment, and heavy-duty trucks and have the opportunity to work part time at local service providers. A 400-hour summer internship is included which provides students with production experience and an opportunity to assess future employment possibilities.

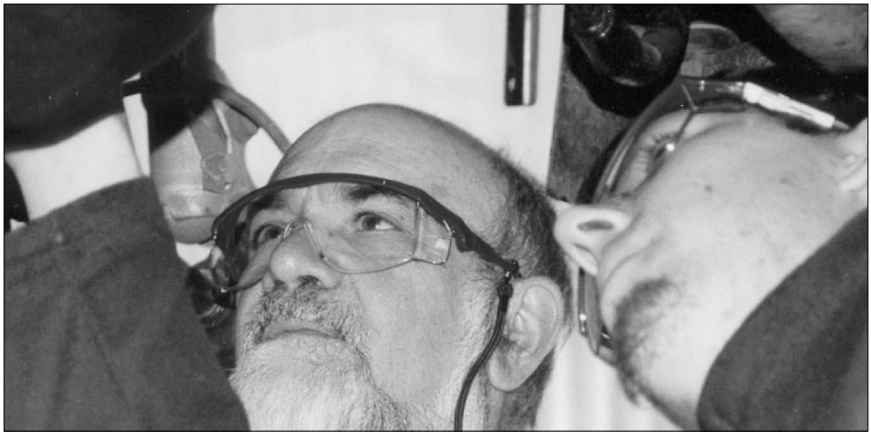
The coursework covers all systems down to the component level on agricultural equipment, earthmoving equipment, and heavy-duty trucks. All mechanical systems are covered in the curriculum. Electrical, electronic and hydraulic systems maintenance, diagnosis, and repair are emphasized. A combination of classroom instruction and hands-on laboratory practical experience is used at a one-to-one ratio. Students must possess their own set of hand tools for use in the laboratory and for the summer internship program. A tool list is available from the Admissions Department.

The curriculum will use the NATEF (National Technician's Education Foundation) and AED (Associated Equipment Distributors) diesel task mastery specifications to assess successful learning outcomes. Outcomes include but are not limited to:

- the ability to use the principles of critical thinking in the diagnostic process;
- the ability to understand, maintain and repair advanced automotive electronic systems;
- the ability to understand, maintain and repair all major mechanical systems on automobiles and light trucks; and
- the ability to perform successfully as an entry to B-level service technician.

Coursework in English and technical communication, computer software skills, technical math, physics, and general education are also included. Courses are offered in Williston and Middlebury. Students must provide their own transportation.

The minimum number of credits required for degree is 62.



Two-Year Program

First Year

First Year Fall Courses	Credits
DSL 1010 – Heavy Duty Suspension & Steering	4
DSL 1040 - Basic Diesel Electrical/Electronic Sys	4
ENG 10XX - English*	3-4
MAT 1100 – Mathematics for Technology	3
	14-15

First Year Spring Courses	Credits
DSL 1020 - Diesel Power Systems	4
DSL 1050 - Preventive Maintenance	3
DSL1110 - Heavy Duty Braking Systems	3
CIS 1080 - Intro to Sprdshts & Db Mgmt	2
PHY 1030 - General Physics	4
	16

Second Year

Second Year Fall Courses	Credits
DSL 2010 - Fuel Systems	4
DSL 2020 - Chassis Electrical & Elec Sys	4
DSL 2030 - Hydraulics	3
ENG 2080 - Technical Communication	3
ELE XXXX - AH/SS Elective**	3
	17

Second Year Spring Courses	Credits
DSL 2040 - Power Transmission	4
DSL 2050 - Emissions and Engine Performance	4
DSL 2060 - Fabrication	3
ELE XXXX - AH/SS Elective**	3
	14

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

Electrical Engineering Technology

The impact and wide-spread use of electrical systems in our everyday life cannot be overstated. Nano-scale systems such as computers and cell phones and large-scale systems such as the power grid and electric locomotive engines are everywhere. Graduates in Electrical Engineering Technology (EET) are well prepared to work on these systems and many others. These graduates will be key players in the development of sustainable technologies that will transform the way we think about energy in the coming decades.

Vermont Tech emphasizes both classroom and laboratory experience. Theory learned in the classroom is reinforced by laboratory exercises in EET classes. Laboratories are equipped with instruments, power supplies and controllers used widely in the industry. There are analog and digital laboratories at both the Randolph and Williston sites where the EET degree is offered.

Graduates of the EET program are able to work in any number of challenging positions. As engineering technicians, they may partiCipate in such varied activities as research, development, design, production, or manufacturing of complex electrical, electronic, or electromechanical products. Testing, quality control, marketing, installation, and customer service are among the job opportunities available.

With a minimum of an extra year's work, students may pursue a dual major with Computer Engineering Technology (CPE) or Mechanical Engineering Technology (MEC). This flexibility helps ensure a broad educational experience while at Vermont Tech. (See catalog section on "Multiple Degrees and Majors").

Upon completion of a two year Associates degree in Electrical Engineering Technology, students can pursue a Vermont Tech Bachelor of Science in Electromechanical Engineering, Sustainable Technology, or Business Technology & Management with two more years of study.

The EET degree program is accredited by the Technology Accreditation Commission of the ABET, Inc. Accreditation Board for Engineering and Technology.

A graduate of Vermont Tech’s Electrical Engineering Technology associate’s program should be able to:

- Understand the concepts of AC/DC circuit analysis and demonstrate the ability to apply concepts learned in class experimentally.
- Understand the concepts of digital electronics and demonstrates the ability to apply concepts learned in class experimentally.
- Understand the fundamental operation of semiconductor devices and their application in modern electronic circuits.
- Be able to write programs in assembly language and in an appropriate high level language.
- Be able to utilize current hardware and software tools and devices such as laboratory instruments, MultiSim, embedded controllers and PLCs.
- Execute a simple manufacturing type project. Include design, layout prototype, documentation and presentation.
- Be able to communicate technical information clearly in oral and written forms.
- Understand the professional requirements of today’s employers regarding quality, timeliness and the ability to work in teams towards a common goal.

- Understand the professional, ethical and social responsibilities and recognize the need for continuous improvement and lifelong learning.
- Demonstrate a respect for diversity and knowledge of contemporary professional, societal and global issues.

The minimum number of credits required for the degree is 71.

Two Year Curriculum
First Year

First Year Fall Courses	Credits	**First Year Spring Courses**	Credits
ELT 1031 - Electrical Circuits I	4	CIS 2025 - "C" Programming	4
ELT 1051 - Presentation Graphics I	1	ELT 1032 - Electrical Circuits II	4
ELT 1110 - Introduction to Digital Circuits	4	ELT 1052 - Presentation Graphics II	1
ENG 10XX - English*	3-4	MAT 1520 - Calculus for Engineering***	4
INT 1000 - Freshman Orientation	1	**Select one:**	
MAT 1420 - Technical Mathematics	5	PHY 1041 - Physics I	4
	18-19	PHY 2041 - Physics I w/Calculus	4
			17

Second Year

Second Year Fall Courses	Credits	**Second Year Spring Courses**	Credits
ELT 2050 - Microcomputer Techniques	4	ELT 2052 - Electronics II	4
ELT 2051 - Electronics I	4	ELT 2130 - Industrial Electronics	4
ELT 2060 - Electronic Applications	4	ELT 2720 - Electrical Project	3
ELE XXXX – AH/SS Elective**	3	ENG 2080 - Technical Communication	3
Select one:		ELE XXXX - AH/SS Elective**	3
PHY 1042 – Physics II	4		17
PHY 2042 – Physics II w/ Calculus	4		
	19		

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

***Students taking MAT 1520 may take PHY 2041/2042 instead of PHY 1041/1042.

Three Year Curriculum
First Year

First Year Fall Courses	Credits	First Year Spring Courses	Credits
ELT 1011 - Fundamentals of Circuits I	3	CIS 1160 - Fundamentals of Programming in C	1
ELT 1021 - Fundamentals of Digital Circuits I	3	ELT 1012 - Fundamentals of Circuits II	3
ENG 1041 - Basic College Writing	4	ELT 1022 - Fundamentals of Digital Circuits II	3
INT 1000 - Freshman Orientation	1	ENG 1042 - Expository Writing*	4
MAT 1111 - Intro to Tech Math I	5	MAT 1112 - Intro to Tech Math II	5
	16		16

Second Year

Second Year Fall Courses	Credits	Second Year Spring Courses	Credits
CIS 2025 - "C" Programming	4	ELT 1032 - Electrical Circuits II	4
ELT 1051 - Presentation Graphics I	1	ELT 1052 - Presentation Graphics II	1
ENG 1043 - Research Writing* *	4	MAT 1520 - Calculus for Engineering	4
MAT 1420 - Technical Mathematics	5	PHY 1022 - Energy Conservation and Equil	4
PHY 1021 - Introduction to Newtonian Mech	4	ELE XXXX - AH/SS Elective**	3
	18		17

Third Year

Third Year Fall Courses	Credits	Third Year Spring Courses	Credits
ELT 2050 - Microcomputer Techniques	4	ELT 2052 - Electronics II	4
ELT 2051 - Electronics I	4	ELT 2130 - Industrial Electronics	4
ELT 2060 - Electronic Applications	4	ELT 2720 - Electrical Project	3
PHY 1042 - Physics II	4	ENG 2080 - Technical Communication	3
	16	ELE XXXX - AH/SS Elective**	3
			17

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

Bachelor of Science in Electromechanical Engineering Technology

In today's global marketplace, a vast array of new products is emerging all the time. As varied as human inventiveness can devise, they have at least this in common: nearly all include mechanical and electrical components or rely on them in the manufacturing process.

Traditionally, the companies engaged in design and manufacturing form teams, usually made up of mechanical, electrical, and computer engineers and technicians. Each team member contributes specific expertise as needed at various stages of the project, but often with little insight into the requirements of the other disciplines. As a result, the process as a whole is less efficient than it might ideally be.

The Bachelor's degree Electromechanical Engineering Technology (ELM) program bridges this gap with an interdisciplinary approach to problem solving in a design and manufacturing environment where, increasingly, the challenges are both mechanical and electrical. Graduates are prepared to bring this broader understanding to the design, development, manufacturing, and technical support of emerging products, integrating and improving both the product and the process. In larger firms, this might be as a member of the design or manufacturing team, while smaller companies might assign this role to a single individual.

The ELM program is the second leg of a "two-plus-two" curriculum. The junior year offers courses in advanced math, science, and sensor technology, along with "crossover" courses that vary according to a student's prior educational background: students with electronics backgrounds focus on mechanical processes and principles and those with mechanical backgrounds concentrate on electronics. Students from other majors may be required to take courses other than specified. This junior crossover year can accommodate students with a variety of academic credits and competencies. Although the program is designed primarily for students who have completed an ABET-accredited associates degree in either Electrical Engineering Technology or Mechanical Engineering Technology, the ELM curriculum may also be appropriate for graduates of other engineering technology associates degree programs. Students entering ELM on completion of one of these programs or its equivalent at another institution may be assigned additional course requirements and a course sequence that may vary in some other respects from that outlined below, depending on the student's academic background.

The fourth year of the ELM program incorporates computer programming, data communications, power systems, and control systems, along with the capstone course, a two-semester ELM senior project. This project provides an opportunity to research and develop a significant project that integrates mechanical and electrical subsystems.

A graduate of Vermont Tech's Electromechanical Engineering Technology bachelor's degree program should be able to:

- Use standard software engineering tools in the mechanical, electrical, and software areas.
- Exhibit a basic knowledge in the mechanical, electrical, and software areas, and be able to apply this knowledge to adapt to emerging applications of mathematics, science, engineering and technology.
- Conduct, analyze and interpret experiments and apply experimental results to improve processes.
- Program in several languages including those related to microcontrollers and PLCs.
- Demonstrate a working knowledge of control theory and control systems design, both analog and digital, employing differential and integral calculus.
- Understand professional, ethical and social responsibilities.
- Research and evaluate new technologies (electrical, mechanical, or software), make recommendations about such technologies based on features, performance, and cost, and manage the implementation of those new technologies in a design or technical solution, with a commitment to quality, timeliness, and continuous improvement.
- Research, read, and understand relevant documents, recognizing that lifelong learning is a necessary part of the discipline.
- Communicate clearly (in writing and orally) with his or her peers as well as with personnel and authority.
- Apply engineering principles and creativity to design, develop, and troubleshoot electromechanical products.
- Function effectively on teams.
- Demonstrate a respect for diversity and a knowledge of contemporary professional, societal and global issues.

Students admitted to the Electromechanical Engineering Technology program must have completed a strong two-year associate's degree program in engineering technology at an accredited college or university, preferably including electrical, mechanical, or computer engineering technology courses.

This program is accredited by the Technology Accreditation Commission of ABET, Inc.

The minimum number of credits required in the junior and senior years is 66.

Third Year

Third Year Fall Courses	Credits
ELM 3015 - Sensors and Instrumentation	3
MAT 2532 - Calculus II	4
EET > ELM Track**	
MEC 1011 - Design Communication I	2
MEC 2010 - Fluid Mechanics and Fluid Systems	4
MEC 2020 - Applied Mechanics	3
MEC > ELM Track**	
CIS 2025 - "C" Programming	4
ELT 3060 - Electrical Circuit Analyses	3
	14-16

Third Year Spring Courses	Credits
ELT 2061 - ELT 2061 - Electromechanical Systems I	4
MAT 3170 - Applied Math for Engr	3
PHY 3120 - Introduction to Modern Physics	4
EET > ELM Track**	
MEC 3020 - Manufacturing Proc & Mach Design	3
MEC 3030 - Properties and Mech of Materials	3
MEC > ELM Track**	
ELT 2050 - Microcomputer Techniques	4
ELT 3030 - Solid State Electronics	4
	17-19

Fourth Year

Fourth Year Fall Courses	Credits
ELM 4015 - Electro-Mechanical Power Systems	4
ELM 4231 - Control Systems I	4
ELM 4701 - ELM Project I	2
ELE XXXX - Technical Elective***	3-4
ELE 3XXX - AH/SS Elective*	3
	16-17

Fourth Year Spring Courses	Credits
ELM 4232 - Control Systems II	4
ELM 4702 - ELM Project II	3
ELT 3040 - Electronic and Data Communications	4
ELE XXXX - AH/SS Elective*	3-4
ELE XXXX - Technical Elective***	3
	17-18

* General Education requirements for the BSELM program include a cumulative 24 credits, 9 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 the ELM Senior Project courses (ELM-4701 and ELM-4702), and three credits must be at a GE 3XX level. See *General Education Electives* for course offerings

** EET > ELM courses required of students with two-year electrical/electronics degrees; MEC > ELM courses required of students with two-year mechanical degrees. For students with other degrees, these course requirements may change

*** Technical Electives may be selected from several areas, including Computer Science, Mathematics, and Business, CHE-1031, MAT-2533, MAT-2021, MAT-2533, BUS-2210, BUS-2440 and (for EET>ELM track students only) MEC-2050 or MEC-2130.

Bachelor of Science in Equine Studies

The Equine Studies Bachelor's degree program is designed for students who are passionate about working with and learning about horses and who are interested in career opportunities in the equine industry. Students graduating with a degree in Equine Studies can explore a variety of opportunities, depending on their areas of interest. Careers in direct equine service facilities include barn manager, instructor, or assistant trainer. Job opportunities in businesses supporting the equine industry include equine consultant, sales, marketing, specialized service provider, and many others, limited only by graduates' imaginations.

The Core Equine Studies program is a combination of theory and hands-on experience working with horses and clients. The curriculum provides a foundation in a range of topics designed to increase student success in the workplace after graduation. Specific equine topics include equine anatomy and disorders, nutrition, genetics and reproduction, training (beginning and advanced), riding instruction techniques, therapeutic riding, farrier practices, and equitation. Courses in training and riding instruction methods provide both theory and hands-on experience working with horses and clients. The six semesters of weekly small group riding lessons increase students' abilities as horsewomen/men, with opportunities to experience dressage, hunt seat, stock seat, hunter-jumper, and driving. These and other equine-centered courses equip students to work in equine facilitie, or even to start up one of their own in the future.

Student learning outcomes for graduates of the Equine Studies program include:

- Students will 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. (Assessed in EQS 1021, 1022, 2020, 4010)
- Students will assess, critique, devise and implement plans for using both teaching and training techniques, including their application in hands-on lab settings. (Assessed in EQS1011, 1012, 2011, 2023, 3024, 3031, 3012, 4025, 4026, 4032)
- Students will recognize, examine, and be able to implement fundamental business theories and practices, including bookkeeping and accounting systems, legal guidelines, and marketing objectives and strategies. (Assessed in BUS2210, ACC1020, BUS2260, ACC 1010, BUS2410, EQS3010, BUS2230, and CIS 1151)
- Students will demonstrate their understanding of issues in the equine industry, eventually presenting their appraisal of and recommendations about a defined area of the industry. (Assessed in EQS1011, 1012, 4020, 4610)
- Students will review, examine, and draw conclusions about scientific theories that influence equine health, behavior, and care. (Assessed in BIO2320, VET1020, EQS2020, AGR1030, AGR2030, and EQS4010)

The minimum number of credits required for the degree is 120.

Four Year Curriculum

First Year

First Year Fall Courses	Credits	First Year Spring Courses	Credits
BIO 2320 - Zoology	4	CHE 1020 - Introduction to Chemistry	4
EQS 1010 - Introduction to Equine Studies I	2	EQS 1012 – Intro to Equine Studies II	2
EQS 1021 - Equitation I	2	EQS 1022 - Equitation II	2
ENG 10XX - English*	3-4	LAH 1050 - Introduction to Soils	4
MAT 1210 - Principles of Mathematics	3	VET 1020 - Animal Anatomy and Physiology	4
	15-16		16

Second Year

Second Year Fall Courses	Credits	Second Year Spring Courses	Credits
ACC 1020 - Surveys of Accounting	3	AGR 1030 - Animal Reproduction and Genetics	3
AGR 1050 - Livestock Production	3	AGR 2030 - Animal Nutrition	4
AGR 2040 - Forage Production	3	ENG 2080 - Technical Communication	3
BUS 2210 - Small Business Management	3	EQS 2023 - Equitation III	1
EQS 2011 - Equine Training I	3	ELE XXXX - AH/SS Elective**	3
EQS 2020 - Farrier Care & Lameness	2	ELE XXXX - AH/SS Elective**	3
Select One:			17
CIS 1050 - Intro to Spreadsheets	1		
CIS 1080 - Intro to Spreadsheets & Database	2		
	18-19		

Third Year

Third Year Fall Courses	Credits	Third Year Spring Courses	Credits
BUS 2260 - Principles of Financial Management	3	ACC 1010 - Computerized Accounting	3
EQS 3010 - Law for the Equine Professional	3	BUS 2410 - Human Resources Management	3
EQS 3024 - Equitation IV	1	ENG 1070 - Effective Speaking	3
EQS 3031 - Riding Instruction I	3	EQS 3012 - Equine Training II	3
MAT 1221 - Finite Mathematics	3	PSY 1010 - Introduction to Psychology	3
ELE XXXX - AH/SS Elective**	3		15
	16		

Fourth Year

Fourth Year Fall Courses	Credits	Fourth Year Spring Courses	Credits
CIS 1151 - Website Design	3	BUS 2230 - Principles of Marketing	3
EQS 4010 - Equine Health and Diseases	3	EQS 4026 - Equitation VI	1
EQS 4020 - Therapeutic Riding and Driving	2	EQS 4610 - Senior Project	3
EQS 4025 - Equitation V	1	EQS 4032 - Riding Instruction II	3
ELE XXXX AH/SS Elective**	3	XXX XXXX Elective	3
ELE 3XXX AH/SS Elective**	4		13
	16		

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms to complete all requirements.

**Students must complete a minimum of four Arts and Humanities (AH) or Social Science (SS) electives, including at least one from each discipline (Arts/Humanities and Social Sciences) and one at the 3XXX level.

Fire Science

The Associate's degree in Fire Science program at Vermont Technical College will prepare students to pursue careers in firefighting, fire protection services, and affiliated professions.

The curriculum includes coursework in behavior, emergency medicine, hazardous materials chemistry, incident strategy and tactics, administration of emergency services, fire prevention, and occupational safety and health.The program will also prepare students for certification in both firefighting (NFPA Firefighter I) and emergency medicine (EMT-B). As well as preparing students for the fire service, the program will provide strong leadership skills and instill graduates with a sense of community service.

Applicants should have a good foundation in math and science. Some typical career choices for graduates of the Fire Science program include:

- Firefighters
- Emergency medical technicians
- Fire, police, and ambulance dispatchers
- Fire suppression and alarm system installers and technicians
- Fire inspectors and investigator's (requires additional certification)

Note: Residential of Day program internships may be available for qualified students.

Student learning outcomes for an associate's degree in Fire Science include:

- Demonstrate technical skills needed for firefighting, critical thinking skills and reasoning, used in decision making for fire prevention, control, suppression, and extinguishment.
- Provide leadership in their community, fire department, and personal lives.
- Deliver professional presentations concerning fire safety in the public and private sector, produce clear, concise, and accurate written reports required by the profession.
- Understand scientific principles of fire and combustion, chemicals in hazardous materials, fire control, and extinguishments.
- 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 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.

The minimum number of credits required for the degree is 65.

Two Year Curriculum

First Year

First Year Fall Courses	Credits
CIS 1050 - Introduction to Spreadsheets	1
FSC 1000 - Freshman Orientation	1
FSC 1010 - Building Const./Fire Protection	3
FSC 1021 - Firefighting Services I	3
FSC 1030 - History & Impact of Fire in America	3
MAT 1210 - Principles of Mathematics	3
ENG 10XX - English*	3-4
	17-18

First Year Spring Courses	Credits
CHE 1020 - Introduction to Chemistry	4
FSC 1022 - Firefighting Services II	4
FSC 1210 - Fire Inspector I	3
FSC 1220 - Fire Service Leadership	3
ELE XXXX - AH/SS Elective**	3
As required:	
FSC 1122 - Service Learning/Independent Study	3
	17

Second Year

Second Year Fall Courses	Credits
AHS 2011 - Emergency Medical Services	6
ENG 2080 - Technical Communication	3
FSC 2020 - Hydraulics & Water Supply	3
FSC 2250 - Fire & Life Safety Educator	3
FSC 2810 - Internship Review (If Req.)	1
Electives (fall or spring by permission):	
FSC 2030 - Firefighting OSH	3
FSC 2820 - Residential Internship	3
	15-16

Second Year Spring Courses	Credits
FSC 2210 - Fire Administration	3
FSC 2220 - Firefighting Strategy & Tactics	3
FSC 2230 - Hazardous Materials Chem. & Ops.	4
FSC 2240 - Fire Protection Systems	3
ELE XXXX - AH/SS Elective**	3
	16

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

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

General Engineering Technology

The Associate's degree General Engineering Technology program is designed to support the workforce education needs of a variety of companies and industries seeking engineering technology degree opportunities. Administered by the College's Technology Extension Division, 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 workforce education needs being served. These industry-specific technical courses are developed by a curriculum development team comprised of Vermont Tech faculty and representatives from the sponsoring organizations.

The programs offer applications-oriented science and technology curricula delivered in nontraditional modes to accommodate student and industry needs. The goal is to offer students a flexible, interdisciplinary path to the acquisition of basic engineering concepts and specific job-related skills needed to excel in their current positions and prepare for career growth.

The minimum number of credits for the degree is 60.

Initial Courses

	Credits		Credits
ENG 10XX - English*	3-4	PHY 1041 - Physics I	4
ENG 2080 - Technical Communication	3	ELE XXXX - Social Science Elective**	3
MAT 1420 - Technical Mathematics	5	ELE XXXX - Arts & Humanities Elective**	3

Foundation Courses

Course sequences, depending on the industry emphasis, in preparation for technicalcoursework.

For Example,

Electronic-Aerospace	Credits	**Semiconductor**	Credits
ELT 1070 - Electronic Circuits	4	CHE 1031 - General Chemistry I	4
CIS 1030 - Introduction to Computer	3	CIS 2025 - "C" Programming	4
CIS 2025 - "C" Programming	4	ELT 1101 - General Electronics I	4
MAT 1520 - Calculus for Engineering	4	MAT 1520 - Calculus for Engineering	4
PHY 1042 - Physics II	4	PHY 1042 - Physics II	4

Technical Courses

Developed by the curriculum team: (Vermont Tech faculty and industry representatives).

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

Landscape Development & Ornamental Horticulture

Landscape Development and Ornamental Horticulture encompasses some of the most rapidly expanding areas of agriculture, not only in Vermont, but nationwide. Combined, the industries of landscape design, construction and maintenance, and nursery and greenhouse production total just over 80 billion dollars annually in retail and wholesale sales. A recent survey completed by Associated Landscape Contractors of America (ALCA) reports that between 2002 and 2003 there was a 30% increase in professional landscape services. These trends are predicted to continue in the foreseeable future.

Rapid growth in the horticultural industry means opportunities for graduates. Among the numerous career options are positions as landscape designers, contractors and maintenance personnel, greenhouse growers, plant propagators, perennial growers, nursery and garden center operators, salespeople for horticultural products, and technicians for state and federal regulatory agencies. Projected job growth is excellent, and there is a steady trend toward higher salaries.

The curriculum features courses such as Woody Ornamentals, Herbaceous Plant Materials, Entomology, Greenhouse Management, and Plant Pathology. In addition, we offer Landscape Graphics, Landscape Construction and Maintenance, AutoCAD, and two semesters of Landscape Design.

The program combines these horticulture and landscape classes with offerings in math, English, general education, and business. Graduates from this program are well-prepared to enter today's dynamic horticultural industry or to continue their education at a four-year college or university.

Student learning outcomes for an associate's degree in Landscape and Ornamental Horticulture include:

- Graphic Communication Skills: Demonstrate an appropriate mastery of freehand sketching, board drafting, presentation graphics, and CADD as effective tools for the formulation, exploration, communication, and presentation of design ideas.
- Communication Skills: Demonstrate a high level of ability to communicate technical and theoretical information effectively to clients, customers, and co-workers, both through the written and spoken word; demonstrate excellent listening and interpersonal skills; demonstrate the principles of professional conduct in all aspects of client/customer and employee/employer relations.
- Technical Skills: Demonstrate a high level of comprehension and the ability to analyze, solve, and apply the following: materials and methods of construction (the respective roles of specifications and drawings, the development of design intentions at the site and detail level and their resolution according to sound principles of construction, surveying techniques in preparation of a base map, construction of stone walls and patios, statics and mechanics of basic landscape construction materials, and estimating and bidding); site engineering issues such as grading and drainage; the creation and maintenance of healthy plant environments, both indoors and outdoors; legal issues and regulations as they apply to land use, landscape construction and/or installation; the installation, operation, advantages and disadvantages of greenhouse and nursery environmental systems; pesticide/herbicide application; and the utilization of appropriate computer applications
- Design Skills: Integrate fundamental design principles and practice, including site analysis, base plan measurements and preparation, and study of historic precedent in order to analyze, create, and apply these concepts to comprehensive and holistic landscape designs. Includes working drawings, presentation drawings, client/jury presentation, and write-up. This course of study will culminate in a proposed master plan project that will integrate all aspects of design study.
- Horticultural Skills: Demonstrate a high level of comprehension and the ability to analyze, solve, and apply the following: identification, production, and use of herbaceous and woody ornamental plants; propagation; diagnosis of insect and disease problems and the assimilation of integrated, environmentally safe and sustainable approaches for their control; soil properties; and landscape applications such as plant selection, planting and pruning practices, cultural requirements, cultural practices, and maintenance.
- Business Skills: Examine and analyze: practical aspects of organizing and managing a small business; marketing (product, place, pricing, and promotion); management skills. Demonstrate a working knowledge of generally accepted accounting practices as they apply to the horticultural/design industry.

The minimum number of credits required for the degree is 69.

First Year

First Year Fall Courses	Credits
CIS 1080 - Intro to Spreadseehts & Dbs Mgmt	2
ENG 10XX - English*	3-4
LAH 1000 - Freshman Orientation	1
LAH 1020 - Introduction to Horticulture	3
LAH 1021 - Landscape Graphics	3
LAH 1030 - Woody Ornamentals	3
MAT 1210 - Principles of Mathematics	3
	18-19

First Year Spring Courses	Credits
ACC 1020 - Survey of Accounting	3
BIO 1220 - Botany	4
LAH 1050 - Introduction to Soils	4
LAH 2011 - Introduction to Landscape Design	3
ELE XXXX - AH/SS Elective**	3
First Year Summer Course	
LAH 2810 - Landscape & Hort. Internship	0
	17

Second Year

Second Year Fall Courses	Credits
BIO 2040 - Entomology	3
BUS 2210 - Small Business Management	3
LAH 2030 - Herbaceous Plant Materials	3
LAH 2810- Internship Review	1
ELE XXXX - AH/SS Elective**	3
Select One:	
LAH 2010 - Landscape Construction and Mgmt	4
LAH 2020 - Plant Propagation	3
LAH 2012 - Advanced Landscape Design	3
	16-17

Second Year Spring Courses	Credits
BIO 2030 - Plant Pathology	3
BUS 2230 - Principles of Marketing	3
ENG 2080 - Technical Communication	3
LAH 2720 - Landscape Design/Orn. Hort. Seminar	2
ELE XXXX - Technical Elective***	3
Select:	
LAH 1031 - CAD for Landscape Design;	1
LAH 2012 - Adv. Landscape	3
LAH 1040 - Greenhouse Management	4
	18

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

***The department has approved several electives including: ARC-1220, BUS-2020, BUS-2440, CHE-1020, CHE-1031, and MAT-2021.

Mechanical Engineering Technology

Almost every device in use today has its origins in the scientific and mathematical principles of Mechanical Engineering Technology. Graduates of this Associate's degree program are involved in the design, testing, manufacture, installation, maintenance, distribution, and documentation of mechanical systems and devices.

Mechanical engineering technicians provide an indispensable link between the professional engineer involved with research, design, and development and the skilled craftsperson who manufactures and assembles the high technology devices that enable people, companies, and nations to function every day. Few fields of study offer a wider range of opportunities for graduates. Students learn how to communicate at all levels in a professional setting; to produce sketches and drawings used in the manufacture of machines; to analyze forces imposed upon mechanical objects; to determine appropriate sizes and materials for mechanical parts; to test finished assemblies for proper design; to calculate the energy requirements of machines and analyze the fluid systems that control them; to deal with the problem of heat and energy flow in mechanical systems; and to control mechanisms by the use of electrical power and electronics.

The computer is used as a teaching, learning, and production tool in such areas as computer-aided design and drafting (CAD), computer-aided manufacturing (CAM), computer-numerical-controlled machining (CNC), problem analysis with spreadsheets, and technical communication. Laboratories give the student hands-on training in practical working conditions.

Graduates are well prepared for admission to Vermont Tech's Bachelor of Science program in Electromechanical Engineering Technology.

Student learning outcomes for an associate's degree in Mechanical Engineering Technology include:

- Mastery of the knowledge, techniques, skills and modern tools of mechanical engineering technology.
- Ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology.
- Ability to conduct, analyze and interpret experiments and apply experimental results to improve processes.
- Ability to apply creativity in the design of systems, components or processes appropriate to program objectives.
- Ability to function effectively on teams.
- Ability to identify, analyze and solve technical problems.
- Ability to communicate effectively.
- Recognize the need for, and an ability to engage in lifelong learning.
- Ability to understand professional, ethical and social responsibilities.
- Respect for diversity and a knowledge of contemporary professional, societal and global issues.
- Commitment to quality, timeliness, and continuous improvement.

The minimum number of credits required for a degree is 69.

Two Year Curriculum
First Year

First Year Fall Courses	Credits
ENG 10XX - English*	3-4
MAT 1420 - Technical Mathematics	5
MEC 1000 - Freshman Orientation	1
MEC 1011 - Design Communication I	2
MEC 1020 - Manufacturing Processes	2
MEC 1050 - Comp. Appls for Mechanical Eng	1
PHY 1041 - Physics I***	4
	18-19

First Year Spring Courses	Credits
ENG 2080 - Technical Communication	3
MAT 1520 - Calculus for Engineering	4
MEC 1012 - Design Communication II	2
MEC 1040 - Intro to Materials Science + Engr	3
PHY 1042 - Physics II ***	4
	16

Second Year

Second Year Fall Courses	Credits
ELT 2071 - Basic Electricity	3
MEC 2010 - Fluid Mechanics and Fluid Systems	4
MEC 2020 - Applied Mechanics	3
MEC 2040 - Computer-Aided Technology	2
MEC 2060 - Mechanisms	3
ELE XXXX - AH/SS Elective**	3
	18

Second Year Spring Courses	Credits
ELT 2072 - Electronics	4
MEC 2030 - Strength of Materials	4
MEC 2050 - Thermodynamics and Heat Transfer	4
MEC 2720 - Mechanical Projects	3
ELE XXXX - AH/SS Elective**	3
	18

Three Year Curriculum

First Year

First Year Fall Courses	Credits	First Year Spring Courses	Credits
ENG 1041 - Basic College Writing*	4	ENG 1042 - Expository Writing*	4
MAT 1111 - Intro to Tech Math I	5	MAT 1112 - Intro to Tech Math I I	5
MEC 1000 - Freshman Orientation	1	MEC 1012 - Design Communication II	2
MEC 1011 - Design Communication I	2	PHY 1021 - Introduction to Newtonian Mechs	4
MEC 1050 - Comp. Appls. for Mech Eng	1		15
	13		

Second Year

Second Year Fall Courses	Credits	Second Year Spring Courses	Credits
ENG 1043 - Research Writing*	4	ENG 2080 - Technical Communication	3
MAT 1420 - Technical Mathematics	5	MAT 1520 - Calculus for Engineering	4
MEC 1020 - Manufacturing Processes	2	MEC 1040 - Intro to Science + Engr.	3
PHY 1022 - Energy Conservation and Equil	4	PHY 1042 - Physics II	4
ELE XXXX - AH/SS Elective**	3		14
	18		

Third Year

Third Year Fall Courses	Credits	Third Year Spring Courses	Credits
ELT 2071 - Basic Electricity	3	ELT 2072 - Electronics	4
MEC 2010 - Fluid Mechanics and Fluid Systems	4	MEC 2030 - Strength of Materials	4
MEC 2020 - Applied Mechanics	3	MEC 2050 - Thermodynamics and Heat Transfer	4
MEC 2040 - Computer-Aided Technology	2	MEC 2720 - Mechanical Projects	3
MEC 2060 - Mechanisms	3	ELE XXXX - AH/SS Elective**	3
	15		18

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

***Students that desire PHY-2041/2042 instead of PHY-1041/1042 must make specific arrangements with the department chair.

Nursing

Vermont Technical College offers a Practical Nursing (PN) certificate program and an Associate's Degree in Nursing (ADN) program. These programs are offered at 4 locations across the state: Putnam/Bennington Campus; Thompson/Brattleboro Campus; Fanny Allen/Williston Campus; and Randolph Center Campus. The PN program is also offered in a distance learning format in several locations around Vermont in collaboration with the Community College of Vermont and health care providers in various locales.

The nursing curriculum is built upon the foundational concepts of Dorothea Orem and eight outcomes that are prominent in each nursing course: Nursing Process; Scientific Principles; Communication; Ethical/Legal Principles; Nursing Role; Provider of Care; Teaching/Learning; and Accountability/Self Growth. As students move into increasingly complex care issues, theories are explored in more detail, with the goal of appropriate application to each clinical environment.

The PN program extends over two semesters and one summer session (ten-and-one-half months). Students learn practical nursing skills through independent study, lectures, demonstrations, and practice in a nursing arts lab. Under instructor supervision, students also provide patient care in a variety of health care settings either on site or in neighboring health care agencies.

Credits in both levels of the program are assigned as follows: 1 lecture hour equals 1 credit; every 3 clinical/lab hours equals 1 credit.

Upon completion of the program, PN graduates are eligible to apply to take the National Council Licensure Examination for Practical Nurses. The ADN program graduates are awarded an Associate of Science Degree in Nursing and are eligible to apply to take the National Council Licensure Examination for Registered Nurses. From graduates of both programs, the Vermont State Board of Nursing application requests information regarding past history of substance abuse, prior felony convictions, and failure to pay child support and/or taxes. Other states may ask similar questions. It is the Board’s responsibility to determine eligibility to sit for the licensure examination and to issue the license to practice.

After licensure, PN graduates typically find employment in hospitals, nursing homes, and other health care agencies and work under the supervision of a Registered Nurse, physician, or dentist. With experience, they can assume increasing responsibilities in the nursing field.

The ADN program articulates with the PN program and requires two further semesters of full-time study. The curriculum includes microbiology, technical communication, mathematics, the humanities, trends in nursing, advanced pharmacology and further skill development in both lecture and lab settings. The clinical component also continues into the second year.

The ADN program is selective and rigorous and there is no assurance of admission from the PN program. Additionally, the twelve clinical credits earned in the PN program do not transfer to the ADN program.

Graduates are prepared to work in a health care setting under the supervision of more experienced practitioners. With experience, they can assume increasing responsibilities, and may be responsible for supervising others.

Each graduate of the practical nursing program, having proceeded in his/her course of study from an understanding of the concepts of normal to abnormal, simple to complex, and utilizing the program's conceptual framework as a basis, will provide individualized nursing care as follows:

- Nursing Process - With guidance, employs the nursing process for selected clients to maintain, achieve, or regain their optimal level of self-care.
- Scientific Principles - Integrates knowledge of scientific, behavioral, and cultural principles in the care of selected clients in a variety of settings.
- Communication - Establishes collaborative relationships with members of the nursing and health team. Maintain confidentiality in clinical setting.
- Ethical/Legal - Supports the use of legal and ethical standards at the practical nurse level.
- Nursing Role - Assumes the role of member of the interdisciplinary team as a graduate practical nurse.
- Provider of Care - Provides care which maximizes the self-care potential of individuals across the lifespan in a variety of health care settings.
- Teaching/Learning - Contributes to the development of a teaching plan for the client with an alteration in basic self-care needs.
- Accountability/Self-Growth - Assumes responsibility for self-directed, goal-oriented growth.

In addition to the general requirements of all Vermont Tech associate degree programs, as outlined in the Vermont Tech catalogue, the following program outcomes are expected for the Associate in Science degree with a major in Nursing.

- Nursing Process - Evaluates the plan of care, to assist clients with complex health care needs to maintain, achieve or regain their optimal level of self-care.
- Scientific Principles - Selects appropriate scientific, behavioral, and cultural principles for the care of clients with complex needs in diverse settings.
- Communication - Evaluates interpersonal skills in professional practice.
- Ethical/Legal - Incorporates into nursing practice, behaviors consistent with legal/ethical standards of professional practice.
- Nursing Role - Assumes the role of manager of care within the interdisciplinary team as a graduate professional nurse.
- Provider of Care - Competently delivers nursing care which maximizes the self-care potential of individuals with complex health needs in diverse settings.

- Teaching/Learning - Evaluates a comprehensive teaching plan to meet the physical and emotional needs of individuals and groups with common and complex health care needs.
- Accountability Self-Growth - Is accountable for growth as individuals, as members of society, and as professional nurses.

The minimum number of credits required for the certificate 47 and for the associate's degree is 35.

Certificate in Practical Nursing

First Year

Fall Courses	Credits
BIO 1030 - Nutrition	3
BIO 2011 - Human Anatomy & Physiology I	4
NUR 0111 - Principles & Pract of Nursing I Lab	4
NUR 1020 - The Nurse-Client Relationship	3
NUR 1111 - Principles & Pract of Nursing I	5
	19

Winter Courses	Credits
BIO 2012 - Human Anatomy & Physiology II	4
NUR 0121 - Principles & Pract of Nursing II Lab	4
NUR 1010 - Pharmacology for Nursing	3
NUR 1121 - Principles and Pract of Nursing II	5
PSY 1050 - Human Growth & Development	3
	19

Spring 2 Courses	Credits
NUR 0131 - Principles & Pract of Nursing III Lab	4
NUR 1131 - Principles & Practices of Nursing III	5
	9

Associate's Degree in Nursing

Second Year

Fall Courses	Credits
BIO 2120 - Elements of Microbiology	4
ENG 10XX - English*	3-4
NUR 2010 - LPN to RN Trans /Trends in Nursing	2
NUR 2030 - Principles & Pract of Nursing IV	3
NUR 2040 - Principles & Pract of Nursing IV Lab	2
ELE XXXX - Art/Humanities Elective	3
	17-18

Spring Courses	Credits
ENG 2080 - Technical Communication	3
MAT 1040 - Mathematics for Allied Health	2
NUR 2011 - Advanced Pharmacology	1
NUR 2130 - Principles & Pract of Nursing V	5
NUR 2140 - Principles & Pract of Nursing V Lab	4
PSY 1010 - Introduction to Psychology (SS)	3
	18

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements). This may require summer courses or additional terms.

All BIO and NUR courses and PSY-1050 must be completed with a grade of "C" or better to continue in the program.

The certificate program includes 495 hours of theory and 630 hours of clinical/lab; the degree program includes 420 hours of theory and 315 hours of clinical/lab.

Respiratory Therapy

Respiratory Therapy is an allied health profession in which the provider cares for patients with breathing disorders. Respiratory Therapists assume primary responsibility for all respiratory care treatments. They treat patients of all ages, from premature infants to the elderly. Health conditions that require respiratory care include asthma, emphysema, chronic obstructive lung disease, pneumonia, cystic fibrosis, infant respiratory distress syndrome, and conditions brought on by shock, trauma, or postoperative complications.

Respiratory therapists are employed in hospital specialty areas such as labor and delivery, neonatal and pediatric intensive care units, pulmonary function laboratories, sleep laboratories, adult intensive care units, extra corporeal membrane oxygenation, and ECG testing. In addition to hospitals, the respiratory therapist delivers respiratory care in the home, in rehabilitation agencies, in nursing homes, in out-patient clinics, and in physicians' offices. Starting yearly salaries often begin between $35,000 – $40,000.

The U.S. Department of Labor states that demand for respiratory therapists is growing faster than the average for all occupations. Job opportunities are best for therapists with cardiopulmonary care skills and for those with experience working with newborns and infants.

The respiratory therapy program is offered in a distance learning format in several locations around Vermont in collaboration with the Community College of Vermont and health care providers at various locales. Under instructor supervision, students provide patient care in a variety of health care settings in Vermont and New York. All students will be required to travel to hospital sites at a distance from their local site.

Students graduate from the program with an Associate of Science degree in Respiratory Therapy. Graduates are eligible to apply to take the entry-level certified respiratory therapist and advanced-level registered respiratory therapist credentialing examinations offered by the National Board for Respiratory Care. The program is accredited by the Commission on Accreditation of Allied Health Programs, in collaboration with the Committee on Accreditation for Respiratory Care Programs.

Student learning outcomes for a degree in Respiratory Therapy include:

- The primary mission of the respiratory therapy program is to provide a high-quality education that is relevant and professionally sound to meet the respiratory care needs in the health care community. Inherent in this mission is the program's goal to prepare students who can demonstrate the attitudes, skills, and knowledge relevant to their role as registered respiratory therapists.
- Throughout the study of respiratory care, an emphasis is placed on the expanding role of the respiratory therapist as an essential member of the health care team. Each new topic is presented in a manner that requires students to decide whether care is needed, administer the care competently, and determine whether the care provided was in fact effective.
- Clinical experience is regarded as the highest importance to the success of program. Extensive practice at a premier academic medical center helps students develop critical thinking skills, use strong communication skills and demonstrate the leadership required of today's respiratory therapists.

The minimum number of credits required for a degree is 64.

First Year

First Year Fall Courses	Credits
BIO 2011 - Human Anatomy & Physiology I	4
ENG 10XX - English*	3-4
RSP 1000 - Introduction to Respiratory Practices	1
RSP 1011 - Respiratory Care I	4
ELE XXXX - Arts/Humanities Elective	3
	15-16

First Year Spring Courses	Credits
BIO 2012 - Human Anatomy & Physiology II	4
MAT 1040 - Mathematics for Allied Health	2
RSP 1012 - Respiratory Care II	4
RSP 1210 - Respiratory Anatomy and Physiology	3
RSP 1801 - Respiratory Clinical Field Experience	2
	15

First Year Summer

RSP 2810 - Respiratory Internship	0

Second Year

Second Year Fall Courses	Credits
BIO 2120 - Elements of Microbiology	4
RSP 2011 - Cardiopulmonary Disease I	5
RSP 2013 - Respiratory Care III	3
RSP 2802 - Respiratory Clinical Field Exp II	4
	16

Second Year Spring Courses	Credits
ENG 2080 - Technical Communication	3
PSY 1010 - Introduction to Psychology (SS)	3
RSP 2012 - Cardiopulmonary Disease II	5
RSP 2803 - Respiratory Clinical Experience III	6
RSP 2810 – Internship Review	1
	18

*Students must place into ENG 1060 or 1061 in order to be accepted into the program.

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

Bachelor of Science in Sustainable Design and Technology

The Bachelor's degree in Sustainable Design and Technology (SDT) is a cross-disciplinary program grounded in the belief that students who understand the fundamentals of technology, business, and the regulations that govern both can be effective agents for sustainable change. The program creates graduates committed to using technology to grow a sustainable economy, act as stewards of our environment and resources, and educate others about the benefits of a more sustainable college and community.

The +2 SDT curriculum emphasizes application of technology in service of sustainable goals and an understanding of the fundamentals of business, regulation, and permitting. The curriculum is organized into four areas: Sustainability Core; Green Technical Track; Business Electives, and General Education (AH/SS). Students select one of three technical tracks described below: Green Buildings; Green Sites; or Renewable Energy.

The **Green Buildings** track focuses on conserving energy in new and renovated residential and commercial buildings without sacrificing function and design. Education includes all aspects of sustainable design, from "green" materials and construction to efficient selection and operation of complex mechanical systems. Students learn to evaluate building designs on the basis of natural energy efficiency standards, and to integrate renewable energy systems into buildings. Students enter this track from the Architectural & Building Engineering Technology (ABT) and Construction Practice & Management (CPM) programs.

The **Green Sites** track focuses upon the art of responsible, inspired design and engineering for residential, agricultural, and commercial sites in order to enhance the quality, sustainability, and integrity of our built environment. Within this track, special emphasis is placed upon the design of the landscape, including structures, plantings, roads and water systems, in order to minimize environmental impact, meet and create legislative standards, and promote an ethic of stewardship of the land and our natural resources. Students enter this track from the Civil & Environmental Engineering Technology (CET), Dairy Farm Management Technology (DFM), and Landscape Development & Ornamental Horticulture (LAH) programs.

The **Renewable Energy** track focuses on renewable energy technology and systems for efficient energy conversion and use. The technical curriculum includes courses in mechanical and electrical engineering technology that cover topics such as materials and structures, circuits and electronics, sensors and instrumentation, and electromechanical power systems. Energy systems courses address the use of solar, wind, alternative fuels, and other renewable technologies for electricity, heating, and other power uses. Students enter this track from Electrical Engineering Technology (EET) or Mechanical Engineering Technology (MEC) programs.

Graduates will be well prepared to work in technical fields related to their associate's degree, and to work with newer sustainable technologies as applications engineers, project managers or technical staff. SDT graduates will also be prepared to pursue post-baccalaureate education in business, environmental law studies, or related technical fields. The graduates will provide businesses with highly valued employees with a blend of technical, project management, and communication skills. Students may take SDT courses prior to completion of their associate's degree if their schedule and prerequisites permit.

Program Outcomes:

- Graduates will have a robust understanding of the environmental, climate and energy challenges facing our state and society and economic opportunities provided by meeting these challenges.
- Graduates will apply critical and analytical thinking skills to determining where and when sustainable designs, technologies and practices are appropriate and effective.
- Graduates will be effective communicators and advocates for sustainability and environmental stewardship.

Learning Outcomes:

- Development and practice communication skills and a basic understanding of how businesses work.
- Demonstrate an understanding of the economic and societal costs and benefits of a more sustainable approach to environmental, technology, economic and societal issues.
- Practice and apply a high level of competence and technical mastery in their chosen "green" technical track.

The minimum number of credits for the + 2 portion of the bachelor's degree (junior and senior years) is 64.

Green Buildings Track Third and Fourth Year Curriculum

Third Year

Third Year Fall Courses	Credits
Core Classes:	
SDT 3000 - Sustainable Design Seminar	1
SDT 3010 - Conflict and Communication	3
SDT 3110 - Codes & Loads & LEED	3
ABT	
BIO 1020 - Intro Environmental Science	4
BUS XXXX - Business Elective	3
ELE 3XXXX - AH/SS Elective**	3
	17
***CPM**	
ARC 2051 – Architectural Design I	3
MAT 1520 – Calculus for Engineers	4
PHY 1043 – Physics II for Arch. Programs	3
	17

Third Year Spring Courses	Credits
Core Classes:	
SDT 3111 - Energy Systems & Sustainability	3
SDT 3121 - SDT Design Studio I	3
ABT	
ARC 3010 - Design Systems Integration	3
ARC 3050 – Fund. Fluids & Thermodynamics	4
BUS XXXX – Business Elective	3
	16
CPM	
ARC 2052 – Architectural Design II	3
ARC 3010 – Design Systems Integration	3
ARC 3050 – Fund. Fluids & Thermodynamics	4
	16

Third Year Summer	
SDT 4810 - Summer Internship	0

Fourth Year

Fourth Year Fall Courses	Credits
Core Classes:	
SDT 4110 – Controls & Commissioning	3
SDT 4112 - Green Sites Survey	3
SDT 4810 - Internship Review	1
ABT	
ARC 4020 - Architectural Engineering Mgmt	3
ARC 4030 – HVAC Systems	4
CHE 1031 – General Chemistry I	4
	18
***CPM**	
BIO 1020 - Intro Environmental Science	4
ARC 4030 – HVAC Systems	4
CHE 1031 – General Chemistry I	4
	19

Fourth Year Spring Courses	Credits
Core Classes:	
SDT 4113 - Green Building Tech Survey	3
SDT 4122 - Sustainable Design Studio II	3
ABT	
ARC 3040 – Electrical/Lighting Systems	3
BUS XXXX - Business Elective	3
MAT 2021 – Statistics	3
ELE XXXX - AH/SS Elective**	3
	18
CPM	
ARC 3040 – Electrical/Lighting Systems	3
MAT 2021 – Statistics	3
ELE XXXX - AH/SS Elective**	3
ELE 3XXX – AH/SS Elective**	3
	18

ABT = Architectural & Building Engineering Technology AAS program

CPM = Construction Practice & Management AAS program

* CPM students must complete MAT-1420 Technical Mathematics I before entering the SDT program.

**Students must complete a minimum of two Arts and Humanities (AH) or Social Science (SS) electives, including at least one at the 3XXX level.

Green Sites Track Third and Fourth Year Curriculum

Third Year

Third Year Fall Courses	Credits
Core Classes:	
BIO 1020 - Intro Environmental Science	4
SDT 3000 - Sustainable Design Seminar	1
SDT 3010 - Conflict and Communication	3
SDT 3130 – Environmental Soils	3
CET	
AGR 2720 - Issues and Trends in Agriculture	2
BUS XXXX - Business Elective	3
LAH 1020 - Introduction to Horticulture	3
	19
DFM	
CET 1031 - Computer Applications I	3
LAH 1020 – Introduction to Horticulture	3
	17
LAH	
AGR 2720 – Issues & Trends in Agriculture	2
CET 1031 - Computer Applications I	3
	16

Third Year Spring Courses	Credits
Core Classes:	
SDT 3020 - Environmental Permitting	2
SDT 3111 - Energy Systems & Sustainability	3
SDT 3121 - SDT Design Studio I	3
CET	
BUS XXXX – Business Elective	3
BUS XXXX – Business Elective	3
ELE 3XXX – AH/SS Elective**	3
	17
DFM	
CET 1032 - Computer Applications II	3
PHY 1030 – General Physics I	4
	15
LAH	
BUS XXXX – Business Elective	3
CET 1032 – Computer Applications II	3
PHY 1030 – General Physics I	4
	1
Third Year Summer	
SDT 4810 - Summer Internship	0

Fourth Year

Fourth Year Fall Courses	Credits
Core Classes:	
SDT 4010 - Water and Wastewater	3
SDT 4112 - Green Sites Survey	3
SDT 4810 - Internship Review	1
CET	
ARC 4020 - Architectural Engineering Mgmt	3
BUS XXXX – Business Elective	3
LAH 1021 - Landscape Graphics	3
	16
DFM Graduates:	
BUS XXXX - Business Elective	3
ELE 3XXX – AH/SS Elective	3
LAH 1021 - Landscape Graphics	3
	16
LAH Graduates:	
AGR 2040 - Forage Production	3
CHE 1020 – Introduction to Chemistry	4
ELE 3XXX – AH/SS Elective	3
	17

Fourth Year Spring Courses	Credits
Core Classes:	
SDT 4020 - Ground Water & Storm Water	2
SDT 4113 - Green Building Tech Survey	3
SDT 4122 - Sustainable Design Studio II	3
CET	
MAT 2021 – Statistics	3
ELE XXXX – AH/SS Elective	3
ELE XXXX - AH/SS Elective**	3
	17
DFM Graduates:	
MAT 2021 – Statistics	3
ELE XXXX – AH/SS Elective	3
ELE XXXX - AH/SS Elective**	3
	17
LAH Graduates:	
BUS XXXX – Business Elective	3
ELE XXXX - AH/SS Elective**	3
MAT 2021 – Statistics	3
	17

CET = Civil & Environmental Engineering Technology AE program

DFM = Dairy Farm Management Technology AAS program

LAH = Landscape Development & Ornamental Horticulture AAS program

**Students must complete a minimum of two Arts and Humanities (AH) or Social Science (SS) electives, including one at the 3XXX level.

Renewable Energy Track Third and Fourth Year Curriculum

Third Year

Third Year Fall Courses	Credits
Core Classes:	
BIO 1020 - Intro Environmental Science	4
SDT 3000 - Sustainable Design & Tech Seminar	1
SDT 3010 - Conflict & Communication	3
EET	
BUS XXXX – Business Elective	3
ELE 3XXX – AH/SS Elective	3
ELM 3015 – Sensors & Instruments	3
	17
MEC	
BUS XXXX – Business Elective	3
ELE 3XXX – AH/SS Elective	3
ELM 3015 – Sensors & Instruments	3
	17

Third Year Spring Courses	Credits
Core Classes:	
SDT 3111 - Energy Systems & Sustainability	3
SDT 3121 - SDT Design Studio I	3
EET	
ARC 3050 – Fund. Fluids & Thermodynamics	4
BUS XXXX – Business Elective	3
CHE 1031 – General Chemistry	4
	17
MEC	
BUS XXXX – Business Elective	3
BUS XXXX – Business Elective	3
CHE 1031 – General Chemistry	4
	16

Third Year Summer	
SDT 4810 - Summer Internship	0

Fourth Year

Fourth Year Fall Courses	Credits
Core Classes:	
SDT 4112 - Green Sites Survey	3
SDT 4030 – Renewable Energy Systems	3
SDT 4810 - Internship Review	1
EET	
ELE XXXX – AH/SS Elective	3
ELM 4015 - Electro-Mechanical Power Sys	4
Select One:	
ARC 2031 - Environmental Systems	3
ATT 2010 - Engine Performance	4
ATT 2060 – Advanced Technology Vehicle	4
MEC 1020 - Manufacturing Processing	2
	16-18
MEC	
ELM 4015 - Electro-Mechanical Power Sys	4
ELE XXXX – Elective	3
AND Select One:	
ARC 2031 - Environmental Systems	3
ATT 2010 - Engine Performance	4
ATT 2060 – Advanced Technology Vehicle	4
	17-18

Fourth Year Spring Courses	Credits
Core Classes:	
SDT 4113 - Green Building Tech Survey	3
SDT 4122 – Sustainable Design Studio II	3
EET	
BUS XXXX – Business Elective	3
BUS XXXX – Business Elective	3
MAT 2021 – Statistics	3
	15
MEC	
BUS XXXX - Business Elective	3
ELE XXXX – Elective	3
MAT 2021 – Statistics	3
	15

EET = Electrical Engineering Technology AE program

MEC = Mechanical Engineering Technology AE program

**Students must complete a minimum of two Arts and Humanities (AH) or Social Science (SS) electives, including at least one at the 3XXX level.

Technical Education Program

The Vermont Mentor Program is an alternative process of teacher certification for people with professional experience in trades and industry and technical professional areas who need to complete the technical education courses required to teach in Vermont's Career and Technical Education Centers. Once employed as a Trades and Industry instructor or technical professional in a technical center, the student then takes: Methods and Materials in Technical Education I & II; Current Issues and Trends in Technical Education; Special Needs Students in Technical Education; Reading in Secondary Content Areas; and Adolescent Development.

Certificate in Technical Education Instruction

Students enrolled in the Vermont Mentor Program can earn a certificate in Technical Education Instruction at Vermont Technical College.

The certificate will be awarded upon application and successful completion of the following 24 credits:

Courses	Credits
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	3
PSY 2310 - Adolescent Development	3
TEC 1110 - Issues and Trends in Technical Education	3
TEC 1120 - Reading in Technical Education Content Areas	3
TEC 1130 - Vocational Instruction for Students with Special Needs	3
	24

NOTE: Enrollment in the Technical Education Mentor Program or permission of the instructor is the prerequisite for all of the above courses.

Telecommunications Technology

The Associate of Applied Science degree in Telecommunications Technology program is part of a cooperative effort among Vermont Tech, the telecommunications industry, and other New England colleges. Presently, enrollment in the program is open only to employees of sponsoring organizations.

The program provides a thorough examination of state-of-the-art telecommunications technology, as well as a solid foundation in mathematics, electronics, physics, and general education subjects. The instructional approach is applications-oriented with a science and technology emphasis. Graduates of the program are proficient in the broad range of technical competencies required of highly-skilled telecommunications technicians.

The general education foundation in mathematics, computer applications, social science, and written and oral communications provides essential support for the specialized coursework in electronics and technical subjects specific to the telecommunications industry.

The minimum number of credits for the degree is 61.

Eight Semesters

FALL		**SPRING**	
First Semester	Credits	**Second Semester**	Credits
CIS 1030 - Introduction to Computer	3	ELT 1110 - Digital I	4
MAT 1421 - Tech Math I	4	ENG 10XX - English*	3-4
TCT 1000 - Telecommunications Orientation	1		
Third Semester	Credits	**Fourth Semester**	Credits
ELT 2030 - Digital II	4	ELT 1070 - Electrical Circuits	4
MAT 1422 - Tech Math II	4	PHY 1041 - Physics I	4
Fifth Semester	Credits	**Sixth Semester**	Credits
ELT 1101 - IGeneral Electronics	4	TCT 1002 - Telecom II-Intro to Voice and Data	4
TCT 1001 - Telecommunications 1	4	ELT 1102 - General Electronics II	4
Seventh Semester	Credits	**Eighth Semester**	Credits
ENG 2080 - Technical Communication	3	SSC XXXX - Social Science Elective	3
TCT 2003 - Telecomm II-LANS and WANS	4	TCT 2004 - Telecom IV-Advanced Topics	4

TCT-0001 Asset Test Preparation (0 credits) may be a prerequisite to the first semester for some students

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements page 157). This may require summer courses or additional terms.

Undeclared Associate Program

Students who have not decided on a specific program of study and who have met the acceptance requirements of Vermont Technical College may be admitted to the college in the associate degree undeclared program. Enrollment in this program may begin in either the fall or spring semester.

Students who might be interested in this program may be uncertain about their major, want to begin college in mid-year, would like a lighter credit load each semester, would like a slower pace, or have other plans for the fall semester.

Important information about the undeclared program:

- Enrollment in this program will increase the time necessary to complete a degree.
- An undeclared program will either be in engineering or non-engineering and may be determined by the results of the Vermont Tech math placement.
- Students who enroll in the undeclared program will be expected to select a degree program as soon as possible. When ready to declare a degree program, students will apply for a change of program during the pre-registration cycle for the following term.
- Acceptance into the degree program is contingent upon space availability and departmental approval.
- Once in a degree program, the students are expected to meet all the requirements of that program for graduation.
- Faculty advisors from the General Education department will normally advise undeclared students.
- Students will not have scheduling priority over matriculated students.
- **A student will not be eligible to graduate as undeclared.**

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

Sample Semesters

Fall Entry	Credits
XXX 1000 - Freshman Orientation (if available)	0-1
CIS XXXX - Computer Operations	0-2
ENG XXXX - English (based on placement)	3-4
MAT XXXX - Mathematics (based on plcmnt)	2-5
SCI XXXX - Science (as desired)	3-4
ELE XXXX - Elective (as desired)	0-3
XXX XXXX - Major Coursework	3-8
	12-18

Spring Entry	Credits
CIS XXXX - Computer Operations	0-2
ENG XXXX - English (based on placement)	3-4
MAT XXXX - Mathematics (based on plcmnt)	2-5
SCI XXXX - Science (as desired)	3-4
ELE XXXX - Elective (as desired)	0-3
XXX XXXX - Major Coursework	3-8
	15-18

Veterinary Technology

Graduates of the Associate's degree in Veterinary Technology (VET) program are very much in demand and this demand is expected to continue to grow. Technicians form an important link between animals and the veterinarian. Under the supervision of a veterinarian, they work in the laboratory, pharmacy, radiology, and surgical areas, and also perform patient reception and client education duties.

Employment opportunities include veterinary practices, universities, pharmaceutical/biological research companies, diagnostic labs, feed companies, zoos, and government veterinary facilities.

A full-time veterinarian instructs students in the core program with support from other faculty and a full-time veterinary technician.

Specific courses are taught on a practical level with the intent of making the student a competent assistant.

Hands-on experience in the laboratories is stressed. Favorable staff/student ratios allow students excellent opportunities to gain experience in a variety of procedures.

The college farm gives students excellent exposure to dairy cattle and horses, and the newly-remodeled facility on the main campus provides a modern setting for experience with dogs, cats, rodents, reptiles, and birds. Basic restraint and handling is also taught on sheep, chickens, and rabbits.

All students are required to adhere to the policies and procedures set forth in the Vermont Tech Veterinary Technology Student Handbook. These policies include 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.

Student learning outcomes for an associate's degree in Veterinary Technology include:

- Office and Hospital Procedures: Demonstrate the ability to participate in facility management, utilize appropriate medical terminology, and communicate in a professional manner. Follow and uphold the applicable laws and the veterinary technology ethical code.
- Pharmacy and Pharmacology: Demonstrate safe and effective administration and dispensing of medications and explain prescribed drugs to clients.
- Nursing: Demonstrate and perform patient assessment, husbandry, nutrition, therapeutic and dentistry techniques to various animal species.
- Anesthesia: Safely and effectively manage patients, anesthetic and monitoring equipment in all phases of anesthetic procedures.
- Surgical Nursing: Understand and integrate all aspects of patient and equipment management for common surgical procedures in a variety of animal species.

- Laboratory Procedures: Demonstrate the ability to handle, store and properly analyze laboratory specimens.
- Imaging: Demonstrate the ability to safely and effectively produce diagnostic radiographic and non-radiographic images.
- Demonstrate the ability to safely and effectively handle and provide care for common laboratory, avian and exotic animals.
- Students demonstrate competence by:

o Completing AVMA required psychomotor and didactic skills in each category in accordance with criteria of evaluation established by program faculty.

o Taking quizzes, hourly and final examinations, and other written assessments as determined by the instructor.

- Students must satisfactorily complete all AVMA required tasks for each course to receive a grade in the course. Students must also achieve a minimum grade of C- to be eligible to graduate, which also reflects the amount of learning beyond the required skills.

The minimum number of credits required for a degree is 70.

First Year

First Year Fall Courses	Credits
BIO 2320 - Zoology	4
MAT 1210 - Principles of Mathematics	3
ENG 10XX - English*	3-4
VET 1000 - Freshman Orientation	1
VET 1030 - Animal Care and Restraint	3
VET 1051 - Animal Care I***	1
	15-16

First Year Spring Courses	Credits
CHE 1020 - Introduction to Chemistry	4
VET 1020 - Animal Anatomy and Physiology	4
VET 1040 - Animal Diseases	4
VET 1052 - Animal Care II*	1
VET 1060 - Laboratory Techniques	5
First Year Summer Course	
VET 2810 - Vet Externship	0
	18

Second Year

Second Year Fall Courses	Credits
CIS 1080 - Intro to Sprdshts & Database Mgmt	2
VET 2011 - Veterinary Clinical Techniques I	3
VET 2030 - Animal Nutrition	2
VET 2050 - Applied Laboratory Methods	4
VET 2070 - Pharmacology and Toxicology	3
VET 2720 - Veterinary Supervisor***	1
VET 2810 - Externship Review	1
ELE XXXX - AH/SS Elective**	3
	19

Second Year Spring Courses	Credits
ENG 2080 - Technical Communication	3
VET 2012 - Veterinary Clinical Techniques II	3
VET 2040 - Reproduction and Genetics	3
VET 2060 - Veterinary Office Procedures	3
VET 2080 - Animal Behavior	2
VET 2090 - Veterinary Technician National Exam	1
ELE 2XXX - AH/SS Elective**	3
Optional:	
VET 2720 - Veterinary Supervisor*	1
	18-19

*Students who do not place into ENG 1060 or 1061 may take up to three terms to complete English Composition (See English Requirements). This may require summer courses or additional terms.

**Students must complete a minimum of one Arts and Humanities (AH) and one Social Science (SS) elective.

*** Must be taken at least once, but may be repeated for credit

All BIO 2320 and all VET courses must be completed with a grade of "C-" or better to graduate from the program.

General Education Requirements

The goals of the Vermont Technical College general education component, within both the prescribed and the elective areas of the curriculum, are to foster within each student an appreciation for the major domains of human achievement; to provide a common educational experience; to refine critical thinking, writing, information literacy and communication skills; to nurture civic responsibility; to celebrate diversity and common values; foster life-long learning; and to produce an educated graduate.

The college does not guarantee that general education or elective courses will be available and reserves the right to withdraw or restrict any offering:

1) if an insufficient number of students enroll in the course

2) if registrations exceed class capacity; or

3) if the availability of faculty or other resources is limited

Course requirements also may be fulfilled by simultaneous enrollment at other Vermont State Colleges under the VSC consortium agreement. Students may not use one course to meet more than one requirement within their program.

Depending on specific program requirements, each associate degree student will complete a selection from the following list:

- 3 credits of English (composition, writing, & research)
- 3 credits of Technical Communication
- 4 credits of Natural Sciences
- 1 credit of Information Technology
- 3 credits of Art/Humanities
- 3 credits of Social Science
- 3 credits of Mathematics/Critical Thinking

In addition to the basic associate's degree requirements, (and depending on specific program requirements), each bachelor's degree student will complete a selection from the following list:

- 6 credits of Arts/Humanities or Social Sciences
  (3 credits minimum at the 3XXX level)
- 2 credits of Information Technology
- 4 credits of Natural Sciences
- 2-3 credits of Mathematics/Critical Thinking

All courses that are at a higher level or are a continuation of the listed initial courses will meet the general education area requirements of the initial offerings. For example, if PHY-1041 is listed as meeting the science requirement, PHY-1042 also will satisfy the science requirement.

Students need to work with their advisors to develop a plan to meet the General Education elective requirements.

English Requirements

Each student will complete English Composition or an equivalent course or sequence of courses that will emphasize reading and writing and will require the successful completion of a research paper. Degree students may satisfy the English Composition requirements by completing one of the following, as determined by placement:

1. ENG-1041, or ESOL-1041 (with a B or better), ENG-1042 and ENG-1043
2. ENG-1042 and ENG-1043
3. ENG-1060 or ENG-1061

Communication Requirements

Each student will complete ENG 2080 - Technical Communication or an equivalent course that will emphasize the principles and forms of communication in the workplace, including a technical report. Each student will complete coursework that emphasizes effective speaking, organization, and presentation skills.

Information Technology Requirements (CI)

Each student will be introduced to computer information technology to include internet orientation and research, e-mail, word processing, and computer software applications applicable to their field of study.

Computer Courses

ACC 1010 - Computerized Accounting	3	CIS 1151 - Website Design	3
ARC 1021 - Architectural CAD I	2	CIS 2025 - "C" Programming	4
BUS 1051 - Information Processing I	3	CPM 1021 - Construction Graphics I	1
BUS 2131 - Office Administration I	3	CPM 2050 - Construction Management Software	1
CET 1031 - Eng and Survey Computer Apps I	3	LAH 1031 - CAD for Landscape Design	1
CIS 1030 - Introduction to Computer	3	MEC 1011 - Design Communication I	2
CIS 1050 - Introduction to Spreadsheets	1	NUR 1020 - The Nurse-Client Relationship	3
CIS 1080 - Intro to Spreadsheets & Dbs Mgmt	2	RSP 1011 - Respiratory Care I Lab	4

Mathematics/Critical Thinking Requirements (MA)

Each student will complete the mathematical or empirical technique 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 will satisfy the logic and critical thinking component of this requirement.

ARC 2040 - Construction Practices	3	MAT 1111 - Intro to Tech Math I	5
CIS 1420 - Computational Foundations	4	MAT 1112 - Intro to Tech Math II	5
CPM 2010 - Construction Estimates	3	MAT 1210 - Principles of Mathematics	5
MAT 1040 - Mathematics for Allied Health	2	MAT 1221 - Finite Mathematics	3
MAT 1100 - Mathematics for Technology	3	MAT 1340 - Algebra and Trig	5
MAT 1420 - Technical Mathematics	5	MAT 2120 - Discrete Structures	3

Natural Sciences Requirements

Students will be introduced to the natural sciences, either the life or physical sciences, to include a lab experience. The course of study is determined by the major or as an elective course. These science courses include BIO, CHE, ENV, PHY and SCI, as well as appropriate course work under other subject listings.

Life & Physical Sciences

BIO 1020 - Environmental Biology	3	CHE 1020 - Introduction to Chemistry	4
BIO 1030 - Nutrition	3	CHE 1031 - General Chemistry I	4
BIO 1220 - Botany	4	PHY 1021 - Intro to Newton Mech.	4
BIO 2011 - Human Anatomy & Physiology I	4	PHY 1022 - Energy Conservation and Equilibrium	4
BIO 2012 - Human Anatomy & Physiology II	4	PHY 1041 - Physics I	4
BIO 2040 - Entomology (PS 204)	3	PHY 1042 - Physics II	4
BIO 2120 - Elements of Microbiology	4	PHY 2041 - Funds of Physics I w/Calculus	4
BIO 2320 - Zoology	4		

Arts and Humanities Electives (AH)

Each associate degree student will be exposed to the methods of inquiry and major concepts in the Arts and Humanities. Courses at the associate level will be in survey-type courses to expose students to a broad array of concepts and to enhance reading, writing, and communication skills. Courses at the upper level will meet program and curriculum expectations for more in depth student learning and understanding.

The following courses may be used to satisfy the Arts and Humanities elective requirement and are offered at Vermont Tech or other VSC schools, but might not be offered every semester.

ARH 1000 - Intro to Art History	3	HUM 2070 - Vampire in Literature, Culture & Film*	3
ARH 2660 - European Classroom	3	HUM 2110 – Vietnam in Literature & Film	3
BUS 2250 - Business Ethics	3	HUM 2330 - Peace Studies*	3
BUS 3410 - Business Ethics*	3	HUM 2710 – Special Topics in Humanities*	3
ENG 1070 - Effective Speaking*	3	HUM 2080 - Literature & Cultural of Witchcraft*	3
ENG 1310 - Intro Literature	3	HUM 3330 - Peace Studies & Peace Making*	3
ENG 2070 - Grant Writing	3	HUM 3050 - Theories of Science and Tech.*	3
ENG 2101 - Introduction to Creative Writing*	3	HUM 3070 - Vampire in Literature, Culture & film --Upper Level*	3
ENG 2320 - Themes in American Literature*	3	ENG 3490 - Crime and Punishment*	3
ENG 2485 – Literature of Peace and Pacifism*	3	HUM 1010 - Music Appreciation*	3
ENG 2590 – Stephen King in Lit. & Film*	3	HUM 1028 - History of Rock and Roll*	3
ENG 3485 – Tradition of Anti-war Literature*	3	ITA 1011 - Italian I*	3
ENG 2550 - Science Fiction Literature	3	PHI 1010 - Introduction to Philosophy*	3
ENG 3490 - Crime and Punishment*	3	PHI 1030 - Introduction to Logic*	3
ENG 3590 – Films and Novels of Stephen King*	3	PHI 1040 - Introduction to Ethics*	3
FRE 1111 - French I	3	PHI 2010 - Comparative Religion*	3
HUM 2010 - Educational Inquiry	3	PHI 2060 – Business Ethics	3
HUM 2020 - Bioethics*	3	SLS 1011 - Sign Language	3
HUM 2030 - Folklore*	3	SPA 1011 - Spanish I*	3
HUM 2040 - The Holocaust*	3	THA 2060 - Women in Film*	3
HUM 2050 - Women's Spirituality	3	THA 2070 - Comedy in Film*	3
HUM 2060 - Cyberethics*	3		

* Courses marked with an asterisk (*) may be offered regularly at Vermont Tech.

CCV course HUM-1000 does not meet the Vermont Tech Arts and Humanities elective requirement.

Social Sciences Electives (SS)

Each student will be exposed to an understanding of human behavior, personality, politics, and economics, as well as the social context of human interaction in broad survey-type courses designed to enhance reading, writing, and communication skills within the context of the social science course.

The following courses may be used to satisfy the Social Sciences elective requirement and are offered at Vermont Tech or other VSC schools, but might not be offered every semester.

ANT 1010 – Cultural Anthropology	3
BUS 2440 - Introduction to Business Law*	3
BUS 2450 – Business Law	3
CRJ 1010 - Introduction to Criminal Justice	3
ECO 1010 - Economics & Society	3
ECO 2020 - Macroeconomics*	3
ECO 2030 - Microeconomics*	3
ENV 1110 - Introduction to Environmental Probls	3
ENV 2070 – Environmental Law*	3
ENV 3050 - Issues in Environmental Studies*	3
GEO 1010 - World Geography*	3
GEO 1020 - Physical Geography	4
GEO 1030 - Intro to Plan & Zone	3
GEO 1040 - Maps & Map Reading	3
GEO 1050 - Geography and Economic Dev.	3
GEO 1060 - Geography: Modern Overview	3
GEO 2010 - Connecticut River Valley	3
GEO 2030 - Rural Land Planning	3
GEO 2060 - Environmental Problems in Geog.	3
GEO 2070 - North America	3
GEO 2090 - Africa	3
GEO 2150 - Cultural Geography	3
GEO 2160 - Travel and Tourism	3
GEO 2910 - Independent Study	1
HIS 1011 - Western Civilization I	3
HIS 1012 - Western Civilization II	3
HIS 1020 - Comparative Civilizations	3
HIS 1111 - World History*	3
HIS 1112 - World History II*	3
HIS 1120 - Modern World History	3
HIS 1211 - American History I*	3
HIS 1212 - American History II*	3
HIS 1220 - Native American Histories & Cultures	3
HIS 1230 - History of America to 1763	3
HIS 1240 - Colonial America & Amer. Revolution	3
HIS 1260 - Info Tech, Past, Present and Future*	3
HIS 2070 - Vermont History*	3
HIS 2110 - U.S. History, 1945 to Present	3
HIS 2120 - Social Reform in America	3
HIS 2130 - African American History	3
HIS 2140 - The Civil War	3
HIS 2150 - History of U.S. in the Sixties*	3
HIS 2210 - Women in US History	3
HIS 2220 - The Wild, Wild West	3
HIS 2230 - Modern Russian History	3
HIS 2240 - Survey of Eurasia	3
HIS 2250 - Modern Middle Eastern History	3
HIS 2330 - Traditional Asia	3
HIS 2340 - Modern Chinese History	3
HIS 2350 - Modern Pacific Asian History	3
HIS 2410 - Latin American History and Culture	3
HIS 2420 - Modern Latin American History	3
HIS 2430 - Survey of Africa	3
HIS 2440 - African Civilization	3
HIS 2450 - Modern African History	3
HIS 2510 - Historian at Work	3
HIS 2520 - Intro to Genealogy	3
HIS 2530 - Women in History	3
HIS 2660 - European Classroom*	3
HIS 2710 - Special Topics in History*	3
HIS 2720 - Special Topics in Vermont History	3
HIS 2730 - S.T.-Political Correct/Truth/20th Century	3
HIS 3165 - Vermont History & Government	3
POS 1010 - Intro to Political Science	3
POS 1020 - Intro to American Politics & Gov*	3
POS 1030 - Comparative Government	3

Social Sciences Electives (SS) *Continued*

POS 1040 - African-American History/Politics	3	PSY 1030 - Psychology of Consciousness	3
POS 1050 - The Constitution	3	PSY 1040 - Human Interaction	3
POS 1060 - Law & the Individual	3	PSY 1050 - Human Growth & Development*	3
POS 2010 - Observ Leg Process	0	PSY 1110 - Observe, Record, Report	3
POS 2020 - Family Law	3	PSY 1121 - Intro Behavior Analysis	3
POS 2030 - UN & World Politics	3	SSC 2020 - Experience Russia	1
POS 2040 - International Relations	3	SSC 2040 - Experience Brazil	1
POS 2050 - International Economics & Politics	3	SSC 2050 - Experience China	1
POS 2110 - State & Local Government*	3	PSY 2310 - Adolescent Development*	3
POS 2120 - Consumer Law	3	SSC 2010 - Science, Technology, and Society	3
POS 2701 - Environmental Politics	3	SSC 2030 - Energy and Society	3
POS 2310 - Environmental Politics	3	SSC 3010 - Revolution - Call to Serve*	3
PSY 1010 - Introduction to Psychology*	3	SSC 3045 - News & Newspapers*	3
PSY 1020 - Child Abuse & Neglect	3		

* Courses marked with an asterisk (*) may be offered regularly at Vermont Tech.

Student learning outcomes for students taking courses in English, Humanities, and Social Sciences include:

- Gains experience with the unique content and methods of inquiry in social sciences and in arts/humanities through successful completion of elective courses in each area of study.
- Demonstrates competence with written communication by achieving the required standard on the written communication assessment at the associate or bachelor level.
- Focuses written work around an explicit or implicit central thesis.
- Develops the central thesis as appropriate to the audience, using specific details and supporting evidence.
- Organizes written work clearly and logically.
- Uses correct grammar, syntax, punctuation, and spelling.
- Follows standard practices in quotation, summary, paraphrase, and citation of textual material.

NOTE: In choosing electives, students should run their degree audit and consult with their advisor to determine which electives will meet their graduation requirements. For details on any of these courses, see the *Course Descriptions* section of the catalog.

Course Descriptions

Key to Course Subject Abbreviations

ACC Accounting
AER Aeronautical
AGR Agricultural and Animal Science
AHS Allied Health Science
ARC Architectural Engineering Technology
ARH Art History
ATT Automotive Technology
BIO Biological Sciences
BUS Business
CET Civil & Environmental Engineering Technology
CHE Chemistry
CIS Computer Science
CPE Computer Engineering Technology
CPM Construction Practice & Management
DHY Dental Hygiene
DSL Diesel Power Technology
ECO Economics
EDU Education
ELT Electrical Engineering Technology
ELM Electromechanical Engineering Technology
ENG English
ENV Environmental Studies
EQS Equine Studies
ESL English for Speakers of Other Languages
FSC Fire Science
GEO Geography
HIS History
HUM Humanities
INT Interdisciplinary
ITA Italian
LAH Landscape Development and Ornamental Horticulture
MAT Mathematics
MEC Mechanical Engineering Technology
MUS Music
NUR Nursing
PHI Philosophy
PHY Physics
POS Political Science
PSY Psychology
RSP Respiratory Therapy
SDT Sustainable Design and Technology
SSC Social Science
TCT Telecommunication Technology
TEC Technical Education
THA Theatre Arts
VET Veterinary Technology
XXX Individual Research, Independent Study and Interim Special Topics

NOTE: Students without the prerequisites for any course must obtain the permission of the instructor.

Course Descriptions

Accounting (ACC)

ACC-1010 Computerized Accounting (3) spring

This course demonstrates how various accounting systems are implemented and integrated on a microcomputer. Students will become proficient with applications in general ledger, receivables, payables, inventory, fixed assets, and the preparation of financial statements. 1 hour of lecture, 4 hours of laboratory per week. Prerequisite: ACC-2121 or ACC-1020.

ACC-1020 Survey of Accounting (3) fall/spring

Students acquire basic familiarity with processing accounting transactions for service and merchandise businesses, including cash receipts and accounts payable; cash payments and accounts payable; and payroll. Students prepare and analyze financial statements and develop an understanding of inventory valuation, depreciation of plant assets, and generally accepted accounting principles. 3 hours of lecture per week. Prerequisite: None.

ACC-2121 Financial Accounting (4) fall

This course covers the basics of generally accepted accounting principles, terminology and accounting cycle. Students will learn to prepare financial statements and become familiar with special journals, receivables, payables, control accounts, inventory, depreciation, deferrals, accruals, and payroll. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: None.

ACC-2122 Managerial Accounting (4) spring

This course is a continuation of Financial Accounting and covers accounting concepts of partnerships and corporations. Topics also include bonds, investments, financial statement analysis, and cash-flow analysis. Students will gain entry-level skills which permit employment in keeping accurate financial records for a small business. 4 hours of lecture per week. Prerequisite: ACC-2121.

ACC-2201 Intermediate Accounting I (4) as required

This course provides an in-depth examination of accounting theory for assets, liabilities, and stockholders' equity, essential for the understanding and analysis of financial statements. The accounting cycle is reviewed and other topics include temporary investments, receivables, inventories, and fixed and intangible assets. 4 hours of lecture per week. Prerequisite: ACC-2121.

ACC-2202 Intermediate Accounting II (4) as required

This is a continuation of Intermediate Accounting I. Emphasis is placed on problem solving and topics covered include long-term investments, liabilities, matching revenue and expenses for the determination of net income, income taxes, non-operational revenue, and financial statement analysis. 4 hours of lecture per week. Prerequisite: ACC-2201.

ACC-2210 Cost Accounting (4) **as required**

This course examines in-depth concepts used in recording, classifying, and reporting cost data. Students will understand costs as related to management in the planning and control process. Topics include budgeting, job order, and job process. 4 hours of lecture per week. Prerequisite: ACC-2122.

Agriculture and Animal Science (AGR)

AGR-1011 Agricultural Techniques I (2) **fall**

This course is designed to facilitate a successful transition to college and focuses on four primary areas: orientation to the College and academic programs; development of basic agricultural skills; interpersonal development; and an introduction to agriculture-related careers. In an informal laboratory, students will be exposed to the practical skills necessary to succeed within the agricultural curriculum under the supervision of experienced farm staff. Students will be introduced to student rights & responsibilities, how to interact with faculty and classmates, Agri-careers, time management, and how to enhance academic performance. 1 hour of lecture, 2 hours of laboratory per week, plus one week of milking experience. Prerequisite: None.

AGR-1012 Agricultural Techniques II (1) **spring**

This is a continuation of AG 1011 in which the student must select an area for independent study through a work experience project. Students work closely with the farm staff to complete their selected topics during the semester. 2 hours of laboratory per week, plus one week of required milking experience. Prerequisite: None

AGR-1030 Animal Reproduction and Genetics (3) **spring**

Students are expected to develop knowledge of the anatomy and physiology of the male and female reproductive systems and the estrous cycle in farm animals. The course includes an understanding of simple Mendelian and quantitative genetic principles. Students are expected to develop sound breeding and selection systems. 3 hours of lecture per week. Prerequisite: None.

AGR-1050 Livestock Production (3) **fall**

A study and discussion of livestock applicable to the New England dairy and agricultural industry. Emphasis is devoted to dairy cattle, but beef cattle, sheep, and horses are also covered. Breeding, feeding, and management topics are presented in a technical and practical manner. 3 hours lecture per week. Prerequisite: None.

AGR-2011 Dairy Herd Management I (3) fall

This course concentrates on the profitable care and management of a dairy herd. Detailed practices essential to operating a modern, efficient dairy herd are presented in lecture. These principles are reinforced in laboratory experiences that utilize the College herd. Various field trips are planned to complement what is taught in lecture and lab. Active student participation is expected. Dairy Herd Management I deals with record keeping and the development and implementation of breeding and feeding programs that will accomplish a desired set of goals. Students also learn how to manage the reproductive performance of the herd as well as how to raise quality herd replacements. 2 hours of lecture, 2 hours of laboratory per week. Prerequisite: Sophomore standing or instructor permission.

AGR-2012 Dairy Herd Management II (3) spring

A continuation of Dairy Herd Management I, this course emphasizes proper milking management and herd health programs. Subtopics include sire selection, culling, milking management, and herdsmanship. As a final project, students conduct a mock cattle sale. 2 hours of lecture, 2 hours of laboratory per week. Prerequisite: AGR-2012 or instructor permission.

AGR-2020 Farm Buildings (2) fall

Farmstead planning and basic structural concepts for farm buildings are emphasized. Subtopics include construction materials and methods, environmental issues, waste management, feeding systems, and housing systems. 2 hours of lecture per week. Prerequisite: None.

AGR-2030 Animal Nutrition (4) spring

This is a course in the fundamentals of livestock feeding. It includes the study of the nutritive characteristics of forages, grains, and grain products as feeds for different farm animals. Students will be asked to develop livestock rations and feeding programs based on the available feedstuffs and needs for maintenance, growth, and production. Typical applications may center around the College's dairy herd and/or the student's home farm. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: None.

AGR-2040 Forage Production (3) fall

Emphasis is given to 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 laboratory per week. Prerequisite: None.

AGR-2050 Large Animal Diseases (3) 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 preventive medicine. To further students' understanding of diseases and disease prevention, basic pathologic changes and immunologic processes involved in the occurrence and prevention of disease are described. 3 hours of lecture per week. Prerequisite: None.

AGR-2060 Beef Production (3) spring

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 will also be discussed. 1 hour of lecture, 2 hours of laboratory per week. Prerequisite: None.

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 will also be presented. 1 hour of lecture, 2 hours of laboratory per week. Prerequisite: None.

AGR-2720 Issues and Trends in Agriculture (2) fall

This course emphasizes new ideas in agricultural techniques and management and some of the primary issues impacting animal agriculture. Students investigate new and/or alternative production methods with emphasis on sustainable agriculture. Field trips and guest speakers provide students the opportunity to evaluate societal concerns about various aspects of modern production agriculture. 2 hours of lecture per week. Prerequisite: Sophomore standing.

Allied Health Science (AHS)

AHS-2011 Emergency Medical Service (6) fall

This course combines classroom and lab instruction in all phases of pre-hospital emergency care at the emergency medical technician level. Clinical practice includes patient assessments, required participation in ambulance/rescue emergency service response, and hospital experience. This course prepares students for EMT-B and CPR/AED certification through written exam, hospital care, and proficiency skill testing. In addition, after successful completion of this course students will be eligible to take the NREMT EMT-B certifying exam. 4 hours of lecture, 2 hours of laboratory per week.

Architectural/Building Engineering Technology (ARC)

ARC-1000 Freshmen Orientation (1) fall

This course provides a forum for first-year students to learn about the program and about the architecture profession, building construction industry, and related engineering disciplines. Skills that will assist the student in having a successful experience at the College are also discussed. The course makes use of guest speakers from within the College community and from the building industry. 1 hour of seminar per week. Prerequisite: None.

ARC-1010 Architectural Woodframe Construction (3) fall

This course covers basic instruction in architectural construction graphics and the use of hand drawing equipment, as well as an introduction to the materials of light woodframe construction. A set of drawings for a small residence is developed, in keeping with contemporary office practices. 6 hours of studio per week. Prerequisite: None.

ARC-1021 Architectural CAD I (2) fall

This course covers basic instruction in computer-aided drafting and design as related to architectural and building engineering technology. The students will receive instruction using AutoCAD. 3 hours of studio per week. Prerequisite/Co-requisite: ARC-1010 and CIS-1050 or permission of the instructor.

ARC-1210 Construction Materials and Methods (6) spring

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 with this course: the materials studio sessions familiarize students with physical characteristics and uses of materials, performance of standard tests, and preparation of technical reports while; the design/drafting studio involves the detailing and drafting of construction assemblies. Hand drafting and CAD are both used in the latter studio . 4 hours of lecture, 3 hours of materials testing studio, and 3 hours of detailing studio per week. Prerequisite: ARC-1010 and
ARC-1021.

ARC-1220 Architectural History (3) spring

Through photo slide lectures and small group 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 concentration is worldwide development since the 18th century, particularly in America, and its significance to today's society. Small group 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 aesthetic principles from a view of architectural history. 3 hours of lecture per week. Prerequisite: None.

ARC-2022 Architectural CAD II (3) spring

This course covers advanced instruction in computer-aided drafting and design for architecture. There will be combined lecture and studio sessions in the use of productivity modules to improve two dimensional plan/detail construction drawings, three-dimensional building models, and presentation rendering. 6 hours of studio per week. Prerequisite: ARC-1021 and 2051.

ARC-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 ventilating, and mechanical requirements in small buildings. The laboratory 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. Co-requisite: PHY-1043.

ARC-2032 Environmental Systems II (3) spring

This is a continuation of Environmental Systems I. Broad-scale aspects of mechanical, electrical, and sanitary systems are investigated and studied as applied 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: ARC-2031.

ARC-2040 Construction Practices (3) fall

This course is a combination of several distinct areas in the building construction industry. One half of the course is comprised of an introduction to fundamental surveying principles and methods, including distance measurement, angular measurement, and elevational differences. Instrument practice and care for levels, electronic distance measurement instruments, and total station equipment are introduced. Other topics studied are: terminology, computations, developing site plans, and construction layout. Another part of the course covers topics in construction estimates and records including estimating, take-offs, and pricing for both residential and commercial construction. A third part of the course covers construction management principles including scheduling practices, contracts, general conditions, and specifications. 2 hours of lecture, 3 hours of studio per week. Prerequisite: ARC-1210.

ARC-2051 Architectural Design I (3) fall

Individual design projects are developed by the student from conception to presentation under faculty supervision. Problem solving and the process of design are taught and reinforced throughout the semester. Graphic techniques for design drawings are a major emphasis in this course. Building types covered range from small artifacts through the house to a small public building. Throughout the course, graphic and oral communication of goals, methods, and solutions are emphasized. Some projects are presented by the student before a jury of architecture faculty and practicing architects. 6 hours of studio per week. Prerequisite: ARC-1010, 1210, and 1220. Co-requisite: ARC-2031.

ARC-2052 Architectural Design II (3) spring

The course design project is located in a Vermont town. Input in the planning and design process is received from proposed users of the building and local officials.Projects have been done throughout Vermont. Existing conditions and constraints are explored in-depth as a prelude to design. Students then respond to the building program on a specific site. The architectural program is then developed and appropriate design responses generated. Throughout the course, oral and graphic communication and presentation skills are developed as appropriate. Students work in teams 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: ARC-2051.

ARC-2720 Architecture Seminar (0) spring

This lecture/seminar course for sophomore students 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 lecture per week. Prerequisite: Sophomore Standing.

ARC-3010 Design Systems Integration (3) spring

The intent of this course is to concentrate the student's design thinking toward the areas used in Architectural Engineering, particularly in the integration of environmental and structural systems into the building design. The course complements the Architectural Engineering curriculum by introducing students 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: ARC-2032, 2051, CET-2120.

ARC-3020 Structural Analysis (3) fall

This course covers the analysis of statically determinate and indeterminate structures, building on the foundation that most students obtain in a course on statics. Topics include static determinacy and stability, reactions, member forces and moments in beams, frames, and trusses (2-D and 3-D) through both determinate and indeterminate methods, as well as approximate methods. Deflection analysis is also covered. Computer applications for analysis are used and matrix methods of analysis are introduced. Dynamics structural analysis is also introduced. Prerequisite: MAT-1520 and CET-2040.

ARC-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 constructibility are also addressed. 3 hours of lecture per week.
Prerequisite: ARC-3020, ARC-3110, and CET-2120.

ARC-3040 Electrical/Lighting Systems (3) spring

This course familiarizes students with the various electrical and lighting systems commonly found in modern buildings. Systems include 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: ARC-2032, ARC-3110 or SDT-3110, and ELT-3020 or SDT 4110.

ARC-3050 Fundamentals of Fluids and Thermodynamics (4) spring

Students study 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, first and second laws of thermodynamics, refrigeration, psychrometrics, basic thermodynamic processes, and HVAC. 3 hours of lecture, 3 hours of studio per week. Prerequisite: MAT-1520 and PHY-1043.

ARC-3110 Codes and Loads (3) fall

This course provides students with an understanding of which codes and specifications govern the determination of design structural, heating/cooling, and lighting/electrical loads for buildings and other structures. It introduces students to the determination of applicable code provisions, the application of those code provisions, and also to methods for calculating and estimating loads that are not 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 provides the basic knowledge and skills for the determination and use of such loads in courses such as steel structures design, concrete structures design, HVAC, plumbing, electrical/lighting, and Senior Project. Lectures introduce topics and methods of application; the laboratory emphasizes the application of codes and methods on varying structure types. 1 hours of lecture, 3 hours of studio per week. Prerequisite: ARC-2032, CET-2120, and MAT-1520 or instructor permission.

ARC-4010 Concrete Structures Design (3) fall

This course covers the design of typical statically determinate and indeterminate concrete structures. The course will make extensive use of the American Concrete Institute building code requirements and will consider concrete and steel material properties, design approximations, design of concrete linear members (beam and columns), one-way and two-way slabs, and foundation footings and walls. 3 hours of lecture per week. Prerequisite: CET-2120, ARC-3110, ARC-3020.

ARC-4020 Architectural Engineering Management (3) fall

This course covers many of the business, management, professional, and ethical subjects that architectural and other engineers may face during their careers. These include 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; technical presentation skills; and others. The course helps students develop communication skills and the ability to analyze and create management-related reports using various methods and tools, especially in a team setting on team projects. 3 hours of lecture per week. Prerequisite: ARC-2040.

ARC-4030 HVAC Systems (4) fall

This course addresses the engineering aspects of heating, ventilating, and air conditioning systems design. There is a focus on mechanical systems for commercial buildings that includes psychrometrics, basic HVAC calculations, design condition determination, load estimating, duct and pipe sizing, HVAC systems, and HVAC equipment selection. Students are required to perform system design on a commercial building in preparation for Senior Project. Introductions to energy conservation, comfort condition, indoor air quality, and mechanical codes are included. ASHRAE standards and international codes are used as a basis in these areas. 3 hours of lecture, 3 hours of studio per week. Prerequisite: ARC-2032, ARC-3050, and ARC-3110 or SDT 3110.

ARC-4040 Plumbing Systems (3) spring

Students in this course learn the basic practices and techniques for the design of plumbing systems in buildings. International Plumbing Code commentary is the basis of course materials. Emphasis is placed 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: ARC-2032 and ARC-3050.

ARC-4050 FE Exam Survey (1) spring

This course provides students and practicing professionals with applications for, and review of, engineering, math, and science concepts to prepare for the Fundamentals of Engineering (FE) examination administered by most states as a first step toward professional licensure as a Professional Engineer (PE). The course focuses on topics that students have been exposed to previously, and on topics that are generally easier to understand and apply with limited explanation of background material. FE exam topics that are covered significantly in Senior-level ARC courses (e.g., ethics and engineering economics) receive limited coverage. Strategies for studying for and taking the FE and similar examinations are covered, as is the application of engineering judgement in general. Applications are primarily in SI units to match the FE examination. 3 hours of lecture/ laboratory per week for 8 weeks. Prerequisite: Senior standing, AET or an ABET accredited program, or instructor permission. [Course fee $35.00]

ARC-4720 Senior Project (4) **spring**

This course is a capstone course that integrates knowledge and skills developed through other coursework and life experience. Students prepare drawings, design documentation, and presentations for a commercial project based on preliminary and incomplete architectural plans (the ASHRAE national student competition building is typically selected) or other information. Students may work on schematic drawings for electrical/lighting, mechanical, and structural systems, and then focus on one technical specialty for the development of a final design; in most cases, a semester-long final design in one subject area is done. 2 hours of lecture, 6 hours of studio per week. Prerequisite: ARC-2022, 3030, 3040, 3110, 4010, 4020, and 4030.

Art History (ARH)

ARH-2660 European Classroom (3) **as required**

This course will immerse students in the art and architectural history of a foreign city through participation in intensive coursework combined with the experience of a guided travel tour to Europe. The course will use visual perception and critical analysis to study the two interconnected fields while expanding student learning by experiencing the works of art and architecture first hand. It will reinforce each student's understanding of topics in the history, culture, art, and architecture of Paris. This is a cultural experience intended to enrich and broaden student perspectives in our increasingly global world. Prerequisite: ENG-1061 and instructor permission.

Automotive Technology (ATT)

ATT-1000 Freshman Orientation (1) **fall**

This course helps students to gain basic skills for success in the Vermont Tech Automotive Technology program through library workshops, lab report writing workshops, and an introduction to Vermont Tech support services. The course also serves to introduce students to the automotive field and includes wide-ranging discussion on topics such as: career opportunities, graduate stories, Vermont auto history, repair order writing, and flat rate vs. straight time pay scales. 1 hour of orientation per week. Prerequisite: None.

ATT-1010 Suspension and Steering (3) **fall**

This course is designed to give the student a thorough understanding of the theory, construction, and design of vehicle steering and suspension systems. Emphasis is placed on the geometry of links and levers, the physics of hydraulics, vehicle suspension requirements, vehicle handling and dynamics, and the diagnosis of suspension problems. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

ATT-1020 Engine Diagnostics & Repair (4) fall

This course provides a comprehensive study of the theory, construction, design, and repair of the internal combustion engine. Topics discussed include engine classification, power and torque development, engine power-efficiency tests, engine performance parameters, and mechanical design and failure analysis. The mathematical solution of performance characteristics is demonstrated. Alternative engines and fuels are also discussed. The lab reinforces the lecture by providing engine performance diagnostic procedures and mechanical repair and overhaul procedures. System problem diagnosis and component failure analysis are continually stressed. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

ATT-1040 Automotive Electrical Systems (4) spring

This course is intended to give the student a thorough understanding of automotive electrical systems and to teach 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 will become familiar with various types of test equipment, diagnostic charts, and vehicle wiring schematics. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ATT-1120.

ATT-1050 Alignment and Brakes (4) spring

This course is designed to give the student a thorough understanding of the theory, construction, and design of those mechanical devices utilized in tires, wheels and bearings, and hydraulic braking systems. Emphasis is placed on the geometry of links and levers, the physics of friction and hydraulics, vehicle braking requirements, vehicle handling and dynamics, and the diagnosis of brake problems. 3 hours of lecture, 3 hours of laboratory, 1.5 hours of practical per week. Prerequisite: None.

ATT-1120 General Electronics for Automotive (4) fall

This course will introduce the student to general electrical and electronic principles, theory, and components. Topics include Ohm's Law, circuit analysis, basic circuits, diodes, transistors, relays, and solenoids. The lab will use electrical test equipment to analyze and troubleshoot basic electrical circuits including warning systems, electrical accessories, and battery starting and charging systems. Prerequisite: None.

ATT-2010 Engine Performance (4) fall

This course gives the student an understanding of fuel delivery systems as they relate to the internal combustion engine. Topics include engine air/fuel requirements, gasoline fuel injection systems, diesel fuel injection systems, and vehicle emissions and emission controls. The analysis of fuel-related problems, diagnosis of component failures, and verification of repairs are included. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: PHY-1030.

ATT-2020 Body Electronic Systems (4) fall

This course is designed to give the student an understanding of commonly used chassis systems. Major topics studied include heating, ventilation, and air conditioning, instrument panels, air bags, and anti-lock brakes. The student is familiarized 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 hour of lecture, 3 hours of laboratory per week. Prerequisite: ATT-1010, ATT-1040, and PHY-1030.

ATT-2030 Advanced Engine Performance (4) spring

This course is intended to give the student a thorough understanding of the electronic controls and devices used on the modern automobile powertrain. Topics to be 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, and causes of premature component failure are studied in detail. 4 hours of lecture, 3 hours of laboratory per week. Prerequisite: ATT-1120.

ATT-2040 Automotive Drivetrains (4) spring

In this course students learn the principles of construction, design, and operation of mechanical devices used in the modern automotive drivetrain. Specific topics to be addressed include helical and planetary gear drive systems, torque converters, hydraulic control systems, principles of electronically-controlled transmissions, clutches, manual transmissions and transaxles, driveshafts and axles, universal and CV joints, differentials, transfer cases, and problem diagnosis and component failure analysis. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

ATT-2060 Advanced Technology Vehicle (4) fall

This course will introduce students to the design, operation and servicing of electric, hybrid, alternative fuel, and fuel cell vehicles. Topics will include basic physics and chemistry influencing design, motor and generator design and utilization, hybrid electric vehicle design variations, maintenance and service, and a basic introduction top fuel cell vehicles. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ATT-1020.

ATT-2810 Summer Internship/Internship Review (0/1) summer/fall

A ten-week summer cooperative education experience followed by a one credit fall seminar. Prerequisite: Departmental permission.

Biological Sciences (BIO)

BIO-1020 Introduction to Environmental Biology (4) fall

This course is intended to introduce students to the fundamentals of environmental biology. It is an introductions to the structure and biota of several aquatic and terrestrial ecosystems and students investigate 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, critical observation and interpretation of landscapes. The course will stress communication skills, as well as critical thinking and teamwork. 3 hours of lecture and 2 hours of lab per week. Prerequisite: None.

BIO-1030 Nutrition (3) fall

The course focus is to provide sound, relevant background knowledge in the science of human nutrition and to translate the scientific principles of nutrition into applicable concepts of care. The course offers opportunity for the student to identify dietary modifications relating to the developmental stage of the patient. It implements the philosophy and objectives of the nursing and allied health programs by identifying the role of adequate nutrition in maintaining the health of the individual throughout the life-span. 3 hours of lecture per week. Prerequisite: None.

BIO-1220 Botany (4) spring

This course provides students with an understanding of the fundamentals of plant growth and development. Higher plant structure, metabolism, growth regulators, and mineral nutrition are emphasized. Students also become acquainted with the diversity of plants and plant-like organisms through study of bacteria, viruses, algae, fungi, mosses, and lower vascular plants. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

BIO-2011 Human Anatomy & Physiology I (4) fall

This course is an introduction to the structure and function of the human body. It emphasizes the properties of cells, tissues, and organ systems and their relationships in health and disease. Topics include general body organization and function, cellular physiology and histology, and the anatomy and physiology of each organ system. Laboratory work parallels lecture topics and includes microscopy, study of human anatomical models, dissection of appropriate laboratory specimens, and physiologic experimentation. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

BIO-2012 Human Anatomy & Physiology II (4) spring/winter

A continuation of BIO-2011, this portion of the course includes the study of the structure and function of the endocrine system, circulatory system, immune system, respiratory system, digestive system, excretory system and reproductive system. Other topics covered include acid/base balance and electrolyte balance. Laboratory work parallels lecture topics and includes microscopy, dissection of appropriate laboratory specimens, and study of human anatomical models. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: BIO-2011.

BIO-2030 Plant Pathology (3) spring

Students explore 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. Students learn to recognize disease symptoms. All methods of control are covered, but more emphasis is placed on bio-rational techniques. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: BIO-2040 or instructor permission.

BIO-2040 Entomology (3) fall

Entomology examines the biology and control of insect and other related invertebrate pests that attack ornamental plants. Students study insect morphology, anatomy, life processes, and ecology. Special emphasis is placed on insect identification and life histories. Students explore control strategies as part of an integrated approach to pest management. The most effective, least toxic, and sustainable methods of insect control are highlighted. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: Sophomore standing or instructor permission.

BIO-2120 Elements of Microbiology (4) fall/spring/summer

This course offers the student an opportunity to examine organisms that are too small to be seen with the naked eye. This is a comprehensive study of the basic principles of microbiology. A brief survey of the history of the science is given. Emphasis is placed on understanding the variety and differences of microbes and their relationship to humans. Virtual laboratory study and in-lab demonstrations complement the lecture. Successful completion of the lab exercises is a partial requirement for the course. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

BIO-2320 Zoology (4) fall

A laboratory course designed to acquaint 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 highly desirable. 3 hours of lecture, 3 hours of laboratory per week. Co-requisite: CHE-1020 or 1031 or instructor permission. Prerequisite: None

Business (BUS)

BUS-1010 Introduction to Business (3) fall

The focus of this course is to survey the interconnected disciplines of management, marketing, finance, and information technology, and to facilitate college success strategies such as notetaking, time management, test taking, and study skills. Students will begin to develop effective oral and written communication, critical thinking, problem solving, and interpersonal skills necessary to succeed in a business environment. 3 hours of lecture per week. Prerequisite: None.

BUS-1051 Information Processing I (3) fall

Students will develop skills in a variety of business competencies; including "touch" keyboarding at 45 words per minute, file management, basic functions of word processing using Microsoft Word, and preparation of business correspondence. Students also learn to use e-mail and the Internet. 1 hour of lecture, 4 hours of laboratory per week. Prerequisite: None.

BUS-1052 Information Processing II (3) spring

Students will develop advanced skills in a variety of business competencies; including "touch" keyboarding at 60 words per minute and advanced functions of word processing and desktop publishing using Microsoft Word and Microsoft Publisher. 1 hour of lecture, 4 hours of laboratory per week. Prerequisite: BUS-1051 or equivalent skills.

BUS-2020 Principles of Management (3) fall

Students will understand styles and roles of effective management in today's workplace. Both classic and modern topics will be included. Emphasis will be placed on the anatomy of organizations and the evolution of management theories through today's LEAN concepts. Traditional topics include motivation, group dynamics and organizational culture. Emerging topics include self-managed teams, coping with stress, and diversity in the workplace. 3 hours of lecture per week. Prerequisite: None.

BUS-2131 Business communication Technology (3) fall

This course will focus on computer software proficiency and professional business writing. Students will write business letters, memos, email messages, instant messages, blog postings, podcasts, and newsletters. Students will write, design, and create PowerPoint slides and will conduct computer training seminars. 2 hours of lecture, 2 hours of laboratory per week. Prerequisite: NoneBasic skills in Microsoft Office software.

BUS-2132 Management Applications (3) spring

This course will focus on management theories and techniques applied with emphasis on the action skills that managers need for success. Course topics include accounting, conference and travel planning, meeting management, and parliamentary procedure. Students will describe the components of an effective business meeting and be able to conduct and/or participate in a meeting according to the Robert's Rules of Order, 2 hours of lecture, 2 hours of laboratory per week. Prerequisite. ACC-2121 or ACC-1020.

BUS-2140 Personal Finance (3) as required

A study of the tools used in personal financial planning. The student is introduced to the process used by professional planners and shown how this can be hepful in planning their own financial futures. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

BUS-2150 Office Information Systems (3) spring

This course will examine the impact of technology and information systems on the evolution of today's office. Topics include the history of information technology; hardware components and uses; software applications, networks and data communications, systems concepts, and applications. Emphasis is placed on the integration of people, equipment, procedures, and environments. 3 hours of lecture per week. Prerequisite: None.

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 is to equip students with the knowledge necessary to make informed business decisions. Students will examine 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. Prerequisite: None.

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 placed on a study of the marketing mix of product, place, pricing, and promotion. Students will learn marketing strategies well suited to small business operation. 3 hours of lecture per week. Prerequisite: None.

BUS-2260 Principles of Financial Management (3) fall

This course is designed to build on the knowledge from basic accounting. Students apply tools learned in this course to develop a conceptual and analytical understanding of financial management. The emphasis is on learning decision-making techniques. 3 hours of lecture per week. Prerequisite: ACC-1020 or 2121.

BUS-2270 Organizational Communications (4) fall

This course offers a clear, hands-on approach to learning the role, the process, and the skills of interpersonal, group, and public communications in professional/organizational settings. The distinctive feature and objective of the course is to understand the role of people in the organizational communication process, both individually and in work groups. Specific topics include the psychology of face-to-face communications, the roll of non-verbal communication, teamwork and group dynamics, professional behavior, effective listening, and oral presentations. 4 hours of lecture per week. Course Fee: $50

BUS-2410 Human Resources Management (3) spring

This course emphasizes selecting, training, and evaluating personnel; wages, benefits, and bargaining units; motivation, morale, and human relations; and personnel problems in the workplace. 3 hours of lecture per week. Prerequisite: None.

BUS-2440 Introduction to Business Law (3) fall/spring

This course is designed to familiarize students with the law as it relates to business. Following the Uniform Commercial Code, such topics as contracts, negotiable instruments, agency bailment, real property, and insurance are covered. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

BUS-2720 Business Seminar (3) spring

This course is designed to assist students in developing the attitudes and skills essential for career success. The focus is in two areas: *Job Search* includes researching the job market, writing a resume and cover letter, and preparing for job interviews; *and Senior Project* includes a two-part demonstration of essential skills and knowledge learned in the Business degree program. The project consists of individual written assignments and a team oral presentation. 3 hours of lecture per week. Prerequisite: Sophomore standing.

BUS-3150 Production & Operations Management (3) fall

This course develops administrative skills needed to manage efficiently the several elements of production: materials, facilities, and staffing. Quantitative models (Management Science) are used to optimize the efficient use of resources. 3 hours of lecture per week. Prerequisite: MAT-2021 and junior standing or instructor permission.

BUS-3250 Organizational Behavior and Management (3) spring

Students will explore the foundations of individual and group behavior and discuss how attitudes and values contribute to or detract from individual success, as well as the success or failure of organizations. Students will classify various personality characteristics, and discuss how these characteristics influence the ways people and groups feel and behave as they do in organizations. Prerequisite: BUS-2020.

BUS-3260 Investments and Portfolio Management (3) spring

This course examines investment in stocks, bonds, governments, warrants, options, and collectibles. Topics include investment setting, securities valuation and analysis, security markets and regulations, and portfolio constraints. 3 hours of lecture per week.(General Education: SS except for Business majors). Prerequisite: BUS-2260 and ACC-2121 or ACC-1020.

BUS-3410 Business Ethics (3) fall

This course is designed to develop an awareness of ethical issues in organizations and reflect upon the values underlying policy making and operational decisions. In this process students will need to reflect upon their personal values and the sources of ethical standards in today's culture. The ultimate goal of the course is to underscore ethical concerns as a basic and articulated part of organizational culture. Students will be required to write a formal research paper on a topic related to business ethics. 3 hours of lecture per week. Prerequisite: ENG-1061 or equivalent.

BUS-4310 Business Information Architecture (3) fall

Students will learn and apply theory, process, design, and development to create effective, user-centered oral, written, printed, and electronic information. Components of the course include human interactions in the workplace; the convergence of communication and computing systems; and the unintended consequences of the Information Age, such as information glut, information trash, and information hype. Students will write and design copy for business applications including letters, memos, email messages, instant messages, blog postings, podcasts, oral presentations, and PowerPoint slides. 3 hours of lecture per week. Prerequisite: BUS-2020.

BUS-4510 Business Management Through Information Technology (3) **as required**

Students examine the role of information technology in the conduct of business and the managerial uses of information at the operational, tactical, and strategic levels of decision-making. Topics focus on the the use of IT to facilitate business change in policy and practice. The course includes discussion of the importance of communications to today's business organization and the role of the non-IT professional in systems development. Prerequisite: BUS-2020.

BUS-4530 Technical Project Management (3) **spring**

Designed for the project manager who interacts with all levels of management while satisfying the customers' needs, this course covers planning, scheduling, and controlling projects. Emphasis will be placed on issues like leadership, motivation, team-building, and conflict resolution. CPM and PERT will be covered in detail. Real case studies will be used extensively to illustrate theories and concepts covered in the lectures. Prerequisite: BUS-2020.

BUS-4730 Senior Project (3) **spring**

This is a capstone course that integrates knowledge and skills developed through other coursework and life experience. The course will focus on special topics in business and a specific business issue/problem. Students will work in cross-functional teams to select a project which involves solving a common business problem. Students will research the topic extensively and prepare a team oral presentation of their solution. Presentations will be judged by business and industry professionals. Students will also prepare written documentation as part of their project. 3 hours of lecture per week. Prerequisite: senior standing.

Civil & Environmental Engineering Technology (CET)

CET-1000 Freshman Orientation (1) **fall**

This course will focus on the skills required by students for success in the Civil and Environmental Engineering Technology program. The course may have guest speakers and field trips to construction projects and public facilities that will give the student a picture of the variety of work done by civil engineers and the job opportunities in the field. 1 hour of seminar per week.

CET-1011 Surveying I (3) **fall**

The course introduces fundamental surveying principles and methods, including the measuring of distances, angles, difference in elevation, and instruction and practice in the care and use of equipment. Areas covered are bearings, cross sections and profiles, note keeping, computations and field practice relating to traverses, an introduction to geodetic surveying, the basics of construction surveying, and the adjustment of surveying instruments. 2D and 3D coordinate transformation is introduced. 2 hours of lecture, 3 hours laboratory per week. Co-requisite: MAT-1420 or MAT-1111.

CET-1020 Engineering Materials (4) spring

This course studies the materials used in construction, including aggregates, cements, Portland cement concrete, timber, asphalts, bituminous concrete mixes, steel, and masonry. Sources, methods of manufacture and handling, and standard tests are covered. Portland cement concrete and bituminous concrete mixes are designed and tested. Laboratory work includes performance of standard tests and the preparation of technical reports of the tests. 3 hours of lecture, 3 hours of laboratory per week.
Prerequisite: None.

CET-1030 CAD for Civil Engineering (3) spring

This course provides a solid foundation in CAD for the civil engineer. Course covers topics in AutoCAD and Carlson Surveying & Civil and requires access to AutoCAD and Carlson Surveying & Civil outside of regular class hours. Students should have the ability to move files using Windows Explorer and be familiar with MS Word. 6 hours of lab per week. Prerequisite: Basic computer skills.

CET-1031 Engineering and Surveying Computer Applications I (3) fall

This course provides the student with a working knowledge of the use of computers for civil engineering. No prior computer training is required. The course is designed to introduce the computer and its operating system in conjunction with laboratory assignments in the use of CAD (AutoCAD). The fundamentals of CAD operation and application are presented through the use of civil engineering topics including site, structural, and environmental drawings. Major graphic subjects include creating and editing CAD primitive and complex entities, dimensioning, drawing construction, layout and output. Spreadsheets are also introduced with applications appropriate to civil engineering including calculations, quantities, estimates, and graphs. 6 hours of laboratory per week. Prerequisite: None.

CET-1032 Engineering and Surveying Computer Applications II (3) spring

This course is a continuation of CET-1031 intended to provide proficiency in the creation and understanding of working drawings related to civil engineering. Covered AutoCAD topics include advanced AutoCAD 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. In addition, related technologies such as Geographic Information Systems (GIS), their application, and data sources are discussed. 1 hour of lecture, 6 hours laboratory per week. Prerequisite: CET-1031.

CET-2012 Surveying II (4) fall

A continuation of Surveying I, this course gives additional and more detailed information in route location and design, construction surveying, and advanced surveying topics. Specialized equipment such as theodolites, electronic distance measuring instruments, and state-of-the-art total stations and data collectors are used in the field labs. Least squares adjustments are introduced. Carlson surveying software is an integral portion of the course. 2 hours of lecture, 6 hours of laboratory per week. Prerequisite: CET-1011, CET-1032, and MAT-1420.

CET-2020 Hydraulics and Drainage (3) fall

The course includes an introduction to the fundamental concepts of fluids, fluids at rest, measuring devices, pressure diagrams, buoyancy, and steady flow. Calculations with computer applications are made for head losses, open channel flow, hydrology, and runoff. Pump characteristics and water distribution systems are also studied. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1520 and PHY-1041 or PHY-1022.

CET-2030 Environmental Engineering & Science (3) fall

This course emphasizes quantitative analysis of environmental problems and introduces the student to 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 laboratory includes both field and indoor testing of water quality as well as fieldtrips to environmental facilities. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: CHE-1031, MAT-1420 PHY-1041 or PHY-1022.

CET-2040 Statics and 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 methods of determining centroids and moment of inertia. Laboratory work includes calculation of force and stress analysis, in addition to material testing. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1520 and PHY-1041 or PHY-1022.

CET-2050 Civil and Environmental Design (4) spring

This course is designed to give the student experience with realistic civil engineering technology problems that require the use of knowledge and skills obtained in previous courses taken at Vermont Tech. Under faculty supervision, students are assigned design projects that could include site development plans, buildings and parking structures, bridges, water supply and treatment facilities, roads and highways. The students develop 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 laboratory per week. Prerequisite: CET-2012, 2020, 2030, and 2040. Co-requisites: CET-2060, 2110, 2120.

CET-2060 Construction Estimates and Records (3) spring

A study of construction planning, equipment, and methods is incorporated with the study of construction contracts, specifications, and working drawings. Various types of plans and specifications are used as a basis for determining the construction methods and materials to be used on a project. These plans are also used for preparing cost estimates and CPM schedules. Earned value analysis and project accounting is introduced. Computers are used throughout the course for problem solving, estimating, and record keeping. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: CET-1011 and CET-1032.

CET-2110 Mechanics of Soils (3) spring

A study of the basic principles and applications of soil mechanics as used in design and construction is covered. This course introduces a knowledge of soil, its formation, actions, and uses. Included are studies of index properties, soil classification, exploration and sampling, compaction, and soil strength. Problems relating to these items are presented and solved. Laboratory testing is done in conjunction with the classroom studies 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 laboratory per week. Prerequisite: CET-2040.

CET-2120 Structural Design (4) spring

The course is a study of the design of structural systems using wood, reinforced concrete, masonry, and steel. The design of various structural members and systems, such as tension members, beams, columns, connections, walls, and foundations is presented in accordance with relevant design codes. Laboratory work consists of the application of building and design codes to the design of structural systems and generation of detail drawings. 3 hours of lecture, 3 hours laboratory per week. Prerequisite: CET-2040.

CET-3010 Evidence and Procedures for Boundary Line Location (3) spring

The purpose of this course is to familiarize land surveying students with the importance of locating the original boundary line between two or more tracts of land, the evidence that needs to be collected, and the procedures for this collection. This course is intended for students who have achieved an Associates degree in Civil and Environmental Engineering Technology and wish to pursue a career in the field of land surveying. The course is also intended for people working in the field of land surveying who wish to obtain a license as a Professional Land Surveyor in the State of Vermont. 3 hours of lecture. Permission: Required for all individuals. Prerequisite: None. Co-requisites: CET-2012.

Chemistry (CHE)

CHE-1020 Introduction to Chemistry (4) fall/spring

Descriptive chemistry, atomic and molecular structure, chemical reactions, and the fundamentals of chemistry are studied. Laboratory work complements lectures and develops basic laboratory techniques. Previous successful completion of a course in chemistry is highly desirable. 3 hours of lecture, 2 hours of laboratory per week. Prerequisites: None

CHE-1031 General Chemistry I (4) fall/spring

This course is intended for engineering students and consists of the fundamentals of general and physical chemistry. Laboratory work is designed to amplify the lectures, provide an introduction to laboratory techniques, and introduce some methods of analysis currently used in industry. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None. Recommended math placement level 3.

Computer Science (CIS)

CIS-1030 Introduction to Computer (3) as required

Students will become familiar with the Windows operating system, the applications that comprise the Microsoft Office software suite (word processing, spreadsheet, database, and presentation graphics), and communication software. 3 hours of lecture/ laboratory per week. Prerequisite: None.

CIS-1050 Introduction to Spreadsheets (1) fall/spring

This course introduces the student to the Microsoft operating system, e-mail, Internet, and the use of a spreadsheet. Topics include the commands necessary to build a spreadsheet and make graphs. 1 hour of laboratory per week. Prerequisite: None.

CIS-1080 Introduction to Spreadsheets and Database Management (2) fall/spring

This course introduces students to the use of email, MAPLE database functions, and the Internet, as well as to the use of a spreadsheet and database. 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 laboratory per week. Prerequisite: None.

CIS-1120 Introduction to Information Technology (3) fall

This course introduces students to the world of IST across a broad range of topics. Topics include history of computing in society, career paths in computing, and the use of computers in the workplace. 3 hours of lecture per week. Prerequisite: None.

CIS-1151 Website Development (3) fall

This course includes the introduction of web pages for commercial web sites: use of and design with HyperText Markup Language, text and graphics; applying appropriate design, color, and art; size and placement of graphics, including imagemaps, in a web page; creation of advanced tables, including nested tables; creation of forms that contain advanced input types and attributes, text areas, and advanced lists; use of a validation tool to debug an HTML document. 2 hours of lecture, 2 hours of laboratory per week. Prerequisites: None

CIS-1152 Advanced Website Development (3) spring

Students learn intermediate skills and techniques used in webpage development. Topics include applying sophisticated formatting to text; creating documents that automatically display another page and that contain interactive JAVAScripts; creation of and work with frames documents; examination of document styles and recommendations on improvements; HTML document creation/conversion tools; using XML to manage content; an introduction to database theory; use of basic SQL programming; use of Cold Fusion to reformat text and databases and dynamic web pages; use of style sheets; 2 hours of lecture, 2 hours of laboratory per week. Prerequisite: CIS-1151.

CIS-1160 Fundamentals of Programming in C (1) spring

Fundamentals of programming in C is a course intended to be a gentle introduction to writing programs in a Windows environment. It will be taught using the C programming language, but will focus primarily on concepts such as variable declarations, *if* statements, and loops that are common to most popular programming languages. Students will also learn how to manage files and directories, run programs, edit text files, and use a computer. This course is open to all majors who would like to take an introductory programming course. 3 hours of lab per week. Prerequisite: None.

CIS-2010 Computer Organization (4) spring

Students gain a basic understanding of computer hardware. The students are introduced to binary data representation, pointers and memory through the C language. This understanding expands to include the functioning of the CPU, including registers, ALU and simple I/O, culminating in an introduction to assemble language. 3 hours of lecture and 2 hours of lab per week. Prerequisite: CIS-2271 and MAT-2120.

CIS-2025 "C" Programming (4) fall/spring/on-line

This course teaches students 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. In addition, this course will emphasize good software design techniques, programming style, and documentation. No prior programming experience is required. This course is offered in both classroom and on-line versions. Sufficient internet skills and the permission of the instructor are required to take the course on-line. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

CIS-2151 Computer Networks I (4) fall/spring

This course introduces the student to network protocols. The course covers physical, data link, network, transport, and application layer protocols. The TCP/IP protocol suite is discussed in detail. IPX/SPX is also discussed. Topics include ethernet and token ring networks, connectionless protocols, connection-oriented protocols, and application protocols such as SMTP, NNTP, and HTTP. Students learn about both hardware and software troubleshooting tools, security issues, and current topics such as IPv6. The way network software is written, both on the server side and the client side, is also covered. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: CIS-2025 or CIS-2271.

CIS-2230 System Administration (4) spring

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 monitoring and performance tuning. Some topics in computer security are also discussed. Unix and Windows NT/2000 are the specific systems currently studied. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: CIS-2025, CIS 2271 or CIS 2280.

CIS-2260 Object-Oriented Programming (3) fall

This course introduces students to the concepts of programming with abstract data types and object-oriented programming. It uses C++ to cover classes, inheritance, and polymorphism. The course also builds on the prerequisites to provide students with more advanced exposure to software design, implementation, debugging, and documentation. 3 hours of lecture per week. Prerequisite: CIS-2010, CIS-2025 or CIS-2271.

CIS-2271 JAVA Programming (4) fall

This course will introduce the student to basic concepts of JAVA and Object Oriented Programming (OOP). The course begins with basic concepts of OOP. These include classes, objects, inheritance, polymorphism, and object oriented design. The course will then cover the language features of JAVA. The topics in this section are: program structure, statement and field types, operators, expressions, and control structures. The course then returns to OOP features of JAVA, focusing on object data types, strings, methods, classes, and constructors. The final section addresses graphical user interface (GUI). The topics are: applets, GUI components (e.g. buttons), event processing, and frames. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: None

CIS-2280 Perl Programming (2) spring

This course continues the student's training in programming by introducing the student to the use of the scripting language Perl. Students are introduced to the Linux operating system. The basic concepts of programming are reviewed using Perl to demonstrate those concepts. Concepts unique to Perl, such as regular expression handling and hashes, are introduced. The emphasis in the course is on using Perl as a tool to get things done rather than only as a vehicle to explain how to program. Examples and assignments are drawn from topics related to system administration, web programming, and application programming. 2 hours of lecture per week. Prerequisite: CIS-2010, CIS-2025, or CIS-2271.

CIS-2320 Software Quality Assurance and Testing (3) fall

Students are introduced 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, user interface testing and current test support tools. 3 hours of lecture per week. Prerequisite: CIS-2010, CIS-2271, or CIS-2025.

CIS-2720 Current Topics in Computer Engineering (3) spring

This course provides students the opportunity to integrate the topics presented throughout the curriculum as well as to explore additional specific topics that are relevant to the current state of the field. Recent topics have included HTML authoring, JAVA, CGI scripting, Windows programming, X11/Qt programming, and databases. At the discretion of the instructor, students may work on a semester long project, do library research, give an oral presentation, write a significant program, or build significant electrical hardware. The precise content and nature of this course varies from year to year, depending on current industry needs. 2 hours of lecture, 3 hours laboratory per week. Prerequisite: ELT-1080, ELT-2050, CIS-2151, and CIS-2260. Co-requisite: CIS-2230.

[Course Fee: $50]**CIS-2730 Software Engineering Projects (3) spring/fall**

This capstone course involves the development of a group project. The development effort will be combined with an introduction to systems development and life cycle. Students will also receive an introduction to orally presenting technical information to a technical audience. Each group will present their project design and the final project. 2 hours of lecture and 2 hours of lab per week. Prerequisite: CIS-2271 or CIS-2025.

CIS-3010 Database Systems (4) spring

In this course students study a method for designing relational databases, the use of SQL to access data stored in a relational database, and the use a commercial database management system to implement a relational database system. Students are required to implement a real-world example relational database as a project. Additional topics that may be discussed as time and class interest permit include: VBA, DAO and ActiveX, ODBC, and JDBC. Prerequisite: CIS-2230 or equivalent.

CIS-3030 Programming Languages (3) fall

This course introduces the student to a variety of important or current languages. The idea is to give the student more exposure and experience with programming by showing the student how various languages can be used to solve various problems. The intent is to cover languages of practical and theoretical importance. Some software engineering techniques are also introduced. 3 hours of lecture per week. Co-requisite: CIS-3050.

CIS-3050 Algorithms and 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, sorting, and string matching. It also covers selected other topics such as encryption, data compression, and image processing. The language used is C++ with an emphasis on the C++ Standard Template Library. 3 hours of lecture per week. Prerequisite: CIS-2260 or instructor permission.

CIS-3080 Issues in Information Technology (3) as required

This course is an in-depth study of the uses of and issues related to computers and information systems in society. Topics explore the benefits and professional impact of continuing career preparation, career progression, outreach to the community, ethical development, and ethical behavior. Controversies and alternative points of view are evaluated on issues such as professional ethics and professional responsibility. Students research and write extensively on course topics. Prerequisite: Junior standing or instructor permission.

CIS-3152 Networks II (4) spring

This is a second course in networks with an emphasis on the upper layers of the OSI model and network programming. Topics include TCP/IP protocol behavior (including coverage of IPv6), client/server programming, and an application level protocol such as HTTP or SMTP/MIME. An introduction to character sets and XML is also presented. In addition, RPC and a distributed object system such as CORBA are covered. Prerequisite: CIS-2151.

CIS-3170 History of the Theory of Computation (3) spring

This history of computer and early calculators will be examined. Students will learn the principles of early computational devices and investigate how the concepts utilized in these devices are implemented in modern computers. Particular attention is focused on Boolean logic. Frege formula language, Turing machines, Implications of Shannoan's Limit and Moore's Law will be studied. Also offered on-line. Prerequisite: Junior standing. (General Education: SS. For non-computer students).

CIS-4020 Advanced Operating Systems (4) fall

In this course students study the internal workings of modern operating systems. Topics include file systems, multiprocessing, memory management, and device drivers. Distributed operating systems and real time operating systems are also discussed. As part of this course students write a significant Linux kernel module and a device driver for some commercially important operating system. 3 hours of lecture and 3 hours of laboratory per week. Prerequisite: CIS-2230 or equivalent, CIS-3050, and CIS-3152.

CIS-4030 GUI Programming (3) fall/on-line

Modern Graphical User Interface (GUI) design and implementation methods are studied. The course uses JAVA as the base language. Industry standard libraries, such as Swing and Open GL are used for programming coursework. Prerequisite: CIS-2271 or CIS-3030.

CIS-4040 Computer Security (3) spring

This course focuses on security issues associated with computers and computer networks. The course starts by covering cryptographic topics such as symmetric and public key systems, digital signatures, secure hashes, cryptographic random number generation, and message authentication codes. Network security topics are also covered including secure protocols (SSH, SSL, IPsec), network attack methods, network authentication protocols (for example, Kerberos), and firewalls. Finally, the course covers host security matters such as building secure software, auditing, and intrusion detection. 3 hours of lecture per week. Prerequisite: CIS-3040 or CIS-3152.

CIS-4050 Compiler Design (3) spring

This course investigates how languages are implemented and gives the student enough knowledge to build specialized “mini languages” for niche applications. Students will use compiler generation tools, such as Lex and Yacc, and will create some hand-built components. Although some theory is presented, the emphasis is on implementation (programming) rather than theorem proving. Most programming is done in C, but other languages (C++, JAVA) are also used. 3 hours of lecture per week.
Prerequisite: CIS-3030, CIS-3050.

CIS-4120 Systems Analysis and Design (3) spring

This course addresses the methodology used in gathering data, analyzing data, and determining user requirements for information processing using advanced systems analysis techniques and the associated techniques used in designing solutions that can then be programmed as application software for use on computer-based systems. 3 hours of lecture. Prerequisite: Junior standing in IST or CPE and CIS-2260.

CIS-4130 Introduction to Software Engineering (3) as required

This course continues beyond good programming techniques to design modeling techniques for process, event, object and data modeling and utilizes an underlying framework call UML (Unified Modeling Language). 3 hours of lecture, 2 hours of laboratory per week. Prerequisites: CIS-3070 or 3090.

CIS-4150 Software Engineering (3) fall

This course is chiefly concerned with the application of engineering principles to the all too chaotic process of software development. The student will learn how the concepts of repeatability, modularity, traceability, maintainability, and reusability affect the architecture and design of software systems. The software life cycle and how it is supported by various methodologies will be explored, as well as the ramifications of differing team sizes to the selection of traditional versus agile methods. The student will be shown how documentation techniques, modeling languages, and CASE tools can be used to minimize miscommunications and ensure that the system desired is the system that is eventually built. 3 hours of lecture per week. Prerequisite: CIS-3030, CIS-3050.

CIS-4711 Project I (2) fall

This course is a largely self-directed senior project in which students demonstrate their mastery of the subjects covered in their program. 1 hour of lecture, 3 hours of laboratory per week. Prerequisite: Senior standing in a computer program. [Course fee: $50.00]

CIS-4712 Project II (3) spring

Completion and final presentation of the senior project begun in the fall. Regular progress reports are required and a formal presentation is required at the end of the term. This presentation occurs in front of students, departmental faculty, and invited guests (including potential employers). 1 hour of lecture, 6 hours of laboratory per week. Prerequisite: CIS-4711 or instructor permission. [Course fee: $50.00]

CIS-4720 Information Systems Technology Projects (3) spring

This capstone course combines a major project with a review of systems development and life cycle including select human and organization behavior issues, a survey of information technology associated literature focusing on the role of information sciences in society, the psychological underpinnings of design, experimental technologies and future looking science fiction In addition to the significant project spanning at least the three stages of the life cycle, reflective activities include development barriers, use interaction, analyzing project performance and planning for future issues. 1 hour of lecture, 3 hours of laboratory per week. Prerequisite: Senior standing in the Software Engineering or Information Technology program.

CIS-4721 Information Systems Technology Senior Project I (2) fall

This course is a largely self-directed senior project in which students demonstrate their mastery of the subjects covered in the BS.CSE or BS.CIT program. 4 hours of laboratory per week. Prerequisite: Senior standing in the CSE or CIT programs.

CIS-4722 Information Systems Technology Senior Project II (3) spring

This course is the completion and final presentation of the senior project begun in the fall. Regular progress reports are required and a formal presentation is required at the end of the academic year. This presentation occurs in front of students, departmental faculty, and invited guests (including potential employers). 1 hour of lecture, 4 hours of laboratory per week. Prerequisite: CIS-4721.

Construction Practice & Management (CPM)

CPM-1000 Freshman Orientation (1) fall

This course is designed to facilitate 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/site resources, time management, note taking, introduction to career opportunities and program-specific topics including construction program issues and the building construction industry and professional development. 1 hour of seminar per week. Prerequisite: None.

CPM-1010 Electrical/Mechanical Systems (3) spring

The student is introduced to the major environmental systems in a building: plumbing, heating, cooling, and ventilation; and electrical and illumination. Also included is an introduction to the influences of the natural environment on the built environment and a consideration for how these affect energy use and conservation. The building codes that govern the design of the various environmental systems are studied. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: CPM-103, and CPM-1021, or instructor permission.

CPM-1021 Construction Graphics I (1) fall

This course prepares students to interpret working drawings for residential and light commercial construction projects by teaching them to make their own basic arch itectural drawings on a drafting board. Students learn to draw plans, elevations, sections and details, and to understand how they relate to each other. Informal sketching techniques are practiced and used throughout this course and others in the program. 3 hours of laboratory per week. Prerequisite: None.

CPM-1022 Construction Graphics II (1) spring

This course applies the lessons of CPM-1021 to the study and interpretation of construction specifications and drawings for residential and light commercial projects. 3 hours of laboratory per week. Prerequisite: CPM-1021.

CPM-1031 Residential Construction Systems (3) fall

Students study residential construction methods and materials for the following systems: foundations, framing, insulating, interior and exterior finish, and roofing. They learn about the CABO building code, new products, and estimating material quantities. 3 hours of lecture per week. Co-requisite: CPM-1032 or instructor permission.

CPM-1032 Construction Lab (2) **fall**

Students are introduced to the basic materials and methods of commercial construction. 6 hours of laboratory per week. Co-requisite: CPM-1031.

CPM-1111 Commercial Construction Systems (4) **spring**

This course introduces students to the construction materials and installation methods used in commercial projects. Students study soils and foundation types; heavy timber frame construction; masonry, concrete and steel construction systems; and commercial roofing, insulation and cladding systems. They also learn about the BOCA building code. CPM-1111 is the same as ARC-1210 for the lecture portion. 4 hours of lecture per week. Prerequisite: CPM-1031 or instructor permission.

CPM-2010 Construction Estimates (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. Included are organizing the 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. Familiarization with computer estimating software applications is included. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: CPM-1031, CPM-1111, CPM-1022, and MAT-1100 or MAT-142, or instructor permission.

CPM-2020 Construction Project Management (3) **fall**

This course introduces students to the principles of construction project management. Included are the design/construction process, 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. An introduction to design-build and construction manager contracting is included. 3 hours of lecture per week. Prerequisite: None.

CPM-2030 Elementary Theory of Structures (4) **spring**

This course introduces the student to the methods used in the preliminary analysis and design of building framing systems and to why certain materials and member sizes are used. An introduction to statics and strength of materials includes basic analysis of framing systems and properties of materials used in residential and commercial construction. The student is introduced to building and design codes and the study of building loads and how the building reacts to the loads. General structural system using wood, steel, concrete, and masonry elements including pre-engineered products are studied. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1100 or MAT-1420 and PHY-1030, CPM-1031, and CPM-1111.

CPM-2050 Construction Management Software (1) fall

This course exposes Construction Practice and Management students to several commonly-used computer applications for construction management: advanced spreadsheets (Excel), estimating (Winest), and scheduling (Primavera Suretrak). Students will learn the software by working through tutorial-type exercises in a weekly computer lab run by an instructor. Three hours of studio per week. Prerequisite: CET-1031, CIS-1050, or CIS-1080

CPM-2060 Field Engineering (3) fall

This course introduces students to the fundamentals of construction field engineering, survey and building layout. Students will learn 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 will be used to balance angles, make distance corrections, and compute areas and volumes. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1100 or equivalent.

CPM-2720 Construction Supervision (1) fall

This is an elective course for Construction Management seniors. The intent is to give these students practice supervising first-year students during their Construction Lab and managing the CPM job site. 3 hours of laboratory per week. This course is repeatable for additional credit. Prerequisite: instructor permission.

CPM-2730 Construction Seminar and Project (4) spring

This course ties together all the previous courses for the CPM program. The lecture portion utilizes professionals from all phases of the construction process as guest speakers. In the lab, students read and interpret the contract and specifications for a commercial project of significant scope. Through individual and group work on this project, they develop a complete estimate of cost and construction time, a project schedule, a schedule of values, a safety plan, an environmental plan, and a quality control plan. 2 hours of lecture, 6 hours of laboratory per week. Prerequisite: Sophomore standing or instructor permission.

CPM-2810 Construction Internship/Internship Review (0/1) summer/fall

This is a required part of the CPM curriculum and involves a ten-week summer cooperative education experience that will broaden student understanding of real world construction and management and an internship review seminar in the subsequent fall term. Graded Pass/No Pass. Prerequisite: Departmental permission.

Dental Hygiene (DHY)

DHY-1011 Pre-clinical Dental Hygiene (4) fall

This course explores the principles of dental hygiene and provides an orientation to clinical practice and preclinical experience. 3 hours of lecture and 6 hours of laboratory per week. Prerequisite: None.

DHY-1012 Clinical Dental Hygiene I (5) spring

This course is a continuation of DHY-1011 with an early clinical experience. 3 hours of lecture, 8 hours of laboratory per week. Prerequisite: DHY-1011 and DHY-1021.

DHY-1021 Oral Tissues I (3) fall

This course is an introduction to dental terminology and the morphology and histology of the oral tissues. 2 hours of lecture, 3 hours laboratory per week. Prerequisite: None.

DHY-1022 Oral Tissues II and Medical Emergencies (3) spring

This is a continuation of DHY-1021 emphasizing head and neck anatomy, oral embryology, odontogenesis and medical emergencies. 2 hours of lecture per week, 2 hours of laboratory per week. Prerequisite: DHY-1011, DHY-1021, and BIO-2011.

DHY-1030 Dental Radiography (3) spring

This is the study, demonstration, and practice of fundamentals of intraoral radiographic technique. The student will learn to recognize radiographic appearance of common oral disorders. 2 hours of lecture per week, and 2 hours of laboratory per week. Prerequisite: DHY-1011, DHY-1021, BIO-2011.

DHY-2010 Dental Materials (3) fall

This course is designed to emphasize the clinical and theoretical concepts of dental materials and their clinical application. This course blends two hours of lecture with two hours of laboratory time to provide the students with adequate opportunity to manipulate materials introduced during the didactic portion of the course. Knowledge in the use of dental materials will allow the dental hygienist to better promote and explain the necessary preventative and restorative needs of the patient. 2 hours of lecture, 2 hours of laboratory per week. Prerequisite: DHY-1012, DHY-1022, DHY-1030, and BIO-2012.

DHY-2020 General Pathology and Clinical Dental Pharmacology (3) fall

This course is an introduction to clinical pathology and the pharmacological management of the treatment of dental patients. The student will learn to integrate diseases commonly found in dental hygiene practice with the pharmacologic agents used in management of those diseases. 3 hours of lecture per week. Prerequisite: DHY-2030, DHY 2020, DHY 2721 or instructor permission.

DHY-2030 Periodontics (3) fall

This is the study of the morphologic and functional aspects of the supporting structures. The student will learn to recognize diseases of the peridontium and will learn therapeutic measures for the treatment of diseases of the peridontium. 3 hours of lecture per week. Prerequisite: DHY-1012, DHY-1022, DHY-1030, and BIO-2012.

DHY-2210 Community Oral Health (3) spring

This is an introduction to the concepts of community oral health with emphasis on advanced research designs, community health issues, and the function of public health programs. Additionally, there is an introduction to sociological study with an emphasis on core models and concepts associated with major sociological perspective. 3 hours of lecture per week. Prerequisite: DHY-2030, DHY-2020, DHY-2010, and DHY-2721.

DHY-2220 Oral Pathology (2) spring

This course is the study of the functional and organic diseases of the oral cavity and their clinical management. 2 hours of lecture per week. Prerequisite: DHY-2030; DHY-2020, and DHY-2721.

DHY-2721 Clinical Dental Hygiene II (5) fall

This is the experience of clinical practice with patients from Class 0 to Class 5 periodontal conditions. Children, adults, and special populations are treated. 1 hour of lecture and 14 hours clinic per week. Prerequisite: DHY-1012, DHY-1022, DHY-1030, and BIO-2012.

DHY-2722 Clinical Dental Hygiene III (6) spring

This is the 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. The administration of local anesthetics will also be covered. 2 hours of lecture, 16 hours of clinic per week. Prerequisite: DHY-2020, DHY-2010, and DHY-2721.

DHY-3010 Evidence Based Decision Making in Dental Hygiene (3) fall

This course will provide fundamental knowledge about evidence based decision making. It will provide tools and skills needed to locate and review research articles and abstracts quickly and easily so that the student interpret the literature to provide the best possible care and achieve optimum outcomes for patients. 3 hours of lecture per week. Offered on-line. Prerequisite: DHY-2722 or equivalent.

DHY-3020 Advanced Periodontics (3) fall

This course will expand on the student's existing knowledge of current concepts in etiology, risk factors, assessment, treatment planning, implementation and evaluation of contemporary treatment modalities and maintenance therapy. The interrelationship of periodontal treatment with other dental specialties will be discussed along with an investigation of the periodontal literature. Emphasis will be placed on the dental hygienist's role in periodontal therapy. 3 hours of lecture per week. Prerequisite: DHY-3010.

DHY-3030 Dental Hygiene Methodology and Leadership (3) fall

This course is designed to provide the student with an introduction to educational concepts and theory relative to dental hygiene education, as well as theories, concepts, and principles of leadership in the dental hygiene educational setting. Topics included are course development and design, goals and objectives, principles of learning, learning styles and motivation, laboratory and clinical instruction, using educational media and software, and leadership skills. 3 hours of lecture per week. Offered on-line. Prerequisite: DHY-3010.

DHY-4010 Advanced Community Oral Health (3) fall

This course is an in-depth study of the current issues surrounding today's public health care delivery system. Issues addressed include: access to health care, quality assurance, health care financing and regulatory approaches to health care delivery in the public sector. Oral health care issues will be incorporated throughout the course with special emphasis on public health policy and practice. 3 hours of lecture per week. Offered on-line. Prerequisite: DHY-3010.

DHY 4810 Dental Hygiene Practicum (6) fall

This course is designed to provide the student an opportunity to apply their knowledge of a chosen professional role through teaching, internship, observation or work experience. This course will use student selected sites on or off campus to develop the expanding role of the dental hygienist in the health care system. 8 hours of practicum per week. Prerequisite: DHY-3020, DHY-3030, and DHY-4010.

Diesel Power Technology (DSL)

DSL-1010 Heavy Duty Suspension & Steering (4) fall

This course is designed to give the student a thorough understanding of the theory, design, and construction of heavy duty suspension and steering systems as used on highway trucks. The student will also become familiar with wheel alignments. Emphasis is placed on the geometry of links and levers, the physics of hydraulics and pneumatics, vehicle suspension and steering requirements, vehicle handling and dynamics, the diagnosis of suspension and steering problems and performing wheel alignments. Three hours of lecture, three hours of laboratory per week. Prerequisite: None.

DSL-1020 Diesel Power Systems (4) spring

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 and maintenance, and failure analysis. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

DSL-1040 Basic Diesel Electrical/Electronics Systems (4) fall

This course is intended to give students a thorough understanding of diesel electrical and electronic systems and to teach diagnostic and troubleshooting skills. Topics include Ohm's Law, basic circuits devices, circuit faults, basic computers, networks, feedback circuits, batteries, and charging and starting systems. The student will become familiar with various types of test equipment, diagnostic charts, and wiring diagrams. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

DSL-1050 Preventive Maintenance (3) spring

This course provides students with an understanding of the development and administration of preventive maintenance programs. Topics include PM schedules, types of service, 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 laboratory per week. Prerequisite: None.

DSL-1110 Heavy Duty Braking Systems (3) spring

This course is designed to give the student a thorough understanding of the theory, design, and construction of those mechanical devices utilized in hydraulic, pneumatic and combination braking systems. Emphasis is placed on the geometry of links and levers, the physics of friction and hydraulics, pneumatic systems, vehicle braking requirements, and the diagnosis of braking problems. Parking brake systems, power boost systems, anti-lock braking systems, and dynamic stability control systems are also presented. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

DSL-2010 Fuel Systems (4) fall

This course provides a comprehensive study of the theory, design, construction, and repair of diesel fuel system. Topics include an overview of diesel fuel injection systems, chemistry of combustion, diesel fuel and alternatives, fuel transfer systems, mechanical

injector nozzles, and Unit Electrical Injector's (UEI), Bosch, Detroit Diesel, Caterpillar, Cummins DFI systems, governors, system diagnosis and service, and computerized fuel control systems. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

DSL-2020 Chassis Electrical and Electronic Systems (4) fall

This course is intended to give students a thorough understanding of advanced diesel chassis electrical and electronic systems and to teach diagnostic and troubleshooting skills. Topics include advanced networks and muliplexing, A/C systems, lighting systems, instrument panels, wiper and washer systems, alarm systems, collision avoidance systems, supplemental restraint systems, ground based communication systems, satellite based communication systems, and accessory systems. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: DSL-1060.

DSL-2030 Hydraulics (3) fall

This course provides a comprehensive study of the theory, design, construction, and repair of mobile hydraulic systems. Topics include hydraulic systems, components, hydraulic symbols and engineering drawings, pilot systems, and electronic control systems. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: DSL-1060.

DSL-2040 Power Transmission (4) **spring**

This course is intended to give students a thorough understanding of power transmission systems and to teach diagnostic and troubleshooting skills. Topics include introduction power transmissions, clutches and torque converters, manual transmissions, gear theory, planetary gear theory, hydraulic planetary controls and support systems, power-train management and electronically controlled transmissions, Allison Commercial Electronic Control (CEC) system, Eaton Auto-shift transmission, drive shafts, final drives, and tracks. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: DSL-1060 and DSL-2020.

DSL-2050 Emissions and Engine Performance (4) **spring**

This course is intended to give students a thorough understanding of advanced diesel engine performance and emissions systems and to teach diagnostic and troubleshooting skills. Topics include engine performance, emissions theory, exhaust emissions treatment, and diagnosis and correction of engine performance and emission complaints. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: DSL-1020 and DSL-1040.

DSL-2060 Fabrication (3) **spring**

This course provides a comprehensive study of manufacturing processes and fabrication. Topics include manufacturing processes, use of fabrication tools, job planning, basic gas and MIG welding, advanced welding, rodding and tubing of hydraulic cylinders, and drive-shaft repair. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

Economics (ECO)

ECO-2020 Macroeconomics (3) **fall**

The course consists of an introduction to basic principles of macroeconomic analysis and a survey of the economic government, household, and business sectors. The student is introduced to the analysis of the level and variations of the national income; government fiscal and monetary policies, money; the banking system; and the problems of inflation and unemployment. 3 hours of lecture per week. (General Education: SS) Prerequisite: Math placement level 2 or higher or instructor permission.

ECO-2030 Microeconomics (3) **spring**

This course covers the theory and analysis of market structures, prices, profits, wages, interest, and international trade. Developments in such areas as agriculture and the balance of international payments are examined by means of reading and class discussion about current economic events. 3 hours of lecture per week. (General Education: SS). Prerequisite: Math placement level 2 or higher or instructor permission.

Education (EDU)

EDU-2051 Teaching Methods I (3) fall/spring

The Teaching Methods I course is designed to provide in-depth coverage of technical center operations and procedures for teachers who are new to the field of Trade and Industry teacher licensure. The yearlong course includes a classroom component and a field practicum. The classroom component provides specific information on standards based education, program competencies, competency and employability skill lists, and federal and state rules and regulations. The unique mandates of technical education are reviewed and implemented by course participants, who must be teaching at least one half day each week in a technical center under supervision of a peer coach. The practicum component of the course requires formal lesson plans, classroom/lab observations, and evaluation conferences with course teacher and field supervisor. Observations are conducted three times each semester. Prerequisite: Instructor permission.

EDU-2052 Teaching Methods I continued (3) fall/spring

Class continues curriculum from EDU-2051. Prerequisite: EDU-2051.

EDU-2061 Teaching Methods II (3) fall/spring

The Teaching Methods II course is designed to provide more in-depth coverage of technical center operations and procedures for teachers who are new to the field of Trade and Industry teacher licensure. The yearlong course includes a classroom component and a field practicum. The classroom component provides specific information on standards-based education, program competencies, competency and employability skill lists, and federal and state rules and regulations. The unique mandates of technical education are reviewed and implemented by course participants, who must be teaching a least one-half day each week in a technical center under the supervision of a peer coach. The practicum component of the course requires formal lesson plans, classroom/lab observations, and evaluation conferences with course teacher and field supervisor. Observations are conducted twice each semester. Prerequisite: Instructor permission.

EDU-2062 Teaching Methods II continued (3) fall/spring

Class continues work in Teaching Methods II course. Prerequisite: EDU-2061.

Electromechanical Engineering Technology (ELM)

ELM-3015 Sensors and Instrumentation (3) fall

An introduction to the type 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, optical sensors. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-1110 or ELT-2072, and MAT-1520 and PHY-1042. [Course fee: $160.00]

ELM-4015 Electro-Mechanical Power Systems (4) fall

A detailed analysis of the components in high-power hydraulic, pneumatic, and electrical systems. Topics include pumps, pneumatic circuits, safety valves, actuators, electric motors and generators, transformers, relays, solenoids, and high-power semiconductors. Emphasis is placed 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, 3 hours of laboratory per week. Prerequisite: Senior standing in BSELM program or instructor permission.

ELM-4231 Control Systems I (4) fall

Students are introduced to 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 the design of discrete-time controllers using z-transform methods. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite:ELT-2061, MAT-3170, senior standing in the BS ELM program, or instructor permission. [Course fee: $50.00]

ELM-4232 Control Systems II (4) spring

Continuation of Control Systems I. Students are introduced to complex second-order, and higher-order systems. Topics include system identification methods, performance parameter design trade-offs, and designing higher-order controllers. Practical applications of microcontroller-based controller design are emphasized. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELM-4231. [Course fee: $50.00]

ELM-4701 ELM 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. Students are given a small electromechanical design on which to apply the lecture material. Students also select and begin planning a major, team-oriented project that is completed in Projects II. The project must have major electrical and mechanical components. 1 hour of lecture, 3 hours of laboratory per week. Prerequisite: Senior standing in the BSELM program or instructor permission. [Course fee: $50.00]

ELM-4702 ELM Project II (3) **spring**

This course is a continuation of EMT Projects I, dealing primarily with issues of large-scale projects. Coordination between the members of the design teams is stressed, with frequent seminars and mini-presentations to inform everyone of the teams' progress. A major presentation of the teams' project is required at the end of the semester. 1 hour of lecture, 6 hours of laboratory per week. Prerequisite: ELM-4701. [Course fee: $50.00]

Electrical Engineering Technology (ELT)

ELT-1011 Fundamentals of Circuits I (3) **fall**

This is the first of a two-semester study of basic electrical circuits. Course content includes electric charge, voltage, resistance, energy, and power. DC circuit theory includes Ohm's Law, Kirchhoff's Laws, series and parallel circuits, and electrical sources. The concepts of superposition and Thevenin's Theorem are introduced as well. Laboratory sessions are used to verify and reinforce concepts introduced in lecture. A weekly recitation is used to review problem sets. Teamwork is emphasized throughout the course. 2 hours of lecture, 2 hours of laboratory, 1 hour of recitation per week. Co-requisite: MAT-1111. [Course fee: $150.00]

ELT-1012 Fundamentals of Circuits II (3) **spring**

This is a continuation of ELT-1011. Course content includes the AC concepts of frequency, period, magnitude and phase of sine waves. Circuit parameters are studied as phasors and complex numbers, and are expressed in polar and rectangular forms. Topics studied include reactance, impedance, and power in series and parallel circuits and the transient behaviors of RC and RL circuits. Theorems developed in DC now used to analyze AC circuits. A weekly recitation is used for mastery of the subject. Laboratory sessions include the use of function generators and oscilloscopes. 2 hours of lecture, 2 hours of laboratory, 1 hour of recitation per week. Prerequisite: MAT-1111 and ELT-1011. Co-requisites: MAT-1112.

ELT-1021 Fundamentals of Digital Circuits I (3) fall

A first course in the fundamentals of digital logic with applications. Basic principles are presented along with Boolean theorems and algebraic reduction techniques, number systems, Karnaugh mapping, and analysis of combinational logic circuits, digital arithmetic, synchronous counters, decoders, encoders, and multiplexers. Concepts and theorems developed in the classroom are explored in the laboratory through practical examples and applications. Trouble-shooting techniques for digital circuits are also developed and students learn how to properly document their results. 2 hours of lecture, 3 hours of laboratory per week. Co-requisite: ELT-1011. [Course fee: $25.00]

ELT-1022 Fundamentals of Digital Circuits II (3) spring

This follow-on course to ELT-1021 introduces students to flip-flops, asynchronous counters, shift registers, state tables, and state diagrams. Analog-to-digital and digital-to analog converters are covered as well as basic system memory elements. Students are introduced to the Altera software simulation program in the lab and learn how to burn their own chips. 2 hours of lecture, 3 hours of laboratory per week.
Prerequisite: ELT-1021.

ELT-1031 Electrical Circuits I (4) fall

This course is an introductory study of DC and AC electrical circuits. Course content includes the basic ideas of electrical charge, current, voltage, resistance, energy and power. Capacitance, inductance, and the transient behavior of RC and RL circuits are also studied. 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, Kirchoff's laws, series and parallel circuits, and electrical sources. Laboratory exercises develop the use of basic measurement equipment, such as the ammeter, voltmeter, and oscilloscope, while verifying the concepts studied in lectures. 3 hours of of lecture, 3 hours of laboratory per week. Co-requisite: MAT-1420.
[Course fee: $150.00]

ELT-1032 Electrical Circuits II (4) spring

This course is a continuation of ELT-1031. Circuit analysis using advanced network theorems and techniques is introduced. Topics such as Superposition, Mesh and Nodal analysis, Thevenin's theorem and Controlled sources are investigated. Other topics include transformers, poly phase circuits, frequency response and response to non-sinusoidal signals. Laboratory exercises provide experience in using oscilloscopes, function generators, and frequency counters on circuits demonstrating the concepts developed in lectures. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-1012 or ELT-1031 and MAT-1420. Co-requisite: MAT-1520.

ELT-1051 Presentation Graphics I (1) fall

This course provides hands-on experience in creating technical presentations using many different software programs including MS Word, Excel, and PowerPoint. Topics include terminology, layout, chart creation, effective chart usage, and integrating text, graphics, and audio. Upon successful completion of this course students will be able to assemble and demonstrate an effective presentation. Additional topics covered are the use of analog and digital simulation tools such as MultiSim, Podcasting, Vodcasting and LabView. 3 hours of laboratory per week; co-requisite ELT-1011 or ELT-1031 and MAT-1112 or MAT-1420.

ELT-1052 Presentation Graphics II (1) spring

A continuation of ELT-1051 that provides the fundamentals of AutoCad, and continuing topics on schematic capture, circuit analysis and printed circuit board (PCB) creation. The fundamentals of WEB page documentation are also presented. At the end of the course there will be a two-week project that will use all tools explored in the course. 3 hours of laboratory per week. Prerequisite ETL-1051 and ELT-1110 or ELT-1022. Co-requisite ELT-1032. [Course fee: $25.00]

ELT-1080 Electronics for Computer Engineering (4) fall/spring

This course gives students an overview of topics from solid-state electronics. Topics include diode circuits, the transistor as a small signal amplifier and as a switching element, op-amp circuits, and interfacing circuits common to computer applications. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-1031 or ELT-1012.

ELT-1101 General Electronics I (4) fall

This is an introductory course for students who are not majors in the Electrical Engineering Technology or the Computer Engineering Technology programs. It presents a survey of the fundamental principles of electrical theory, in order to provide the basic understanding for further study and application in other areas. Key topics in direct current (DC) and alternating current (AC) circuits are presented, including current, voltage, resistance, capacitance, inductance, reactance, impedance, energy, power, electrical sources, magnetism, and transformers. A brief introduction to semiconductors is presented. Common measurement instruments are discussed and used in laboratory experiments. 3 hours of lecture, 3 hours of laboratory per week. Co-requisite: MAT-1420.

ELT-1102 General Electronics II (4) as required

This course continues the topics from ELT-1101 General Electronics I, as survey of the fundamental principles of electronic theory for students who are not majors in Electrical Engineering Technology or Computer Engineering Technology programs.
Prerequisite: ELT-1101.

ELT-1110 Introduction to Digital Circuits (4) fall/spring

This first course in digital electronics introduces hardware programmable (wired) digital structures from a functional perspective. The logic function -- its representation, simplification, and implementation -- is developed as a central concept. Two network classes are identified and analyzed: combinatorial and sequential. The nature of digital signals, number systems, the algebra of logic and graphical minimization are among the topics investigated. Common logic functions are realized in the laboratory using currently popular digital integrated circuits of varying complexity (small-, medium-, large-scale integration). A familiarity with vendor offerings and knowledge of data book specifications are emphasized. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None. [Course fee: $25.00]

ELT-2010 Analog Electronics (4) as required

This course for General Engineering Technology majors introduces the use of diodes and transistors as basic circuit elements in power supplies, amplifiers, and digital gates. Operational amplifier configurations are examined in detail. Transfer functions, frequency response, and the effects of feedback are explored. 3 hours of lecture, 3 hours of laboratory per week. Co-requisite: ELT-1031.

ELT-2030 Digital Electronics II (4) as required

The second course in a sequence of digital electronics for students majoring in Telecommunication Technology. This course is designed to train students in the organization, architecture and hardware aspects of digital computer systems. Topics include and introduction to microprocessors, types and characteristics of different chips, microprocessors architecture, introduction to programming, PC system organization, operating systems, motherboards, bus structures, memory, I/O interface devices, disc drives, video displays, and printers. Serial and parallel buses are discussed. Applications include the interfacing of peripherals, data communications between computers, and a team project. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-1110.

ELT-2040 Computer System Components/Interfaces (4) spring

This course is a continuation of the interfacing concepts started in ELT-2050 from the local processor level to the board and systems level. Topics studied include data communications standards and techniques, data structures, multiple interrupt problems, and advanced assembly language programming. Computer systems and peripherals are studied with emphasis on dealing with systems, reading documentation, and interconnecting subsystems. Software will be written to test the systems. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-1080, ELT-2050, and CIS-2025. [Course fee: $50.00]

ELT-2050 Microcomputer Techniques (4) fall/spring

This course introduces students to the fundamentals of computers with an emphasis on applications using microcontrollers. Topics include assembly language programming, computer architecture (CPU, memory, input/output devices, and busses), counters, timers, parallel ports, A/D and D/A converters, and interfacing to switches, keypads, display devices, simple sensors, and DC motors. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-1110 or ELT-1022 and CIS-2025. Co- requisite: ELT-2051, ELT-3030. [Course fee: $120.00]

ELT-2051 Electronics I (4) fall

This is an introductory course in electronics. lt extends DC-AC circuits into active devices and their associated circuitry. Stress is placed on solid-state theory. Diodes, bipolar transistors, and several types of field-effect transistors are studied. Small signal equivalent circuits and large signal graphical analysis are developed. Included in the applications studied are Class A and Class B amplifiers. Practical approximation methods are developed throughout the course. 3 hours of lecture, 3 hours laboratory per week. Prerequisite: ELT-1032 and MAT-1520. [Course fee: $25.00]

ELT-2052 Electronics II (4) spring

This course addresses electronics from a system and applications view rather than a device view as in ELT-2051 (Electronics I). System issues such as two-port networks, frequency response, dB, bode plots and related topics are explored. Active filters, linear and switching supplies, oscillators and modulation are also covered. Several additional topics that tie together electronics and applications are also introduced. 3 hours of lecture. 3 hours of laboratory per week. Prerequisite ELT-2051, ELT-2060 and MAT-1520. [Course fee: $25.00]

ELT-2060 Electronic Applications (4) fall/spring

The purpose of this course is to integrate material from several courses in order to achieve small working systems. In the process of achieving this integration, topics in the theory and application of operational amplifiers, the theory and applications of A/D and D/A systems and the integration of instrumentation will be explored. analysis in both time and frequency will be used. additional topics will be added as seen appropriate. analysis will often use MultiSim to assist with concepts. 3 hours of lecture. 3 hours of laboratory per week. Prerequisite ELT-1032. Co-requisite ELT-2050 and ELT-2051.

ELT-2061 Electromechanical Systems I (4) spring

The course introduces applied system mathematics, including block diagram algebra, LaPlace transforms, and graphical technique such as Bode analysis. Basic modeling techniques for first and second order systems are covered. Open loop characteristics are initially developed and system models are then constructed for closed loop simulations. Damping coefficients are stability are looked at with an initial introduction to PID controllers. Some time is spent looking at a commercial Programmable Logic controller. 3 hours of lecture. 3 hours of laboratory per week. Prerequisite MAT-1520; ELT-1032 and ELT-1110 or ELT-2072 and ELT-3060.

ELT-2071 Basic Electricity (3) fall

The course introduces the physical concepts of electricity and electrical devices for mechanical engineering technology students. Fundamentals of power, resistance, inductance, capacitance, motors, and generators from the standpoint of their relationship to mechanical applications are covered. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1420.

ELT-2072 Electronics (4) spring

Linear and digital electronics, including microprocessors, are studied from the standpoint of the electrical-mechanical interface. Concepts of sensors and transducers, amplifiers, semiconductor control devices, and integrated logic circuits account for approximately two-thirds of the course. The last third is spent on learning the application of a small microcomputer to simple industrial control problems. Related laboratory exercises reinforce the class material. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-2071 and CIS-1050, or MEC-1050 or equivalent. [Course fee: $36.00]

ELT-2130 Industrial Electronics (4) spring

This is a multi-purpose course designed to acquaint the student with the electronic devices, circuits and computer techniques used to control industrial operations. Specifically included in the course are sensors and related instrumentation, power switching devices, DC and AC motors, stepping and brushless motors and Programmable Logic Controllers. Applications and control issues involved with these devices are investigated as well. If time permits, additional topics of student interest will be investigated. 3 hours of lecture, 3 hours of laboratory per week.
Prerequisite: ELT-2051 and ELT-2060.

ELT-2210 Introduction to Solid State Lighting (3) fall

This course introduces the fundamentals of solid state lighting systems. The student will gain experience using various LED's, optics, and heat sinks to create a total lighting solution. Various applications of using LED's for lighting will be studied. Lecture: 2hrs/wk; Laboratory 2hrs/wk. Pre-requisites: PHY-1041 and MAT-1420. [Course fee: $100.00]

ELT-2720 Electrical Project (3) 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 will work on a product of reasonable complexity, develop and assemble a printed circuit board, and document and present the finished product. The laboratory portion is intended to develop practical skills in circuit board layout and fabrication. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: Sophomore standing in the EET program or instructor permission. [Course fee: $50.00]

ELT-2730 Engineering Project (3) as required

The goal of the capstone course is to provide students with an opportunity to use their technical knowledge to develop a final technical project. Students need to use their abilities in analysis, synthesis, and interpersonal skills to solve engineering or manufacturing problems. The objectives of the course are for students to apply technical knowledge to solving problems, practice decision-making skills, demonstrate teamwork, perform technical analysis, demonstrate synthesis, develop documentation and presentation skills, and develop time management. Prerequisite: ELT-1051, ELT-2050, and ELT-2051.

ELT-3010 Digital II (4) fall

This course is designed to extend the student's skill with digital hardware. It covers more advanced topics than can be covered in a first digital course, including advanced digital design techniques. Various design methodologies are studied such as state machine design and the use of hardware description languages. Applications focus on the design of computer hardware subsystems. The laboratory experiences illustrate the various methods for design entry such as schematic entry and VHDL. Additionally, simulation and testing is a major focus in lab. Designs are implemented using commercial programmable logic devices (PLDs). 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-1022 or ELT-1110 and ELT-1080 and ELT-2050. [Course fee: $30.00]

ELT-3020 Electrical Circuits and Controls (4) fall

This course provides an intense introduction to the basics of DC and AC circuits. The applications of these principles to electromechanical systems, transformers, power distribution, and motors are explored. Transducers, sensors, and the fundamentals of digital systems are examined as well. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1520, Junior standing or instructor permission.

ELT-3030 Solid State Electronics (4) spring

This course reviews solid state theory and introduces students to multilayer semiconductor devices (diodes, bipolar and field effect transistors, thyristors, PUTs, etc.). Other topics include integrated circuit amplifiers, comparators, timers, regulators, multiplexers, and oscillators. Computer simulation software is used. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-1032 or ELT-3060.

ELT-3040 Electronic and Data Communications (4) spring

This course introduces students to the concepts necessary to understand data communications in today's networked world. Both analog communications and digital communications are studied. Topics include media characteristics, Fourier series analysis, frequency division multiplexing, noise, and modulation techniques. Additional topics include network protocols, data encoding techniques, error detection and correction, encryption, and data compression. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1520, ELT-2050, ELT-3030, and CIS-2025.

ELT-3050 Microprocessor Techniques II (4) spring

This third course in digital electronics focuses on implementing an embedded system. Topics include a review of programmable peripherals, interfacing standard i/o devices and sensors found in embedded systems, standard communication interfaces, battery-based operation, ROMable code, mixed language programming (assembly language and C), real time programming issues, and hardware based debugging techniques (in-circuit emulation). The students work with a single board computer and build a complete, stand-alone embedded system. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: ELT-2050 and ELT-3010. [Course fee: $65.00]

ELT-3060 Electrical Circuit Analyses (3) fall

This course reviews and extends the circuit analysis capabilities of students who have only had an introductory electrical circuits course. Topics include passive components (resistor, capacitor, inductor, transformers), Kirchoff's laws, network theorems (mesh, nodal, Thevenin, Norton, superposition), dependent sources, two port models, and transient response. This course emphasizes alternating current concepts and makes use of computer simulation software. 3 hours of lecture per week. Prerequisite: MAT-1520 and ELT-2072 or ELT-1031 and Junior standing in the BSELM program.

ELT-4010 Computer Architecture (3) fall

This course discusses the architecture of computer systems, both inside the CPU as well as outside. Topics include pipelines, cache, floating-point unit, RISC vs CISC architecture, and so forth. Issues such as branch prediction, pipeline interlocks, and coordinating SMP machines are discussed. 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 (4) spring

Digital Signal Processing (DSP) theory and applications are covered from an introductory to an intermediate level. Throughout the course, the implementation of DSP algorithms and mathematical functions such as Infinite Impulse Response (IIR) filters, Finite Impulse Response (FIR) filters, correlation routines, Discrete Fourier Transforms (DFT), and Inverse Discrete Fourier Transforms (IDFT) are examined. The student also gains familiarity with DSP hardware system design and peripheral interface techniques. 3 hours of lecture and 3 hours of laboratory per week. Prerequisites: ELT-2050 and MAT-2532

English (ENG)

ENG-1041 Basic College Writing (4) fall

This integrated course helps students develop basic reading and writing skills. Comprehension and vocabulary skills are taught through analysis of technical reading selections. Students write regularly and improve their grammar skills through systematic review. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: Placement level 1.

ENG-1042 Expository Writing (4) fall/spring

Students develop their reading skills by analyzing examples of professional writing in class; they develop their writing skills by writing at least five essays and completing various writing exercises. Students review principles of grammar and sentence construction. Emphasis is placed on the process of revision through class editing of student essays. Word processing and computer network skills are taught in the laboratory section. The course also includes optional oral presentation and library exercises. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: ENG-1041 or Placement level 2.

ENG-1043 Research Writing (4) fall/spring

This course is a continuation of ENG-1042 and completes the English composition sequence. Students develop their expository and argumentative writing skills through writing exercises, essays, a research paper, and an optional oral presentation. Research skills are developed through library assignments and research exercises. The Writing Graduation Standard is assessed in ENG-1043. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: ENG-1042.

ENG-1060 Freshman Composition (4) fall/spring

This course teaches the same writing concepts as ENG-1042/1043. Successful completion of this course prepares students for ENG-2080. All students are introduced to composing on the word processor and the use of rhetorical strategies. They complete a variety of writing exercises, essays, a research paper, and an optional oral presentation. The Writing Graduation Standard is assessed in ENG-1060. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: Placement level 3 or higher.

ENG-1061 English Composition (3) fall

Students are expected to read and think critically, to write effectively, and to understand 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 resources in locating, organizing, and presenting materials in an accepted format. The Writing Graduation Standard is assessed in ENG-1061. 3 hours of lecture per week. Prerequisite: Placement level 4.

ENG-1070 Effective Speaking (3) fall/spring

Students study various theories of effective oral communication with the focus on organizational communication. Students develop their abilities to listen, to analyze audiences, and to use visual aids. They learn through study and practice how to communicate effectively in three primary settings: person to person, person to group, and within a group. For some majors, the Oral Communication Graduation Standard is assessed in ENG-1070; consult with your advisor about your major. 3 hours of lecture per week. (General Ed: AH). Prerequisite: None.

ENG-2080 Technical Communication (3) fall/spring/summer

This course is a comprehensive study of the principles, methods, and forms needed to produce clear and effective technical reports, proposals, instructions, graphic aids, and correspondence. Students are prepared for employment interviews through their study of principles of oral communication and their writing of job application letters and resumes. A major technical report, written on some topic in the student's field of concentration and in consultation with his/her technical department faculty is required. The Writing Graduation Standard is assessed in ENG-2080. 3 hours of lecture per week. Prerequisite: ENG-1061 or equivelent.

ENG-2101 Introduction to Creative Writing (3) as required

This course encourages students to explore themselves and the worlds around them with a writer's eye. Along with writing their own stories, students will read stories and essays by other writers, and will workshop each other's stories. 3 hours of lecture per week. (General Education: AH). Prerequisite: ENG-1061 or equivalent.

ENG-2320 Themes in American Literature (3) as required

Students read and discuss selected works of recent and earlier American literature focusing on themes such as growing up American, the immigrant experience, country life vs. city life, alienation, the pioneer experience, the impact of the western hero, and the work ethic. Understanding and appreciation of the uniqueness and continuity of these themes and of the methods used by fiction writers will enhance the students' reading experience. 3 hours of lecture per week. (General Education: AH). Prerequisite: ENG-1061 or equivalent.

ENG-2485 Literature of Peace and Pacifism (3) as required

This course introduces students to the themes of peace, pacifism, and nonviolence in literature from the United States and around the world. Students will read and discuss classic and contemporary novels, short stories, and poetry, responding critically to war and suggesting peaceful alternatives. 3 hours of lecture per week. (General Education: AH). Prerequisite: None.

ENG-2590 Stephen King in Literature and Film (3) as required

This course is designed to offer a critical inquiry into the films, novels, life and works of one of the bestselling and most popular authors of our time – Stephen King. Through the critical analysis of such films as Carrie, Stand by Me, Misery, The Shining, and Storm of the Century (among others), students will explore their personal relationship to horror fiction while entertaining a central, pivotal question: What does horror's 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 filims. 3 hours of lecture per week. (General Education: AH) Prerequisite: ENG-1061 or equivalent.

ENG-3485 The Tradition of Anti-War Literature (3) as required

This course studies in depth the tradition of anti-war literature from the United States and around the world. Students will read and discuss classic and contemporary novels, short stories and poetry addressing themes of peace, pacifism, and nonviolence, responding critically to war and suggesting peaceful alternatives. 3 hours of lecture per week. (General Education: AH). Prerequisite: ENG-1061 or equivalent.

ENG-3490 Crime and Punishment in Film and Literature (3) as required

This course introduces students to the fundamental legal and ethical issues in American crime and criminal justice through film and literature. The course examines the dilemmas in crime and punishment. Students discuss the literature and films in the context of the humanities. (General Education: AH) Prerequisites: Junior standing or permission.

ENG3590 – the Films and Novels of Stephen King (3) as required

This advanced writing course is designed to offer a critical inquiry into the films, novels, life and works of one of the bestselling and most popular authors of our time – Stephen King. Through the critical analysis of such films as Carrie, Stand by Me, Misery, The Shining, and Storm of the Century (among others), students will explore their personal relationship to horror fiction while entertaining a central, pivotal question: What does horror's 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 filims. 3 hours of lecture per week. (General Education: AH) Prerequisite: ENG-1061 or junior standing.

English for Speakers of Other Languages (ESOL)

ESL-1041 Basic College English Skills (4) summer/fall

This integrated course helps non-native English speaking students at the intermediate and high intermediate level to develop their skills in grammar, writing, reading, listening and speaking. These basic academic skills are taught, practiced, and tested in the classroom, the writing laboratory, and the language laboratory--which has ESOL software. Students develop academic writing skills through weekly assignments. Reading comprehension and vocabulary skills are taught through analysis of general and technical reading selections. Students must achieve at least a "B" and demonstrate improved skills in two post-course placement tests in order to take ENG-1042. 2 hours of lecture, 2 language lab hours and 2 writing lab hours per week. Placement assessment of intermediate to high intermediate level of English, Vermont Tech writing placement test required to determine placement level.

Environmental Studies (ENV)

ENV-2070 Environmental Law (3) as required

This course will analyze various aspects of environmental policy making in both the U.S. and internationally. It will begin with various philosophical and ideological perspectives concerning the relationship between man and nature. There will be consideration of how environmental issues interact ith various other types of societal goals, particularly economic prosperity, security, and freedom. The class will study aspects of the environmental policy process and its outcomes in the U.S. by the use of a number of case studies relevant to particular policy problems (including air and water pollution; biological engineering; and energy). 3 hours of lecture per week. (General Ed: SS). Prerequisite: None

ENV-3050 Issues in Environmental Studies (3) as required

Technological advances have been used to lessen or solve many of humanity's problems. However, there seems to be one major area, the environment, where advances in technology have not accomplished that end. What is so different about an environmental problem that leads to reluctance to use technological advances to find and implement solutions? This course uses political, economic and sociological perspectives to look at environmental problems, proposed solutions, and the failure of society to implement effective solutions. (General Education: SS). Prerequisite: Junior standing or permission of instructor.

Equine Studies (EQS)

EQS 1010/EQS1011 Introduction to Equine Studies (2 each) fall/spring

This course introduces students to Vermont Technical College and provides an overview of the Equine Studies major. Topics to be covered include: an examination of the equine industry in the United States; 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. Prerequisite: None for EQS1010. EQS1011 requires EQS1010.

EQS 1021 Equitation I: Stable Management and Riding (2) fall

Students will be introduced to stable management principles and will be responsible for daily horse care, under the supervision of the Equine Center Supervisor. Stable Management topics include safety guidelines, grooming for health, feed and nutrition, equine health care and record keeping; facility assessment and organization, and seasonal care issues. The Equitation topics begin with the fundamentals of equitation, including correct use and fitting of tack; understanding human anatomy and the seat; the use of basic balanced position and light contact while performing transitions and half halts; working on turns and maneuverability; and regulation of pace on the flat.. All students are expected to demonstrate proficiency in the foundation components, which will form the basis of Riding Instruction I. 4 hours per lab week: 2 hours animal care and 2 hours riding. Prerequisite: None. [Course fee: $600.00]

EQS 1022 Equitation II: Winter Stable Management and Riding (2) spring

Students will build upon their study of stable management principles from EQS1021 and will continue to be responsible for daily horse care, under the supervision of the Equine Center Supervisor. Emphasis in this course will be on successful winter care of equines and the facility. Topics include: regular health assessment; dental care; first aid; blanketing and bandaging; use of restraints; facility design and pasture management; continuing attention to saddle and equipment fit; tack care; and equine transport. Additionally, students will continue to receive instruction in equitation and use of aids, including review of basic balanced position; half halts, transitions, and lateral and longitudinal suppling; and development of obedience and roundness, submission and attention. Students will be introduced to the use of natural and artificial aids, cues, and exercises for flat work. Students will receive equitation instruction suitable to their level of ability, which may include increased focus on clear communication and effective use of aids or cues resulting in improved performance. Some students also may opt to focus on driving or western horsemanship. 4 lab hours per week: 2 hours animal care and 2 hours riding. Prerequisite: EQS 1021. [Course fee: $600.00]

EQS 2011 Equine Training I (3) fall

Students learn safe and effective techniques for training the green or unbroken horse for various disciplines, as well as develop skills to critically analyze various trainers and strategies. The course includes discussion sessions, during which students view and evaluate professional trainers. The labs include hands-on practice of 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 will be introduced to harness and/or saddle as well as desensitization training. Introduction to actual riding or driving will depend on each training horse's rate of progress. 2 hours of lecture and 2 hours of lab per week. Prerequisite: EQS 1022. [Course fee: $150.00]

EQS-2020 Farrier Care & Lameness (2) fall

This course is designed to teach students to recognize anatomical issues with a horse's hoof and leg structure and to evaluate the care provided by a farrier. They will learn how to do a basic hoof trim and to provide emergency care until the farrier can arrive. 1 hour of lecture, 2 hours of laboratory per week. Prerequisite: EQS-1021 and EQS-1022 or with permission of the instructor. Lab Fee required.

EQS 2023, 3024, 4025, 4026 Equitation III-VI (1) fall/spring

Emphasis in each course is placed on assisting each student's development at his/her pace and introducing all students to a variety of riding and driving methods. Students will continue to learn about correct use of tack for various disciplines or purposes, as well as correct technique in their choice of dressage, jumping, hunt seat equitation, stock seat/Western, or driving. Not all topics will be covered in each course, but all topics will be addressed within the sequence, which every student must complete in the correct order. **Note: all students are encouraged to take at least one semester of dressage, of driving, and of Western horsemanship.** 2 hrs/riding lessons per week. Prerequisite: EQS-1022or equitation course in the sequence.

EQS 3010 Law and the Equine Professional (3) fall

Students in this course will review equine- specific cases and learn about structure, risk, liabilities, and other pertinent topics necessary to running a successful equine-related business. The course will include in-depth examination of differences, advantages, and disadvantages of different structures for equine businesses; equine liability laws; insurance issues; and equine contracts. 3 hours of lecture per week. Prerequisite: None.[Course fee: $150.00].

EQS 3012 Equine Training II (3) spring

This course focuses on refining and developing the green and the schooled horse. Attention will be given to long lining, lunging, producing lightness and acceptance of the aids and correct muscle development and way of going. The horse will demonstrate relaxation and suppleness through balanced movements, quality gaits, and smooth transitions. Strategies for eliminating resistance and improving the horse's way of going will be introduced with the goal of keeping the horse fresh and happy in its work. 1 hour of lecture and 4 hours of lab per week. Prerequisite: EQS 2011 with a C or better. [Course fee: $150.00]

EQS 3031 Riding Instruction I (3) fall

This course provides analysis of effective teaching techniques for equine riding and/or driving instruction for beginners to beginner/ intermediate riders, including the psychological factors that influence rider/horse interaction. There are opportunities for observing, assisting with, and providing instruction. Students will begin to accumulate hours toward the required total necessary for ARIA certification testing. 2 hours of lecture and 2 hours of lab per week. Prerequisite: None. [Course fee: $150.00]

EQS 4010 Equine Health and Diseases (3cr) fall

This course provides an in-depth exploration of issues relating to equine health management, including signs of health and illness; diseases and their causes; preventative and maintenance care measures; and emergency care for horses. 3 hours of lecture per week. Prerequisite: AGR 2030 and VET 1020.

EQS 4020 Therapeutic Programs (2) fall

This course provides the historical and social context of the ever-increasing popularity of therapeutic riding and driving programs. Students will learn about how such program are operated, the clientele they serve, and the crucial role that therapy horses play in people146s lives. There will be opportunities to meet individuals involved with such programs and to visit an operational equine therapy program. 2 hours of lecture per week. Prerequisite: None.

EQS 4032 Riding Instruction II (3) fall

Students will continue to develop their skills as riding and/or driving instructors, including class preparation, assessment of student progress, and variety of teaching methods used. After completion of Riding Instruction I and II, students should have a strong foundation of riding instruction experience. They will be able to apply for Level I Certification with the American Riding Instructors Association. If a sufficient number of students are interested, ARIA testing can be conducted at Vermont Technical College. 2 hours of lecture and 2 hours of lab per week. Prerequisite: EQS 3031 with a grade of C or better. Lab Fee required.

EQS 4610 Equine Studies Senior Project (3cr) spring

Under the joint supervision of the Program Director and a mentor, when necessary, students will propose, gain approval for, and complete a research project in a specific area of the equine industry. The project will include a hands-on component (unless an exception is granted by the Program Director) and will conclude with a substantive written report and an oral presentation. 3 hours of lecture per week. Prerequisite: None.

Fire Science (FSC)

FSC-1000 Freshman Orientation (1) fall

The focus of this course is designed to facilitate a successful transition to college and focuses on: orientation to college: academic success strategies; study skills, professional development; introduction to Web Services, critical thinking skills, and academic advising services, time management and developing an understanding of the fire service as a public trust. 1 hour of lecture per week. Prerequisite: None

FSC-1010 Principles of Building Construction and Fire Protection (3) fall

This course provides the components of building construction that relate to fire and life safety and how understanding the building types and construction principles will improve fire suppression and fire ground safety. The emphasis of this course is on firefighter safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at emergencies. 3 hours of lecture per week. Prerequisite: None.

FSC-1021 Firefighting Services (3) fall

This introductory course provides an overview of fire services; career opportunities in fire fighting and related fields; philosophy and history of fire protection/service; fire loss analysis; organization and function of public and private firefighting services; fire departments as part of local government; laws and regulations affecting the fire service; introduction to fire protection systems; fire strategy and tactics. Students will learn basic fire suppression, rescue, and extrication skills. This academic course will include competency based skill development necessary to perform fire/rescue duties. 3 hours of lecture per week. Prerequisite: None [Course fee: $30.00]

FSC-1022 Firefighting Services II (4) spring

Firefighting Services II continues the study of fire service nomenclature; specific firefighting techniques and functions; basic fire chemistry and physics; fire protection systems; and understanding fire strategy and tactics. Students will learn and practice basic fire suppression, rescue, and extrication skills. Upon successful completion of this course students will be eligible to apply for Vermont Certification as a Firefighter I. This procedure includes passing a written exam; proficiency skill based testing, and participation in a live burn exercise at the Vermont Fire Academy. 3 hours of lecture, 1 hour of laboratory hour per week. Prerequisite: FSC-1021.

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 will include a general understanding of fire and combustion, the history of fire fighting in the United States, analysis of significant fires in American history and their impact, discussion of the catastrophic theory of management as it pertained to these fires, today's impact of the urban wildfire interface, and how fire affects society and the family unit. 3 hours of lecture per week. Prerequisite: None.

FSC-1122 Independent Study (3) as required

Students will have the opportunity to pursue an independent or public research project, participate in a service-learning project such as fire education. Students will be required to submit a thesis for their project, which outlines the topic, research methods, and evaluation method. Prerequisite: Program Director permission.

FSC-1210 Fire Inspector I (3) spring

The Fire Inspector I course is designed as an introductory course to educate the student in the principles, and techniques of fire prevention, life safety inspection, and code compliance. It conforms to National Fire Protection Association 1031, Standard for Professional Qualifications for Fire Inspector I and Plan Examiner. Built as a beginning course to certification the course will include case studies, field inspection exercises and report writing. 3 hours of lecture per week. Prerequisite: None.

FSC-1220 Fire Service Leadership (3) spring

Fire Service Leadership is designed to develop a foundation of leadership skills for the firefighter/officer. Course content will include the identification of leadership styles, group dynamics, diversity, conflict resolution, managing change, and problem solving. This course will emphasize personal leadership development and supervisory skills both in applied research, readings, group exercises and classroom discussion. 3 hours of lecture per week. Prerequisite: None.

FSC-2011 Emergency Medical Services (6) fall

This course is designed to teach students emergency medical services skills. Prerequisites: Current CPR certification and automated external cardiac defibrillation (AED) is required prior to entering the class; Department Chair approval is required for all students and community emergency medical personnel who wish to enroll in this class; Community emergency medical personnel must be affiliated with an ambulance service, licensed first response organization, or a fire/rescue department providing emergency care. [Course fee: $200.00]

FSC-2020 Fire Service Hydraulics and Water Supply (3) fall

This course provides a foundation of theoretical and mathematical knowledge to understand the principles of fluids, the use of water in fire protection, and to apply 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-2030 Firefighter Occupational Health and Safety (3) as required

Students learn the basic concepts of occupational health and safety as it relates to emergency service organizations. Topics include risk evaluation and control procedures for fire stations, training sites, emergency vehicles, and emergency situations involving fire, EMS, hazardous materials, and technical rescue. Upon completion of this course, students should be able to establish and manage a safety program in an emergency service organization. 3 hours of lecture per week. Prerequisite: By permission

FSC-2210 Fire Administration (3) spring

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. Students will utilize case studies, analysis of actual fire ground scenarios, and critique various fire ground operational strategies. 3 hours of lecture per week. Prerequisite: None.

FSC-2220 Firefighting Strategy and Tactics (3) spring

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. Students will utilize case studies, analysis of actual fire ground scenarios, and critique various fire ground operational strategies. 3 hours of lecture per week. Prerequisite: None.

FSC-2230 Hazardous Materials Chemistry and Operations (4) spring

This course provides basic fire chemistry relating to the categories of hazardous materials including problems of recognition, reactivity, and health hazards encountered by firefighters. It also prepares students to determine an initial course of action for emergency responders and understand strategies, tactics, and resource management techniques for handling hazardous materials incidents. Upon successful completion of this course and supplemental field and classroom training, students will be Vermont certified at the Operations Level for Hazardous Materials. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: CHE 1020.

FSC-2240 Fire Protection Systems (3) spring

This course provides information relating to the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, and water supply for fire protection and portable fire extinguishers. Classroom activities will provide students with the opportunity to use fire extinguishers, inspect wet/dry/residential sprinkler systems, and study various alarm notification systems. 3 hours of lecture per week. Prerequisite: None.

FSC-2250 Fire & Life Safety Educator (3) fall

This course provides fundamental information regarding the history and philosophy of fire prevention, organization and operation of a fire prevention bureau, use of fire codes, identification and correction of fire hazards, and the relationships of fire prevention with built-in fire protection systems, fire investigation, and fire and life-safety education in community schools. Students will prepare presentations, deliver safety education using the National Fire Protection Association; Risk Watch; Program, and study the effects of tragic fires, which led to new fire safety standards. 3 hours of lecture per week. Prerequisite: None.

FSC 2820 Residential/Internship Program (3) as required

This course is a designed to provide the student with actual experience as a firefighter in a municipal fire station, or an internship experience in private industry involved with fire prevention, loss control, or risk management. In the residential program, the student will perform actual firefighter duties which include; station duties, fire safety instruction, fire suppression activities, responding to; alarms, fire calls, motor vehicle accidents, mutual aid, good intent calls, and special hazards incidents. Placement in the internship program either in private industry or fire related service, a student will participate in prevention or risk management activities under the supervision of a supervisor or manager. Prerequisite: Vermont Certification as a Firefighter I,

Geography (GEO)

GEO-1010 World Geography (3) as required

This course introduces students to the fundamental concepts of geography and the major geographic regions of the world. The course examines the ecological interactions between the physical and the human environment; following an introduction to the basic terms and concepts of geography, the course continues to explore each of ten regions of the globe. 3 hours of lecture week. (General Education: SS) Prerequisite: None.

History (HIS)

HIS-1111 World History I (3) as required

An introduction to world civilizations: Ancient, Mediterranean, European, South Asian, East Asian, and African. Study includes origins of the time of global expansion of European civilizations. 3 hours of lecture per week. (General Education: SS). Prerequisites: None.

HIS-1211 American History I (3) fall

In the course, students survey the major historical events of the period as they affected the lives of the American people. Emphasis in the course is placed on the changes in institutions, values, and lifestyles that characterized the evolution of our society from a colonial, agrarian culture to that of a unified, democratic republic. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

HIS-1212 American History II (3) spring

Students examine the historical roots of American society as an individualized, urbanized, technological culture and consider the problems and solutions generated by such a culture. Students also study the evolution of the U.S. in foreign affairs to its present status as a superpower. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

HIS-1260 Information Technology Past, Present and Future (3) fall

The history of computing from the early mechanical devices, theoretical milestones, electronic computers of the late 1940's and 1950's, generational changes in architecture, underlying technologies, and the progression from main frames, to minicomputers, supercomputers, microcomputers and embedded computers, and networking. Introductory societal and/or ethical issues such as the digital divide, encryption, peer-to-peer file sharing, and computers &; homeland security. Organizational and human forces shaping the adoption of information technology and the difficulties that may be experienced during a systems implementation, a change of systems, and the impacts of computer technology on employment, health, and the community. It concludes with various trends and forces shaping information technology and probable changes that will occur from a futurist perspective. Topics include: recent new technologies and their effect on people and society, basic concepts of future studies, the application of future studies to make a prediction regarding new technologies. 3 hours of lecture per week. (General Education: SS - For non-computer major). Prerequisite: None.

HIS-2150 History of U.S. in the Sixties (3) as required

This course explores the movements and events of the United States during one of the most tumultuous decades of our history--the 1960's. Through documentary films and other media, readings, websites, and discussion, students will study such topics as the Civil Rights Movement, the Kennedy administration and assassination, the student movement, the impact of the Vietnam War, and the music, art, and literature of the counterculture that are the hallmarks of a decade marked by social activism and political and cultural upheaval. Through individual and group reading, study, and presentation, students will learn of the continuation of the environmental, women's and civil rights movements. Students will also examine the arms race and the space race. (General Education: SS). Prerequisites: None.

HIS-2660 European Classroom (3) fall

This course will immerse students in the art and architectural history of a foreign city through participation in intensive coursework combined with the experience o a guided travel tour to Europe. The course will use visual perception and critical analysis to study the two interconnected fields while expanding student learning by experiencing the works of art and architecture first hand. It will reinforce each student’s understanding of topics in the history, culture, art, and architecture of paris. This is a cultural experience intended to enrich and broaden student perspectives in our increasingly global world. (General Education:SS) Prerequisite: ENG-1061 and instructor permission.

Humanities (HUM)

HUM-2020 Bioethics (3) **as required**

An exploration of ethical issues from beginning-of-life to end-of-life, from legal, medical, and philosophical perspectives. Topics include assisted reproduction, abortion, euthansia, genetic experimentation and cloning, and homosexuality. 3 hours of lecture per week. (General Education: AH). Prerequisites: None.

HUM-2040 The Holocaust (3) **as required**

Students in this course will examine the Holocaust thematically through a variety of mediums: psychology, history, literature, and sociology. (General Education: AH). Prerequisites: None.

HUM-2060 Cyberethics (3) **as required**

This course introduces students to the fundamentals of ethical inquiry and the ethical implications of developments in computer technology. 3 hours of lecture per week. (General Education: AH). Prerequisites: None.

HUM-2070 Vampire in Literature (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, students will understand the fundamental aspects of Gothic literature and formulate their own ideas as to the importance of the vampire archetype. In addition, students will learn to identify vampirical elements in literature and film and will enhance their knowledge and understanding of the vampire's role in popular culture. (General Education: AH). Prerequisite: ENG-1061 or equivalent.

HUM-2080 The Literature and Culture of Witchcraft (3) **as required**

Grounded in the early European historical context of Witchcraft and the Colonial American experience of Witchcraft, this course engages students in an exploratory and critical dialog that examines Witchcraft as it is represented in various types of literature (including plays, short stories poetry, court documents, journal entries and novels), culture and film. Witchcraft stereotypes and hysteria often represent the societal anxieties and beliefs of the culture in which they appear, and offer a rich subject for academic study. By drawing from the readings and films assigned throughout the semester, as well as personal research, and reflective and critical analysis, students will develop their own unique discourse in regards to the literature and culture of witchcraft and its unique contribution to contemporary and past culture. 3 hours of lecture per week. (General Education: AH) Prerequisite: ENG-1061 or equivalent.

HUM-2330 Peace Studies (3) **as required**

This course introduces students to the ideas, principles, and practices of peacemaking. We will examine the literature and philosophy of peace and nonviolence in the context o historical experience, and learn practical ways of peacemaking that we can apply to our own lives. We'll watch films, hear speakers, read, discuss, and take a field trip to the Green mountain Darma Center; grades are based on attendance and participation, weekly short informal writing assignments, midterm and final take-home essay exams, and a final research paper/project and presentation. (General Education: AH). Prerequisite: None.

HUM-3050 Theories of Science and Technology (3) **as required**

This course explores a variety of historical and philosophical perspectives on science and technology. Special emphasis is placed 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; the role of the individual scientist or technician. 3 hours lecture per week. (General Education: AH). Prerequisite: Junior standing or instructor permission.

HUM-3070 Vampire in Literature--Upper Level (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, students will understand the fundamental aspects of Gothic literature and formulate their own ideas as to the importance of the vampire archetype. In addition, students will learn to identify vampirical elements in literature and film and will enhance their knowledge and understanding of the vampire's role in popular culture. (General Education: AH). Prerequisite: Junior standing or instructor premission.

HUM-3330 Peace Studies and Peacemaking (3) **as required**

This course studies the ideas, principles and practices of peacemaking in depth. It will examine the literature and philosophy of peace, pacificism, and nonviolence in the context of historical experience, and learn practical ways of peacemaking through mindfulness, nonviolent communication, and nonviolent conflict resolution. 3 hours of lecture per week. Prerequisite: ENG-1061 or permission.

Interdisciplinary (INT)

INT-1000 Freshman Orientation (1) **as required**

This course is designed to facilitate a successful transition to college and focuses on: orientation to college; academic success strategies; professional development; and introduction to a degree program or programs. Topics include: student rights and responsibilities, student grading and graduation requirements, student information technologies and data base orientation, campus/site resources, time management, note taking, introduction to career opportunities and program specific topics. 1 hour of seminar per week. Prerequisites: None.

Italian (ITA)

ITA-1011 Italian I (3) **as required**

The one-semester course is designed for students with little or no previous knowledge of Italian. At the end, students will be able to ask and answer simple questions, to use several verb tenses, and to understand conversations necessary to being a tourist in Italy. As part of the Humanities requirement, students will also read from Dante's L'Inferno, and through it learn about Italy's art, culture, history and geography. Assignments include bi-weekly journals as well as a 1,500-word research paper on L'Inferno, three quizzes and two hour-long exams on the language. 3 hours of lecture per week. Prerequisite: None.

Landscape Development and Ornamental Horticulture (LAH)

LAH-1000 Freshman Orientation (1) **fall**

This course is designed to facilitate a successful transition to college and focuses on four primary areas: orientation to the College; academic success strategies; professional development; and introduction to business careers. Topics include student rights and responsibilities; campus resources; time management; notetaking; test taking, learning styles and study skills; self esteem, group dynamics and stress management; introduction to career opportunities. 1 hour of seminar per week. Prerequisite: None.

LAH-1020 Introduction to Horticulture (3) **fall**

This survey course introduces the principles and practical applications of horticulture. Students become familiar with the basic science that forms the foundation of horticulture and use this information to understand how horticulture is applied. Topics include plant classification, plant structures, plant physiology and development, plant environments, plant propagation, harvesting and post-harvest preservation, and crop improvement. 3 hours of lecture per week. Prerequisite: None.

LAH-1021 Landscape Graphics (3) **fall**

The purpose of this course is to familiarize students with a broad range of graphic techniques as well as the specific tools necessary for each. Specific coursework includes an introduction to mechanical drawing, conventions of landscape/architectural drawing, including their intentions, capabilities and use; three dimensional drawing techniques, tonal value and texture rendition, various media and their specific uses, lettering, and color rendering for presentations. 6 hours of studio per week. Prerequisite: None.

LAH-1030 Woody Ornamentals (3) fall

This course covers the identification of approximately 90 to 120 native and cultivated woody plants found in northern New England. In addition, plant characteristics, landscape use, cultural requirements, and plant associations are explored. Emphasis is placed upon both plant identification and the plant selection process. Drawing as part of learning is encouraged. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

LAH-1031 CAD for Landscape Design (1) spring

Students are introduced to landscape drafting and design using AutoCAD and other computer-aided drafting software. 3 hours of studio per week. Prerequisite: LAH-2011.

LAH-1040 Greenhouse Management (4) spring

This course covers the fundamentals of commercial greenhouse production. Control of the greenhouse environment and the effects this has on plant growth are stressed. Students learn about greenhouse construction, heating and cooling, growing media, fertilization, watering, pest control, and the production of container-grown crops. Laboratory exercises are conducted in the greenhouse or at the facilities of local growers. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

LAH-1050 Introduction to Soils (4) spring

Subject areas covered include soil formation and classification and the ways in which chemical, physical, and biological properties of soil affect plant growth. The course also deals with problems of soil drainage and the tillage methods best suited to erosion control. Students learn about soil testing and the most effective liming and fertilizing practices for economical crop production. The College and home farms are used in soil and fertilizer problem solving. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

LAH-2010 Landscape Construction and Management (4) fall

This course introduces students to the materials and methods of landscape construction and management. Emphasis is placed on how general design intentions are developed at the site and detail level, resolved according to sound principles of construction, and professionally documented according to conventional standards. Specific coursework includes surveying, map making, construction of freestanding and retaining walls, construction of patios and walkways, basic equipment operation and safety procedures, grading (earthworks), and the principles of statics and mechanics as they apply to landscape design. Theory and practice are emphasized equally. 6 hours of laboratory per week. Prerequisite: LAH-2011.

LAH-2011 Introduction to Landscape Design (3) spring

The goal of this course is to introduce students to the basic design principles of landscape design in order to build a fundamental knowledge of, and fluency in, the issues and language of 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, students receive an overview of landscape architectural history and are exposed to the work of practitioners in the field. 6 hours of laboratory per week. Prerequisite: LAH-1021.

LAH-2012 Advanced Landscape Design (3) spring

This course explores two essential aspects of landscape design: the art of site analysis and planning and the art of appropriate plant and materials selection in support of a design idea. During the course of the semester, students work on a Ùreal worldˆ project where they are asked to complete a thorough site analysis in preparation for the development of a working master plan, develop a detailed planting and construction plan, and, finally, develop a cost estimate for the client. Throughout the semester, design composition and emphasis are stressed, as are oral and graphic presentation skills. Individual design projects are developed under faculty supervision and presented to a jury of faculty and distinguished practitioners. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: LAH-2011.

LAH-2020 Plant Propagation (3) fall

Students in this course study the principles that explain and control plant propagation, as well as practice plant propagation techniques in the laboratory. Propagation by seeds, cuttings, grafting, layering, and other common methods is explored. Special emphasis is placed on the newest techniques in plant tissue culture. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: LAH-1020.

LAH-2030 Herbaceous Plant Materials (3) fall

The primary objective of this course is to familiarize students with approximately 100 to 150 native and introduced herbaceous plants including perennials, annuals, biennials, bulbs, and turfgrass. Emphasis is placed upon: identification; aesthetic and functional uses in the landscape; plant culture and maintenance; transplanting; and planting design and composition. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

LAH-2720 Landscape Design/Ornamental Horticulture Seminar (2) spring

This course is designed with a two-fold purpose: 1) to assist all Landscape Development &; Ornamental Horticulture students in developing the attitudes and skills essential for career success; and 2) to act as a capstone course with a focus on the many possibilities within the broad field of horticulture and design. As such, it concentrates on the following critical areas: 1) job search, including researching the job market and targeting the specific discipline area within the horticulture/design field the student is interested in pursuing; 2) researching the various options within that targeted field; 3) writing a resume and cover letter; and 4) preparing either a portfolio, business plan, or some other significant project that demonstrates the student's readiness to seek employment. In addition, students are introduced to a broad spectrum of practicing professionals from all walks of the landscape design and horticultural fields, which also allows for opportunities for discussion of employment possibilities. This course is designed to develop attitudes and skills essential for career success. 1 hour of seminar, 2 hours of laboratory per week. Prerequisite: Sophomore standing.

LAH-2810 Summer Internship/Internship Review (0/1) summer/fall

After successful completion of the first year core curriculum, students are required to experience horticulture or design in an employment setting. With the aid of program faculty and staff, students will arrange a summer job/practicum that will broaden their understanding of real world horticulture and design. Prerequisite: Completion of the freshman year or by permission. Prerequisite: instructor permission.

Mathematics (MAT)

Students who have shown exceptional mathematical ability may be placed into calculus as their initial mathematics course at Vermont Tech. If this course is completed successfully, then prior requisite courses for calculus will be waived.

MAT-1040 Mathematics for Allied Health (2) spring

This course gives an introduction to basic concepts in general mathematics, ratio, proportions, variation, financial applications, 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-1100 Mathematics for Technology (3) fall

This course provides an introduction to technical mathematics for students in the Automotive Technology, Construction Practice & Management, and Diesel Power Technology programs. It is designed for students whose academic background includes only an introduction to algebra and geometry. Topics covered include a review of arithmetic, percentages, dimensional analysis, scientific notation, sign numbers, order of operations, basic algebra including (exponents, radicals, factoring, algebraic fractions), ratio and proportions, systems of equations (2 x 2 only), graphing of equations, formulas, linear and quadratic equations, vectors, geometry, and right triangle trigonometry. 3 hours of lecture per week. Prerequisite: Placement level 2.

MAT-1111 Introduction to Technical Mathematics I (5) fall

This course is the first of a two course sequence giving an introduction to technical mathematics that will provide the skills necessary to be successful in MAT-1420. Topics covered include fundamental algebraic concepts, geometry, right triangle trigonometry, factoring and algebraic fractions, systems of equations, quadratic equations, radicals and exponents. Prerequisite: Placement

MAT-1112 Introduction to Technical Mathematics II (5) spring

This course is the second of a two semester sequence giving an introduction to technical mathematics that will provide the skills necessary to be successful in MAT-1420. Topics covered include review of factoring and algebraic fractions, exponents and radicals, exponentials and logarithms, trigonometric functions of any sized angle, oblique triangles and vectors, graphing trigonometric functions, trigonometric identities, and complex numbers. Prerequisite: MAT-1111.

MAT-1210 Principles of Mathematics (3) fall/spring

This course is a review of general mathematics principles and an introduction of concepts for solution of agricultural, agribusiness, and business problems. Topics covered include pocket calculator use, basic algebraic operations, solution of linear and quadratic equations and inequalities, variation, trigonometry of right triangle, 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 use of 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 math of finance. 3 hours of lecture per week. Prerequisite: Placement level 3.

MAT-1340 Algebra and Trigonometry (5) spring

This course is a one semester course covering the necessary topics in algebra and trigonometry that will provide the student with the skills necessary to be successful in MAT-1420 Technical Mathematics. It is designed as a bridge for qualified stucents who have completed MAT-1210, MAT-1221 as a way to advance to MAT-1420 Technical Mathematics, or pre-calculus. It covers all the topics covered in MAT-1111 and MAT-1112 Prerequisite: Placement

MAT-1420 Technical Mathematics (5) fall/spring

The course stresses the relation of mathematics to engineering applications and development of an appreciation of the importance of precision in mathematical thought. It covers use of the graphing calculator, solution of linear and quadratic equations, exponents and radicals, logarithms, exponential functions, sine and cosine laws, vectors, operations with imaginary and complex numbers, trigonometric identities and equations, and graphs of trigonometric functions. 5 hours of lecture per week. Prerequisite: Placement level 4.

MAT-1421 Technical Mathematics I (4) as required

A study of selected topics and applications of mathematics. Topics include: algebraic expressions, linear equations and inequalities, algebraic equations in one, two and three variables, quadratic equations and right angle trigonometry. The use of the graphing calculator is integrated into the course. 4 hours of lecture per week. Recommended prior learning: basic algebra and basic geometry skills. Students must take a math assessment for placement purposes prior to registration. Prerequisite: Placement level 4.

MAT-1422 Technical Mathematics II (4) as required

A continuation of the topics of Technical Mathematics, Part I. 4 hours of lecture per week. Prerequisite: MAT-1421.

MAT-1520 Calculus for Engineering (4) fall/spring

Students who have shown exceptional mathematical ability may be placed into Calculus as their initial mathematics course at Vermont Tech. If this course is completed successfully, then prior requisite courses for Calculus will be waived. A presentation of basic concepts of plane analytical geometry and calculus is given. Topics include differentiation and integration of algebraic, trigonometric, exponential, and logarithmic functions with emphasis on technical applications. 4 hours of lecture per week. Prerequisite: MAT-1420, MAT-1113, or Placement level 5.

MAT-2021 Statistics (3) spring

This course is an introduction to the basic ideas and techniques of probability and statistics. It is designed to prepare students to interpret quantitative information and to make statistical decisions. Topics include: descriptive statistics, probability, characteristics of the normal distribution, mean and standard deviation, and steps in hypothesis testing. 3 hours of lecture per week. Prerequisite: MAT-1210, MAT-1221, MAT-1420, or Placement level 3.

MAT-2120 Discrete Structures (3) fall/spring

This course introduces discrete structure in computer science. The instruction covers such topics as sets, set logic, relations, functions, proof techniques, induction, logic, graphical representations, and algorithms. 3 hours of lecture per week. Prerequisite: MAT-1210, MAT-1221, or Placement level 3.

MAT-2532 Calculus II (4) fall/spring

Topics include techniques of integration, numeric integration, hyperbolic functions, indeterminate form and improper integrals, polar coordinates, partial function expansion, differential equations, and infinite series. 4 hours of lecture per week.. Prerequisite: MAT-1520.

MAT-2533 Calculus III (4) spring

This course provides students with an opportunity to continue their study of calculus and covers the traditional third semester topics in calculus: vectors, partial derivatives, multiple integrals, vector analysis, and differential equations. 4 hours of lecture per week. Prerequisite: MAT-2532.

MAT-3170 Applied Mathematics for Engineering (3) spring

This course introduces selected topics of advanced mathematics and applies them directly to key areas of electrical and mechanical analysis. Includes selected topics in solutions of first and second order differential equations, Laplace transforms, Fourier series, partial differential equations, numerical methods of solving ordinary and partial differential equations, and systems modeling concepts. 3 hours of lecture per week. Prerequisite: Junior standing or permission of the instructor, ELT-1080 or ELT-3020, and MAT-2532.

MAT-3720 Topics in Discrete Mathematics (3) fall

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, data encryption and combinatorics are best understood with a foundation in logic and proof theory, set theory, probability, number theory and the structure of modern algebra. This course will introduce the mathematical concepts and then follow them with some application of the concepts to computer science and computer technology. 3 hours of lecture per week. Prerequisite: MAT-2532.

Mechanical Engineering Technology (MEC)

MEC-1000 Freshman Orientation (1) fall

The seminar presents an introduction to the mechanical engineering technician career and to the skills of life-long learning. Introductory design projects, research, lab experiments, student presentations, speakers from industry, and field trips help develop teamwork, communications, and study skills, and give an overview of the broad field of mechanical engineering technology. 1 hour of seminar per week. Prerequisite: None.

MEC-1011 Design Communication I (2) fall

The course provides a basic understanding of the principles and technology of mechanical drawing and computer modeling as methods of documenting and communicating mechanical designs. The concepts of geometric construction, orthographic projection, sectional and auxiliary views, dimensioning, and fasteners are covered using hand-drawing techniques and basic drafting tools. Basic proficiency is also developed in computer-aided design (CAD) using a two-dimensional documentation software and a three-dimensional parametric solid-modeling software. The computer operating system, file management techniques, and email are also introduced. 6 hours of laboratory per week. Prerequisite: None.

MEC-1012 Design Communication II (2) spring

In this course, students gain proficiency in communicating mechanical designs using hand drawing and computer modeling, building on the fundamentals learned in the previous course. In addition, students gain skills in project management and teamwork. Students work in teams on short- and long-term mechanical design projects, maintaining electronic design notebooks and project webpages. Students practice two-dimensional and three-dimensional computer modeling and web authoring. 6 hours of laboratory per week. Prerequisite: MEC-1011.

MEC-1020 Manufacturing Processes (2) fall/spring

This course will introduce the student to machine tools, measuring instruments and machining operations and how they relate to the manufacturing process. The concept of the job shop and production plant will be studied, and the relationship of design, production control and manufacturing will be demonstrated. Computer-aided manufacturing (CAM) will be introduced. 1 hour of lecture, 3 hours of laboratory per week. Prerequisite: None. [Course fee: $35.00]

MEC-1040 Introduction to Materials Science and Engineering (3) spring

The structural nature and various mechanical properties governing the selection, use, and behavior of engineering materials, both metallic and non-metallic, is studied in this course. In the laboratory, students evaluate and control material properties through various testing, mechanical, and thermal procedures. 2 hours lecture, 3 hours laboratory per week. Prerequisite: PHY-1041 or equivalent. [Course fee: $15.00]

MEC-1050 Computer Applications for Mechanical Engineering (1) fall

This course introduces the student to the college network, Microsoft operating system, email and Internet. Focus is on the mechanical applications for spreadsheets, analysis and organization of electronic data, data acquisition and analysis, and presentation of technical information using various computer applications. 2 hours laboratory per week. Prerequisite: None.

MEC-1060 Metrology and Inspection Techniques (3) as required

This course is designed to provide students with the fundamental concepts of modern dimensional metrology and related inspection techniques. 2 hours of lecture and 3 hours of lab per week. Prerequisite: None.

MEC-1070 Tool Geometry and Productive Metal Cutting (1) as required

This course is designed to help students develop an understanding of the theory and practical applications of modern cutting-tool technology. After successfully completing this course, participants will be competent to recognize and define the various geometries associated with cutting tools and how they relate to the material and manufacturing process. 4 hours of laboratory each week. Prerequisite: None.

MEC-2010 Fluid Mechanics and Fluid Systems (4) 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. Laboratory experience and observation develops a working knowledge of fluid properties, fluid behavior, and fluid systems for power transmission and control. 3 hours lecture, 3 hours laboratory per week. Prerequisite: MAT-1520, MEC-1050, and PHY-1041 or 1022.

MEC-2020 Applied Mechanics (3) fall

At the completion of this course, the student should be familiar with equilibrium as it applies to coplaner and noncoplaner force and moment systems and friction. Principles of centroids and moments of inertia are discussed. In addition, the course includes dynamics using Newton's second law as it applies to rectilinear and curvilinear motion. 3 hours of lecture per week. Prerequisite: MAT-1420, MEC-1050, or ELT-1051, PHY-1041 or 1022, and MEC-1011.

MEC-2030 Strength of Materials (4) spring

This course will familiarize the student with stress analysis by studying coaxial and shear stress and strain, temperature relationships, torsion, shear and bending moments, beam stresses and deflections. Columns, joints, thin-walled cylinders, combined stresses, Mohr's circle, and the effects of fluctuating loads on machine parts will be introduced. The course will also include the use of computer applications to solve stress and bending problems. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1520, MEC-2020, and MEC-1040. [Course fee: $35.00]

MEC-2040 Computer-Aided Technology (2) fall

Students develop skills to program CNC lathes and milling machines. Software linking CAD programs with CNC machines, industrial pick and place robots, and Flexible Machining Systems is presented. In addition, the student is kept up to date on current developments in computer-aided technology. 1 hour of lecture, 3 hours of laboratory per week. Prerequisite: MEC-1020, MEC-1011, and MEC-1050. [Course fee: $45.00]

MEC-2050 Thermodynamics and Heat Transfer (4) spring

The purpose of this course is to help the student to acquire a familiarity with the first and second laws of thermodynamics; the equations of state, perfect gas processes, and various power cycles. The student will develop some skill in applying these principles to the analysis of devices which utilize the power cycles such as the Otto, Diesel, Rankine, and vapor-compression cycles. Conduction, convection, and radiation heat transfer are also introduced. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: MEC-2010 and PHY-1042.

MEC-2060 Mechanisms (3) fall

The student in this course should acquire a thorough understanding of the displacement, velocity and acceleration characteristics of plane motion and the associated graphical and computer-aided methods of analysis. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: MEC-1050, MEC-1011, and PHY-1041 or 1022.

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 laboratory per week. Prerequisite: None

MEC-2720 Mechanical Projects (3) spring

Through this course, the student will gain an understanding of 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 this 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 laboratory per week. Prerequisite: MEC-1020, and 2060. Co-requisite: MEC-2030. [Course fee: $75.00]

MEC-3020 Manufacturing Processes and Machine Design (3) spring

This course integrates concepts in manufacturing processes with elements of machine design. Fabrication techniques using manufacturing tools such as mills and lathes are covered, as well as an introduction to computer-aided manufacturing. Design implications of selected components such as gears, bearings, chains, belts, clutches, brakes, and couplings are discussed. The course culminates with a project that employs the practical applications of many of the covered topics. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: Junior Standing in the BSELM program. [Course fee: $40.00]

MEC-3030 Properties and Mechanics of Materials (3) spring

This course provides an overview of the nature and structure of materials, the properties of different materials classes (metals, ceramics, polymers, and composites), and materials processing and testing methods. The course also introduces the student to concepts of materials strength, such as stress analysis and design, by studying stress and strain produced by direct, torsion, and bending loads using shear and moment diagrams and beam deflections. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1520, MEC-2010 and MEC-2020. [Course fee: $15.00]

Music (MUS)

MUS-1010 Music Appreciation (3) as required

A survey of Rock and Roll from its origins through contemporary rock. Students will discuss the social, economic and political conditions that influence the development of rock music and the artists who have contributed to its form. Through extensive listening, students will explore a variety of rock styles from 1950s through the present. 3 hours of lecture per week. (General Education: AH). Prerequisite: None.

MUS-1028 Introduction to Rock and Roll (3) as required

A survey of Rock and Roll from its origins through contemporary rock. Students will discuss the social, economic and political conditions that influence the development of rock music and the artists who have contributed to its form. Through extensive listening, students will explore a variety of rock styles from 1950s through the present. 3 hours of lecture per week. (General Education: AH). Prerequisite: None.

Nursing (NUR)

NUR-0111 Principles and Practices of Nursing I Lab (4) fall

Laboratory component of NUR-1111. 12 hours of clinical/laboratory per week, including math for meds. Co-requisite: NUR-1111.

NUR-0121 Principles & Practices of Nursing II Lab (4) winter

Laboratory component of NUR-1121. 12 hours of clinical/laboratory per week. Co-requisite: NUR-1121.

NUR-0131 Principles & Practices of Nursing III Lab (4) spring 2

Laboratory component of NUR-1131. 18 hours of clinical/laboratory per week for the 10-week spring term. Co-requisite: NUR-1131.

NUR-1010 Pharmacology for Nursing (3) winter

This course acquaints the student with classifications of drugs according to body systems and the use of these drugs for the purpose of restoring or maintaining health. Orem's Self-care Theory is integrated into practical application vis-a-vis a client's pharmacologic needs. The course begins with basic terminology and progresses to the process of medication administration. The student studies standards and legislation as they relate to drugs. The role of the nurse, the nursing process, nutrition, and principles of ethics as they relate to pharmacology are included in the curriculum. A basic study of pharmacokinetics helps the student to understand how drugs are absorbed, transported, metabolized, and excreted. A review of pharmacotherapeutics helps the student to realize 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. Prerequisites: NUR 1111, NUR 0111, NUR 1020, BIO 2011. Co-prerequisites: BIO-2012

NUR-1020 The Nurse-Client Relationship (3) fall

The content of this course is designed to assist the nursing student to cope with the human relations challenges encountered in his/her career. Discussions encourage the student to broaden views and develop an awareness of the uniqueness of man. 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 also 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. Prerequisite: Instructor permission.

NUR-1111 Principles and Practices of Nursing I (5) fall

This course provides an opportunity for the student to acquire the selected knowledge and skills necessary to meet the basic self-care needs of the assigned client in both long term care 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 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, with emphasis on data collection. Additional topics presented include: roles of various health care team members, concepts of effective communication, and effective maintenance of a safe and therapeutic environment. Initially, nursing arts laboratories are used for skill demonstration and practice with advancement toward clinical application. Simultaneous enrollment in NUR-0111 is required. 5 hours of lecture per week. Co-requisites: BIO 1030, BIO 2011, NUR 1020.

NUR-1121 Principles and Practices of Nursing II (5) winter

This course offers the student opportunity to reinforce and build upon previously learned information. The goal is to provide safe, competent, standard nursing interventions to clients experiencing recurring health care 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. The student selects appropriate goals toward meeting the client's self-care needs. Observational experiences are provided in certain specialty areas. The student is expected to demonstrate increasing ability to perform standard nursing interventions in the clinical environment with decreasing need for supervision. Simultaneous enrollment in NUR 0121 is required. 5 hours of lecture per week. Prerequisite: BIO-1030, BIO-2011, NUR-1111, NUR-0111, and NUR-1020. Co-requisites: NUR-1010, PSY 1050, BIO 2012.

NUR-1131 Principles and Practices of Nursing III (5) spring

This course explores integrative concepts in nursing and in the developing family. The student expands knowledge and increases skills necessary to meet the self-care deficits of individuals experiencing common health care problems with an emphasis on parent/child care and mental health. In addition to continuing to use the nursing classroom laboratory, the student also learns, through selected clinical experiences, in obstetric, pediatric and medical-surgical settings. The student demonstrates skill in problem solving through the use of the nursing process with a focus on implementation and evaluation of nursing care. Simultaneous enrollment in NUR 0131 is required. 7.5 hours of lecture per week for the 10-week spring term. Prerequisite:Bio-2012, BIO 1030, NUR 1021, NUR-1121, NUR 0121 and PSY-1050. Co-requisite: NUR-0131. [Course fee: $55.00].

NUR-2010 LPN to RN Transition/Trends in Nursing (2) fall

This course is designed to assist the student to recognize both personal and professional challenges that arise in the process of transitioning from the role of the practical nurse to that of the registered nurse. Additionally, 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 will ultimately develop an individual philosophy of differentiated nursing practice. Corequisites: NUR-2030 and NUR-2040 or permission.

NUR-2011 Advanced Pharmacology (1) spring

This course assumes that students have retained knowledge gained in NUR-1010 Pharmacology. It is a body-system-oriented approach to analyzing the use of particular medications for complex medical/surgical conditions in clients across the lifespan. The clinical component of this class is demonstrated in NUR-2140. The student will integrate and evaluate the effectiveness of each client outcome as it relates to his/her pharmacologic needs. Prerequisites: NUR-2030, NUR-2040, and BIO-2120. Co-requisites: NUR-2130, 2140 or permission.

NUR-2030 Principles and Practice of Nursing IV (3) fall

This course is divided into three content areas: a) health promotion and physical assessment (3 weeks); b) maternity nursing (6 weeks); and c) psychiatric nursing (6 weeks). Part a) assumes prior knowledge of normal physiological and developmental parameters and focuses on assessing abnormal conditions and encouraging a maximum level of self-care by promoting healthy behaviors. Such topics as the importance of an accurate and complete health history including a psychosocial, cultural and spiritual assessment and a health risk appraisal are covered. Lab and acute care clinical experiences are provided. Part b) assumes previous learning of the normal and expected conditions relating to the maternity client. 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 are covered. The content builds on this and focuses on abnormal conditions and the expanded role of the registered nurse. Clinical experiences in inpatient and outpatient settings are provided. Students assist the maternity client and family to recognize their self-care needs. Part c) offers the student an opportunity to gain the tools necessary to assess, plan, and evaluate interventions in the care of the client population dealing with mental health needs. Students select appropriate roles to be assumed in assisting clients to meet their mental health self-care needs. The student is expected to perform therapeutically in the clinical setting. Simultaneous enrollment in NUR-2040 is required. Prerequisite: PN License, or course work, or permission. Co-requisites: NUR-2010.

NUR-2040 Principles and Practices of Nursing IV Lab (2) fall

Laboratory component of NUR-2030. 6 hours of clinical/laboratory per week. Co-requisite: NUR-2030.

NUR-2130 Principles and Practices of Nursing V (5) spring

This course offers students the opportunity to learn about clients across the lifespan experiencing complex acute medical surgical illnesses and chronic self-care deficits. Experiences are also provided in intensive care, the emergency room, and a home health agency. The student demonstrates skills in decision-making through the use of the nursing process with an emphasis on implementation and evaluation. The student also selects the appropriate roles to be assumed in meeting the client's self-care needs. The student is expected to perform therapeutically in the clinical area with a decreasing need for instructor supervision. Simultaneous enrollment in NUR-2140 is required. 5 hours of lecture per week. Prerequisite: BIO-2120,NUR-2010, NUR-2030, and NUR- 2040. Co-requisites: NUR-2140. [Course fee: $55.00].

NUR-2140 Principles & Practices of Nursing V Lab (4) spring

Laboratory component of NUR-2130. 12 hours of clinical/laboratory per week. Co-requisite: NUR-2130.

Philosophy (PHI)

PHI-1010 Introduction to Philosophy (3) as required

In examining the history of philosophy from Socrates to Sartre, students look at the diverse perspectives, methods and conclusions of significant philosophers, both classical and contemporary, concerning selected topics in metaphysics, epistemology, ethics, political philosophy, and aesthetics. Class discussion of reading is directed toward an increased understanding of significant contemporary problems in light of the relevant philosophical issues. 3 hours of lecture per week. (General Education: AH). Prerequisite: None.

PHI-1030 Introduction to Logic (3) as required

This course encompasses the principles and conditions of correct reasoning, including the relationship between language and thought, deductive arguments, and the methods of inductive inference. Throughout the course, the students will be expected to apply these principles in analyzing arguments. 3 hours of lecture per week. (General Education: AH). Prerequisite: None.

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 may 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. (General Education: AH). Prerequisite: None.

Physics (PHY)

PHY-1021 Introduction to Newtonian Mechanics (4) fall/spring

Students taking this one-semester course study the fundamental topics necessary for further study in physical sciences and engineering technologies. The topics covered are: systems of units, converting units, one- and two-dimensional kinematics, vectors, Newton's Laws of Motion, and static equilibrium and torque. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

PHY-1022 Energy Conservation and Equil (4) fall/spring

This one-semester course is a continuation of PHY-1021 Introduction to Newtonian Mechanics. It is designed to familiarize the student with the concepts of work, energy, power, impulse-momentum, and the laws of conservation. These concepts are used to investigate both translational and rotational motion. Other topics covered include elasticity and the physics of static and dynamic fluids. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: PHY-1021.

PHY-1030 General Physics (4) spring

This one semester, general physics course has the purpose of introducing the student to basic classical physics. Topics include: Newtonian mechanics, elasticity, fluids, heat transfer, gas laws, some thermodynamics, and DC and AC circuits. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1100 or equivalent.

PHY-1041 Physics I (4) fall/spring/summer

The purpose of this course is to give the student in engineering technology a thorough study of the basic principles of physics. Topics covered in this course are 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; fluids, including properties of gases, fluid pressure, density, buoyancy, and hydraulics. Previous successful completion of a course in physics is highly desirable. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: None. Co-requisite: MAT-1420 or equivalent.

PHY-1042 Physics II (4) fall/spring/summer

This course is a continuation of Physics I for electrical engineering technology and computer engineering technology students. Emphasis is on understanding basic physical concepts that relate both to practical situations and to subsequent technical courses. Topics include heat, wave motion, electrical and magnetic field theory, electricity, light, and semi-conductor physics. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: PHY-1041 or 1022.

PHY-1043 Physics II for Architectural Programs (3) fall

This course for architectural students is a continuation of Physics I and is a study of heat, including specific heat, latent heat, and heat transfer; wave motion, light, including such topics as mirrors, lenses, refraction, interference, and polarization; electricity, including such topics as electrical and magnetic field theory, light, solid-state physics, current, DC series and parallel circuits, energy, power, and AC series circuits. 3 hours of lecture per week. Prerequisite: PHY-1041 or PHY-1022.

PHY-2041 Fundamentals of Physics I with Calculus (4) spring

This course, an alternative for Physics 1041, is intended for engineering technology students who have demonstrated an above-average ability in verbal skills and mathematics and whose mathematics and science preparation includes algebra, plane trigonometry, and basic physics. Prior completion of a course in calculus or concurrent enrollment in Calculus (MAT-1520) is required. Topics covered are systems of measurement; dynamics, including motion, acceleration, forces producing motion; work, energy, and power; momentum and conservation laws; statics, including concurrent and nonconcurrent forces; and fluids, including properties of gases, fluid pressure, density, buoyancy, and hydraulics. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1420. Co-requisite: MAT-1520.

PHY-2042 Fundamentals of Physics II with Calculus (4) fall

This course is a continuation of calculus-based PHY-2041. Topics in wave motion, heat, electricity and magnetism, light, and solid-state and modern physics are covered. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: PHY-2041 and MAT-1520.

PHY-3120 Introduction to Modern Physics (4) 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 some elementary particle theory. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: PHY-1042 or equivalent.

Political Science (POS)

POS-1020 American Politics & Government (3) as required

The course is a survey of the American political system with emphasis on the origins and function of the Federal Government and its branches and on the American political process. The nature, scope, and authority of state and local government is also covered. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

POS-2110 State and Local Government (3) as required

This course provides a study of the principles and problems of American government at the state and local level. 3 hours of lecture per week. (General Education: SS) Prerequisite: None.

Psychology (PSY)

PSY-1010 Introduction to Psychology (3) fall/spring

This course is a study of the biological foundations and the basic psychological processes and concepts involved in human behavior as well as an examination of the problems involved in personality adjustment and interpersonal relations. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

PSY-1050 Human Growth & Development (3) winter

This course is designed to teach the developmental stages of humans from infancy through the aging process. Course content includes general and specific principles and concepts of growth and development, as well as physical, motor, cognitive, and psychosocial characteristics of the various developmental stages. The course implements the philosophy and objectives of the program by stressing the importance of the changes that occur at each stage of the life span. There is no specific clinical laboratory. However, the student is expected to apply acquired principles and concepts in determining needs and implementing care of the client through all phases of the age continuum. The unique safety needs and health care maintenance needs of each developmental stage are emphasized. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

PSY-2310 Adolescent Development (3) as required

An examination of the physiological, psychological, and social development of adolescents. Explores puberty, adolescent sexuality, adolescent rebellion, and indentity formation, peer relations, idealism and alienation. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

Respiratory Therapy (RSP)

RSP-1000 Introduction to Respiratory Practices (1) fall

This course provides an orientation to respiratory care practices. Students will be introduced to routine bedside care including the patient interview and measurement of vital signs. Students will also learn to select and apply body mechanics and infection control procedures. Students will review the issues of quality in respiratory care and be introduced to the concept of evidence-based medicine as it applies to the practice of respiratory care. The students will analyze problems depicted in case studies for the topics of communication techniques, medical ethics, and legal implications of practice. 1 hour of lecture per week; Prerequisite: none

RSP-1011 Respiratory Care I (4) fall

In the classroom and laboratory setting, the student will begin to learn the skills and techniques of managing and treating patients with respiratory needs. Basic health care skills will be taught along with some basic respiratory procedures. The student will learn firsthand how equipment performs under specific circumstances--which will expand clinical ability and capability. The student also will become familiar with such techniques as checking equipment function and testing equipment performance. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: None.

RSP-1012 Respiratory Care II (4) spring

In this course, students will learn the skills and techniques of managing and treating patients with respiratory needs both in the classroom and laboratory setting. The clinical effects of various types of respiratory therapy and diagnostic techniques are explored. Oxygen therapy, aerosol therapy, and respiratory drugs are thoroughly discussed. Hyperinflation therapy, pulmonary hygiene and chest physical therapy, as well as techniques of airway management are included. In the laboratory, students will apply their classroom knowledge of the above subjects. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: RSP-1011 and BIO-2011.

RSP-1210 Respiratory Anatomy and Physiology (3) spring

This course teaches the basic physiology of the pulmonary system. The physiological principles underlying various therapeutic, diagnostic, and monitoring procedures in respiratory care will be detailed. Students will interpret patient data, solve problems and analyze patient cases using these physiological concepts. 3 hours of lecture per week. Prerequisite: RSP-1011 and BIO-2011.

RSP-1801 Respiratory Clinical Field Experience (2) spring

This is a field experience of one day per week that allows the student to become familiar with the hospital setting and perform basic respiratory therapy in non-critical areas of the hospital. 8 hours clinical per week. Prerequisite: BIO-2011, and RSP-1011.

RSP-2011 Cardiopulmonary Disease I (5) fall

Analysis of respiratory disturbances requires an understanding of the etiology, pathophysiology, and clinical signs of the disease, thus, leading to a plan for treatment. The study of cardiopulmonary disease will begin with a presentation of advanced clinical assessment techniques. Measures used to evaluate ventilation, hemodynamics, oxygen transport and tissue oxygenation will be discussed in relation to respiratory assessment of the critically ill patient. Chest radiographs and electrocardiographs will be presented. 5 hours of lecture per week. Prerequisite: RSP-1210, RSP-1012, and BIO-2012.

RSP-2012 Cardiopulmonary Disease II (5) spring

A continuation of Cardiopulmonary Disease I presenting additional diseases affecting the pulmonary system. For each disease, emphasis is placed on etiology and pathogenesis, pathology, pathophysiology, and clinical features. A case study approach is utilized to enhance the student's ability to exercise judgment in handling patient complaints, collect and examine data, formulate treatment options, assess patient responses to treatment and modify therapy. 5 hours of lecture per week. Prerequisite: RSP-2011 and RSP-2013.

RSP-2013 Respiratory Care III (3) fall

Respiratory Care III 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 is also presented. In the classroom, students will apply these concepts to patient care scenarios. In the laboratory, students will complete a series of mechanical ventilation and critical care monitoring competencies. 2 hours of lecture, 2 hours of laboratory per week. Prerequisite: RSP-1012, RSP-1210 and BIO-2012.

RSP-2802 Respiratory Clinical Field Experience II (4) fall

This is a field experience of two days per week that allows the student to work in clinical areas in which they have received instruction. Students will be directly and indirectly observed performing respiratory care in the critical care and non-critical care settings. 16 hours of clinical per week. Prerequisite: RSP-1801, RSP-2810, and BIO-2012.

RSP-2803 Respiratory Clinical Experience III (6) spring

This course is designed to provide supervised clinical experience in the critical care areas of the hospital and in specialty service areas of the hospital and in the community. There will be a strong emphasis on intensive care techniques and procedures. Instruction will take place in the adult, pediatric, and neonatal areas. Students will be introduced to infant and pediatric mechanical ventilation, and home care. Students will continue to gain proficiency in adult care throughout the medical system. 24 hours of clinical per week. Prerequisite: RSP-2802.

RSP-2810 Respiratory Internship/Internship Review (0/1) summer/spring

This course is a field experience of two days per week that allows the students to work in clinical areas in which they have received instruction. Students will be directly and indirectly observed performing respiratory care in the non-critical care setting. 16 hours of clinical per week. Prerequisite: RSP-1801.

Sustainable Design & Technology (SDT)

SDT-1550 Erosion Prevention and Sediment Control (3) as required

This course will focus on storm water runoff during the construction phase of a project and will present the various methodologies employed to control this potential pollution source. Coursework will provide a basic understanding of soils and how they behave when exposed during construction. 2 hours of lecture with occasional lab demonstrations. Prerequisite: MAT1221, equivalent or permission of the instructor.

SDT-2550 Storm Water Modeling and Permitting (3) as required

This course will focus on Vermont storm water permitting and modeling of storm water systems using HydroCAD. 2 hours of lecture, 2 hours of laboratory / studio per week. Prerequisite: None.

SDT-3000 Sustainable Design and Technology Seminar (1) fall

This course brings together the diverse group of students who enter the SDT program, and introduces them to the concept and ethos of sustainability. Reading, films, and other media will be used, and outside speakers will be invited. Students will explore their own particular interests in sustainability and present their findings to the class. Internship opportunities will be discussed. 1 hour of seminar per week. Prerequisite: None.

SDT-3010 Conflict and Communication (3) fall

This course introduces students to the basic causes and nature of human conflict. Students will use case studies and role playing to explore the nature of working in groups, the types of conflict that occur, and very basic techniques that can be used to discuss, explore and sometimes resolve conflict. 3 hours of lecture per week. Prerequisite: None.

SDT-3020 Environmental Permitting (2) spring

This course introduces student to the Federal, Vermont State and local permitting process. Issues include an introduction to the legal foundation of the permitting process and a historic prospective on environmental permits. Typical topics include the Clean Water and the Clean Air Acts, the Vermont 2000 Farm Bill, Act 250 hearings, Planning and Zoning boards. Students will be required to attend permit hearings outside of regular class hours. 1 hour of lecture, 3 hours of studio per week. Prerequisite: None.

SDT-3110 Codes & Loads & LEED (3) fall

This course provides students with an understanding of the codes and specifications that govern the determination of design structural, heating/cooling, and lighting/electrical loads for buildings, as well as an introduction to the LEED (Leadership in Energy & Environmental Design) rating system. It introduces students to the determination of applicable code provisions, the application of those code provisions, and also to methods for calculating and estimating loads that are not 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 provides the basic knowledge and skills for the determination and use of such loads in courses such as HVAC, Electrical/Lighting, Controls & Commissioning, and Studios. Lectures introduce topics and methods of application; the laboratory emphasizes the application of codes and methods on varying structure types. 2 hour of lecture, 2 hours of laboratory per week.

SDT-3111 Energy Systems and Sustainability (3) spring

This survey course introduces all SDT students to the technical issues related to the application of renewable energy systems for power and heat generation. The systems will be studied in terms of current and potential production capacity, resources and distribution issues, technology installation and life-cycle costs. Specific technical topics will include small and large scale power grids and power transmission, fuels, electrical energy storage, combustion systems (diesel and hydrogen), fuel cells, solar and geothermal systems, photovoltaic systems, wind and hydropower, hybrid systems, and combined heat and power. 3 hours of lecture per week. Prerequisite: CIS-1050 and MAT-1111 or equivalent.

SDT-3121 Sustainable Design Studio I (3) spring

Through short team projects all SDT students will begin to solve interdisciplinary problems in sustainable design, applying basic concepts learned in the sustainable survey courses and the technical courses in each discipline. Students will work in interdisciplinary teams on projects that draw from each discipline. Student teams will participate in a stepped process involving: problem evaluation, design alternatives, calculations, graphic representation, and presentation to the class and a professional panel. 6 hours of studio per week. Prerequisite: SDT-3010. Co-requisite: SDT-3111.

SDT-3130 Environmental Soils (3) fall

This course will give students and introduction to soils using lecture and labs to gain hands-on experience. Topics include the mechanical classification of soils, the identification of the seasonal high water table, an overview of wetlands classification and applicable regulations, and an overview of issues of soils and agriculture. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: MAT-1210 or placement level 2.

SDT-3810/4810 SDT Internship/Internship Review (0/1) spring/fall

Students enroll in the internship upon successful completion of their junior year core curriculum. The internship requires students to spend at least 5 weeks in an employment setting with an institution or firm that is employing, or seeks to employ, sustainable technology. This practicum is designed to broaden a students understanding of how sustainable technologies are implemented in the real world. Students will be enrolled in the 1 credit internship review in the following fall term. Graded Pass/No Pass.

SDT-4010 Water and Wastewater (3) fall

This course introduces student to water quality issues, and water and wastewater treatment for centralized and decentralized systems. Students will gain a broad overview of the treatment of water and wastewater including the permitting and regulatory requirements. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: Junior standing in the SDT program.

SDT-4020 Ground Water and Storm Water (3) spring

This course introduces student to ground water, storm water and erosion control. Students will gain a broad overview of groundwater, storm water and erosion control including the permitting and regulatory requirements. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: Junior standing in SDT program.

SDT-4030 Renewable Energy Systems (3) fall

This course introduces students to renewable energy systems including resource assessment, system design, installation, and performance monitoring. Lab activities include work with solar thermal, wind, solar PV, and other technologies. Topics covered include resource assessment and site selection, installation practices and requirements, monitoring and performance analysis, maintenance and life-cycle analysis. Visits to renewable energy facilities in the region may be included. 2 hours of lecture, 3 of hours of laboratory per week. Prerequisite: ARC-3050 or MEC 2010 and MEC 2050, ELT-2072, ELT-1032 or ELT 1080.

SDT-4110 Building Controls/Commissioning (3) spring

This course in the Green Buildings Technical Core looks at two important areas for sustainable commercial buildings: integrated control systems and the hands-on 'fine tuning' that is essential for a building to operate efficiently. The first part of the course will concentrate on an overview of digital control systems: electrical circuits and basic system design. The second part of the course focuses on the detailed knowledge needed for the emerging field of building commissioning, now a requirement of the LEED certification process. 2 hours of lecture and 2 hours of lab perweek. Prerequisite: ARC-3010 and SDT-3110. Co-requisite: ARC-4030.

SDT-4112 Green Sites Technical Survey (3) fall

This modularized course introduces students to issues related to environmentally responsible site design: site assessment, landscaping and aesthetic considerations; nutrient management and agricultural potential; and mapping, water, utility & permitting issues. This survey course also introduces students to the uses and use of Geographic Information Systems (GIS). LEED and other best practice standards will be discussed. 2 hours of lecture, and 2 hours of studio per week. Prerequisite: None.

SDT-4113 Green Buildings Technical Survey (3) spring

This course introduces all SDT students to the technical issues related to Green Buildings, and to act as a knowledgeable member of a multi-disciplinary team. By comparing sustainable design approaches to standard practice, the student learns about energy conservation in buildings. Topics covered are: how energy is used in buildings, sustainable options, residential versus commercial construction, building energy modeling, economics of sustainable buildings, state and national regulations, voluntary standards such as LEED, professional and ethical responsibilities, and designing with a holistic team approach. 3 hours of lecture per week. Prerequisite: SDT-3111 and SDT-4112.

SDT-4122 Sustainable Design Studio II (3) spring

This capstone project course will serve to bring multi-disciplinary student teams together to solve a real life problem that integrates the knowledge of all the SDT tracks. Working with a client and experts in the field, each team will develop and present their concepts for a sustainable solution. This course requires that students draw upon solid knowledge of the SDT core, as well as the technical courses in their own concentration. The final solutions will be presented to the class and a panel of professionals. 6 hours of studio per week. Prerequisite: SDT-3121 and SDT-4112.

Social Science (SSC)

SSC-2010 Science, Technology, and Society (3) as required

This course explores the ways that science and technology are related to the broader social context of human civilization. Case studies illustrate the social and environmental impacts of science and technology, as well as the ways that social structures influence the development of science and technology. Guest lecturers discuss the responsibility of the individual technician. Students give oral presentations and engage in class debates. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

SSC-2030 Energy and Society (3) as required

This course is designed to enable students to gain insights into the energy issue and to promote energy awareness and conservation. Topics will include a history of energy use, forms of energy, energy resources, renewable sources, the economics of energy production and consumption, and relevant social issues regarding energy. Appropriate field trips and guest lectures are scheduled. 3 hours of lecture per week. (General Education: SS). Prerequisite: None.

SSC-3010 Revolution and the Call to Serve (3) as required

This course explores the concepts of "community," "service," and "honor" through rigorous study of (1) current cultural events and trends, (2) literature - political, religious, and aesthetic, and (3) each student's ethics and values. The course begins with an overview of historical definitions of "service" in our country and in other cultures, so that students are better able to understand their opinions and actions within a historical and global context. Most importantly, a major segment of this course involves direct service, providing students with ongoing hands-on experience for reflection and analysis along with their reading, writing, research and classroom discussion. 3 hours of lecture per week (General Education: SS). Prerequisite: ENG-1061 or equivalent.

SSC-3045 News and Newspapers (3) summer

This course explores the nature of news - what is news, who controls news, how news is presented, and the many ways that news and newspapers affect our daily lives. Emphasis is placed on how news can contribute to being an informed citizen a well a how news can be manipulated to influence public opinion and policy. Offered on-line. Prerequisite: ENG-1061 or equivalent.

Individual Research (XXX)

XXX-X710 Special Topics as required

These courses are for one-time or special offerings that do not 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 departmental approval. Details of specific course content are available from the instructor of from the department chair for the subject offered.

XXX-X910 Individual Research/Study as required

These courses are subjects on course material that do not have an approved course number. They may vary in subject area and the credits may vary. These courses are for individual research. The research project must be related to the student's major field of study or another area approved for independent study. Prerequisites and Course Notes: permission of the Department Chair and Academic Dean required.

Telecommunication Technology (TCT)

TCT-1000 Telecommunications Orientation (1) fall

An orientation to the college experience, including an analysis and discussion of learning styles, time management, test-taking, and study skills. Prerequisite: None.

TCT-1001 Telecommunications I (4) fall

An introduction to the techniques, principles, and terminology of Voice telecommunications will be presented. Public and private telecommunication networks will be examined. Telecommunication equipment, switching and transmission technology will be demonstrated. The frequency spectrum, modulation schemes and multiplexing techniques will be explored. Lectures, interactive learning and demonstrations will be employed. Laboratory exercises will be required. 3 hours of lecture, 3 hours laboratory per week. Prerequisite: None.

TCT-1002 Telecommunications II--Introduction to Voice and Data (4) spring

An introduction to the techniques, principles, and terminology of Data Communications will be presented. Public and private networks will be examined. Data communication equipment, multiplexing, and interactive learning demonstrations will be employed. Laboratory exercises will be required. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: TCT 1001.

TCT-2003 Telecommunications III--LANS and WANS (4) fall

This course is designed to train students in the organization, architecture, setup, maintenance, hardware and software aspects of computer networks. Topics include: introduction to networks; types and characteristics of different network architectures (LAN to WAN); network topologies and cabling; intra and inter-network devices; network operating systems; peer-to-peer and client/server environments; LAN setup and maintenance; inter-network communications including connecting a LAN to the Internet; remote network access; network printing; network security; and World Wide Web Server. A hands-on approach will be taken, with team projects throughout. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: TCT-1002.

TCT-2004 Telecommunications IV--Advanced Topics (4) spring

A survey of current and emerging technologies in Telecommunications will be presented. Lectures, interactive learning, demonstrations, and site visits will be employed. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: TCT-2003.

Technical Education (TEC)

TEC-1110 Issues and Trends in Technical Education (3) summer

This course is designed to provide in-depth coverage of current issues in technical education with a historical perspective on the development of programs in Vermont. Prerequisite: None.

TEC-1120 Reading in Technical Education Content Areas (3) summer

The course is designed to assist technical center teachers in the development of techniques that will allow them to teach basic reading skills as an integrated part of their technical classroom. The primary focus will be on teaching skills for "reading to learn" about subject content. Technical Center classrooms by nature is a process-centered mode. Students learn in ways that allow direct application to technical job requirements. This course emphasizes the same process-centered approach for the teaching of reading skills.

TEC-1130 Vocational Instruction for Students with Special Needs (3) summer

This three credit course is designed to inform technical educators about students who are members of special populations, including methods of identification, assessment, modifications and accommodations provided to these individuals and the role of the technical educator in these processes.

Theatre Arts (THA)

THA-2070 Comedy in Film (3) as required

This course provides students with an overview of the psychological, social, and dramatic roots of comedy, as well as with a review of the social context of American comedy. Students will study paired films, all of which use elements of comic structure, characterization, plot, symbolism, and themes. (General Education: AH). 3 hours of lecture per week. Prerequisite: ENG-1061 or equivalent.

Veterinary Technology (VET)

VET-1000 Freshman Orientation (1) fall

This course introduces students to the wide range of employment opportunities for the veterinary technician. Presentations by guest lecturers are included. Information on using the library, Learning Center, and other support facilities on campus is provided. Students are introduced to different study skills and problem-solving techniques. 1 hour of lecture per week. Graded: Pass/No Pass. Prerequisite: None.

VET-1020 Animal Anatomy and Physiology (4) spring

Covered in this course are the anatomy and physiology of organs and organ systems in animals. There is emphasis on basic physiology common to domestic animals. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: BIO-2320.

VET-1030 Animal Care and Restraint (3) fall

This course teaches the principles of animal management which are fundamental to animal health. The student is introduced to the basics of animal behavior, handling and restraint, feeding, housing, and disease prevention. Laboratories stress hands-on experience with the handling, restraint, physical exam, and administration of medications to the common domestic species and laboratory animals. Proficiency in performance of laboratory tasks is evaluated. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: None.

VET-1040 Animal Diseases (4) spring

Bacterial, viral, fungal, and parasitic diseases are discussed. Review of disease prevention practices. Laboratories concentrate on diagnostic techniques including microbiology, fungal cultures and evaluations, parasitologic specimen collection and processing, necropsy procedures, specimen handling, and shipping specimens to other laboratories. 3 hours of lecture, 2 hours of laboratory per week. Prerequisite: VET-1010, 1030, BIO-2320.

VET-1051 Animal Care I (1) fall

This course is designed to give students hands-on experience in the daily care and maintenance of farm, laboratory and pet animals. Students are assigned times to care for the colony dogs, cats, laboratory animals, birds, sheep, horses and dairy animals under supervision. This course is repeatable for credit. Selected hours throughout the term. Prerequisite: None. Graded: Pass/No Pass.

VET-1052 Animal Care II (1) spring

This course is designed to give students hands-on experience in the daily care and maintenance of farm, laboratory and pet animals. Students are assigned times to care for the colony dogs, cats, laboratory animals, birds, sheep, horses and dairy animals under supervision. This course is repeatable for credit. Scheduled hours throughout the term. Prerequisite: VET-1051 or instructor permission. graded: Pass/No Pass.

VET-1060 Laboratory Techniques (5) spring

Students learn to perform venipuncture, complete blood counts, urinalyses, serum chemistries, and supplemental hematologic evaluations on all species studied in VET-1030. Proficiency in performing tasks in the laboratories is emphasized. 3 hours of lecture, 4 hours of laboratory per week. Prerequisite: VET-1030, BIO-2320.

VET-2011 Veterinary Clinical Techniques I (3) fall

Students learn the stages of anesthesia, and to induce and monitor anesthesia under the direct supervision of a veterinarian. Surgical nursing skills associated with aseptic technique and proper protocol in the surgery suite are covered. Pre- and post-op monitoring, record keeping and client education skills are practiced. Students perform blood work, urinalysis, and fecal examination on animals that are scheduled to be anesthetized as medically indicated. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: VET 1030,VET-1020, VET-1040, and VET-1060.

VET-2012 Veterinary Clinical Techniques II (3) spring

This course provides instruction in radiography of both large and small animals. The laboratories review of anesthesia while the students learn to position animals for radiographs and develop, handle, and store the films. Ancillary techniques such as dentistry procedures are also covered. Students perform blood work, urinalysis, and fecal examination on animals that are scheduled to be anesthetized as medically indicated. 2 hours of lecture, 3 hours of laboratory per week. Prerequisite: VET-2011, VET-2050, and VET-2070.

VET-2030 Animal Nutrition (2) fall

This course familiarizes the student with the various nutrients and their metabolism. Diet formulation for the common domestic and laboratory animals is covered, including species variation in nutritional requirements. The use of prescription diets for small animals is discussed. Practical information regarding client education for feeding both large and small animals is presented. 2 hours of lecture per week. Prerequisite: CHE 1020, BIO 2320, VET 1020.

VET-2040 Reproduction and Genetics (3) spring

This course provides instruction in genetics and comparative reproductive physiology of domesticated animals. Reproductive management is covered, including heat detection, determination of pregnancy, management of pregnant animals and parturition, and reproductive failure. Students gain information on how to assist veterinarians with reproductive and obstetrical procedures. 3 hours of lecture per week. Prerequisite: BIO 2320, VET 1020, VET 2070

VET-2050 Applied Laboratory Methods (4) fall

Students learn medical nursing skills including bandaging, responding to medical emergencies, CPR, handling trauma cases, preparing animals for certain diagnostic procedures, obtaining an EKG, blood transfusions, and fluid therapy. Cytological specimens are collected and evaluated. 3 hours of lecture, 3 hours of laboratory per week. Prerequisite: VET-1020, VET-1040, and VET-1060.

VET-2060 Veterinary Office Procedures (3) spring

Students review material on professionalism and interactions with clients that they have been introduced to in other courses. This course then provides additional information on interpersonal communication, professional correspondence, legal issues regarding medical records, organizing an office, financial record keeping, and OSHA compliance. Practical information on evaluating a potential job position and getting and keeping a job is presented. 3 hours of lecture per week. Prerequisite: Sophomore standing in VET program or instructor permission.

VET-2070 Pharmacology and Toxicology (3) fall

Calculation of drug doses, dispensing and administration of medications are reviewed. The metabolism of commonly-used veterinary medications and their beneficial and potential harmful effects on the body are covered. Students become familiar with common poisonous substances and plants and gain information on assisting the veterinarian in treating toxicity cases. 3 hours of lecture per week. Prerequisite: VET-1020, VET-1040, and VET-1060, CHEM 1020.

VET-2080 Animal Behavior (2) spring

This course is designed to give veterinary technology students grounding in the natural behaviors of the common domestic species. Included are the neural, genetic, and endocrine bases for these behaviors. In addition, many aspects of clinical behavioral medicine also are covered. Included are 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. Prerequisite: Sophomore standing in VET program or instructor permission.

VET-2090 Veterinary Technician National Exam Seminar (1) spring

This course is a comprehensive review of the core curriculum material presented in the first three semesters of the veterinary technician program. The purpose is to prepare students for standardized professional examinations, such as the Veterinary Technician National Exam (VTNE). 1 hour of seminar each week. Prerequisites: VET-2030, VET-2050, VET-2070, and VET-2011. Graded Pass/no pass.

VET-2720 Veterinary Supervisor (1) fall/spring

Required course for Veterinary Technology students. Prerequisite: Sophomore status and two semesters of animal care. This course is repeatable for credit. Graded Pass/no pass.

VET-2810 Veterinary Externship/Internship Review (0/1) summer/fall

Students are enrolled in the externship after successful completion of the first-year core curriculum. The externship consists of a summer practicum of a minimum of 400 hours (10 weeks). It is recommended that the student attend two different sites for 5 weeks each to get a broad range of experiences. Successful completion of the externship required for graduation. After successful completion of the summer externship students are enrolled in the externship review seminar in the subsequent and fall term. The review is a letter-graded one credit course.

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Full-time Faculty

Note: For a listing of part-time faculty, go to www.vtc.edu, click on the academic program your are interested in, then select faculty and staff in the left navigation bar. Current part-time faculty will be listed two weeks after the start of each semester.

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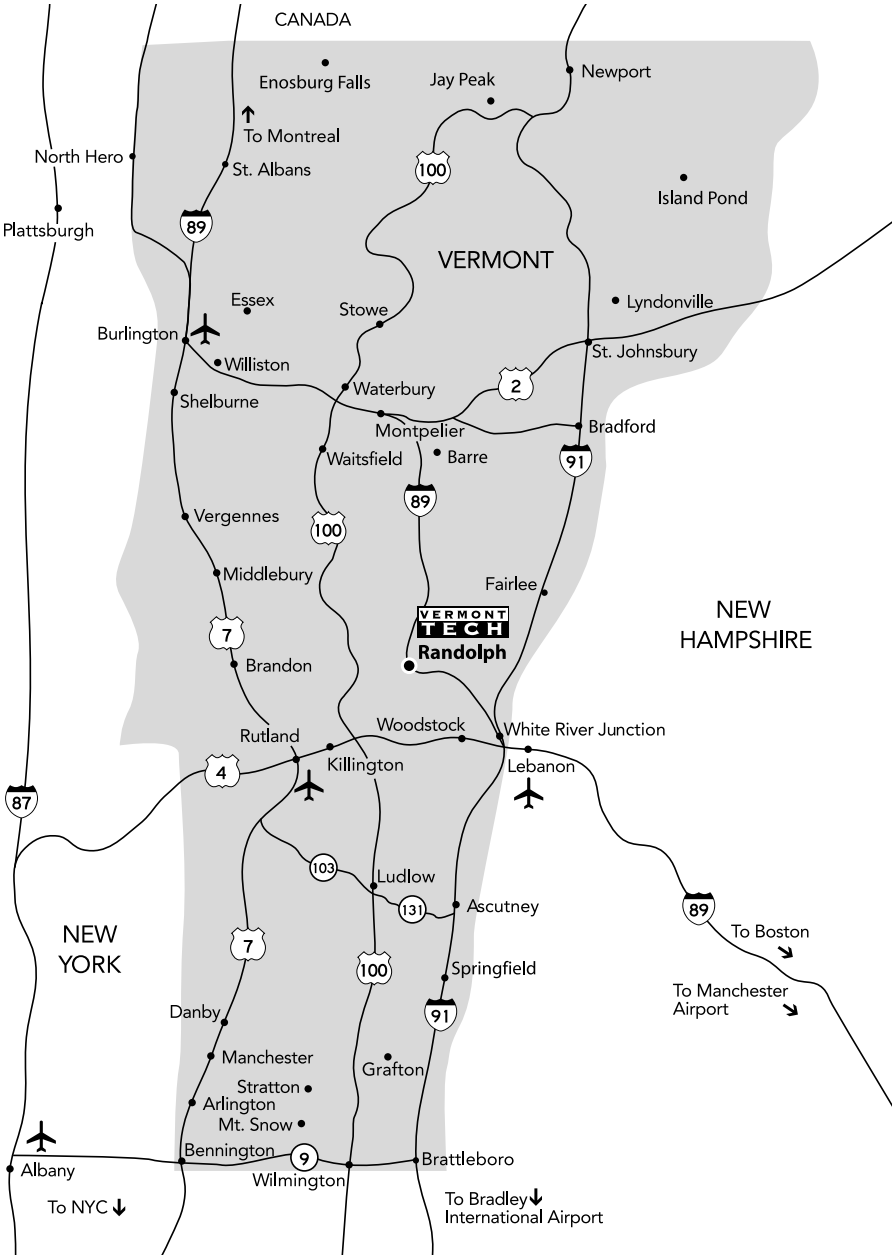

Approximate Hours of Driving Time to Vermont Tech

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Hartford, CT 3	Springfield, MA 2.5
New York, NY 6	St. Johnsbury, VT 1.5
Albany, NY 2.5	Portland, ME 4
Burlington, VT 1	Concord, NH 2