






2024-2025 Program of Study

ESSEX NORTH SHORE
AGRICULTURAL & TECHNICAL SCHOOL

Translation & Interpretation Services

Essex North Shore Agricultural & Technical School strives to ensure families have meaningful access to all aspects, programs, opportunities, and services pertaining to their children's education. We do this by providing a multitude of language services via internal and external resources to safeguard communications; including the translation of written communications and interpretation services for verbal communications.

To request documents in another language or request interpretation services, please email translation@essextech.net or call (978) 304-4700.

Non-Discrimination Statement

It is the policy of the Essex North Shore Agricultural & Technical School District to provide a safe and secure learning and work environment for all students and employees without distinction, where all school community members treat each other with respect. All programs, activities, and employment opportunities are offered without regard for race, color, sex, religion, national origin, ethnicity, sexual orientation, gender identity, homelessness, age, and/or disability.

The Essex North Shore Agricultural & Technical School District School Committee is committed to the prevention, remediation, and accurate reporting of discrimination and harassment, bias incidents, and civil rights violations, including hate crimes, based on race, color sex, religion, national origin, ethnicity, sexual orientation, gender identity, homelessness, age, and/or disability and any other class or characteristic protected by law. The District also prohibits other harmful conduct by reasons unrelated to the above characteristics.

Excerpt from file ACAB: Discrimination and Harassment Policy

Table of Contents

PRINCIPAL'S MESSAGE 1
MISSION STATEMENT 2
GRADUATE PROFILE 2
COMMITMENT TO EQUITY AND OPPORTUNITY STATEMENT 3
SCHOOL PROFILE 4
NEASC ACCREDITATION 4
MA DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION ACCOUNTABILITY 4
PROMOTION & GRADUATION REQUIREMENTS 5
MCAS COMPETENCY DETERMINATION REQUIREMENTS 6
EDUCATIONAL PROFICIENCY PLANS (EPP) 6
MASSACHUSETTS STATE SEAL OF BILITERACY 7
GRADING SYSTEM 7
HONOR ROLL 7
ACADEMIC INTEGRITY 7
DISTRICT CURRICULUM ACCOMMODATION PLAN (DCAP) 8
GRADE POINT AVERAGE DETERMINATION 8
PLACEMENT OF GRADE 9 STUDENTS IN CTAE EDUCATION PROGRAMS 9
PLACEMENT OF STUDENTS IN ACADEMIC PROGRAMS 10
COURSE STRUCTURE & IDENTIFICATION 11
CAREER & COLLEGE PLANNING 12
COOPERATIVE EDUCATION PROGRAM 13
SPECIAL EDUCATION 14
SECTION 504 14
TITLE I SERVICES 14
CTAE AND LANGUAGE COURSES 14
EARLY COLLEGE PROGRAM 15
DUAL ENROLLMENT 16
MULTILINGUAL LANGUAGE LEARNERS 16
CTAE PARTNERSHIP/AFTER DARK PROGRAM 16
INTEGRATION LEARNING 17
COMMUNITY SERVICE LEARNING 17
CAREER TECHNICAL AND AGRICULTURAL CLUSTER PATHWAYS 18
CAREER TECHNICAL & AGRICULTURAL PROGRAMS 20
- AGRICULTURAL CLUSTER 21
- ANIMAL SCIENCES 21
  - CTAE PATHWAY COURSES 21
  - Companion Animals 23
  - Companion Animals Exploratory 9 24
  - Equine Sciences 27
  - Veterinary Science 32
- AGRICULTURAL CLUSTER 37
- PLANT SCIENCES 37

CTAE PATHWAY COURSES 37
Arboriculture 39
Landscaping & Turf Management 42
Natural & Environmental Sciences 45
Sustainable Horticulture 50
CONSTRUCTION CLUSTER 53
CTAE PATHWAY COURSES 53
Carpentry 55
Construction Craft Laborers 58
Electricity 61
Heating, Ventilation, Air Conditioning & Refrigeration 64
Masonry & Tile Setting 67
Plumbing 70
HEALTH SCIENCES CLUSTER 73
CTAE PATHWAY COURSES 73
Dental Assisting 75
Early Education & Care* 78
Health Assisting 80
STEAM ACADEMY 83
CTAE PATHWAY COURSES 83
Advanced Manufacturing 85
Biotechnology 88
Design & Media Communications 91
Engineering & Automation Technology 94
Information Technology Services 97
Metal Fabrication & Joining Technologies* 102
SERVICES CLUSTER 103
CTAE PATHWAY COURSES 103
Automotive Collision Repair & Refinishing 105
Automotive Technology 108
Cosmetology 111
Culinary Arts & Hospitality 114
Marketing 119
Partnership/After Dark Programs 121
Advanced Manufacturing 122
Construction Craft Laborers 122
Early Education & Care 123
Health Assisting 123
Sustainable Horticulture 124
GRADE 9 CTAE PATHWAY FOUNDATION COURSES 125
GRADE 10 CTAE PATHWAY FOUNDATION COURSES 125
ACADEMIC
COURSE OFFERINGS 127

ENGLISH CORE COURSES 127
MATHEMATICS CORE COURSES 131
SCIENCE CORE COURSES 135
HISTORY CORE COURSES 139
SPANISH CORE COURSES 140
GRADE 12 ACADEMIC ELECTIVE COURSES 143
HISTORY & SOCIAL SCIENCES 143
SCIENCE 144
ENSATS EARLY COLLEGE PROGRAM COURSES 146
MULTILINGUAL - ENGLISH LEARNER COURSES 149
WELLNESS COURSES 150
ADDITIONAL COURSES 152
STUDENT SUPPORT SERVICES 153
SCHOOL COUNSELING SERVICES 153
HEALTH SERVICES 153
EDUCATIONAL STABILITY 154
STUDENT ACTIVITIES 156
ATHLETICS 159
APPENDIX 161
STANDARDIZED ASSESSMENT INFORMATION FOR POST-SECONDARY & COLLEGE ADMISSIONS 161
ARTICULATION AGREEMENTS 161

PRINCIPAL'S MESSAGE

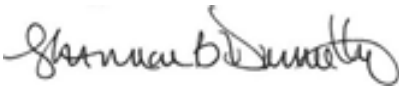
On behalf of the Essex North Shore Agricultural & Technical School learning community, we are excited to share with you our Program of Studies for the 2024-2025 school year. Our six-block schedule offers students greater opportunities to learn through a fully-articulated set of CTAE Pathways courses designed to prepare them to be responsible and skillful members of the future workforce. We continue to promote our commitment to equity, diversity, inclusion, and opportunity for all students. We have also included an update to Integration Learning and a new Community Service Program, commencing with this next school year's entering grade 9 class. Finally, we have added Spanish courses in grades 9 and 10 for students who have previously taken advanced coursework and to honor the diversity of students who are fluent in the language.

As you read this program and should any questions arise, please do not hesitate to reach out directly to your student's school counselor or to our team of administrators:

- Assistant Superintendent of Curriculum, Instruction, and Assessment - Dr. Thomas O'Toole at totoole@essextech.net
- Executive Director of CTAE - Ms. Jill Sawyer at jsawyer@essextech.net
- CTAE Coordinator - Mr. Donald Ducharme at dducharme@essextech.net
- CTAE Coordinator - Mr. Paul Crofts at pcrofts@essextech.net
- STEAM Academy Coordinator - Dr. Tony Di Luna at tdiluna@essextech.net
- Director of Special Education & Multilingual Language Learner Programming - Ms. Susan Stevens at sstevens@essextech.net
- Director of School Counseling & Admissions - Ms. Sandra Goldstein at sgoldstein@essextech.net

We look forward to working with you to live our Mission and make Essex North Shore Agricultural & Technical School a culture of academic and technical excellence for next year and for all the years to come.

Welcome,



Shannon B. Donnelly
Principal

MISSION STATEMENT

The mission of Essex North Shore Agricultural & Technical School is to create a culture of *academic and technical excellence,* encourage *continuous intellectual growth*, and promote *professionalism, determination, and citizenship* for all students, as they develop into *architects, artisans, and authors* of the 21st century community.

This will be accomplished through a four-tiered approach, requiring both commitment and investment from all members of our community:

Students will …

- take ownership for their learning by being active participants in their own education
- be respectful and considerate citizens both in school and in the community
- encourage and support growth in themselves and others

Staff will …

- equip students with the skills necessary to have an array of college and/or career choices upon graduation
- model improvement of skills while implementing a rigorous, relevant, and rich curriculum
- encourage and support each other in order to create an environment where everyone feels safe to grow and take intellectual risks

Caregivers will …

- provide the at-home support necessary to be partners in education
- maintain clear and high expectations for student performance, in all areas, to foster the continual growth of each student
- guide their student towards continuous improvement

General Advisory will …

- review and evaluate curriculum and instruction in order to advise on course materials
- support career and technical education with the current industry trends
- make administrators and instructors aware of potential internships and co-op opportunities for students

GRADUATE PROFILE

Aligned with our mission Essex North Shore Agricultural and Technical School espouses the development of student qualities that ensure that all ENSATS graduates are future-ready. Our goal is for students to be:

- Collaborative
- Culturally Proficient
- Entrepreneurial
- Kind
- Perseverant
- Responsible

COMMITMENT TO EQUITY AND OPPORTUNITY STATEMENT

Essex North Shore Agricultural & Technical School District (ENSATSD) is committed to equity for all students. It is the policy of the District to provide a safe, secure learning and work environment for all students and employees without distinction, where all school community members treat each other with respect. All programs, activities, and employment opportunities are offered without regard for race, color, sex, religion, national origin, ethnicity, sexual orientation, gender identity, homelessness, age, and/or disability. The ENSATSD School Committee is committed to the prevention, remediation, and accurate reporting of discrimination and harassment, bias incidents, and civil rights violations, including hate crimes, based on race, color, sex, religion, national origin, ethnicity, sexual orientation, gender identity, homelessness, age, and/or disability and any other class or characteristic protected by law. The District also prohibits other harmful conduct by reasons unrelated to the above characteristics. The School Committee has developed this policy to ensure that the educational opportunities of all students and the employment conditions of all employees are not threatened or limited by such violations of discrimination or harassment to ensure that differences are respected and individuals are free to work, learn, and develop relationships without fear of intimidation, humiliation, or degradation. Furthermore, no student shall be excluded from or discriminated against in admission to Essex North Shore Agricultural & Technical School, for admittance to State and Federally funded grant programs, or in obtaining the advantages, privileges, and courses of study offered on account of race, color, gender, gender identity, homelessness, disability, sexual orientation, religion, or national origin. This commitment to equity and opportunity applies to all persons. The school strives to create a positive learning environment in which individual differences are valued.

SCHOOL PROFILE

Essex North Shore Agricultural & Technical School opened as a four-year Massachusetts public career technical and agricultural high school in September 2014 following the merger of North Shore Technical High School, Essex Agricultural & Technical High School, and the Automotive Collision Repair and Refinishing, Automotive Technology, and Carpentry career and technical education programs from Peabody Veterans Memorial High School. Students from 17 member districts are enrolled in one of the school's 24 career technical, animal science, agricultural or natural resources programs while students from across the Commonwealth of Massachusetts are eligible to earn admissions to one of the district's specialized animal science, agricultural, or plant science programs (see Appendix A). For more information see our Admissions Policy at EssexNorthShore.org/Admissions.

Upon successful completion of curriculum aligned to the Massachusetts Vocational Technical Education Regulations (603 CMR 4.00), including the Massachusetts Vocational Technical Education Frameworks , the Massachusetts Curriculum Frameworks, and Massachusetts High School Program of Studies (MassCore), Essex North Shore Agricultural & Technical School graduates are awarded both a Massachusetts high school diploma and a certificate of completion from their career technical or agricultural program.
College Board/ACT School Code: 220-980

NEASC ACCREDITATION

Essex North Shore Agricultural & Technical School's NEASC accreditation determination was awarded Fall 2018 following a Spring 2018 review by the The New England Association of Schools and Colleges.

MA DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION ACCOUNTABILITY

Essex North Shore Agricultural & Technical School made gains during the 2022-2023 school year and maintains the overall classification of Not Requiring Assistance or Intervention. Accountability targets are based on MCAS English Language Arts, Mathematics, and Biology achievement, MCAS English Language Arts and Mathematics growth, high school completion, student attendance, and advanced coursework completion. For more information, select the following link: http://profiles.doe.mass.edu/accountability/.

PROMOTION & GRADUATION REQUIREMENTS

Each program at Essex North Shore Agricultural & Technical School is comprised of academic instruction as well as career and technical instruction aligned to the Massachusetts Curriculum Frameworks and the Massachusetts Career Vocational Technical Education Frameworks and the Massachusetts High School Program of Studies (MassCore).

Successful completion of the following courses and achievement of a competency determination based on MCAS state assessments or the equivalent in English Language Arts, Mathematics and Science (see below) are requirements for receiving an Essex North Shore Agricultural & Technical School diploma and a career technical or agricultural program certificate.

Grade 9	Grade 10
English Mathematics Science History Spanish I or Spanish II (eff. Class of 2028)* CTAE Foundation Course: Freshman Seminar Health and Physical Education CTAE Exploratory Program	English Mathematics Science History Spanish II or Spanish III (eff. Class of 2028)* CTAE Foundation Courses: US Government & Politics and Financial Literacy Health and Physical Education CTAE Theory CTAE Program
Grade 11	**Grade 12**
English Mathematics Science History Health and Physical Education CTAE Pathway CTAE Theory CTAE Program	English Mathematics Electives (equivalent of 2 full-year courses)** Health and Physical Education CTAE Pathway CTAE Theory CTAE Program ***A 4th year of lab-based science is recommended for all students pursuing public or private post-secondary enrollment.*

*Exceptions may apply.

Students must pass ALL courses, including OSHA 10 or the equivalent, and their Career Technical or Agricultural Program course requirements, EVERY year to be eligible for annual promotion and/or graduation. The completion of a Showcase Portfolio is also a graduation requirement. All students are required to maintain a working portfolio beginning freshman year. During senior year, a Showcase Portfolio will be prepared and presented to a committee for evaluation before graduation.

Students who earn a failing grade in one or two academic courses and/or their CTAE Pathway or Theory courses or the equivalent must complete an online course or the equivalent approved by the district or a summer school course in the student's community approved by the district the summer immediately following failure to adequately earn credit for promotion/graduation.

Students who fail their CTAE program and/or fail three or more academic courses, including but not limited to CTAE Pathway or Theory course, must request permission in writing from the Principal within five (5) school days following completion of the school year to either:

1. Repeat the grade at Essex North Shore Agricultural & Technical School. If a student is repeating a grade, they may not take the place of another qualified candidate in a CTAE program, or
2. Be granted a waiver to enroll in online courses or the equivalent to make up the failed academic or related courses and be considered for promotion to the next grade.

MCAS COMPETENCY DETERMINATION REQUIREMENTS

The Massachusetts Education Reform Law of 1993, state law, G.L. c. 69, § 1D, requires that all students who are seeking to earn a high school diploma, must meet the Competency Determination (CD) standard, in addition to meeting all local graduation requirements. Students in the class of 2025 must earn a scaled score of at least 472 on the grade 10 MCAS English Language Arts (ELA), or earn a scaled score between 455 and 471 and fulfill the requirements of an Educational Proficiency Plan (EPP), and earn a scaled score of at least 486 on the MCAS Mathematics, or earn a scaled score between 469 and 485 and fulfill the requirements of an EPP. Students must also earn a scaled score of at least 467 on the high school MCAS Biology test. For more information on MCAS graduation requirements, visit the following DESE website: http://www.doe.mass.edu/mcas/graduation.html.

EDUCATIONAL PROFICIENCY PLANS (EPP)

An EPP is a plan that schools develop to help individual students make progress towards proficiency in ELA and/or Mathematics. The purpose of an EPP is to help a student acquire the knowledge and develop the skills he or she needs to be ready for higher education and/or a career after high school.

Each EPP must include:

- A review of the student's strengths and weaknesses based on MCAS tests and other assessment results, coursework, grades, and teacher input.
- A list of courses in the relevant ELA and/or Mathematics content areas that the student must take and complete successfully in grades 11 and 12.
- A description of assessments the school will use at least once each year to make sure that the student is making progress toward or has achieved proficiency.

For more information on EPP requirements visit the following DESE website:
http://www.doe.mass.edu/ccte/.

MASSACHUSETTS STATE SEAL OF BILITERACY

Any graduating senior who is proficient in English and another language, and meets specific criteria, is eligible to earn this prestigious award. The State Seal of Biliteracy is an award given in recognition of students who have studied and attained proficiency in speaking, reading, and writing in English and in another language by high school graduation. This award promotes excellence and high standards in the study of world language, certifies attainment of biliteracy skills and honors the value of language diversity. The State Seal of Biliteracy will be displayed on student transcripts and diplomas and is a statement of accomplishment for future employers and for college admissions.

GRADING SYSTEM

Letter grades will be given with the following numerical equivalent:

A+	100-97	B+	89-87	C+	79-77	D+	69-67	F	59-0
A	96-93	B	86-83	C	76-73	D	66-63		
A-	92-90	B-	82-80	C-	72-70	D-	62-60		

HONOR ROLL

High Honors……. A- or 90 or higher in all subjects
Honors …… B- or 80 or higher in all subjects

ACADEMIC INTEGRITY

It is the expectation of the administration and faculty at Essex North Shore Agricultural & Technical School that all students will work to the best of their ability. We are committed to helping all students become successful learners. Therefore, it is the responsibility of all students to submit work that is their own. If students do not submit their own work, teachers are unable to determine whether or not the student has mastered the content and if there is a need for re-teaching or additional support. Violations of the academic integrity policy, including cheating and plagiarism, will be documented in Aspen and parents will be notified.

Required Pre-Discussion: Teachers are required to meet with the student first to confirm that a violation of academic integrity did in fact occur. This is a critical point during which the teacher appraises the student's level of understanding of what occurred, intent, and reasoning behind what occurred. If the teacher determines that there was a violation of academic integrity there are three levels of response based on numbers of occurrences for students who have demonstrated a lack of academic integrity.

First Occurrence: The teacher will meet with the student to discuss the process for completing the work where academic integrity was not demonstrated. The student will be required to come after school to redo the assignment with teacher assistance.

Second Occurrence: The same procedure will be followed, but the credit for the assignment will be reduced by one full grade (i.e. a paper that earned 87 points is reduced to 77 points)

Third Occurrence: No credit will be given for the assignment.

DISTRICT CURRICULUM ACCOMMODATION PLAN (DCAP)

Essex North Shore Agricultural & Technical School is an inclusive school where diversities of all types, including learning differences, are respected and embraced. We recognize that all students have individual learning needs. Our classroom instruction is designed to provide all learners with access to our curricula. Our District Curriculum Accommodation Plan (DCAP) describes accommodations that are available for all students.

GRADE POINT AVERAGE DETERMINATION

Many courses carry a weighted Grade Point Average (GPA). The higher the level of a course, the higher the GPA weight. Thus, AP and Early College (EC) level courses carry a 5.0 value for earning an A in a designated course, Honors level may carry a 4.67 value for an A. ACP courses carry a 4.33 value, and College Prep courses carry a 4.0 value.

Grade Point Averages will be calculated based on a weighted 4.0 scale no less than once annually at the conclusion of the school year. Courses are be weighted accordingly:

Course Weighting for Grade Point Average (GPA):

Letter Grade	Numerical Grade	College Prep (CP) & Pathway Courses	College ACP CTAE Courses & CTAE Theory	Honors & Cooperative Education	AP Early College & Dual Enrollment
A+	97-100	4.3	4.7	5.0	5.3
A	93-96	4.0	4.33	4.67	5.0
A-	90-92	3.7	4.01	4.32	4.63
B+	87-89	3.3	3.58	3.86	4.13
B	83-86	3.0	3.25	3.5	3.75
B-	80-82	2.7	2.93	3.16	3.38
C+	77-79	2.3	2.49	2.68	2.88
C	73-76	2.0	2.17	2.34	2.5
C-	70-72	1.7	1.84	1.98	2.13
D+	67-69	1.3	1.41	1.52	1.63
D	64-66	1.0	1.08	1.16	1.25
D-	60-63	0.7	0.76	0.82	0.88
F	59 or below	0	0	0	0
Additional Codes:	*P-Passing*	*M- Medical*	*E- Exempt*	*NC- No Credit*	*W- Withdrawn*

Rev. 9/2021

PLACEMENT OF GRADE 9 STUDENTS IN CTAE EDUCATION PROGRAMS

GRADE 9 CAREER DISCOVERY PROGRAM

During the Career Discovery Program, all freshmen students will be introduced to the 24 programs offered at Essex North Shore Agricultural & Technical School. This will occur during the first five (5) Career Technical Education Program days of the school year.

GRADE 9 EXPLORATORY PROGRAM

Students will participate in seven (7) CTAE program areas during the seven (7) CTAE cycles following the completion of Career Discovery for a maximum of five (5) days per cycle. During the exploratory experience, career technical instructors evaluate each student based upon a common rubric/scoring guide including the following:

40%	Weekly Assessment in Workmanship/Production, Safety, Career Awareness and Professionalism/Employability
20%	Performance-Based Assessment
20%	Written Assessment
20%	Reflection/Journal Entry

GRADE 9 CAREER TECHNICAL & AGRICULTURAL PROGRAM SELECTION

Students who have been admitted to ENSATS will need to apply to a specific program of study (also known as a "major" or "career area") following completion of the Exploratory Program. At the conclusion of the Exploratory Program, each student rank orders their preferences from all of the explored career technical and/or agricultural programs for which a passing grade has been earned. Parent/Guardian approval of these preferences is required.

GRADE 9 CAREER TECHNICAL AND AGRICULTURAL PROGRAM PLACEMENT

Students are admitted into the final career technical or agricultural program following a review of their stated preferences and their Exploratory GPA for all completed Exploratory courses and by members of the Admissions Committee. Students will be ranked for each of their requested career technical or agricultural preferences based on their Exploratory GPA score. Priority is provided to first choice students. As such, no student with a higher rank can "bump" a student with a lower rank, provided the students have selected different career areas as their first choice.

Should a career technical or agricultural program meet capacity with all first-choice student requests, students will be placed as follows:

- Students will be placed in a second-choice career technical or agricultural program, by rank order, provided there is space available.
- Students not able to access a second-choice career technical or agricultural program will be placed into a third-choice career area, by rank order, provided there is space available.
- Students not placed in one of their top three career technical or agricultural programs will meet with a School Counselor. A School Counselor will review career technical or agricultural programs with remaining seats. A review of the students' exploratory schedules and performance will be conducted as well as students' career exploration and learning assessments. Parent/guardian consultation will follow. Students will then be placed into career technical or agricultural programs with remaining space.

Wait lists will be created for each career technical and agricultural program where requests for placement exceed capacity. Program wait lists are created when students are placed in a career technical or agricultural program other than their first preference, yet would like to be in a different career technical or agricultural program. Waitlisted students are notified if an opening occurs in their desired preference.

Source: ENSATS Admissions Policy (www.EssexNorthShore.org/admissions.)

PLACEMENT OF STUDENTS IN ACADEMIC PROGRAMS

Freshmen

Once incoming ninth-grade students have been accepted to Essex North Shore Agricultural & Technical School, a placement exam will be administered in the spring. The purpose of this test is to ensure appropriate placement for each freshman in their academic courses. Course level recommendations are also requested from sending middle schools for incoming freshmen to further inform freshman scheduling.

Sophomores, Juniors, and Seniors

Level recommendations (College Prep, Accelerated College Prep*, Honors, and Advanced Placement) for required Courses in English Language Arts, History and Social Sciences, Mathematics, and Science are made by the sending teacher based on the results of each student's work in their course as well as all prior courses in the same content area. In some cases, such as upper level science courses (Chemistry and Physics), students' prior performance in Mathematics courses is also taken into consideration when making a level recommendation due to the Mathematics skills needed for higher levels of these courses (*

Accelerated College Prep courses are offered only in Grade 11 and Grade 12 during School Year 2024-2025).

Students may choose two academic electives in senior year when electives are offered in History, Mathematics, and Science.

Course Selection Process: February-March Annually
For leveled core courses, teacher recommendations will determine placement for students entering Grades 10-12 after the conclusion of Semester 1/Quarter 2. Please note the recommendations and prerequisites in the course descriptions under all leveled courses. If students or parents/guardians are in disagreement with the recommended placement, the parent/guardian must document this request in writing during the course selection period (February-March annually).

Schedule Changes
Schedule changes are disruptive to a student's education. Once the school year has begun, changes to class schedules are discouraged. Students and families are expected to select courses carefully during the course selection period in order for schedules and staffing to be completed. Please consult the recommendations for placement and pre-requisite course(s) in the course description.

Please follow the procedure in the *Student Handbook* to initiate schedule changes. The following are schedule change guidelines:

- There is a freeze on schedule changes for the first two academic cycles at the beginning of the term.
- Requests to change teachers will not be considered.
- Courses dropped after October 1 may result in the appearance of a Withdrawal "W" on the student's transcript. Changes approved in Quarter 1, but after progress reports are issued, may not be made until the start of Quarter 2.
- No changes will be made after four academic cycles into the first term unless extenuating circumstances exist.

COURSE STRUCTURE & IDENTIFICATION

All courses offered at Essex North Shore Agricultural & Technical School are college preparatory so that all students are college and career ready. Courses are structured using the following delineations:

College Preparatory (CP)
College Preparatory is designed for college-bound and career-oriented students. The curriculum develops critical skills for college and career readiness and moves at a pace that focuses on content and skills essential to succeed after high school. Students will complete assignments independently and in small groups in a structured class environment and will have homework assignments and projects that extend concepts and skills practiced in class.

Accelerated College Preparatory (ACP) : Discontinued beginning with the Class of 2026

Accelerated College Preparatory is designed for students preparing for two- and four-year colleges. The curriculum develops critical skills for college and career readiness and moves at a moderate pace. Students should evidence a solid interest in learning and work well independently and in groups with teacher direction. Students are capable and willing to put time and effort into their assignments. These courses require daily homework, longer term projects, and consistent participation in various class activities.

Honors (H)

This level is the most academically challenging of the three college preparatory levels, and it moves at a rigorous pace with nightly homework as well as independent projects. Students in honors courses should possess a strong interest in learning and have a high level of intellectual curiosity. Students are expected to be self-motivated and work well with others. Homework is required to be done on time to ensure participation in daily class discussions.

Advanced Placement (AP)

Advanced Placement courses require students to apply advanced critical thinking and analytical skills that are typical of comparable college-level courses. This guiding Advanced Placement enrollment policy holds true for all Advanced Placement courses and exams, regardless of the grade level in which a student takes Advanced Placement coursework. Advanced Placement courses are specifically designed to provide challenging, college-level coursework for willing and academically prepared high school students. The amount of homework, independent research and reading is significantly more than in other courses. Students are expected to take the Advanced Placement exam in the spring. Advanced Placement courses follow specific guidelines and requirements set forth by the College Board. Students taking Advanced Placement courses are required to sign and return this *Advanced Placement Student & Parent/Guardian Contract*. For more information visit the AP Central website: http://apcentral.collegeboard.com/home.

Early College Designated Program Courses (EC)

ENSATS was awarded official designation as an Early College Program by the Massachusetts Department of Elementary and Secondary Education and the Massachusetts Department of Higher Education (March 2022) in partnership with North Shore Community College. Early College courses are taught by North Shore Community College faculty while guided and supported by ENSATS staff. Learning will take place during the ENSATS school day on both the ENSATS and NSCC campuses throughout the term of the course (transportation to the Danvers NSCC campus is provided). Successful completion of Early College courses will result in students earning both ENSATS high-school credit and NSCC college credit.

CAREER & COLLEGE PLANNING

ENSATS School Counselors are available to guide and support students and families with navigating the college and career planning process. While directed supports from school counselors commence mid-year during the junior year when School Counselors visit student classes and CTAE programs, this is intended to be a collaborative effort with the student, family and school counselors. Additionally, our school counselors host a Family Information session annually in early March to afford parents and caregivers an opportunity to

review the career and college planning process, including the roles and responsibilities of the student, our staff, and the caregivers.

COOPERATIVE EDUCATION PROGRAM

It is the expectation of Essex North Shore Agricultural & Technical School that all students participate in a Cooperative Education experience. Students may be eligible to go out on Cooperative Education as early as midway through their junior year as long as they meet the criteria. Students are encouraged to meet with their program instructor and the assigned Career Counselor to discuss requirements and steps necessary to complete the process.

Cooperative Education Criteria:

- Minimum age 16.
- Completion of 1½ years of full time study in the Career technical or agricultural Program.
- No earlier than midway through junior year (90 days).
- OSHA 10 Credential (Construction, General Industry, or Health) and any other certification/credential specific to the student's Career technical or agricultural program. (ie. CNA, Adobe, ServSafe, Radiology).
- Recommendation of Career technical or agricultural program Instructor: Student demonstrates the acquisition of the knowledge and skills in the Career Technical or Agricultural program associated with 1½ years in the program.
- Career technical or agricultural program, theory, and pathway coursework grade: minimum: “C” in the prior term and maintaining this standard at time of placement.
- Academic grade minimum: Passing all Core Academic classes in the prior term and maintaining this standard at the time of placement.
- Attendance: Student demonstrates that they meet the Attendance Policy set forth in *The Student Handbook.*
- Discipline records will be reviewed by the Assistant Principal.
- Successful completion of all relevant placement paperwork.
- Students need to provide their own transportation to their placement.
- During placement, students will submit time cards and written entries weekly to their assigned career technical or agricultural instructor and Career Counselor.
- Students should notify the Cooperative Education Coordinator of any absence from work or injury that occurs at the Cooperative Education placement as soon as possible.
- During placement, students who do not meet coursework grade and/or attendance criteria will be placed on probation for two cycles as this gives the student the opportunity to return to good standing. Students would then remain on probation for the remainder of the term. Probation may consist of weekly progress reports, meetings, and other interventions to assist the student to remain in their Cooperative Education placement.

For additional information, contact the ENSATS Cooperative Education Coordinator.

SPECIAL EDUCATION

Essex North Shore Agricultural & Technical School is an inclusive school where diversities of all types, including learning differences, are respected and embraced. We recognize that all students have individual learning needs. Our classroom instruction is designed to provide all learners with access to our curricula. Students' special education programs are individualized. Some examples of supports and services are classes co-taught by general and special education teachers, participation in individual or small-group services, such as academic support, reading instruction or speech and language therapy. Decisions regarding the need for supports and services are made by the Individualized Education Program teams of eligible students. For additional information contact the ENSATS Director of Special Education.

SECTION 504

Section 504 is a part of the Americans With Disabilities Rehabilitation Act of 1973, a federal law designed to protect the rights of individuals with disabilities in programs and activities that receive federal financial assistance from the U.S. Department of Education. Section 504 provides: "No otherwise qualified individual with a disability in the United States . . . shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

To be protected under Section 504, a student must be determined to:

1. Have a physical or mental impairment that substantially limits one or more major life activities; or
2. Have a record of such an impairment; or
3. Be regarded as having such an impairment. Major life activities include caring for one's self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and working. This list is not exhaustive.
4. Essex North Shore Agricultural & Technical School recognizes its obligations under the law.

The District 504 Coordinator has the overall responsibility for overseeing efforts to ensure full compliance including the identification, evaluation, and the determination of whether or not a child is eligible to receive accommodations under Section 504 of the Rehabilitation Act of 1973. For additional information, contact the ENSATSD District Section 504 Coordinator.

TITLE I SERVICES

Title I is a federal grant-funded supplemental program that provides reading and mathematics instruction to Essex North Shore Agricultural & Technical School students who have been identified through placement testing or teacher referrals. Reading and mathematics instruction take place during English 9 or 10 courses or Algebra I or Geometry courses, so that students are receiving instruction in how to improve their reading and/or mathematical problem solving in an inclusion classroom setting. For additional information, contact the Title 1 Director.

CTAE AND LANGUAGE COURSES

In keeping with the mission of our school to "create a culture of academic and technical excellence" the Essex North Shore Agricultural & Technical School requires students to take two years of Spanish, Spanish

1 in Grade 9 and Spanish II in Grade 10, unless a student requires supportive learning services in place of these language courses.

We do want to remind everyone of the Mass CORE requirements and, in particular, language policies for students who attend Massachusetts career technical schools and their impact on admissions to the Massachusetts State University System. What is established is that because career technical students require more credit hours related to their technical and agricultural areas, students who are unable to take Spanish I and Spanish II will be considered opt outs per MassCore that stipulates that "Students enrolled in a state-approved Career and Technical Education program of studies have the option of opting out of Foreign Language and Art and still fulfill MassCore."

EARLY COLLEGE PROGRAM

"Early college programs are designed to blend elements of high school and college to provide students with the opportunity to experience and complete college level academic coursework on a clearly articulated pathway and simultaneously gain exposure to a variety of career opportunities. Early college programs also reduce the time and expense of earning a college credential while increasing the likelihood of completion (Source: https://www.doe.mass.edu/ccte/early-college/)."

ENSATS was awarded official designation as an Early College Program by the Massachusetts Department of Elementary and Secondary Education and the Massachusetts Department of Higher Education (March 2022) in partnership with North Shore Community College.ENSATS has partnered with North Shore Community College (NSCC) to offer Early College Designation Program courses to enrolled ENSATS students beginning in Grade 10. ENSATS. Early College courses are taught by North Shore Community College faculty while guided and supported by ENSATS staff. Learning will take place during the ENSATS school day on both the ENSATS and NSCC campuses throughout the term of the course (transportation to the Danvers NSCC campus is provided). Successful completion of an Early College Designated course will result in students earning both ENSATS high-school credit and NSCC college credit. ENSATS Early College Program course enrollment is free to eligible students.

ANTICIPATED ENSATS EARLY COLLEGE PROGRAM COURSE OFFERINGS*

	NSCC Course	NSCC Course	ENSATS Crosswalk
Grade 10	*Understanding Higher Education* FFL 103		*Personal Financial Literacy* Foundation Course: (1 Semester)
Grade 11	*Speech* SP 102	*Composition 101* CMP 101	*English 11* (1300, 1301, 1302 or 1304)
Grade 12	*Introduction to Sociology* SOC 106	*Introduction to Psychology* PSY 102	Senior Elective (1 Full Year)

*Early College Designation Offerings are subject to available funding.

DUAL ENROLLMENT

Students and families who seek to independently enroll in college level courses to complement their high school experience are encouraged to do so. The Principal, in collaboration with the Assistant Superintendent of Curriculum, Assessment, & Instruction, CTAE Director, and Director of School Counseling will review formal written requests for Dual Enrollment coursework to be included in the ENSATS student's transcript. Requests for Dual Enrollment approvals must be made in writing to the Director of School Counseling at least two (2) weeks prior to the commencement of enrollment in any Dual Enrollment courses. An official transcript, forwarded directly from the college or university to ENSATS, must be received upon completion of any Dual Enrollment course in order for ENSATS credit to be awarded to the student.

MULTILINGUAL LANGUAGE LEARNERS

Multilingual Language Learners (MLs) are students whose first language is other than English and who are not yet sufficiently proficient in English in the four language domains of listening, speaking, reading, and writing. Essex North Shore Agricultural & Technical School uses a two-pronged approach to support MLs. Students who are identified as MLs receive English instruction and Sheltered English Immersion (SEI) instruction to assist them in developing the language skills necessary to participate fully in academic and career technical education classes. Additionally, the progress of Former English Learners (FELs), who receive the benefit of instruction that is consistent with the principles of Sheltered English Immersion, is monitored for a period of four years subsequent to their being identified as no longer requiring direct ML instruction. ML students' skills are evaluated each year using the ACCESS for MLs test, as required by state law.

Essex North Shore Agricultural & Technical School actively encourages the participation of current and former English Learners in courses at all levels and ensures that the student's level of English proficiency does not impede a student's participation in advanced level courses. Additionally, current and former English Learners have access to and are actively encouraged to participate in all of the many extracurricular opportunities that ENSATS provides. For additional information, contact the ENSATSD District ML Coordinator.

CTAE PARTNERSHIP/AFTER DARK PROGRAM

The CTAE Partnership/After Dark Program provides career technical education opportunities for juniors and seniors within our district who are not enrolled as full time students at ENSATS. These students receive core academics within their own participating districts in the morning and Chapter 74 career technical education in the afternoons on our campus. For the school year 2024-2025, these Chapter 74 career technical programs include Advanced Manufacturing, Construction Craft Laborers, Health Assisting, and Sustainable Horticulture. Students receive 900 hours of technical training and the opportunity to earn industry recognized credentials (NOTE: The Auto Collision Repair and Refinishing and Automotive Technology Partnership/After Dark Programs have been discontinued).

INTEGRATION LEARNING

We continue to explore creative ways to integrate career technical and agricultural education with academic content at Essex North Shore Agricultural & Technical School. We do so through our Integration Academies, where students work with teachers and student mentors to plan, design, prototype, and compete in engaging projects that integrate learning and encourage outside-the-box thinking.

COMMUNITY SERVICE LEARNING

Beginning with the Class of 2025, Essex North Shore Agricultural & Technical School will continue our Community Service Learning program requiring students to complete 40 hours of community-based service as part of their graduation requirement. Aligned to our mission, community service learning represents another way in which we can shape our students to be responsible community members who discover who they are through making a gift of themselves and their talents to others. Students will participate in reflections with their peers as they give to others and thereby extend the mission reach of our school to communities in need.

CAREER TECHNICAL AND AGRICULTURAL CLUSTER PATHWAYS

We believe that our Career Cluster Pathway courses will better prepare our students for entrance into the future workforce with mid-level skilled careers. This extended learning complements the work we do with students over their four years to acquire technical and agricultural skills and knowledge with the professional qualities necessary for success in the world of work beyond graduation. These courses align with the MA CVTE Curriculum Frameworks.

For freshman and sophomore years, all students participate in a pairing of required Pathway courses designed to transition them to the professional expectations of a career technical and agricultural school. Then, in junior and senior year, Pathway course offerings are differentiated by Career Cluster or Academy, again with the intention of preparing them for the workforce. Below, please find a graphic of the Pathway courses throughout the four years at Essex North Shore Agricultural & Technical School.

GRADE 9 PATHWAY COURSE
Freshman Seminar - Full Year

GRADE 10 PATHWAY COURSES	
United States Government & Politics - Semester	*Financial Literacy* - Semester

GRADE 11 PATHWAY COURSES	
AGRICULTURAL CLUSTER - ANIMAL SCIENCES	
Communication and Essential Skills - Semester	*Animal Ethics and Agricultural Laws* - Semester
AGRICULTURAL CLUSTER - PLANT SCIENCES	
Agricultural Sciences - Full Year	
CONSTRUCTION CLUSTER	
STEM for Construction - Semester	*Understanding Specifications and Blueprints* - Semester
SERVICES CLUSTER	
Services Leadership I - Full Year	
HEALTH & HUMAN SERVICES CLUSTER	
Communication for Health Professionals - Semester	*Medical Forensics* - Semester

STEAM ACADEMY	
Communication and Career Essentials - Semester	*Business Finance* - Semester

GRADE 12 PATHWAY COURSES	
AGRICULTURAL CLUSTER - ANIMAL SCIENCES	
Laboratory Skills for Animal Sciences - Semester	*Applied Mathematics in the Animal Sciences* - Semester
AGRICULTURAL CLUSTER - PLANT SCIENCES	
Agricultural Management - Full Year	
CONSTRUCTION CLUSTER	
Construction Management - Semester	*Renewable Energy in Construction* - Semester
SERVICES CLUSTER	
Services Leadership II - Full Year	
HEALTH & HUMAN SERVICES CLUSTER	
Data Analytics in Health Sciences - Full Year	
STEAM ACADEMY	
Civic Humanitarianism - Semester	*Professional Portfolio Presentation* - Semester

ESSEX NORTH SHORE
AGRICULTURAL & TECHNICAL SCHOOL

CAREER TECHNICAL & AGRICULTURAL PROGRAMS

Essex North Shore Agricultural & Technical School admits students from our 17 member communities to our 25 career technical, animal science, and agricultural programs. Member communities include Beverly, Boxford, Danvers, Essex, Gloucester, Hamilton, Lynnfield, Manchester-by-the-Sea, Marblehead, Middleton, Nahant, Peabody, Rockport, Salem, Swampscott, Topsfield, and Wenham. Students from across the Commonwealth of Massachusetts are also eligible to apply for admission to Essex North Shore Agricultural & Technical School's animal science, agricultural, and natural resource programs *(See: Specialized Agricultural and Natural Resources Programs Nonresident Student Enrollment Advisory, MA DESE)*.

Massachusetts Department of ELEMENTARY & SECONDARY EDUCATION

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AGRICULTURAL CLUSTER

ANIMAL SCIENCES

Companion Animals, Equine Sciences, Veterinary Science

CTAE PATHWAY COURSES

CTAE Pathway courses are cluster-based courses scheduled during the academic cycle to meet the needs of Strands 1, 3, 4, 5, 6 of the *Vocational Technical Education Frameworks* under Chapter 74 Regulations (CMR 603).

Communication and Essential Skills - Grade 11 Pathway
Course # paa301 Credits: 2
This semester-based course explores the communication, problem-solving and leadership skills necessary for success in the animal science fields of Companion Animals, Equine Sciences, and Veterinary Science. Students will be given multiple opportunities to practice individually and in groups the many interpersonal attributes required for success in the animal sciences pathway, including the ability to communicate, empathize, and collaborate effectively when dealing with people in the animal science workplace.

Animal Ethics and Agricultural Laws - Grade 11 Pathway

Course # paa302 Credits: 2

This semester-based course is designed to build student understanding of the current debates about the nature and extent of our moral obligations to animals through the framework of agricultural laws. Topics will include theories of ethics and their application to animals, our moral relationship to animals, animal minds, and the uses of animals for food, clothing, experimentation, entertainment, hunting, as companions or pets, and other purposes. Students will develop positions based upon theoretical and legal issues concerning ethics and animals, giving reasons for their support, and defending their views from potential objections and criticism.

Laboratory Skills for Animal Sciences - Grade 12 Pathway

Course # paa401 Credits: 2

This semester-based course is designed to introduce students to laboratory skills as they are applied to the animal sciences. Students explore the impact of laboratory skills and what these can tell us about animals, including animal reproduction, the equine industry, animal health and human health, production technology, processing, and distribution of agricultural animal products. Students will participate in classroom and laboratory activities that are complemented by cutting-edge research.

Applied Mathematics in Animal Science - Grade 12 Pathway

Course # paa402 Credits: 2

This semester-based course is intended to build student understanding of animal science through real-world mathematical applications. Students will learn how to use indices, graphics, budgeting, interest calculations, compounding and discounting, along with basic statistical measures to broaden their ability to incorporate the use of these calculations into animal science knowledge. The goal of this course is to provide students with the opportunity to select, understand, and critically evaluate scientific studies in the animal sciences disciplines.

Companion Animals

The Companion Animals program is designed to give students hands-on and theory-based learning in the areas of animal health & nutrition, behavior & training, and animal grooming & husbandry. This program will teach students a variety of companion animal skills such as restraints, breed ID, proper breeding technique, breed handling styles, pet grooming, care, and maintenance while working with rodents, reptiles, dogs, cats, and fish. Students will develop skills pertaining to basic grooming, an understanding of training theories, and gain knowledge of basic animal nutrition requirements, and anatomy and physiology theory. Students will practice customer service skills and understand the role and responsibilities of an effective employee in the companion animal industry. Each student will have the opportunity to earn an OSHA 10 hour card, and be certified to practice canine and feline CPR and first aid.

Course Number	Name	Credit	Grade Level
coa101	Companion Animals Exploratory 9	1.0	Grade 9
coa103	Companion Animals 9	10.0	Grade 9
coa201	Introduction to Grooming 10	4.0	Grade 10
coa202	Companion Animals Anatomy & Physiology 10	6.4	Grade 10
coa203	Companion Animals Health and Nutrition 10	9.6	Grade 10
coa301	Grooming Maintenance and Management 10	10.4	Grade 11
coa302	Animal Breeding/Training/Showing I 11	9.6	Grade 11
coa305	Companion Animals Cooperative Education 11	12.0	Grade 11
coa306	Companion Animals Theory 11	4.0	Grade 11
paa301	CTAE Pathway: Communication & Essential Skills	2.0	Grade 11
paa302	CTAE Pathway: Animal Ethics & Agricultural Laws	2.0	Grade 11
coa401	Advanced Grooming 12	10.4	Grade 12
coa402	Animal Breeding/Training/ Showing II 12	9.6	Grade 12
coa405	Companion Animals Cooperative Education 12	24.0	Grade 11
coa406	Companion Animals Theory 12	4.0	Grade 12
paa401	CTAE Pathway: Laboratory Skills for Animal Sciences	2.0	Grade 12
paa402	CTAE Pathway: Applied Mathematics in the Animal Sciences	2.0	Grade 12

Articulated college credit agreement in place with North Shore Community College - Danvers

Articulated college credit agreement in place with Unity College

Companion Animals Exploratory 9

Course # coa101 Credits: 1

This five-day cycle exploratory course introduces grade 9 students to the companion animals field. Students will learn about the different aspects and careers offered within the CTAE area. Students will explore rodents, reptiles, birds, equine, livestock, specialty animals, dogs, cats, and fish. Topics will include safety, behavior, handling, proper management, health issues, and housing.

Companion Animals 9

Course # coa103 Credits: 10

This semester-based course prepares students for the first steps in entering into the Companion Animals program. Students will explore the ability to perform skills that are associated with the required competencies of animal science. They will learn the attitudes consistent with those expected of an individual working in the animal industry and general society. In addition, students will develop an understanding of all proper animal housing, breeds, and handling. Students will be expected to apply basic skills related to reading, writing, science, mathematics, and communication.

Introduction to Grooming 10

Course # coa201 Credits: 4

This full-year course will cover the basic concepts relating to animal grooming in order to prepare the students for full grooming sessions. Topics will include: proper sanitation, tool identification, use, and maintenance. Students will learn about the safety of the groomer and pet along with appropriate techniques for grooming, bathing, nail clipping, ear cleaning, and drying. Students will study basic anatomy and health conditions commonly seen in the industry. The course concludes with a focus on customer service and phone etiquette.

Companion Animals Anatomy & Physiology 10

Course # coa202 Credits: 6.4

This full-year course will introduce students to the anatomy and physiology of the following animal systems: musculoskeletal, circulatory, respiratory, renal, nervous, reproductive and endocrine. Students will also learn about directional anatomical terms and the external anatomy of large and small animals.

Companion Animals Health and Nutrition 10

Course # coa203 Credits: 9.6

This full-year course will teach students the basic concepts relating to office, retail, and service skills associated with the companion animal industry. Students will practice computer skills, create advertising and learn about greeting customers. Students will also learn about safety in the workplace and the specific challenges associated with housing and caring for animals in a retail operation. Topics will include problems with overpopulation and overcrowding,; the maintaining of animal health records; and the ethics of animal euthanasia. Students will also explore basic animal health and nutrition, including the anatomy and physiology of the digestive and immune systems. Major topics will also include: feedstuffs, nutrients, digestion, nutrient requirements, nutritional disorders and deficiencies. Students will understand immunology with a focus on common infectious diseases, parasites, and vaccine technology. Proper

environmental conditions for the animal health will also be a focus. This course will provide knowledge in disease and parasitology prevention and treatment, proper animal restraint, physical exams, and pet first aid.

Grooming Maintenance and Management 11
Course # coa301 Credits: 10.4
This full-year course will expand upon the foundation of knowledge gained during Introduction to Grooming 10. Students will learn about risks and liabilities related to the grooming industry. They will identify design concepts of grooming establishments, plus the pros and cons about mobile grooming. Students will investigate the benefits of memberships in professional organizations including New England Pet Grooming Professionals and the National Dog Grooming Association of America. Students will learn the fundamentals of electric clippers, including safe use, storage, maintenance, blade selection, and care as well as the use of snap-on combs. Students will use this knowledge to build upon their grooming skills.

Animal Breeding/Training/Showing I 11
Course # coa302 Credits: 9.6
This full-year course will introduce students to the fundamentals of animal training, showing, and breeding. Students will develop an understanding of learning theory with a focus on using science-based positive reinforcement techniques. During weekly labs, students will focus on basic obedience and Canine Good Citizen training through the application of various training strategies used in the canine industry. Coursework will also include AKC breed characteristics and identification, companion animal showing practices, and pet therapy. In addition, students will learn about concepts and practices related to the selection, breeding, and management of dogs such as basic genetics and puppy development.

Companion Animal Theory 11
Course # coa306 Credits: 4
This full-year, classroom-based course will examine animal health & nutrition, behavior & training, and animal grooming & husbandry. Students will develop skills pertaining to basic, and breed specific, grooming, an understanding of training theories, including agility, obedience, CGC (Canine Good Citizen), and gain knowledge of basic animal nutrition requirements, and anatomy and physiology theory.

Companion Animals Cooperative Education 11
Course # cos305 Credits: 12
This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Advanced Grooming 12
Course # coa401 Credits: 10.4
The full-year course will focus on student-driven learning through projects and hands-on learning for students. Students will enhance their customer service skills by performing manager skills as if managing a grooming salon. They will also continue refining their grooming skills while learning new pet styles and

products within the industry. Students will identify the process to start a salon and will learn about additional career options in the grooming industry. Students will design a grooming salon as well as a price list and grooming kit and develop several career skills protocols as well as complete the final components of their grooming portfolios.

Animal Breeding/Training/ Showing II 12
Course # coa402 Credits: 9.6
This full-year course will continue to enhance and refine student knowledge of animal training, showing, and breeding while setting students up to pursue industry certifications post-graduation. Students will advance their understanding of learning theory, demonstrate advanced obedience training techniques, and train for sports such as rally and agility. Classwork and labs will also cover service dog training, performance sports, and advanced showmanship techniques. In addition, students will learn to select breeding stock based on breed standards and health clearances that will help them to develop breeding contracts and design breed-specific whelping boxes.

Companion Animal Theory 12
Course # coa406 Credits: 4
This full-year, classroom-based course will examine animal agribusiness skills, competing with and showing companion animals, advanced training of companion animals and advanced grooming skills. Students will develop advanced skills pertaining to the grooming industry and business ownership, breeding care and maintenance of companion animals and animal health and disease control.

Companion Animals Cooperative Education 12
Course # cos405 Credits: 24
This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Equine Sciences

The Equine Sciences program allows each student to build a successful career path by providing hands-on experiences. Throughout the courses in this program, students will explore many aspects of Equine Sciences including: Basic Equine Care, Training Techniques, Riding/Driving, Emergency Care, Barn Management Practices, Riding Instruction, Equine Health Care, Breeding and Genetics, Anatomy and Physiology, Nutrition and General Wellness, Laws and Regulations, and Practical Horsemanship.

Course Number	Name	Credit	Grade Level
eq101	Equine Sciences Exploratory 9	1.0	Grade 9
eq103	Equine Sciences 9	10.0	Grade 9
eq201	Equine I 10	5.6	Grade 10
eq202	Equine Health and Nutrition 10	4.0	Grade 10
eq203	Equine Emergency Care 10	5.6	Grade 10
eq204	Equine Anatomy & Physiology 10	4.8	Grade 10
eq301	Equine Sciences Breeding and Genetics 11	4.8	Grade 11
eq302	Equine Sciences Health Management I 11	5.6	Grade 11
eq303	Equine Sciences Practical Horsemanship	9.6	Grade 11
eq305	Equine Sciences Cooperative Education 11	12.0	Grade 11
eq306	Equine Sciences Theory 11	4.0	Grade 11
paa301	CTAE Pathway: Communication & Essential Skills	2.0	Grade 11
paa302	CTAE Pathway: Animal Ethics & Agricultural Laws	2.0	Grade 11
eq401	Barn Management 12	4.8	Grade 12
eq402	Equine Methods of Riding, Training and Instruction 12	11.2	Grade 12
eq403	Equine Health Management II 12	4.0	Grade 12
eq405	Equine Sciences Cooperative Education 12	24.0	Grade 12
eq406	Equine Sciences Theory 12	4.0	Grade 12
paa401	CTAE Pathway: Laboratory Skills for Animal Sciences	2.0	Grade 11
paa402	CTAE Pathway: Applied Mathematics in the Animal Sciences	2.0	Grade 11

Articulated college credit agreement in place with SUNY

Equine Sciences Exploratory 9
Course # eq101 Credits: 1

This five-day cycle exploratory course introduces grade 9 students to an overview of the field of equine science. Students will practice hands-on skills, including haltering, leading, and grooming. Safety around horses and proper attire will be discussed. Other topics include equine-related terminology, behavior, and equine-related career options.

Equine Sciences 9
Course # eq103 Credits: 10
This semester-based course will continue to allow students to explore the different aspects and careers offered within the equine science field. Students will also explore rodents, reptiles, birds, equine, livestock, specialty animals, dogs, cats, and fish. Topics will include safety, behavior, handling, proper management, health issues, and housing.

Equine I 10
Course # eq201 Credits: 5.6
This full-year course will continue to offer students an opportunity to explore the equine industry and the various career pathways. Students will learn about horse training; riding techniques, care, and management along with general health considerations for horses. Students will learn how to identify breeds, colors, and markings of horses. Students will also focus on moving forward in their riding and training skills among the various disciplines studied.

Equine Health and Nutrition 10
Course # eq202 Credits: 4
This full-year course will introduce students to basic animal health and nutrition, including the anatomy and physiology of the digestive system. Feedstuffs, nutrients, digestion, nutrient requirements, nutritional disorders and deficiencies will also be covered. Students will focus on proper environmental conditions and sanitation procedures for animal health. In addition, students will learn methods of BSC (body condition scoring) along with methods of determining weight and height for an equine for feeding and medication purposes.

Equine Emergency Care 10
Course # eq203 Credits: 5.6
This full-year course will teach students to recognize a healthy horse and how to assess and treat an injured or sick horse. Normal behavior, vital signs, external anatomy of the horse, and advanced methods of restraint will also be discussed. Students will learn about common medications, their use, proper dosage, and administration. Additional topics will include recognizing, treating and preventing various types of wounds along with conformation and how it affects soundness, causes and treatment of colic, and the symptoms, causes and treatment of lameness.

Equine Anatomy & Physiology 10
Course # eq204 Credits: 4.8
This full-year course will provide students with the knowledge of form and function of the body systems of the horse. The integumentary, musculoskeletal, circulatory, respiratory, renal, nervous, endocrine systems will be examined. There will also be discussions on diseases and conditions related to each system.

Equine Sciences Breeding and Genetics 11

Course # eq301 Credits: 4.8

This full-year course will provide students with an introduction to equine reproduction and genetics. Topics will include: the anatomy and physiology of the mare and stallion reproductive tracts, artificial insemination, natural cover, genetics, evaluating horses for potential breeding stock, stages of gestation and estrus, stages of foaling, as well as normal and abnormal parturition.

Equine Sciences Health Management I

Course # eq302 Credits: 5.6

This full-year course will focus students on understanding a variety of equine health-related topics. Students will review the equine digestive system and the prevention and treatment of colic. Students will develop an equine health program that includes the prevention and control of equine diseases, internal and external parasites, vaccinations, and related record keeping . Additional topics will include Massachusetts General Law 128D and impact and liability in the equine industry. Students will also learn about local town and city animal control laws and determine the steps involved in obtaining a stable license.

Equine Sciences Practical Horsemanship 11

Course # eq303 Credits: 9.6

This full-year course will provide students with all the steps involved in preparing a horse for the show ring as well as presenting a horse in hand for showing, vet examinations, pre purchase exams, and insurance appraisals. Students will learn about the various theories and methods of equine leg protection, barn-clipping techniques, clipper care and maintenance, and safe handling of clippers. Practical horsemanship will continue to move students forward in their riding skills in order to achieve a secure and balanced seat with practiced control of the horse. Using horses for therapy will also be included with an emphasis on the following aspects of a therapeutic riding program: lesson instruction, volunteer roles, and selecting and conditioning the therapy horse. This course will also prepare students to work with a variety of disciplines and be able to select appropriate horses and equipment for each discipline learned. Students will further their skill levels in the fundamentals of long lining and ground driving as training and conditioning methods.

Equine Sciences Theory 11

Course # eq306 Credits: 4

This full-year, classroom-based course will help students to understand the science behind horse colors, breeds, disciplines and blanketing. Students will also explore horse grooming and clipping. Stable management skills will focus on record keeping, tack, aids, equitation and showmanship. Equine careers and colleges will be discussed to help students plan for their future.

Equine Sciences Cooperative Education 11

Course # eq305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students,

and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Barn Management 12
Course # eq401 Credits: 4.8
This full-year course will provide students with a general understanding of equine barn management. Students will be introduced to barn manager topics, including trailering laws and regulations, transporting horses, developing a shoeing program, footing materials, developing a leasing program as well as budgets and documents often found in the equine industry. Students will also continue the development of the practical skills needed to prevent, recognize, and treat medical issues commonly seen in horses. Additional topics will include prevention and treatment of colic, lameness prevention and management, and various types of alternative treatments available. Options for placement of horses after they are done with given jobs will also be discussed. Students will also explore career pathways in the equine industry along with the skills and education needed to work in these areas.

Equine Methods of Riding, Training and Instruction 12
Course # eq402 Credits: 11.2
This full-year course will introduce students to aspects of riding, training, and instruction. Students will explore a variety of training and instructing techniques through applied learning as well as field trips to off-campus sites. Students will complete riding instructing hours. A variety of equine training methods and theories will be discussed and applied. Students will learn the proper fitting of tack in various disciplines as well as different bits and training aids. Students will also learn about equine associations and licenses, and safety protocols for a variety of equine disciplines. Advanced techniques in long lining and body clipping and show preparation will be practiced.

Equine Health Management II 12
Course # eq403 Credits: 4
This full-year course will continue to develop student understanding about a variety of equine health-related topics. We will discuss medical and stable evacuation plans for a variety of natural disasters. Students will also learn to identify problems that require immediate veterinary and lameness causes and evaluation. Other topics will include alternative forms of medical treatments, various types of medical imaging, equine vision as it relates to training and behavior. Students will also learn about equine rescue and rehabilitation and options for retirement and/or rehoming a horse when the current career for the horse is over.

Equine Sciences Theory 12
Course # eq406 Credits: 4
This full-year, classroom-based course will deepen student understanding of Equine Sciences. Theory topics will include equine care, training techniques, riding/driving, emergency care, barn management practices, riding instruction, equine health care, breeding and genetics, equine anatomy and physiology, nutrition and general wellness, laws and regulations, and practical horsemanship.

Equine Sciences Cooperative Education 12
Course # eq405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Veterinary Science

The Veterinary Science program is designed to give students experience needed to work in the veterinary field. Throughout the course of this program, students will practice restraints and medical procedures on rodents, reptiles, dogs, cats, livestock animals, and horses. Students will also develop skills in laboratory work, including performing blood testing, urinalysis, and tests for internal and external parasites as well as gain the ability to administer medication. Students will practice customer service skills and understand the role and responsibilities of each member of the veterinary healthcare team. Students will earn an OSHA 10 hour card and be certified to practice canine and feline CPR and first aid.

Course Number	Name	Credit	Grade Level
vs101	Veterinary Science Exploratory 9	1.0	Grade 9
vs104	Introduction to Veterinary Science 9	5.0	Grade 9
vs105	Animal Science Basics 9	5.0	Grade 9
vs201	Veterinary Sci Health and Nutrition 10	4.0	Grade 10
vs202	Fundamental Veterinary Science 10	8.0	Grade 10
vs203	Veterinary Anatomy & Physiology 10	8.0	Grade 10
vs301	Practical Physiology 11	4.0	Grade 11
vs302	Veterinary Lab Techniques 11	8.0	Grade 11
vs303	Practical Veterinary Science 11	8.0	Grade 11
vs305	Veterinary Science Cooperative Education 11	12.0	Grade 11
vs306	Veterinary Science Theory 11	4.0	Grade 11
paa301	CTAE Pathway: Communication & Essential Skills	2.0	Grade 11
paa302	CTAE Pathway: Animal Ethics & Agricultural Laws	2.0	Grade 11
vs401	Animal Nursing 12	4.0	Grade 12
vs402	Applied Veterinary Science 12	8.0	Grade 12
vs403	Advanced Lab Technology 12	8.0	Grade 12
vs406	Veterinary Science Theory 12	4.0	Grade 12
vs405	Veterinary Science Cooperative Education 12	24.0	Grade 12
paa401	CTAE Pathway: Laboratory Skills for Animal Sciences	2.0	Grade 12
paa402	CTAE Pathway: Applied Mathematics in the Animal Sciences	2.0	Grade 12

Articulated college credit agreement in place with North Shore Community College - Danvers

Articulated college credit agreement in place with Unity College

Veterinary Science Exploratory 9

Course # vs101 Credits: 1

This five-day cycle exploratory course introduces grade 9 students to the basics in Veterinary Science. Students will work with the rodents, reptiles, and birds while performing veterinary activities.

Introduction to Veterinary Science 9

Course # vs104 Credits: 5

This semester-based course allows the students to explore the veterinary science field. Students will learn about the different aspects and careers offered within the veterinary science field. Students will explore rodents, reptiles, equine, livestock, and dogs. Topics will include: safety, behavior, handling, proper management, health issues, and housing.

Animal Science Basics 9

Course #vs105 Credits: 5

This semester-based course allows students to explore animal science as a field of study. Students will learn about the basics of animal systems related to nutrition, reproduction, breeding, care, and management. Students will do so by building upon their study of birds, livestock, specialty animals, cats, and fish.

Veterinary Science Health and Nutrition 10

Course # vs201 Credits: 4

This semester-based course will introduce students to basic animal health and nutrition. This will include the anatomy and physiology of the digestive and immune systems of a variety of animals. Students will be introduced to dental anatomy. Major topics of study will include: feedstuffs, nutrients, digestion, nutrition requirements, disorders, and nutritional deficiencies. Students will explore basic immunology, common infectious diseases, parasites, and vaccine technology. Throughout the year students will also discuss and demonstrate proper sanitation and disinfection procedures.

Fundamental Veterinary Science 10

Course # vs202 Credits: 8

This semester-based course is designed to provide students with the introductory skills needed to explore employment as a veterinary assistant and technician. Topics will include animal restraint and physical exams, terminology, pet first aid, and customer service.

Veterinary Anatomy & Physiology 10

Course # vs203 Credits: 8

This semester-based course is designed to provide students with the knowledge of the form and function of animal body systems. Students will examine the integumentary, musculoskeletal, circulatory, respiratory, renal, nervous, endocrine, and reproductive systems.

Practical Physiology 11

Course # vs301 Credits: 4

This semester-based course will build upon student knowledge of anatomy and physiology in order to develop a more in-depth understanding of the internal and external anatomy of various species. Students will learn to define the medical terms, illustrate body planes, and locate and diagram various components of internal and external anatomy. Students will also describe and identify the function of organs and components of the ten major systems, distinguish between various species, identify normal and abnormal characteristics, and identify common disorders associated with each system.

Veterinary Lab Techniques 11

Course # vs302 Credits: 8

This semester-based course will provide students with the skills needed to explore employment in the laboratory science field. Major topics will include: medical math, hematology, urinalysis, and diagnostic testing. Students will develop skills in lab safety and proper use of all lab equipment. Students will also acquire skills in lab safety and proper use of all lab equipment.

Practical Veterinary Science 11

Course # vs303 Credits: 8

This full-year course will prepare students for entry-level positions in the field of veterinary assisting. Students will develop practical skills as members of a veterinary team. Major units of study will include: veterinary tools, equipment, surgical instruments, common disease and prevention techniques. Students will also practice suturing and bandaging techniques.

Veterinary Science Theory 11

Course # vs306 Credits: 4

This full-year, classroom-based course is intended to provide students with further training in large and small animal medical health fields and will introduce them to the position of veterinary assistant. After a brief history and orientation of the veterinary assistant career, students will learn the basics of animal diseases, restraints, sterilization, radiology, wound healing, humane issues, and related lab procedures.

Veterinary Science Cooperative Education 11

Course # vs305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Animal Nursing 12

Course # vs401 Credits: 4

This semester-based course is designed to help students develop mastery level skills in animal nursing. Students will use medical terminology found in records and surveys in order to establish normal versus abnormal animal behavior. There will be a health unit that has students learn about the organs of different systems, common disorders, zoonotic diseases in New England, and common diseases and conditions. A unit on restraint and handling will prepare students for working with fractious animals. Students will also examine different techniques of first-aid care.

Applied Veterinary Science 12

Course # vs402 Credits: 8

This full-year course will focus students on learning advanced techniques of veterinary assisting by building upon skills students have learned in previous years. Major topics will include: professional communication, management responsibilities, surgical assisting, including an introduction to anesthetic monitoring, and radiation safety. Students will also participate in clinical rotations intended to enhance classroom learning.

Advanced Lab Technology 12

Course # vs403 Credits: 8

This semester-based course further builds upon student skills necessary for employment in a laboratory science field. Major topics will include: medical math, hematology, urinalysis, and diagnostic testing. Students will develop skills in lab safety and proper use of all lab equipment. Students will also refine skills in lab safety and proper use of all lab equipment.

Veterinary Science Theory 12

Course # vs406 Credits: 4

This full-year, classroom-based course is intended to provide students with further training in the medical care of animals. Topics will include: animal diseases, internal and external parasites, medications, and methods of administering: injection, pilling, and drenching animals. Students will also practice customer service skills in order to understand the roles and responsibilities of the veterinary healthcare team.

Veterinary Science Cooperative Education 12

Course # vs405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related

to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

AGRICULTURAL CLUSTER

PLANT SCIENCES

Arboriculture,
Landscaping & Turf Management,
Natural & Environmental Sciences,
Sustainable Horticulture

CTAE PATHWAY COURSES

CTAE Pathway courses are cluster-based courses scheduled during the academic cycle to meet the needs of Strands 1, 3, 4, 5, 6 of the *Vocational Technical Education Frameworks* under Chapter 74 Regulations (CMR 603).

Agricultural Sciences - Grade 11 Pathway
Course # pap301 Credits: 4
This full-year course explores agricultural sciences to understand current challenges and to consider alternative or shifting approaches to agricultural productivity. Topics introduced include earth sciences,

physics, botany, and soils. Students will have an opportunity to form a unified vision of these topics based upon ecology, agricultural productivity, and sustainability.

Agricultural Management - Grade 12 Pathway

Course # pap401 Credits: 4

This full-year course examines agricultural management through the business of agriculture and its products. Major units of study will look closely at the life cycle of materials, business and management practices, effective communication, and applied mathematical skills. Students will use case studies of agribusinesses to learn more about how agricultural management has grown more complex through financial risk, managing big budgets, and investing in the latest agricultural technology.

Arboriculture

Arboriculture is the cultivation, management, and study of individual trees, shrubs, vines, and other perennial woody plants. More than 80% of people in the United States live in areas filled with trees, and planting trees in all settings is increasing. As this trend continues, arborists and urban foresters strive to preserve trees in urban and suburban areas. In this program, students learn how arborists and urban foresters ensure healthy populations of trees to provide sustained benefits to people, including the removal and replacement of hazardous trees. Students are prepared for the following certifications: Massachusetts Pesticide License, ISA-Certified Tree Climbing Professional, and ISA Aerial Lift Professional.

Course Number	Name	Credit	Grade Level
ar101	Arboriculture Exploratory 9	1.0	Grade 9
ar103	Arboriculture 9	10.0	Grade 9
ar200	Arboriculture 10	16.0	Grade 10
ar201	Arboriculture Theory 10	4.0	Grade 10
ar300	Arboriculture 11	20.0	Grade 11
ar305	Arboriculture Cooperative Education 11	12.0	Grade 11
ht301	Horticulture Theory 11	4.0	Grade 11
pap301	CTAE Pathway: Agricultural Sciences	4.0	Grade 11
ar400	Arboriculture 12	20.0	Grade 12
ar405	Arboriculture Cooperative Education 12	24.0	Grade 12
ht401	Horticulture Theory 12	4.0	Grade 12
pap401	CTAE Pathway: Agricultural Management	4.0	Grade 12

Articulated college credit agreement in place with Stockbridge School of Agriculture U MA Amherst

Arboriculture Exploratory 9
Course # ar101 Credits: 1
This five-day cycle exploratory course introduces grade 9 students to the basic knowledge and skill level used in arboriculture. Students receive an introduction to arboriculture program safety, equipment operation, basic climbing techniques, and an overview in arboriculture as a professional field of study. Students receive instruction through a combination of demonstrations and hands-on experience. Arboriculture exploratory is an immersive, exciting experience from tying knots and climbing trees to running chainsaws and other associated equipment.

Arboriculture 9
Course # ar103 Credits: 10
This semester-based course continues to develop student understanding of arboriculture and the necessary knowledge and skill level to be competent in the field. After reviewing program and equipment safety, students continue learning to operate equipment and work on their climbing techniques. Students receive

field-based instruction through a combination of demonstrations and hands-on experience that involve rope work to climbing trees to using essential arboricultural tools and equipment.

Arboriculture 10
Course # ar200 Credits: 16
This full-year course builds upon operating arboriculture tools. Students continue to expand their experience operating arboriculture tools and equipment, practice tree-climbing techniques along with associated pruning and removal procedures, and other related arboricultural tasks. The training remains immersive and small class sizes offer repeated opportunities for all students to operate all equipment safely.

Arboriculture Theory 10
Course # ar201 Credits: 4
This full-year course will incorporate core concepts in arboriculture for students to deepen their understanding of pruning theory, safety, arbor-specific business strategies and concepts, rigging theory, and planting theory. Students will be involved in class discussions, with written problem solving as evidence. Students will also learn about ANSI z133 standards, the arbor safety requirements for the industry, and will obtain an OSHA 10 card.

Arboriculture 11
Course # ar300 Credits: 20
This full-year course continues to expand and refine through practice student knowledge and skills used in arboricultural tree care today. In addition to personal and career safety, students are instructed in bucket truck and wood chipper operation. General tree care, pruning techniques, saw mill operation, and tree-removal projects are done with students as part of a tree-care crew on various projects on campus. Students continue to receive instruction through a combination of field presentations and hands-on demonstrations.

Horticulture Theory 11
Course # ht301 Credits: 4

This full-year, classroom-based course continues to deepen student understanding of horticulture through botany, pest management, plant propagation, nutrition, production, and soil science. Topics will include a closer examination of irrigation, growing media, planting beds and sites; propagation; marketing; repair and maintenance of nursery equipment and facilities.

Arboriculture Cooperative Education 11
Course # ar305 Credits: 12
This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Arboriculture 12

Course # ar400 Credits: 20

This full-year course offers students the advanced knowledge and skill level used in the field of arboricultural tree care and management. Students will integrate the theory, science, and practice of evaluating, growing, managing, and safely removing trees. Students will recognize tree health and structural issues, identify key tree pests and disease conditions, and consider soil and site considerations. Students learn about tree law and arboricultural regulations, licensing, and recordkeeping standards. Students will continue to work in tree-care crews on various projects, operate bucket trucks, and demonstrate work-space safety considerations for all arboriculture work. Instruction will include a combination of field presentations and hands-on demonstrations.

Horticulture Theory 12

Course # ht401 Credits: 4

This full-year, classroom-based course continues to deepen student understanding of horticulture through studying sustainable landscapes: green roofs, permeable hardscapes, rain gardens, pollinator gardens, drought tolerant plantings, heritage and perennial vegetables, native plants, drip irrigation and energy efficient landscape designs.

Arboriculture Cooperative Education 12

Course # ar405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Landscaping & Turf Management

The Landscape & Turf Management program teaches the necessary skills in the design, maintenance, and management aspects of landscaping and the broad range of turf management, from sports turf installation and maintenance through commercial property landscaping and management. Students learn to plan for and deal with climate and moisture, how to design landscape and hardscape effects for various conditions and settings, such as urban, suburban or rural, and how to accommodate climate and weather. Landscaping & Turf Management takes a broad approach to providing students with a wide range of experiences that will allow them to choose a focus for careers or for further education.

Course Number	Name	Credit	Grade Level
ls101	Landscaping & Turf Mgt Exploratory 9	1.0	Grade 9
ls103	Landscaping & Turf Management 9	10.0	Grade 9
ls200	Landscape Design 10	16.0	Grade 10
ls201	Landscape Theory 10	4.0	Grade 10
ls300	Landscape Design 11	20.0	Grade 11
ht301	Horticulture Theory 11	4.0	Grade 11
ls305	Landscape Cooperative Education 11	12.0	Grade 11
pap301	CTAE Pathway: Agricultural Sciences	4.0	Grade 11
ls400	Landscape Design 12	20.0	Grade 12
ht401	Horticulture Theory 12	4.0	Grade 12
ls405	Landscape Cooperative Education 12	24.0	Grade 12
pap401	CTAE Pathway: Agricultural Management	4.0	Grade 12

Articulated college credit agreement in place with Stockbridge School of Agriculture U MA Amherst

Landscaping & Turf Management Exploratory 9
Course # ls101 Credits: 1

This five-day cycle exploratory course introduces grade 9 students to the field of landscaping and turf management. Students will learn about several areas of the industry, including seasonal maintenance, hardscaping, and seasonal flower planting. Students will also explore numerous landscaping and turf management careers and career pathways.

Landscaping & Turf Management 9
Course # ls103 Credits 10

This semester-based course is designed to give students a general knowledge needed for a successful career in the landscaping and turf management industries. Students will learn about a broad range of landscaping principles and practices. Students will also be introduced to the basics of planting, seasonal maintenance, hardscaping, and equipment operation within safety parameters.

Landscape Design 10

Course # ls200 Credits: 16

This full-year course continues to give students a general knowledge needed for a successful career in the turf management industry. Students will learn the basics of turf physiology, fertilization, and turf pest control. Students will be given specific time on the cultural requirements necessary to grow and maintain turfgrass in many different settings. Students will understand and practice the basics of operating and maintaining commercial mowers and related equipment.

Landscape Theory 10

Course # ls201 Credits: 4

This full-year, classroom-based course is designed to give students a greater scientific understanding needed for a successful career in the landscaping and turf management industries. Students will learn the basics of turf physiology and the requirements for growing healthy turfgrass in the Northeast. Specific time will be spent on the cultural requirement required to grow and maintain turfgrass in many different settings. Students will also learn about OSHA and will obtain an OSHA 10 card.

Landscape Design 11

Course # ls300 Credits: 20

This full-year course will provide students with the basics of landscape construction and hardscaping from base prep to completion of walls, terraces, walkways and water features. Students will read landscape plans and documents and use these to prepare estimates. Students will identify different types of plant material, the cultural requirements of each, and proper installation techniques. Students will study plant health care, including pruning techniques, mulching, soils and soil amendments, and Integrated Pest Management. Various aspects of irrigation installation and maintenance will be covered. Students will also be introduced to the fundamentals of landscape design, how to operate a skid steer loader and mini excavator safely as well as the maintenance requirements for the equipment. Safety requirements for all areas of landscaping and PPE will be emphasized. Students will be involved in different on- and off-campus landscape projects, including mowing, bed maintenance, fall and spring cleanups, and lawn seeding along with various landscape construction and planting projects.

Horticulture Theory 11

Course # ht301 Credits: 4

This full-year, classroom-based course continues to deepen student understanding of horticulture through botany, pest management, plant propagation, nutrition, production, and soil science. Topics will include a closer examination of irrigation, growing media, planting beds and sites; propagation; marketing; repair and maintenance of nursery equipment and facilities.

Landscape Cooperative Education 11

Course # ls305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Landscape Design 12

Course # ls400 Credits: 20

This full-year course is designed to give students a more in-depth understanding of landscape construction and hardscaping from base prep to completion of walls, terraces, walkways and water features. Students will read landscape plans and documents and use these to prepare estimates. Students will identify different types of plant material, the cultural requirements each requires, and proper installation techniques. Students will learn about plant health care, including pruning techniques, mulching, soils and soil amendments, irrigation installation and maintenance, and Integrated Pest Management. Students will also be introduced to the fundamentals of landscape design, learn to operate safely a skid steer loader, and mini excavator as well as the maintenance requirements for the equipment. Safety requirements for all areas of landscaping and PPE will be emphasized. Students will be involved in different on and off campus landscape projects including mowing, bed maintenance, fall and spring cleanups and lawn seeding as well as various landscape construction and planting projects.

Horticulture Theory 12

Course # ht401 Credits: 4

This full-year, classroom-based course continues to deepen student understanding of horticulture through studying sustainable landscapes: green roofs, permeable hardscapes, rain gardens, pollinator gardens, drought tolerant plantings, heritage and perennial vegetables, native plants, drip irrigation and energy efficient landscape designs.

Landscape Cooperative Education 12

Course # ls405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers will provide additional training, pay students, and report their performance to the school for every cycle.

Natural & Environmental Sciences

The Natural & Environmental Sciences program uses inquiry-based projects to develop student skills in observation, assessment, analysis, and management of our most vital resources; water, soil, forests, and wildlife. Our field-based program immerses students into the full range of New England environments, including mountains, forests, ponds, streams, and coastal shorelines. Our goal for each student is to equip them with the necessary skills, knowledge, and experience that will give them an edge in the expansive field of natural resources, environmental science, and civil engineering.

Course Number	Name	Credit	Grade Level
nes101	Natural & Environmental Sciences Exploratory 9	1.0	Grade 9
nes103	Natural & Environmental Sciences 9	10.0	Grade 9
nes201	Forest Ecosystems Management 10	12.0	Grade 10
nes202	Hydrologic Ecosystems Management 10	8.0	Grade 10
nes301	Resource Management & Climate Science 11	12.0	Grade 11
nes302	Marine Ecology 11	8.0	Grade 11
es301	Environmental Science Theory 11	4.0	Grade 11
nes305	Natural & Environmental Sciences Cooperative Education 11	10.0	Grade 11
pap301	CTAE Pathway: Agricultural Sciences	4.0	Grade 11
nes401	Wetlands and Wastewater 12	6.0	Grade 12
nes402	Hazmat 12	8.0	Grade 12
nes403	Research Methods 12	6.0	Grade 12
es401	Environmental Science Theory 12	4.0	Grade 12
pap401	CTAE Pathway: Agricultural Management	4.0	Grade 12

Natural & Environmental Sciences Exploratory 9

Course # nes101 Credit: 1

This five-day cycle exploratory course introduces grade 9 students to topics, equipment, and field work commonly used in the Natural and Environmental Sciences. Lessons will include outdoor-based field work in all weather conditions, lab work, and research work. Students will become familiar with plankton sampling, invasive species concerns, water quality testing, and compass usage.

Natural & Environmental Sciences 9

Course # nes103 Credits: 10

This semester-based course is an introduction to Environmental Sciences focusing on a variety of field work, laboratory analyses, and class projects. Major units of study include: wildlife biology and biodiversity, and earth science, which is the study of the physical, chemical, and biological properties of earth, with a focus on the chemical and physical properties of earth, reading maps and mapping technology, and aquaculture system monitoring and maintenance. Each unit will include a combination of reading, lecture, laboratory activities, research, and field work.

Forest Ecosystems Management 10

Course # nes201 Credits: 12

This full-year course introduces students to the many environmental jobs that require a strong understanding of forest ecology and scientific observation practices. Students will learn tree identification techniques, use of field journals, use of dichotomous keys, and practice in sample preservation techniques. In addition, students will explore forest life zones, forest succession, forest health, and ecosystem patch dynamics. Students will gain expertise in the use of forestry equipment used in industry such as tree diameter tape, Biltmore sticks, Merritt Hypsometer measurements, densiometers, soil tests, and light indicators.

Hydrologic Ecosystem Management 10

Course # nes202 Credits: 8

This full-year course focuses on understanding fisheries through the study of hydrology and water quality. Hydrology is the study of water and, in particular, the movement of water. Water quality is the biotic and abiotic characteristics of water. Students will be provided background information and hands-on experience in a variety of fishery and aquaculture topics related to freshwater and marine habitats. Students will research and explain topics to develop critical thinking and quantitative skills by analyzing life in aquaculture systems, types of aquaculture, technology used in aquaculture and wild-caught fisheries, similarities and differences between culture and harvest fisheries, properties of freshwater and saltwater, and the ecology, anatomy and culture of fishes, crustaceans, and mollusks. Students will be trained to maintain and monitor a variety of tank systems in the Environmental Science laboratory and aquaculture center. Students will also investigate different applications of aquaculture and fisheries technology on field trips to fisheries-related facilities in Massachusetts.

Resource Management & Climate Science 11

Course # nes301 Credits: 12

This full-year course focuses students on managing natural resources and understanding climate science are key aspects of the environmental career field. Through this course, we will explore climate topics, including

global weather events, ocean circulation patterns, climate change, and greenhouse gasses. Students will also explore resource management principles and the policies governing them, including species migration and invasive species management. We will also become familiar with the use of common industry tools used for analysis of these large-scale events. Students will collect field data for several projects and use Global Information Systems (GIS) software to spatially analyze the data.

Marine Ecology 11

Course # nes302 Credits: 8

This full-year course examines ecology and evolution as unifying concepts in all sciences—particularly the environmental sciences through project-based learning. An understanding of concepts in ecology and evolution are valuable in protecting the environment, and this understanding is critical to explaining the role of humans in the environment in order to ensure the sustainability of natural resources. Students will focus on the investigation of ecology and evolution on coastal and ocean life and environments, analysis of weather patterns, and provide hands-on experience in a variety of coastal and ocean ecological topics. Students will conduct field studies, research, and explain topics to develop critical thinking and quantitative skills to analyze interactions between and among species, relationships between species and the environment, and environmental impacts caused by humans. Students will also investigate and describe fundamental concepts in marine ecosystems with a focus on local issues and habitats. The overall goal of the class is to research, analyze, and describe topics in marine biology, marine ecology, oceanography, coastal and ocean habitats, coastal zone management, evolution, and human interactions with the coastal and ocean environment.

Environmental Science Theory 11

Course # es301 Credits: 4

This full-year, classroom-based course will help students understand the concept of sustainability as it relates to various industries at each level of the supply chain. Topics will include the examination of environmental, economic, and social impacts on each industries' abilities as well as the factors that limit sustainability. By analyzing sustainability at the local, national, and global level, students will understand both the challenges as well as the solutions to help industries become more environmentally friendly.

Natural & Environmental Sciences Cooperative Education 11

Course # nes305 Credits: 12

This semester-based course provides qualified students with a vocational-technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Wetlands and Wastewater 12

Course # nes401 Credits: 6

This semester-based course focuses students on the functions and values of wetlands through field work on the processes and importance of wastewater management. Students will explore global and local challenges in providing clean water and cleaning polluted water, the value of clean water to the environment and

economy, the value of protecting and restoring wetlands, the importance of wastewater treatment for human and environmental health, and the processes of wastewater treatment plant operation and maintenance. Students will be introduced to the physical, chemical and biological characteristics of wetland ecosystems and wastewater treatment facilities. Students will also learn about the structure and function of wetland ecosystems, wetland inhabitants, and the valuable ecosystem services that wetlands provide such as flood and erosion control, natural water filtration, and wildlife habitat. The field component of this course will focus on wetland plant identification and quantification skills that are in high demand from environmental consultants, regulatory agencies, and conservation organizations. The field work will emphasize vegetation sampling and identification, soil characteristics, and hydrological indicators. Wetlands are nature's filters, and wastewater treatment facilities apply an understanding of nature's ability to clean water by using engineering and technology to ensure protection of human and environmental health. Students will also visit wastewater treatment plants and describe the sequence of technology used to clean wastewater. Upon course completion, students will be eligible to take the Massachusetts Grade II Municipal Wastewater Certification Exam.

Hazmat & LEED 12
Course # nes402 Credits: 8
This full-year course will help students develop key skills and accreditations for potential careers in environmental technology. Semester 1 will focus on preparing students to earn the Leadership in Energy and Environmental Design (LEED) Green Associate Credential from the United States Green Building Council. This is a foundational professional credential signifying core competency in green building principles. Semester 2 will focus on having students obtain a Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour certificate. Students will also be given time to work on the senior research project and portfolio.

Research Methods 12
Course # nes403 Credits: 6
This semester-based course requires students to develop and complete a capstone research project independently. Students write and defend a research proposal, conduct the research, analyze and interpret research data, and present research findings at the Environmental Research Symposium. Students follow the scientific method to propose and complete rigorous scientific studies on a variety of environmental science topics.

Environmental Science Theory 12
Course # es401 Credits: 4
This full-year, classroom-based course will explore the theoretical skills necessary to collect, analyze, interpret, and communicate environmental data. Emphasis will be on deepening student understanding of the technical skills necessary for successful employment in the competitive environmental science field or to prepare students for further education. Students will study field skills, Geographic Information System digital mapping, water chemistry, aquaculture and fish science, and the impacts of manmade pollutants on the coastal ecosystems.

Natural & Environmental Sciences Cooperative Education 12
Course # nes405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Sustainable Horticulture

Students in Sustainable Horticulture enjoy working with plants and flowers. In our labs and greenhouses, students will learn how to create marketable floral designs for a variety of occasions, maintain interior plants in a variety of settings and also learn how to grow a variety of crops, including seasonal foliage and flowering plants, tropical plants and bedding plants. In this hands-on major, students are provided with real-world work experiences for careers in the floral industry where a broad understanding of floriculture and botany are important. Students can expect to find jobs in the greenhouse industry, within interior landscape firms, as well as in floral shops.

Course Number	Name	Credit	Grade Level
sh101	Sustainable Horticulture Exploratory 9	1.0	Grade 9
sh103	Sustainable Horticulture 9	10.0	Grade 9
sh200	Sustainable Horticulture 10	16.0	Grade 10
sh201	Sustainable Horticulture 10 Theory	4.0	Grade 10
sh300	Sustainable Horticulture Technology 11	20.0	Grade 11
sh305	Sustainable Horticulture Cooperative Education 11	12.0	Grade 11
ht301	Horticulture Theory 11	4.0	Grade 11
pap301	CTAE Pathway: Agricultural Sciences	4.0	Grade 11
sh400	Advanced Concepts in Sustainable Horticulture	20.0	Grade 12
ht401	Horticulture Theory 12	4.0	Grade 12
sh405	Sustainable Horticulture Cooperative Education 12	24.0	Grade 12
pap401	CTAE Pathway: Agricultural Management	4.0	Grade 12

Articulated college credit agreement in place with Unity College

Articulated college credit agreement in place with Stockbridge School of Agriculture U MA Amherst

Sustainable Horticulture Exploratory 9

Course # sh101 Credits: 1

This five-day cycle exploratory course introduces grade 9 students to the diverse field of Sustainable Horticulture through hands-on projects that include plant propagation, microgreens production and harvest, a tour of the Essex orchard, floral arrangements, career exploration, the basics of soils, and a field trip to a local farm. Students are taught the basics of plant care and safety skills that they practice throughout the exploratory cycle.

Sustainable Horticulture 9

Course # sh103 Credits 10

This semester-based course allows students to explore the diverse field of Sustainable Horticulture and begin to build a foundation in the art and science of plants. Students will learn about a variety of topics in

horticulture with specific focus on botany, plant anatomy and physiology, propagation, hydroponics, vegetable and cut-flower production, greenhouse management, and basic floral design. Students will also establish a knowledge and practice of safety, work ethics, and communication skills needed to succeed in the horticulture industry.

Sustainable Horticulture 10
Course # sh200 Credits: 16
This full-year course continues to build a foundation in the art, science, and aesthetics of growing plants. Students will explore a variety of topics in Sustainable Horticulture with specific focus on sustainable food systems, the cultivation of mixed fruit, vegetable and cut flowers, greenhouse management, and exposure to the diverse local food system on the North Shore. Students will continue to practice safety protocols as they learn about ethics and communication in the horticulture industry.

Sustainable Horticulture 10 Theory
Course # sh201 Credits: 4

Sustainable Horticulture Technology 11
Course # sh300 Credits: 20
This full-year course will continue to explore student understanding of topics related to horticulture, floriculture, nursery and greenhouse production, garden design, construction and maintenance, tools safety, and interior and exterior plants. These skills are intended to connect students to the various career areas in the horticulture industry. In addition, students will continue to learn about and practice techniques that promote sustainability.

Horticulture Theory 11
Course # ht301 Credits: 4
This full-year, classroom-based course continues to deepen student understanding of horticulture through botany, pest management, plant propagation, nutrition, production, and soil science. Topics will include a closer examination of irrigation, growing media, planting beds and sites; propagation; marketing; repair and maintenance of nursery equipment and facilities.

Sustainable Horticulture Cooperative Education 11
Course # sh305 Credits: 12
This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Advanced Concepts in Sustainable Horticulture 12
Course # sh400 Credits: 20

This full-year course continues to explore topics within horticulture-greenhouse production, interior plants, floral design, and garden design. Within these specialty areas, students will deepen and expand their understanding of greenhouse system construction and maintenance; crop production of specialty plants, edible plants, interior plants and bedding plants; advanced floral design skills such as bouquet making, specialty-event work and project planning. Students will also learn supply-list creation; interior plant propagation and maintenance; garden design creation and implementation with a focus on using strategies that promote sustainability and growing requirements for plants.

Horticulture Theory 12

Course # ht401 Credits: 4

This full-year, classroom-based course continues to deepen student understanding of horticulture through studying sustainable landscapes: green roofs, permeable hardscapes, rain gardens, pollinator gardens, drought tolerant plantings, heritage and perennial vegetables, native plants, drip irrigation and energy efficient landscape designs.

Sustainable Horticulture Cooperative Education 12

Course # sh405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

CONSTRUCTION CLUSTER

Carpentry, Construction Craft Laborers, Electricity, HVAC/R, Masonry, Plumbing

CTAE PATHWAY COURSES

CTAE Pathway courses are cluster-based courses scheduled during the academic cycle to meet the needs of Strands 1, 3, 4, 5, 6 of the *Vocational Technical Education Frameworks* under Chapter 74 Regulations (CMR 603).

STEM for Construction - Grade 11 Pathway
Course # pcn301 Credits: 2
This introductory, semester-based course will use science, technology, and mathematics to understand real-world applications of production processes used in construction systems. The focus will be on the engineering design process, applying mathematics, science, and engineering standards to hands-on construction projects. Classwork will require students to work both individually and in teams to design solutions to a variety of problems using software and an engineering notebook to document their work.

Understanding Specifications and Blueprints - Grade 11 Pathway
Course # pcn302 Credits: 2
This semester-based course is designed to develop student understanding of the role that blueprints and written specifications play in the development, adjustments, and completion of real-world projects.

Students will explore design decisions made as drawings proceed from schematic sketches to blueprints documents where writing defines both the scope of work and acts as a set of instructions. Topics will include interpreting scales, lines, symbols, elevations, sections, and details of a blueprint drawing, along with the quality criteria for materials, specified project standards, installation and construction methods.

Construction Management - Grade 12 Pathway

Course # pcn401 Credits: 2

This semester-based course is designed to introduce students to managing all phases of construction management. Major units will include understanding industry codes, calculating materials and equipment, using blueprints, identifying safety procedures, and estimating project costs. Using real-world projects, students will learn the fundamentals to manage the construction process from footing and foundation, concrete flatwork, framing, plumbing, electrical, HVAC/R, finish carpentry, sheetrock and plaster, roofing, window and door installation, hardwood and tile flooring, painting, and hardware. Students will work together on teams and be responsible for the overall planning, coordination, and control of a project from inception to completion.

Renewable Energy in Construction - Grade 12 Pathway

Course # pcn402 Credits: 2

This semester-based course explores the reasons for the significant growth in the renewable energy and green building industry in the past 20 years. Topics will include the principles behind the broad spectrum of renewable energy technologies, a systems perspective to analyze energy technologies, technical challenges for each renewable source, and the economic and sustainability issues involved in the integration of renewable energy systems. Students will review case studies of award-winning green building projects to deepen their understanding of renewable energy through every stage of the construction or upgrading process.

Carpentry

Carpentry is one of the oldest and most respected professions. In this program, students begin with small woodworking projects to learn how to use basic tools and gain experience, as well as learning different concepts of building. Students learn measuring, cutting, fastening, and hand/power tool use. All students will be certified in the 10-Hour OSHA CareerSafe program. Licenses that may be obtained through the Carpentry program include: Hilti and Ramset Powder Actuated Tool Licenses, ICC Certification for Residential Building Codes, and One-Year Creditable Service towards the Construction Supervisor License (CSL) work requirements.

Course Number	Name	Credit	Grade Level
cp101	Carpentry Exploratory 9	1.0	Grade 9
cp103	Carpentry 9	10.0	Grade 9
cp200	House Carpentry 10	16.0	Grade 10
cp201	Carpentry Theory 10	4.0	Grade 10
cp300	House Carpentry 11	20.0	Grade 11
cp301	Carpentry Theory 11	4.0	Grade 11
cp305	Carpentry Cooperative Education 11	12.0	Grade 11
pcn301	CTAE Pathway: STEM for Construction	2.0	Grade 11
pcn302	CTAE Pathway: Understanding Specifications & Blueprints	2.0	Grade 11
cp400	House Carpentry 12	20.0	Grade 12
cp401	Carpentry Theory 12	4.0	Grade 12
cp405	Carpentry Cooperative Education 12	24.0	Grade 12
pcn401	CTAE Pathway: Construction Management	2.0	Grade 12
pcn402	CTAE Pathway: Renewable Energy in Construction	2.0	Grade 12

Statewide articulation agreement available for Carpentry

Carpentry Exploratory 9
Course # cp101 Credit: 1

This five-day cycle exploratory course provides grade 9 students with the basic knowledge and skill level used in carpentry. Students receive instruction in personal and career program safety, tool usage, measuring, wood cutting, sanding, and fastening through the construction of a small project. Students receive instruction through a combination of presentations, demonstrations, and hands-on performance.

House Carpentry 9
Course # cp101 Credits: 10

This semester-based course introduces grade 9 students to the construction industry through residential carpentry. In addition to a review of personal, career program, and tool safety, hand-tool and power-tool instructions are taught and put into practice through related career program projects. Students acquire carpentry knowledge and skills and learn new carpentry concepts intended to strengthen their trade-related academics.

House Carpentry 10

Course # cp200 Credits: 16

This full-year course focuses on residential construction where students learn flooring systems, framing, exterior walls, windows, doors, ceiling, and roof. In addition, interior construction and finishes are introduced. Students continue to use hand and power tools after personal, career program, and tool safety are reviewed.

Carpentry Theory 10

Course # cp201 Credits: 4

This full-year, classroom-based course is designed to introduce students to the building trade from codes through framing and finish. Students become familiar with carpentry tools and equipment as well as with concepts and processes involved in carpentry. Special emphasis is placed on personal safety, career program safety, and tool safety.

House Carpentry 11

Course # cp300 Credits: 20

This full-year course provides students with an understanding of the building trades through work-site safety, framing, and finishing. Students will continue to use carpentry tools and instruments as well as with the processes involved in carpentry through on-site and off-site projects. This course introduces students to estimating and state and local building codes.

Carpentry Theory 11

Course # cp301 Credits: 4

This full-year, classroom-based course is designed to introduce students to up-to-date information on building materials and techniques. Detailed coverage of all aspects of light framing construction, including site lay-out, foundation forming, sheathing, roofing, windows and doors, exterior finish, interior walls, floor and ceiling. Special emphasis is placed on the use of modern tools, materials and prefabricated components.

Carpentry Cooperative Education 11

Course # cp305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

House Carpentry 12

Course # cp400 Credits: 20

This full-year course provides students with advanced knowledge of the practical application of framing and finishing for on-campus and off-campus projects. Emphasis is on giving students the technical knowledge and experiences to prepare them for employment in the carpentry field.

Carpentry Theory 12

Course # cp401 Credits: 4

This full-year, classroom-based course is designed to strengthen student understanding of advanced framing techniques, exterior and interior trim along with local, state, and international residential codes. Finally, students will learn about the stretch code part of Strand 1 Part 2K.01 for energy efficient systems related to the carpentry frameworks.

Carpentry Cooperative Education 12

Course # cp405 Credits: 24

This full-year course provides qualified students with a vocational-technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Construction Craft Laborers

The construction industry is one of the most diverse and rewarding industries in the world. The program prepares students for meaningful employment in a variety of areas. The major types of construction are grouped into the following categories:

1. Building construction and reconstruction of residential and commercial buildings.
2. Highway, utilities and land development-construction and reconstruction of the following: major and minor highways, subdivisions, bridges, dams, tunnels and airfields, underground utilities (telephone & electric), piping systems (petroleum, water, sewer, natural gas and collection systems).
3. Environmental remediation and activities associated with the following; asbestos abatement, decontamination and demolition of nuclear facilities, hazard waste removal, lead abatement, permit-required confined spaces, and erosion control

Course Number	Name	Credit	Grade Level
ccl101	Construction Craft Laborers Exploratory 9	1.0	Grade 9
ccl103	Construction Craft Laborers 9	10.0	Grade 9
ccl200	Construction Craft Laborers 10	16.0	Grade 10
ccl201	Construction Craft Laborers 10 Theory	4.0	Grade 10
ccl300	Construction Craft Laborers 11	20.0	Grade 11
ccl301	Construction Craft Laborers Theory 11	4.0	Grade 11
ccl305	Construction Craft Laborers Cooperative Education 11	12.0	Grade 11
pcn301	CTAE Pathway: STEM for Construction	2.0	Grade 11
pcn302	CTAE Pathway: Understanding Specifications & Blueprints	2.0	Grade 11
ccl400	Construction Craft Laborers 12	20.0	Grade 12
mc401	Masonry & Construction Theory 12	4.0	Grade 12
ccl405	Construction Craft Laborers Cooperative Education 12	24.0	Grade 12
pcn401	CTAE Pathway: Construction Management	2.0	Grade 12
pcn402	CTAE Pathway: Renewable Energy in Construction	2.0	Grade 12

Construction Craft Laborers Exploratory 9
Course # ccl101 Credit: 1
This five-day cycle exploratory course provides grade 9 students with the basic knowledge and relevance of safety, estimating, and career paths in the field of construction craft laborers. Students receive instruction in hand tools and their applications and general career program safety. Students will put into practice what they have learned by building an assigned project.

Construction Craft Laborers 9
Course # ccl103 Credit: 10
This semester-based course gives students experience working with various construction materials. The major focus of study is on the various areas of the construction industry, including scaffolding, concrete projects, wood working, and various types of demolition.

Construction Craft Laborers 10
Course # ccl200 Credits: 16
This full-year course provides students with experience in working with various construction materials from the construction industry including safety and health knowledge and skills, using ladders and building scaffolding. Students will also work with a variety of hand, power, and pneumatic tools, how to mix, place, and finish concrete, along with various types of demolition and demolition tools.

Construction Craft Laborers 10 Theory
Course # ccl201 Credits: 4
This full-year, classroom-based theory class provides students with technical knowledge in working with various building materials and concrete. The curriculum includes studies in areas ranging from scaffold building to concrete slab work.

Construction Craft Laborers 11
Course # ccl300 Credits: 20
This full-year course provides students with experience in working with various construction materials. The curriculum includes studies in various areas of the construction industry. Students will experience community work and on-site projects. Students work on a wide range of projects including building staging, line and grade, mason tending, concrete placement, hoisting and rigging, trenching and excavation, pipelaying, weatherization, demolition, and assist other trades on an as needed basis. Students also learn how to use all the various tools efficiently and safely to perform these tasks. Students are taught to dress and act in a manner that would be considered acceptable on a union job site.

Masonry & Construction Theory 11 **Discontinued eff. SY24-25**
Course # mc301 Credits: 4
This full-year, classroom-based course examines the principles and theory of concrete block construction, block types, modular planning, estimating, installation of windows, doors and lintels, bonding, chimneys, concrete construction, planning, mixing, pouring, finishing, curing, testing, jointing and reinforcing. Operation of various hand and power equipment and estimating masonry materials will also be covered.

Construction Craft Laborers Theory 11 Beginning with the Class of 2026
Course # ccl301 Credits 4
This full-year, classroom-based theory course provides students with technical knowledge in working with various building materials and concrete. The curriculum includes studies in areas ranging from hand/power tools, blueprint reading, welding, hoisting/rigging, and weatherproofing job-sites.

Construction Craft Laborers Cooperative Education 11
Course # ccl305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Construction Craft Laborers 12

Course # ccl400 Credits: 20

This full-year course provides students with a continuation of experiences working with various construction materials related to various areas of the construction industry. Students will continue to experience community work and on-site projects. Students will continue to gain experience through participation in a wide range of projects, including building staging, line and grade, mason tending, concrete placement, hoisting and rigging, trenching and excavation, pipelaying, weatherization, demolition, and assisting other trades on an as needed basis. In addition to what students learned in grade 11, a greater emphasis will be placed on career readiness. Students will be asked not only to perform tasks, but will be encouraged to take a leadership role when working with underclassmen. Students will learn exactly what is expected of them on the job site and how they must behave in order to maintain a job. Students will also work on finalizing their resumes and portfolios.

Masonry & Construction Theory 12

Course # mc401 Credits: 4

This full-year, classroom-based course will help students learn technical theory, blueprint reading, project estimating, and the use of appropriate hand and power equipment. Topics will include concrete flatwork, footings, brick, block and stone walls along with project maintenance, repair, and computer estimating. Students will study in theory situations from outside projects in the community.

Construction Craft Laborers Cooperative Education 12

Course # ccl401 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Electricity

The Electricity Program prepares students for meaningful employment in the fields of electrical contracting, design, or engineering. Achieving proficiency in Electricity requires a systematic progression beginning with apprenticeship during high school (Cooperative Education) or upon graduation. Students are placed with local electrical contractors based on their specific skill sets and applicability to contractor business models. Prior to internships or Cooperative Education work, the students are prepared with a comprehensive curriculum based on Massachusetts frameworks and National Standards.

Course Number	Name	Credit	Grade Level
el101	Electricity Exploratory 9	1.0	Grade 9
el103	Electricity 9	10.0	Grade 9
el200	Electricity 10	16.0	Grade 10
el201	Electricity Theory 10	4.0	Grade 10
el300	Electricity 11	20.0	Grade 11
el301	Electricity Theory 11	4.0	Grade 11
el305	Electricity Cooperative Education 11	12.0	Grade 11
pcn301	CTAE Pathway: STEM for Construction	2.0	Grade 11
pcn302	CTAE Pathway: Understanding Specifications & Blueprints	2.0	Grade 11
el400	Electricity 12	20.0	Grade 12
el401	Electricity Theory 12	4.0	Grade 12
el405	Electricity Cooperative Education 12	24.0	Grade 12
pcn401	CTAE Pathway: Construction Management	2.0	Grade 12
pcn402	CTAE Pathway: Renewable Energy in Construction	2.0	Grade 12

Graduates earn up to 300 of the 600 required hours of classroom time and up to 1500 of the 8000 hours of the required on-the-job training time toward their electrical apprenticeship.

Electricity Exploratory 9

Course # el101 Credit: 1

This five-day cycle exploratory course introduces grade 9 students to the many different career opportunities in the electrical field. Students will learn what an Apprentice electrician is and develop a basic understanding of what is required to become a successful Journeyman electrician. In addition to employability and safety skills, students will be provided a basic overview of electrician hand and power tools in order to expose them to on-the-job experiences. Integration with science and mathematical understanding is integral as Ohm's law and electromagnetic theory are discussed. Projects include basic schematic and wiring diagrams, splicing of conductors and installing receptacles, single-pole switches, lighting, and three-way switching.

Electricity 9

Course # el103 Credits: 10

This semester-based course will introduce students to the required safety concepts, mindset, tools, equipment, and business practices of the electrical contracting trade. Potential specialization within the electrical field is discussed and concepts introduced during the exploratory period are further reinforced for the remainder of the year. Tool skills are honed and practiced, and preparing readiness for the Sophomore year is a main focus.

Electricity 10

Course # el200 Credits: 16

This full-year course introduces students to residential wiring and circuitry. Emphasis is placed on proper wiring techniques and the National Electrical Code (NEC). Wiring methods include non-metallic sheathed cable, metal clad cable, electrical metallic tubing, rigid non-metallic conduit, and surface metal raceway. Safety precautions include lock out tag out procedures, the proper use of tools and other potential hazards. This course is based on Massachusetts 237 CMR 22.01 Hours of Education Required as a Prerequisite to Sit for Journeyman Examination and includes: DC theory; AC theory; NEC application of AC and DC theory; electrical bonding and grounding; ground path theory; conductor selection; overcurrent protection; wiring methods; low voltage systems; use of NEC tables and examples; Massachusetts Electrical Code and Amendments; conduct of electricians; job site and electrical safety.

Electricity 10 Theory

Course # el201 Credits: 4

This full-year, classroom-based course introduces students to basic wiring diagrams, project specification sheets, and materials identification. Students will learn the proper use of lines and symbols, specifications, construction materials: types and uses. Students will also deepen their understanding of the purpose, layout, and navigation strategies of the National Electrical Code.

Electricity 11

Course # el300 Credits: 20

This full-year course focuses on live work as opposed to projects completed in the career program setting at workstations and with projects on and off campus. Emphasis is placed on proper wiring techniques and the National Electrical Code. Focus points include hands-on wiring of single-phase installations used in residential construction. Wiring methods and trade academics will include non-metallic sheathed cable, metal clad cable, electrical metallic tubing, rigid metal conduit, surface metal raceway, and rigid nonmetallic conduit, application of the National Electrical Code; services, branch circuits, electrical bonding and grounding, and low-voltage systems and controls.

Electricity Theory 11

Course # el301 Credits: 4

This full-year, classroom-based course formalizes concepts introduced in grade 10 by associating them with the National Electrical Code. Specific practices include sizing wires for various circuits, sizing raceways and conduits to protect wiring, sizing electrical fittings, boxes, enclosures, and selecting the proper materials to complete various projects. Emphasis is placed on navigating the National Electrical Code and applying

the correct sections. This course partially satisfies the theory requirement for hours necessary to sit for Journeyman Examination and is consistent with Massachusetts Board of Examiners of Electricians and DESE rules and regulations. (237 CMR 13.00 Eligibility for initial licensure criteria).

Electricity Cooperative Education 11
Course # el305 Credits: 12
This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Electricity 12
Course # el400 Credits: 20
This full-year course will begin with a review of all previous courses with an emphasis on higher integration of the National Electrical Code (NEC), with Massachusetts Electrical Code (MEC) Amendments, and apprentice-level quality of work. Students review residential, industrial, and commercial wiring as they participate in on- and off-campus projects. The major focus is on Massachusetts 237 CMR 22.01 Hours of Education Required as a Prerequisite to sIt for Journeyman Examination and includes: electrician math and basic electrical formulas; electrical circuit construction; AC theory; raceway, outlet box, and conductor fill; conductor selection and overcurrent protection; branch circuit/feeder/service calculations; motors, controls, and transformer requirements; use of NEC/MEC tables and examples; swimming pools; one-, two-, and multi-family dwelling calculations; motor calculations; review of Board Rules and Regulations; and a review of Massachusetts General Laws pertaining to the Electrical Trade.

Electricity Theory 12
Course # el401 Credits: 4
This full-year, classroom-based course continues the formalized concepts introduced in grade 11 and expands those concepts by adding National Electrical Code based calculations for various individual circuits, building equipment, and entire dwelling units. Specific practices include calculating circuit requirements for appliances, general lighting, receptacle outlets, motors, and entire building services. Emphasis is placed on navigating the National Electrical Code and applying the correct sections. This course partially satisfies the theory requirement for hours necessary to sit for Journeyman Examination and is consistent with Massachusetts Board of Examiners of Electricians and DESE rules and regulations. (237 CMR 13.00 Eligibility for initial licensure criteria).

Electricity Cooperative Education 12
Course # el405 Credits: 24
This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Heating, Ventilation, Air Conditioning & Refrigeration

Students in the Heating, Ventilation, Air Conditioning & Refrigeration (HVAC/R) Program learn to troubleshoot issues, install, and repair a broad range of heating and cooling systems, including window and central air conditioning, refrigeration systems, and various heating systems. All HVAC/R students receive the OSHA 10-Hour CareerSafe certification and are taught how to adhere to safety guidelines in the HVAC/R industry. Students study different heating systems, for example, gas, oil, and electrical. Experience troubleshooting oil- and gas-fired burners for heating systems extends students' experience. The curriculum includes significant experience with electricity, because electrical controls are involved. Students are prepared for the EPA 608 certification exam.

Course Number	Name	Credit	Grade Level
hv101	HVAC/R Exploratory 9	1.0	Grade 9
hv103	HVAC/R 9	10.0	Grade 9
hv200	HVAC/R 10	16.0	Grade 10
hv201	HVAC/R Theory 10	4.0	Grade 10
hv300	HVAC/R 11	20.0	Grade 11
hv301	HVAC/R Theory 11	4.0	Grade 11
hv305	HVAC/R Cooperative Education 11	12.0	Grade 11
pcn301	CTAE Pathway: STEM for Construction	2.0	Grade 11
pcn302	CTAE Pathway: Understanding Specifications & Blueprints	2.0	Grade 11
hv400	HVAC/R 12	20.0	Grade 12
hv401	HVAC/R Theory 12	4.0	Grade 12
hv405	HVAC/R Cooperative Education 12	24.0	Grade 12
pcn401	CTAE Pathway: Construction Management	2.0	Grade 12
pcn402	CTAE Pathway: Renewable Energy in Construction	2.0	Grade 12

Students enrolled in HVAC/R can earn up to 361 Theory hours and up to 1152 hours towards their refrigeration technician license.

HVAC/R Exploratory 9

Course # hv101 Credit: 1

This five-day cycle exploratory course introduces grade 9 students to a broad overview of the heating, ventilation, air conditioning and refrigeration (HVAC/R) field. Included within the week is basic theory on the refrigeration cycle, basic wiring theory, career options, and industry outlook. Students will acquire skills in the basic wiring and piping skills, including swaging, flaring, brazing, and splicing. Students will spend the week working in groups to build and install their own evaporator in a refrigeration system and through

this process learn to pipe, leak test, evacuate, and charge systems. In addition, students will complete electrical projects that simulate how a residential refrigerator works. Students will demonstrate their learning through hands-on projects, written assignments, and safety tests.

HVAC/R 9

Course # hv103 Credits: 10

This semester-based course will provide students with the basic skills needed in the HVAC/R field. Students will start learning about the operation of the refrigeration cycle, focusing on smaller projects to build up their skills and competencies. Major units of study include: safety, tool use, refrigeration theory, and electrical theory. Students will demonstrate learning through hands-on, individual, and group projects, tool competency and safety tests.

HVAC/R 10

Course # hv200 Credits: 16

This full-year course will continue to provide students with the basic skills needed in the HVAC/R field with a focus primarily on the refrigeration cycle and building a refrigeration system. This project will expand student skills in refrigeration piping, electrical wiring, pipe threading, sheet metal work, and drain lines. We will continue to review career safety, tool use, refrigeration theory, and electrical theory. Students will continue to participate in hands-on, individual, and group projects while practicing tool competency and safety tests.

HVAC/R 10 Theory

Course # hv201 Credits: 4

This full-year, classroom-based course explores the basic theory that is the foundation for the HVAC/R field. The major focus will be on the refrigeration cycle and the theory will be scaffolded with more components, conditions, and controls as the school year progresses. Other units of study will include electrical theory, current events, and safety. Students will demonstrate learning through individual and group projects, verbal, written, and online tests.

HVAC/R 11

Course # hv300 Credits: 20

This full-year course will provide students with skills to install and troubleshoot all types of heating and cooling equipment, including gas- and oil-fired forced hot water systems and steam boilers, direct-fired hot air furnaces, hydro-air handlers, mini-split heating and cooling systems, heat-pump units, and various refrigeration units, including multiple types of ice makers and walk-in coolers. Students will also learn how to wire multi-zone boiler controls and equipment. Major units of study will include: EPA certification, gas-fired equipment, and National Fire Protection Association (NFPA) codes, and OSHA-10 certification. Students will demonstrate learning through hands-on individual and group projects, tool competency and safety tests, along with certification exams.

HVAC/R Theory 11

Course # hv301 Credits: 4

This full-year, classroom-based course is designed to provide students with experience using refrigerants, refrigeration and system components. In addition to career program and workplace safety, students will review electrical circuits, symbols, and controls. Students will review for the EPA Section 608 test and learn employability skills to prepare them for cooperative education opportunities.

HVAC/R Cooperative Education 11
Course # hv305 Credits: 12
This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

HVAC/R 12
Course # hv400 Credits: 20
This full-year course focuses on continuing to work with students on refining their skills installing and troubleshooting all types of heating and cooling equipment. The goal for students during this year is for them to be out on their Cooperative Education placement working in the field. Through many partnerships in the mechanical field, students will be working in supply warehouses, refrigeration companies, mechanical contractors, sheet metal contractors, oil companies, heating contractors, and building automation/control companies.

HVAC/R Theory 12
Course # hv401 Credits: 4
This full-year, classroom-based course is designed to provide students with a deeper understanding of furnace and air conditioning installation and troubleshooting, including split-central, multi-zone hydronic systems, and refrigeration systems: ice machines, walk-in refrigerated coolers and freezers. Students will study the proper maintenance procedures for refrigeration systems, including walk-in refrigerators and freezers. Students will also practice job estimating and business practices relevant to HVAC careers.

HVAC/R Cooperative Education 12
Course # hv405 Credits: 24
This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Masonry & Tile Setting

Throughout the Masonry & Tile Setting program students learn the fundamentals of masonry for construction and landscaping. Included is the art of laying brick, block, glass block, and stone, along with pouring concrete and tile setting. Through a series of projects, students will have hands-on experience constructing segmented retaining walls and installing concrete pavers, building chimneys, designing and installing brick and stone facing, decorative stone and concrete, as well as various floors and walks using stone, slate, brick, tile or pavers. Working with the Massachusetts Building Codes, reading blueprints, creating proposals and working on team projects both in our labs and off-campus provide students with hands-on masonry experience. NOTE: This CTAE Program will be discontinued at the conclusion of school year 2025.

Course Number	Name	Credit	Grade Level
ms101	*Masonry & Tile Setting Exploratory 9**	*1.0*	*Grade 9*
ms103	*Masonry & Tile Setting 9**	*10.0*	*Grade 9*
ms200	*Masonry & Tile Setting 10**	*16.0*	*Grade 10*
ms201	*Masonry & Tile Setting Theory 10**	*4.0*	*Grade 10*
ms300	*Masonry & Tile Setting 11**	*20.0*	*Grade 11*
mc301	*Masonry & Construction Theory 11**	*4.0*	*Grade 11*
ms305	*Masonry & Tile Setting Cooperative Education 11**	*12.0*	*Grade 11*
pcn301	CTAE Pathway: STEM for Construction	2.0	Grade 11
pcn302	CTAE Pathway: Understanding Specifications & Blueprints	2.0	Grade 11
ms400	Masonry and Tile Setting 12	20.0	Grade 12
mc401	Masonry & Construction Theory 12	4.0	Grade 12
ms405	Masonry and Tile Setting Cooperative Education 12	24.0	Grade 12
pcn401	CTAE Pathway: Construction Management	2.0	Grade 12
pcn402	CTAE Pathway: Renewable Energy in Construction	2.0	Grade 12

**The following course are discontinued : ms101, ms103, ms200, ms201, ms300, ms301, ms 305*

*Masonry & Tile Setting Exploratory 9 **Effective SY23-24, this course was discontinued**
Course # ms101 Credit: 1
This five-day cycle exploratory course introduces grade 9 students to the masonry & tile setting trade. Students work with brick and mortar to construct pyramids and chimneys, as well as creating patios with concrete pavers in various patterns. Students also learn by doing all phases of work, from setup to preparation to completion of a project.

*Masonry & Tile Setting 9 **Effective SY23-24, this course was discontinued**

Course # ms103 Credits:10

This semester-based course provides students with experience in working with brick and mortar projects: constructing pyramids and chimneys and patios using concrete pavers in various patterns. In addition, students will work with brick, concrete block, stone, tile and concrete. Studies and hands-on work range from brick veneering to concrete slab work. Students will also develop hand coordination skills using tools of the masonry trade.

*Masonry & Tile Setting 10 **Effective SY23-24, this course was discontinued**

Course # ms200 Credits: 16

This full-year course provides students with further experience in working with brick, concrete block, stone, tile and concrete along with continued work with brick veneering to concrete slab projects. Students in the program continue to develop hand coordination skills using tools of the masonry trade.

*Masonry & Tile Setting 10 Theory **Effective SY23-24, this course was discontinued**

Course # ms201 Credits: 4

This full-year, classroom-based course helps students to learn trade terminology, complete safety testing on all equipment, and complete textbook chapter work. Students work through a series of three textbooks, completing chapters related to the actual work they are performing in the career technical area. In addition, students learn the history and background of the trade such as how brick, block, tile, and concrete are manufactured. They also study ratios of materials to create mortar and concrete and their proper uses.

Masonry & Tile Setting 11 **Effective SY24-25, this course was discontinued**

Course # ms300 Credits: 20

This full-year course provides students with further experience in working with brick, concrete block, stone, tile and concrete along with brick veneering to concrete slab. In addition, students will be exposed to community work and on-site projects that allow them to apply their learning directly to a given situation and its particular needs.

Masonry & Construction Theory 11

Course # mc301 Credits: 4

This full-year, classroom-based course examines the principles and theory of concrete block construction, block types, modular planning, estimating, installation of windows, doors and lintels, bonding, chimneys, concrete construction, planning, mixing, pouring, finishing, curing, testing, jointing and reinforcing. Operation of various hand and power equipment and estimating masonry materials will also be covered.

Masonry & Tile Setting Cooperative Education 11 **Effective SY25-25, this course was discontinued**

Course # ms305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Masonry & Tile Setting 12

Course # ms400 Credits: 20

This full-year course provides students with further experience in working with brick, concrete block, stone, tile and concrete along with brick veneering to concrete slab. Successful students will also acquire techniques, a good work ethic, and understand the expectations of the trade. In addition, students will be exposed to community work and on-site projects that allow them to apply their learning directly to a given situation and its particular needs.

Masonry & Construction Theory 12

Course # mc401 Credits: 4

This full-year, classroom-based course will help students learn technical theory, blueprint reading, project estimating, and the use of appropriate hand and power equipment. Topics will include concrete flatwork, footings, brick, block and stone walls along with project maintenance, repair, and computer estimating. Students will study in theory situations from outside projects in the community.

Masonry & Tile Setting Cooperative Education 12

Course # ms405 Credits: 12

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Plumbing

Plumbing is a licensed trade that requires not only specific technical knowledge and skill, but also a thorough understanding of the Massachusetts State Plumbing and Fuel Gas Code as well as a general understanding of the construction trades. Graduates will be working across the building and construction industry and, therefore, need to understand the relationship of plumbing to the wider arena of construction trades such as electrical, carpentry, masonry and HVAC. Students learn water supply and distribution, sanitary waste and venting, natural gas supply and distribution, pipe fitting, as well as fixture and appliance installation. Students learn the installation, operation and maintenance of hydronic heating systems, how to read blueprints, and how to estimate and propose plumbing projects.

Course Number	Name	Credit	Grade Level
pl101	Plumbing Exploratory 9	1.0	Grade 9
pl103	Plumbing 9	10.0	Grade 9
pl200	Plumbing 10	16.0	Grade 10
pl201	Plumbing Theory 10	4.0	Grade 10
pl300	Plumbing 11	20.0	Grade 11
pl301	Plumbing Theory 11	4.0	Grade 11
pl305	Plumbing Cooperative Education 11	12.0	Grade 11
pcn301	CTAE Pathway: STEM for Construction	2.0	Grade 11
pcn302	CTAE Pathway: Understanding Specifications & Blueprints	2.0	Grade 11
pl400	Plumbing 12	20.0	Grade 12
pl401	Plumbing Theory 12	4.0	Grade 12
pl405	Plumbing Cooperative Education 12	24.0	Grade 12
pcn401	CTAE Pathway: Construction Management	2.0	Grade 12
pcn402	CTAE Pathway: Renewable Energy in Construction	2.0	Grade 12

Plumbing students can earn up to 330 total Theory hours (Tiers 1, 2, and 3) and 1700 workshop hours toward their plumbing apprenticeship.

Plumbing Exploratory 9
Course # pl101 Credit: 1

This five-day cycle exploratory course introduces grade 9 students to the basic knowledge and skills used in the plumbing field today. Students receive instruction on personal safety and career program safety along with basic skills in cutting, joining, hanging, and testing all major plumbing pipes and fittings. All tools and materials will be provided. Students receive instruction in personal and career program safety.

Plumbing 9
Course # pl03 Credits: 10

This semester-based course introduces students to basic orientation in career opportunities, program procedures, tool identification, and hand tool safety. Students receive instruction in understanding a ruler/tape measure. Procedures on how to measure, cut and prepare steel, copper, and cast iron piping with various fittings and joining methods.

Plumbing 10
Course # pl200 Credits: 16
This full-year course provides students with hands-on experience working with the four major materials in today's plumbing industry. Students make frames from project sheets, learn to cut and join pipe and fittings to get these projects graded. This work also involves hanging and testing pipes.

Plumbing Theory 10
Course # pl201 Credits: 4
This full-year, classroom-based course will introduce students to plumbing theory continuing within the Tier I curriculum on related plumbing tasks, including water heaters, hot and cold water distribution systems, basic drainage waste and vent systems, residential blueprint reading, and valve characteristics. Reading, writing, and math assignments related to the plumbing professions are integrated with academic frameworks during this class.

Plumbing 11
Course # pl300 Credits: 20
This full-year course provides students with completion of their Plumbing Tier 1 Apprentice training. Students receive instruction according to the Massachusetts Plumbing Code, including safety, installation practices, tools and joining methods, fixture installations, gas piping, drain-waste-vent and water distribution systems. All aspects of the trade are studied with particular emphasis on employability skills.

Plumbing 11 Theory
Course # pl301 Credits: 4
This full-year, classroom-based course will introduce students to the Massachusetts State Plumbing and Fuel Gas Code. Plumbing codes will be reinforced throughout the year in order to prepare for Tier 2, as set by the Massachusetts State Plumbing Board. Students must be able to identify vents, drains and water pipes, as well as construction symbols associated with related trades. The student will learn to recognize by sight the different types of fittings, hangers and pipes and will be introduced to related Mathematics and Physics.

Plumbing Cooperative Education 11
Course # pl305 Credits: 12
This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Plumbing 12
Course # pl400 Credits: 20

This full-year course provides students with completion of their Plumbing Tier 2 Apprentice training. Students focus on an in-depth review of previous instruction. The goal is to strengthen student knowledge in preparation for involvement in the cooperative educational program. In addition, students are involved in school facility maintenance work and off campus projects.

Plumbing Theory 12

Course # pl401 Credits: 4

This full-year, classroom-based course will deepen student understanding of the Massachusetts State Plumbing and Fuel Gas Code through applied mathematics, physics, and plumbing theory. Students will also learn the installation, operation, and maintenance of hydronic heating systems, blueprint reading, and how to estimate and propose plumbing projects. Theory hours will count toward students needing 330 classroom instruction hours toward their Journeyman Plumbing License.

Plumbing Cooperative Education 12

Course # pl405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

HEALTH SCIENCES CLUSTER

Dental Assisting, Early Education & Care, & Health Assisting,

CTAE PATHWAY COURSES

CTAE Pathway courses are cluster-based courses scheduled during the academic cycle to meet the needs of Strands 1, 3, 4, 5, 6 of the *Vocational Technical Education Frameworks* under Chapter 74 Regulations (CMR 603).

Communication for Health Professionals - Grade 11 Pathway
Course # phs301 Credits: 2
This semester-based course will focus on how effective communication skills have a direct impact on the health professional's office image, patient satisfaction, and professional relationships. Units of study will include communication principles; interpersonal communication; voice quality and speaking style; communication clarity; and linguistics and visual strategies. Students will deliver presentations in order to improve their confidence and competence when explaining health-related information to individuals and audiences.

Medical Forensics - Grade 11 Pathway

Course # phs302 Credits: 2

This semester-based course will focus on the role of medical forensics in the health sciences. Students will explore the ability to identify, analyze, and process logically using deductive reasoning and problem solving. Topics will include laboratory skills and safety, microscopy, toxicology, measurement, physical evidence identification, and pathology. Students will develop skills through practice collecting and categorizing crime scene biomedical evidence, conducting scientific analysis of evidence, working with various scientific reports relevant to an investigation, and sharing their findings through documentation.

Data Analytics in Health Sciences - Grade 12 Pathway

Course # phs401 Credits: 2

This full-year course is designed to provide students with experience using statistical analysis to formulate and test hypotheses related to health sciences. Students will begin with basic analyses and how to phrase testable hypotheses using examples from medical research and work through public health data sets as they occur in the real world. Objectives of this course are to: describe a data set from scratch using descriptive statistics and graphical methods, apply appropriate methods to formula and examine statistical associations between variables within a data set, and to interpret the analysis and appraise the role of chance and bias in findings.

Dental Assisting

Dental Assisting provides a comprehensive education in the field. Each student is given the opportunity to learn dental procedures through academic and practical instruction. Students receive clinical experience at Tufts University School of Dental Medicine as well as in our state-of-the-art dental clinic. Upon successful completion of a rigorous three-year curriculum, students will be prepared for the certification examinations required for licensing by the Dental Assisting National Board. Students at Essex North Shore Agricultural & Technical School will be prepared to sit for the Infection Control Examination (ICE), the Radiology Health and Safety (RHS) examinations, and the Anatomy, Morphology and Physiology (AMP) examination, leading to NELDA certification through the Dental Assistant National Board (DANB). Students complete Healthcare Provider CPR and First Aid as juniors.

Course Number	Name	Credit	Grade Level
da101	Dental Assisting Exploratory 9	1.0	Grade 9
da103	Dental Assisting 9	10.0	Grade 9
da200	Dental Assisting 10	16.0	Grade 10
da201	Dental Assisting Theory 10	4.0	Grade 10
da300	Dental Assisting 11	20.0	Grade 11
da301	Dental Assisting Theory 11	4.0	Grade 11
phs301	CTAE Pathway: Communication for Health Professionals	2.0	Grade 11
phs302	CTAE Pathway: Medical Forensics	2.0	Grade 11
da305	Dental Assisting Cooperative Education 11	12.0	Grade 11
da400	Dental Assisting 12	20.0	Grade 12
3450	Anatomy & Physiology Theory 12	4.0	Grade 12
da405	Dental Assisting Cooperative Education 12	24.0	Grade 12
phs401	CTAE Pathway: Data Analysis in Health Sciences	4.0	Grade 12

Dental Assisting Exploratory 9

Course # da101 Credit: 1

This five-day cycle exploratory course introduces grade 9 students to the dental assisting profession. Students are exposed to various principles of clinical, laboratory, and clerical dental assisting. This program allows students to determine whether their abilities and interests are compatible with this technical area. During this course, students explore the many career opportunities in the dental field. Shop safety and program orientation is provided.

Dental Assisting 9

Course # da103 Credits: 10

This semester-based course introduces students to safety in the Dental Assisting program, the fundamentals of the dental industry, and dental careers, including dental and oral anatomy. Students will learn about tissues, surfaces of the teeth, and nutrition. Students also learn about basic office procedures such as identifying dental instruments tray setup, the dental operatory, microbiology, and an introduction to infection control in dentistry. The Dental Office Design project will include virtual field trips to local dental offices, basic lab procedures such as alginate impressions, pouring impressions, and dental models. Students will have an opportunity to talk about oral health and dental hygiene as part of virtual visits to 1-2 elementary schools to provide Children's Oral Health Education.

Dental Assisting 10

Course # da200 Credits: 20

This full-year course will concentrate on infection control in dentistry, oral health education, and tooth morphology. Topics will include: OSHA Bloodborne Pathogens Standard and Hazard Communication training, CDC Guidelines, microbiology, and disinfection and sterilization techniques, HIPAA training and preventive dentistry. Grade 10 students will collaborate with grade 12 students as part of a Dental Table Clinic project that will be presented to the school staff, students, and their caregivers in the spring semester.

Dental Assisting Theory 10

Course # da201 Credits: 4

This classroom theory course is designed to introduce students to all phases of dental assisting, beginning with disease transmission and infection prevention. Major units will include differences between disinfection and sterilization, applied pharmacology, dental drugs, anesthesia, and sedation, Students will also learn about impressions, dental models, and restorations.

Dental Assisting 11

Course # da300 Credits: 20

This full-year course will focus on preparing students for the Tufts Dental Radiology Certification, Dental Assisting National Board Radiation Health and Safety Exam (DANB, RHS). The comprehensive radiology curriculum incorporates operator and patient safety, exposure, processing and evaluation of traditional as well as digital dental radiographs. In addition, students learn about the components of the dental x-ray unit, digital sensors, safety precautions, film identification, film placement using both bisecting and paralleling techniques, film processing, and mounting. The students will begin their clinical internship at Tufts University School of Dental Medicine. Student immunizations must be up-to-date according to the Massachusetts Department of Public Health regulations. Students will also learn about basic restorative procedures and dental materials, and the use of practice management software. Students will obtain their CPR/BLS (Basic Life Support) Certification for Healthcare Providers, as well as First Aid Certification. Training and certification follows the American Heart Association Guidelines.

Dental Assisting Theory 11

Course # da301 Credits: 4

This full-year, classroom-based course is designed to introduce students to all phases of dental assisting. Major units will include preparing patients for dental care, setting up dental charts for review, and providing assistance to the dentist. This course surveys dental terminology as well as discusses dental diseases and pathology. There will be a strong emphasis on learning advanced chairside dental assisting techniques including but not limited to amalgam, composite, and crown and bridge procedures. Students will be trained to expose intraoral and extraoral radiographs while learning the theory behind safety in Radiology. Students will also handle and mount dental radiographs as well as learn various anatomical landmarks on dental radiographs.

Dental Assisting Cooperative Education 11
Course # da305 Credits: 12
This semester-based course will provide qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during the third and fourth quarter only.

Dental Assisting 12
Course # da400 Credits: 20
This full-year course will run concurrent with students participating in their Cooperative Education placements to gain industry experience in paid, off-campus positions. To qualify, students will need to meet all Co-op requirements and be in good academic and vocational standing. Students may participate in a clinical affiliation in both general and/or specialty practice dental offices. Students will continue to receive instruction in the areas of dental science and business office procedures. Students will be expected to gain recertification in adult, child, and infant CPR/First Aid. Students will also have an opportunity to participate in the Tufts Radiology Certification Program.

Anatomy & Physiology Theory 12 [Dental Assisting Theory 12]
Course # 3450 Credits: 4
This full-year, lab-based theory course will give students an in-depth understanding of human anatomy and physiology, which will expand upon in far greater detail the basic topics covered in Biology I and II. Students will gain knowledge through inquiry-based research projects as well as intensive dissections.

Dental Assisting Cooperative Education 12
Course # da405 Credits: 24
This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Early Education & Care*

Students in Early Education & Care learn about the early childhood profession through their work with young children from birth to five years of age. Students practice the principles of high quality childhood programming. They learn the fundamentals of childhood development, theories of early childhood education, teaching methods and professional standards defined by the National Association of the Education of Young Children (NAEYC). Workplace and childcare health and safety are emphasized. Students gain technical expertise through supervised clinical and cooperative education placements to prepare them to begin entry-level work in the early education field.

Early Education & Care Exploratory 9

Course #: ec101 Credits: 1

This five-day cycle exploratory course introduces grade 9 students to the early childhood developmental stages along with activities purposefully designed for each stage. In addition, students will experience infant care through the use of newborn simulators. Students will also be introduced to the variety of careers in the early education and care field.

Early Education & Care 9

Course # ec103 Credits: 10

This semester-based course prepares students for the first steps in entering the early education and care profession. Students will learn about the theories and principles of early childhood development. They will also be introduced to the early childhood and care health and safety protocols and corresponding Massachusetts regulations.

Early Education & Care 10

Course # ec200 Credits: 16

This full-year course will further develop student knowledge and skills in order to prepare them for the early education and care profession. Topics include: learning experiences for children, methods and materials, reading and numeracy, children with special needs. Students will also learn how to plan early curriculum, observing children, and the stages of childhood growth and development. The goal of this course is to prepare students for a comprehensive cooperative education placement during their junior year.

Early Education & Care 10 Theory

Course # ec201 Credits: 4

This full-year, classroom-based course will provide students with the key principles of child developmental theories. These theories have resulted in styles of education, including self-directed learning (Montesorri), learning by doing (Dewey), and hands-on exploration (Waldorf). Students will also discover how early education and care learning environments are designed according to classroom management theories.

Course Number	Name	Credit	Grade Level
ec101	Early Education & Care Exploratory 9	1.0	Grade 9
ec103	Early Education & Care 9	10.0	Grade 9

ec200	Early Education & Care 10	16.0	Grade 10
ec201	Early Education & Care 10 Theory	4.0	Grade 10

***Note: Peabody residents are ineligible to enroll in the Early Education & Care CTAE Program.**

Health Assisting

The Health Assisting program trains students to become certified nursing assistants with advanced skill training in electrocardiology and phlebotomy. This program is also an excellent foundation for nursing, physical therapy, athletic training or other health-related fields requiring college degrees. In this program, students will have the opportunity to become certified in both ECG and phlebotomy through the National Healthcare Association. Medical terminology is taught throughout the senior year, and students can receive three credits at North Shore Community College upon completion with a B grade or higher for this class. Students become certified in both CPR-Healthcare Provider and First Aid.

Course Number	Name	Credit	Grade Level
ha101	Health Assisting Exploratory 9	1.0	Grade 9
ha103	Health Assisting 9	10.0	Grade 9
ha200	Health Assisting 10	16.0	Grade 10
ha201	Health Assisting 10 Theory	4.0	Grade 10
ha300	Health Assisting 11	20.0	Grade 11
3330	Anatomy & Physiology	4.0	Grade 11
ha305	Health Assisting Cooperative Education 11	12.0	Grade 11
phs301	CTAE Pathway: Communication for Health Professionals	2.0	Grade 11
phs302	CTAE Pathway: Medical Forensics	2.0	Grade 11
ha400	Health Assisting 12	20.0	Grade 12
ha401	Health Assisting Theory 12	4.0	Grade 12
ha405	Health Assisting Cooperative Education 12	24.0	Grade 12
phs401	CTAE Pathway: Data Analysis in Health Sciences	4.0	Grade 12

Articulated college credit agreement in place with North Shore Community College - Danvers
Statewide Articulation agreement is available for Health Assisting.

NOTE: The required community-based clinical components of the Health Assisting Program necessitate proof of vaccination for the following: Flu, TB, and COVID-19.

Health Assisting Exploratory 9
Course # ha101 Credit: 1

This five-day cycle exploratory course introduces grade 9 students to the art of caregiving. Students will explore the following topics: career pathways, infection control, responding to emergencies, communication in healthcare, and organ donation. Students will also be given an opportunity to learn basic anatomy and physiology. The goal of this exploratory course will be to dive into the healthcare field.

Health Assisting 9

Course # ha103 Credits: 10

This semester-based course will offer students an expanded overview of the art of caregiving. By introducing them to the knowledge and skills in preparation for the nursing certification exam in grade 11. Students will begin the Nursing Assistant curriculum approved by the Massachusetts Department of Public Health. Major topics will include: working in healthcare, growth and development, responding to emergencies, and controlling the spread of infection in healthcare. Certifications will include: Heartsaver First Aid and Heartsaver Cardiopulmonary Resuscitation.

Health Assisting 10

Course # ha200 Credits: 20

This full-year course will further develop student knowledge and skills in order to prepare them for the nursing certification exam in grade 11. Students will delve further into the Nursing Assistant curriculum approved by the Massachusetts Department of Public Health. Major topics will include: cognitive changes, developmental disabilities, and ethical and legal issues in healthcare. Students will be given opportunities to work with individuals with developmental disabilities along with clinical placements at community early childhood centers and memory-care facilities. Certifications in grade 10 will include OSHA along with an opportunity to receive completion certifications in Dementia and Medical Terminology.

Health Assisting Theory 10

Course # ha201 Credits: 4

This classroom theory course will focus on preparing students for clinical placement at various healthcare settings. Emphasis will be on obtaining industry recognized credentials. Students will complete a 10-hour OSHA course, along with an Alzheimer's Association's Person-Centered Care: A Habilitation Therapy Training Certificate, and Dean Vaughn Medical Terminology Certificate.

Health Assisting 11

Course # ha300 Credits: 20

This full-year course will continue to develop student understanding and skills through participation in the Nursing Assistant curriculum approved by the Massachusetts Department of Public Health. Students will build upon the skills they have acquired in previous years as they learn to master new content and skills. Students will complete their clinical internship at a local long-term care facility. Certifications in grade 11 will include: BLS (CPR for healthcare providers) and First Aid. Upon completion of the program students will be eligible to take the Massachusetts Department of Public Health Certified Nursing Assistant Exam (written and practical) for licensure. Once licensed, students may have the opportunity to begin a Cooperative Education placement.

Anatomy & Physiology [Health Assisting Theory 11]

Course # 3330 Credits: 4

This full-year, lab-based theory course will give students an in-depth understanding of human anatomy and physiology, which will expand upon in far greater detail the basic topics covered in Biology I and II. Students will gain knowledge through inquiry-based research projects as well as intensive dissections.

Health Assisting Cooperative Education 11

Course # ha305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Health Assisting 12

Course # ha400 Credits: 20

This full-year course will continue to build upon and refine students skills that they have acquired in previous grades. Students who have successfully passed the Certified Nursing Assistant Exam will be eligible to participate in the Cooperative Education program, working in the healthcare field during their career technology week. Students who do not participate in Cooperative Education will study a variety of healthcare and medical topics, including but not limited to: pharmacology, medication administration, introduction to EKG, introduction to phlebotomy, abnormal psychology, public health, and medical ethics. All grade 12 students will complete a research project and showcase their completed portfolio in the spring.

Health Assisting Theory 12

Course # ha401 Credits: 4

This full-year, classroom-based course will focus on the aging process. Emphasis is placed on anatomy & physiology and the physical changes associated with health problems which require professional care. Other topics include communication skills, ethics, and problem solving methods.

Health Assisting Cooperative Education 12

Course # ha405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

STEAM ACADEMY

(Science, Technology, Engineering, Arts, & Mathematics)

Advanced Manufacturing, Biotechnology*, Design & Media Communications, Engineering & Automation Technology, Information Technology Services, Metal Fabrication & Joining Technologies+

CTAE PATHWAY COURSES

CTAE Pathway courses are cluster-based courses scheduled during the academic cycle to meet the needs of Strands 1, 3, 4, 5, 6 of the *Vocational Technical Education Frameworks* under Chapter 74 Regulations (CMR 603).

Communication and Career Essentials - Grade 11 Pathway
Course # pmet301 Credits: 2

This semester-based course examines effective communication techniques in the fields of manufacturing, engineering, and information technology. Students will be introduced to the core principles central to the study and practice of communication: community engagement; communication literacy, workplace interaction, and communication and culture. Communication techniques will be practiced that emphasize choice and organization of material, sound reasoning, audience analysis, and delivery.

Business Finance - Grade 11 Pathway

Course # pmet302 Credits: 2

This semester-based course is designed to help students use their knowledge and skills to manage their financial resources effectively using business financial strategies. Major units will include developing a financial plan, capital budgeting, managing payroll, increasing productivity and profits, and employer liability. A case-study approach will allow students to apply financial concepts in workplace scenarios related to CTAE program areas and have them make informed decisions related to business finance.

Civic Humanitarianism - Grade 12 Pathway

Course # pmet401 Credits: 2

This semester-based course is designed to help students develop positive work habits through connections between civic responsibility informed by humanitarian ethics. Topics will include what professionalism is and why it is important; positive workplace habits, the role of teamwork, assuming positive intent, and professional collaboration. Students will study workplace models of humanitarian initiatives and develop a plan for civic engagement related to their particular CTE area.

Professional Portfolio Presentation - Grade 12 Pathway

Course # pmet402 Credits: 2

This semester-based course will help students to create a portfolio that represents their professional identity that will culminate in a presentation. Students will build their professional portfolios using career and professional artifacts. Topics will include the critical components of a professional portfolio; the use of a portfolio in professional activities such as job searches, networking, and interviews; techniques for personalizing a portfolio so that it draws attention; and ways to create an online professional presence. The culminating activity will involve a portfolio presentation and engagement in constructive class feedback to help students form a supportive professional learning community each sharing a similar goal.

Advanced Manufacturing

Advanced Manufacturing provides training and work experience across the broad spectrum of manufacturing equipment. Students learn how to manufacture metal parts using lathes, milling machines, drilling machines, and grinders. Students learn to design components on Computer Aided Design (CAD) software and build components of complex machinery including engines and tooling systems, to make robotics parts, and other projects that require precision design, manufacturing and assembly using principles of engineering.

Course Number	Name	Credit	Grade Level
am101	Advanced Manufacturing Exploratory 9	1.0	Grade 9
am103	Advanced Manufacturing 9	10.0	Grade 9
am200	Advanced Manufacturing 10	16.0	Grade 10
am201	Advanced Manufacturing Theory 10	4.0	Grade 10
am300	Advanced Manufacturing 11	20.0	Grade 11
am301	Advanced Manufacturing Theory 11	4.0	Grade 11
am305	Advanced Manufacturing Cooperative Education 11	12.0	Grade 11
pmet301	CTAE Pathway: Communication & Career Essentials	2.0	Grade 11
pmet302	CTAE Pathway: Business Finance	2.0	Grade 11
am400	Advanced Manufacturing 12	20.0	Grade 12
am401	Advanced Manufacturing Theory 12	4.0	Grade 12
am405	Advanced Manufacturing Cooperative Education 12	24.0	Grade 12
pmet401	CTAE Pathway: Civic Humanitarianism	2.0	Grade 12
pmet402	CTAE Pathway: Professional Portfolio Presentation	2.0	Grade 12

Articulated Credit Agreement with North Shore Community College - Danvers
Statewide articulation agreement in place for Advanced Manufacturing

Advanced Manufacturing Exploratory 9
Course # am101 Credit: 1
This five-day cycle exploratory course introduces grade 9 students to hands-on experience making a project under direct supervision. Students will learn how to cut raw materials to prepare for subtractive machining of metal stock, including brass, steel, or aluminum, and use manual engine lathes, milling machines, and horizontal bandsaws to create a product, such as a working metal clock, a yoyo, a fidget spinner, or dice. In addition, students will be introduced to 3D printing, basic robotics in manufacturing, and CAD/CAM software. The future of careers in aerospace manufacturing, medical instrument manufacturing, tool and die making, along with employment in inspectional and quality assurance areas will be discussed.

Advanced Manufacturing 9

Course # am103 Credits: 10

This semester-based course introduces students to basic information in regards to career program safety, metrology, machining, including the operation of manual milling machinery and metal lathes, horizontal bandsaws, metallurgical categories, bench work, and machine-tool geometry. Students are also introduced to the terms and language used in aerospace and machinist trade, CAD/CAM, solid modeling, and 3D printing. Students also acquire a basic understanding of how to read blueprints and the basic use of inspection equipment. Students work on projects to the end of the school year while practicing safety.

Advanced Manufacturing 10

Course # am200 Credits: 16

This full-year course introduces students to detailed information on safety, metrology, machining, including the operation of manual and conversational milling machinery and manual and conversational metal lathes and fixturing, horizontal bandsaws, metallurgical studies, and a detailed overview of machine tools. Students use geometry and advanced terms and language used in aerospace and the machinist trade to learn how to decipher and create G and M Code, to be introduced to programming language and program formatting, CAD/CAM and program formatting, CAD/CAM and solid modeling, and 3D printing. Students also learn how to read and create blueprints, prototype their ideas, and use detailed inspection equipment with an introduction to geometric dimensioning and tolerances.

Advanced Manufacturing 10 Theory

Course # am201 Credits: 4

This full-year, classroom-based course will provide students with machining theory from basic to advanced techniques. Students will progress by participating in discussions of machine-tool technology and all aspects of machining metals, metallurgy, and other materials, utilizing subtractive-machining techniques. Students will also study inspectional procedures, tool geometry, 3-D printing, CAD / CAM basics to detailed reading and writing G & M code. They will also learn about inspectional and quality-assurance techniques, devices, and measuring tools along with concepts related to geometric, dimensioning, and tolerances. Students will be introduced to CNC program language, detailed introduction to G and M code and practice these techniques with their instructor. Theory will begin with very basic information and build to a more detailed understanding of machining and manufacturing procedures in a safe and fun learning environment.

Advanced Manufacturing Theory 11

Course # am301 Credits: 4

This full-year, classroom-based course introduces students to thread cutting, types of files and saws and the use of milling machines and milling cutters, along with a study of ferrous and non-ferrous metals. Students will explore metal manufacturing blueprint reading and sketching. Students will also learn advanced programming techniques as they write computer numerical controls (CNC) programs for the CNC lathe and machining center using G&M codes.

Advanced Manufacturing 11

Course # am300 Credits: 20

This full-year course provides students with training and work experience across a broad spectrum of manufacturing equipment. Students learn how to manufacture metal and plastic parts using lathes, milling

machines, drilling machines, grinding equipment, laser cutters, and 3D printers. They learn to read blueprints, use a variety of inspection tools, and program and operate computer numerical control (CNC) equipment to industry standards. Students also learn to design components on computer-aided design (CAD) software and build components that require precision design, manufacturing, and assembly, using the principles of engineering.

Advanced Manufacturing Cooperative Education 11
Course # am305 Credits: 12
This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Advanced Manufacturing 12
Course # am400 Credits: 20
This full-year course continues to provide students with experience across a broad spectrum of manufacturing equipment. Students continue to work on projects where they manufacture metal and plastic parts using lathes, milling machines, drilling machines, grinding equipment, laser cutters, and 3D printers. Students read blueprints, use inspection tools, and program and operate computer numerical control (CNC) equipment according to industry standards. Students also continue to design components using computer-aided design (CAD) software and build components that require precision design, manufacturing, and assembly through the engineering design process.

Advanced Manufacturing Theory 12
Course # am401 Credits: 4
This full-year, classroom-based course is intended to teach students the underlying theories that accompany the Advanced Manufacturing program. There is an emphasis on computer-aided design and computer-aided manufacturing, machining calculations, cutting theory, additive manufacturing, job planning workflow, geometric dimensioning and tolerancing, as well as cost analysis.

Advanced Manufacturing Cooperative Education 12
Course # am405 Credits: 24
This full-year course provides qualified students with a career vocational-technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Biotechnology

Biotechnology is the science of using living organisms, their products, or their component parts, for human benefit along with using technical applications that turn biological knowledge into products. Biotechnology is an interdisciplinary field that merges biology, chemistry, mathematics, computer science and engineering. It is also one of the fastest growing commercial industries, with Massachusetts being a major center for growth and innovation. This program provides students with an introduction to biotechnology and offers hands-on experience with the equipment, instrumentation, and techniques frequently used in the field.

Course Number	Name	Credit	Grade Level
bt101	Biotechnology Exploratory 9	1.0	Grade 9
bt103	Biotechnology 9	10.0	Grade 9
bt200	Biotechnology 10	16.0	Grade 10
bt201	Biotechnology 10 Theory	4.0	Grade 10
bt300	Biotechnology 11	20.0	Grade 11
bt301	DNA, RNA, and Proteins 11	4.0	Grade 11
bt305	Biotechnology Cooperative Education 11	12.0	Grade 11
phs301*	CTAE Pathway: Communication for Health Professionals	2.0	Grade 11
phs302*	CTAE Pathway: Medical Forensics	2.0	Grade 11
bt400	Biotechnology 12	20.0	Grade 12
bt401	Computer Programming 12	4.0	Grade 12
bt405	Biotechnology Cooperative Education 12	24.0	Grade 12
phs401*	CTAE Pathway: Data Analysis in Health Sciences	4.0	Grade 12

Note: Biotechnology Program students will enroll in Pathway courses aligned to the Health Sciences Cluster.

Biotechnology Exploratory 9

Course # bt101 Credit: 1

This five-day cycle exploratory course introduces grade 9 students to the Biotechnology Career Area. Students will learn about the scientific method, detection methods for whether a substance is an acid or base, chromatography separation techniques based on properties of polarity, aseptic technique for Luria Broth (LB) Agar plates, growing bacteria, using a pipette to measure small volumes and to load samples on a gel, and finally examining DNA fingerprinting to determine the identify of a whale pup's father. Students will also maintain proper documentation by keeping a laboratory notebook and learn about safety and important equipment used in the lab every day.

Biotechnology 9

Course # bt103 Credits: 10

This semester-based course provides a proposed scope and sequence for the first half of a 3.5 year Biotechnology career and technical education (CTAE). It is designed to explore the field of biotechnology through academically rigorous lessons and intensive hands-on laboratory experience. Students will be introduced to the careers possible in the field of biotechnology. Students will learn the importance of proper documentation in the laboratory. The topics covered will include: Lab safety and regulation, scientific inquiry, calculation, units and measurement; basic microbiology, introduction to DNA and DNA purification, and common laboratory techniques such as pipetting, chromatography and gel electrophoresis.

Biotechnology 10

Course # bt200 Credits: 16

This full-year course provides students with the basic background knowledge and skills needed to work in a biotechnology lab setting. Students will learn about laboratory safety, and good laboratory and documentation practices. Topics of instruction and hands-on work include: measuring of mass, volume, pH, use of a spectrophotometer to determine analyte concentration, preparation of solutions and media at desired concentrations, Bradford Assay, ELISA assay, factors influencing enzyme activity, aseptic technique, inoculation and growth of cultures of microorganisms, gram staining, use of light microscopes, separation techniques, including gel electrophoresis, size exclusion chromatography, centrifugation, DNA extraction, and the use of recombinant DNA tools such as restriction enzymes. Instruction will be a combination of presentations, demonstrations, and hands-on learning in the laboratory.

Biotechnology 10

Course # bt201 Credits: 4

Biotechnology 11

Course # bt300 Credits: 20

This full-year intermediate course will provide students with the practical application of skills needed to work in a biotechnology lab or company setting. Students will learn recombinant DNA techniques, polymerase chain reaction (PCR), genotyping, cell culture, and genetic engineering. Topics of instruction and hands on work will include: the use of recombinant DNA tools and methods such as plasmid vectors, restriction digests, ligation, transformation, DNA fingerprinting, DNA profiling, Southern blot, Western blot, aseptic technique in a laminar flow hood, cell culture of animal cells, freezing of cell stocks, determining cell density and percent viability, PCR amplification for species identification and detection, and genotyping. Long-term projects will include the study of plant genetics, maintaining CHOK1 cells in culture, and engineering of bacteria to produce and extract fluorescent proteins. Student learning will take place through a combination of presentations, demonstrations, and hands-on labs and projects.

DNA, RNA, and Proteins 11

Course # bt301 Credits: 4

This full-year, classroom-based course will use models and graphics to help students understand explanations of: how genetic information is stored in DNA, how DNA is replicated, and how genetic information from DNA is used to create new proteins. Students will learn about the use and development of

primers to study genes and to test for the presence of mutations. DNA sequencing methods will also be explored.

Biotechnology Cooperative Education 11
Course # bt305 Credits: 12
This semester-based course will provide qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers will provide additional training, pay students, and report their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Biotechnology 12
Course # bt400 Credits: 20
This full-year course will continue to help students reinforce and practice the skills learned through previous years in Biotechnology. Major units of study will include: DNA sequencing, CRISPR (clustered regularly interspaced short palindromic repeats) using the Cas9 (CRISPR-associated protein 9) system, plant cloning, designing primers, and participating in a semester-based research project. Students will be encouraged to take on a Cooperative Education placement during this time. Students will continue to work on becoming proficient in such skills as PCR, DNA sequencing, and DNA quantification. Students will also work on long-term, research-based projects.

Computer Programming 12
Course # bt401 Credits: 4
This full-year, classroom-based course will introduce students to the basics of computer programming, a skill useful in the field of Biotechnology for data analysis and modeling. Students will learn to create computer programs in Python, a popular language in both industry and academia, and one that is easily transferable to other languages. Students will create their own programs to solve complex problems, or to speed up tedious processes. An emphasis will be placed on creating programs for modeling biological systems, or analyzing data gathered in the Biotechnology program.

Biotechnology Cooperative Education 12
Course # bt405 Credits: 24
This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Design & Media Communications

In Design & Media Communications, artistic and technical skills are developed through the creation and presentation of graphic and multimedia projects. Students will become versed in principles of design such as color theory, composition, and illustration. They will learn the basics of page layout and design, typography, digital photography, video production, storyboarding, web design and communication with a client. They learn to take an idea from concept to preflight and understand the principles of prepress and outsourcing, as well as the practical aspects of the printing processes, silk screening, and various bindery equipment. Students design and produce communication products using the latest Adobe Creative Cloud software and Macintosh computer hardware, outputting files to a wide format printer, digital copier, vinyl cutter or silk screen. Integral to the program is a student-run design and copy center that trains students in customer service and business-related procedures.

Course Number	Name	Credit	Grade Level
dm101	Design & Media Communications Exploratory 9	1.0	Grade 9
dm103	Design & Media Communications 10	10.0	Grade 9
dm200	Design & Media Communications 10	16.0	Grade 10
dm201	Design & Media Communications Theory 10	4.0	Grade 10
dm300	Design & Media Communications 11	20.0	Grade 11
dm301	Design & Media Communications Theory 11	4.0	Grade 11
dm305	Design & Media Communications Cooperative Education 11	12.0	Grade 11
pmet301	CTAE Pathway: Communication & Career Essentials	2.0	Grade 11
pmet302	CTAE Pathway: Business Finance	2.0	Grade 11
dm400	Design & Media Communications 12	20.0	Grade 12
dm401	Design & Media Communications Theory 12	4.0	Grade 12
dm405	Design & Media Communications Cooperative Education 12	24.0	Grade 12
pmet401	CTAE Pathway: Civic Humanitarianism	2.0	Grade 12
pmet402	CTAE Pathway: Professional Portfolio Presentation	2.0	Grade 12

Articulated college credit agreement is pending with North Shore Community College - Danvers
Statewide articulation agreement is available for DVC.

Design & Media Communications Exploratory 9
Course # dm101 Credits: 1
This five-day cycle exploratory course introduces grade 9 students to Adobe Premiere and Adobe Photoshop as well as to the traditional design process. Students create an advertisement campaign for a product of their

choice through video editing, graphic design in Photoshop following the design steps, including research, storyboarding, sketching, producing and exporting. Students also create, print, and bind a memo pad.

Design & Media Communications 9
Course # dm103 Credits: 10
This semester-based course prepares grade 9 students for a multitude of employment opportunities in the visual communications fields of digital and traditional publishing methods. Students learn foundational design skills that are essential for the design industry, such as the design process, elements and principles of design, and an introduction to Adobe Software. Students demonstrate their understanding through projects using Adobe Photoshop, Adobe Illustrator, Adobe Premiere and Adobe InDesign as well as through painting, drawing, and practicing fine-art techniques.

Design & Media Communications 10
Course # dm200 Credits: 12
This full-year course expands upon the foundational design skills students were introduced to in grade 9. Students will design effective communications using the latest Adobe Creative Cloud software, working towards Adobe Photoshop certification by the end of the school year. Students will practice skills in photography, filming, video editing and graphic design. Students will also gain experience in the copy center that trains students in customer service and business-related procedures. Students will demonstrate learning through illustration projects, self-portraits, videos, photography and graphic design projects.

Design & Media Communications 10 Theory
Course # dm201 Credits: 4
This full-year, classroom-based course will focus on safety in a working production environment that includes OSHA standards, personal protective equipment, proper handling of chemicals, and ergonomics as well as other topics pertaining to working safety in a production environment, helping prepare students for their OSHA 10 hour card. In addition, students will focus on developing entry-level design skills through design and layout, color theory, and typography. Students will also prepare for the Adobe Certified Associate Certificate in InDesign and an option for Photoshop as well.

Design & Media Communications 11
Course # dm300 Credits: 12
This full-year course will focus on deeper conceptual development and communicating messages through media. Students will design effective communications using the latest Adobe Creative Cloud software, working towards Adobe Illustrator Certification by the end of the school year. Students will develop and refine their skills through projects such as the Adobe Illustrator Self-Portrait, short films, and PSA campaigns that will be an essential aspect of developing content creation skills.

Design & Media Communication Theory 11
Course # dm301 Credits: 4
This full-year, classroom-based course will help students design a web page based on their portfolio of work including computer graphics, illustrations, and printing projects. Students will practice interview skills and will focus on their employability skills. Students will also research job opportunities in their chosen area of Design and Media Communication.

Design & Media Communications Cooperative Education 11

Course # dm305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Design & Media Communications 12

Course # dm400 Credits: 20

This full-year course will focus on portfolio development. Students will design effective communications using the latest Adobe Creative Cloud software, working towards Adobe Certification in a program of their choice. In addition, students work on creating a portfolio website, portfolio book, concentration pieces, and overall projects that suit the industry students want to pursue upon graduation.

Design & Media Communication Theory 12

Course # dm401 Credits: 4

This full-year, classroom-based course will help students learn by designing a media communications project and create their own animation. Students will also learn videography by writing scripts and plans for a video project. Students will focus throughout on team-building skills and will continue to work on employability skills as part of career preparation.

Design & Media Communications Cooperative Education 12

Course # dm405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Engineering & Automation Technology

Engineering Technology & Automation Technology is a new Chapter 74 Career and Technical program (Fall 2018) for students who are interested in understanding the design processes and applying them with real-world experiences in robotics, CNC machining, and CAD. Students in this program will learn skills related to electrical, mechanical, and manufacturing engineering, including the components and process of a system, technical writing, blueprint reading and design, and project management. Students will develop a working knowledge of electrical engineering principles and the use of 3D modeling, laser and plasma cutting, precision metal, and basic welding methods.

Course Number	Name	Credit	Grade Level
eng101	Engineering Exploratory 9	1.0	Grade 9
eng103	Engineering Technology 9	10.0	Grade 9
eng200	Engineering Technology 10	16.0	Grade 10
eng201	Engineering Technology Theory 10	4.0	Grade 10
eng300	Engineering Technology 11	20.0	Grade 11
eng301	Engineering Technology Theory 11	4.0	Grade 11
en305	Engineering Technology Cooperative Education 11	12.0	Grade 11
pmet301	CTAE Pathway: Communication & Career Essentials	2.0	Grade 11
pmet302	CTAE Pathway: Business Finance	2.0	Grade 11
eng400	Engineering Technology 12	20.0	Grade 12
eng401	Engineering Technology Theory 12	4.0	Grade 12
eng405	Engineering Technology Cooperative Education 12	24.0	Grade 12
pmet401	CTAE Pathway: Civic Humanitarianism	2.0	Grade 12
pmet402	CTAE Pathway: Professional Portfolio Presentation	2.0	Grade 12

Articulated college credit agreement pending with North Shore Community College - Danvers

Statewide articulation agreement is available for Engineering and Automation Technology.

Engineering Exploratory 9

Course # eng101 Credits: 1

This five-day cycle exploratory course provides grade 9 students with an introduction to the Engineering Design Process and engineering projects. Major areas of focus are on how to transform an idea to a tangible design. Students demonstrate their learning through a series of engineering projects and identify the design process steps as they transition through each project to completion.

Engineering Technology 9

Course # eng103 Credits: 10

This semester-based course emphasizes the role of engineering in modern-day society. The major focus of study is on helping students to understand what is behind the engineering design process and to reinforce this understanding through the various lessons and projects that students will complete. Students will begin by focusing on hand sketching an engineering concept and then applying that technique to brainstorming and developing both the criteria and constraints to a particular design. These steps are then repeated on mini-projects to strengthen student understanding of how to solve an open-ended problem. The skills developed in this course will foster the understanding necessary for continued growth in the engineering program.

Engineering Technology 10

Course # eng200 Credits: 16

This full-year course provides students with an overview of engineering design and manufacturing. Major units of study include engineering drawings, computer-aided design (CAD), and computer-aided manufacturing. Students demonstrate their learning through developing three-dimensional CAD models and applying these to the manufacturing process. Students will learn to develop prototypes using 3-D printers, lasers, and computer numerically-controlled milling machines and lathes and other fabrication techniques.

Engineering Technology Theory 10

Course # eng 201 Credits: 4

This full-year, classroom-based course embeds instruction in the theory behind the engineering projects students develop. The focus is on the theories behind computer-aided design (CAD) and in the equipment used to develop prototypes. Developing sketch constraints to match design intent, rules of dimensioning, and which strategy to incorporate when developing a three-dimensional model are demonstrated for CAD. Manufacturing theory involves the functionality of the different manufacturing processes, G-code, and the related math needed to form their prototypes. The connection between fit, form, and function from the development of a design to the execution of the prototype are emphasized.

Engineering Technology 11

Course # eng300 Credits: 20

This full-year course instructs students in two major engineering disciplines; mechanical, and electrical engineering. The mechanical engineering focuses on the principles of engineering technology, and introduces topics on stress and strain, force distribution, factor of safety and failure analysis using finite element analysis. The electrical engineering focuses on circuit theory, combinational and sequential logic, and programming. Students identify the theory behind engineering principles and enforce that learning through interactive projects.

Engineering Theory 11

Course # eng301 Credits: 4

This full-year, classroom-based course will explore electronic circuits that are used to process and control digital signals. The focus of the course is to expose students to the process of combinational and sequential logic design, teamwork, communication methods, engineering and technical standards and documentation. Students will apply digital concepts to control systems and through programmable logic boards and robotic automation.

Engineering Cooperative Education 11

Course # en305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Engineering Technology 12

Course # eng400 Credits: 20

The full-year course is designed to help students fine tune their Engineering Technology experience by having them pursue their own personal interest in the area of engineering. The primary focus will be product development and design. Students will follow the Engineering Design Process, working from idea generation through the prototyping and testing processes. Seniors will have full access to engineering and manufacturing equipment to assist in the development of their design projects.

Engineering Theory 12

Course # eng401 Credits: 4

This full-year, classroom-based course will explore engineering design by creating computer-aided drawings (CAD) using AutoCAD and SolidWorks, and acquiring programming language skills. Students will also study the theory behind basic machine principles and programming related to the operation of the CNC mill and lathe.

Engineering Cooperative Education 12

Course # en405 Credits: 24

This full-year course provides qualified students with a career ~~te~~chnical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Information Technology Services

The Information Technology Services (ITS) program delivers a comprehensive learning experience to help students develop Information Technology skills in areas such as computer hardware, software, networking, Linux, cybersecurity, computer science, and data science for entry-level career opportunities, continuing education, and globally recognized industry certifications. In both technical and related coursework students will actively learn in a hands-on environment the fundamentals of computer and networking technologies, including cybersecurity and key data science concepts such as data acquisition, preparation, analysis, and visualization in order to meet the demands found in the fast growing industry of Information and Communications Technology (ICT). In addition to learning a broad range of technical content, the ITS program also helps students build 21st century skills such as collaboration and problem solving by encouraging practical application of knowledge through hands-on activities, presentations, and network simulations.

The ITS program is a Cisco Networking Academy, CompTIA Academy, and VMWare IT Academy as well as an alumni TEALS computer science partner. Using these industry partnerships, students will be exposed to leading information technology certification providers and world class curriculum. The ITS program prepares students for certification exams by Certiport, CompTIA, and Cisco.

Course Number	Name	Credit	Grade Level
its101	Information Technology Services Exploratory 9	1.0	Grade 9
its103	Information Technology Services 9	10.0	Grade 9
its200	*IT Essentials 10* *Discontinued eff. SY 24-25*	*16.0*	*Grade 10*
its210	Networking Essentials 10	16.0	Grade 10
its201	Computer Science Theory 10 Formerly “Information Science Theory 10”	4.0	Grade 10
its300	*Introduction to Networks and Cyber Security 11* *Discontinued eff. SY 24-25*	*20.0*	*Grade 11*
its310	Advanced Networking and Cloud Essentials 11	12.0	Grade 11
its311	Data Science Essentials 11	8.0	Grade 11
its301	Applied Computer Science: Data Collection and Analysis 11	4.0	Grade 11
its305	ITS Cooperative Education 11	12.0	Grade 11
pmet301	CTAE Pathway: Communication & Career Essentials	2.0	Grade 11
pmet302	CTAE Pathway: Business Finance	2.0	Grade 11
its400	*Routing and Switching Essentials 12* *Discontinued eff. SY 24-25*	*16.0*	*Grade 12*
its410	Cybersecurity Essentials 12	12.0	Grade 12
its401	*Linux Essentials 12* *Discontinued eff. SY 24-25*	*4.0*	*Grade 12*

its411	Applied Data Science 12	8.0	Grade 12
its407	Applied Computer Science: Robotics 12	4.0	Grade 12
its405	ITS Cooperative Education 12	24.0	Grade 12
pmet401	CTAE Pathway: Civic Humanitarianism	2.0	Grade 12
pmet402	CTAE Pathway: Professional Portfolio Presentation	2.0	Grade 12

Articulated college credit agreement in place with North Shore Community College - Danvers
Statewide articulation agreement in place for Information Technology Services

Information Technology Services Exploratory 9
Course # its101 Credits: 1
This five-day cycle exploratory course introduces grade 9 students to the field of information technology through a variety of hands-on activities, including personal computer hardware, Microsoft Windows, open-source operating systems, fundamental networking concepts, and HTML website design. Safety considerations, employability skills, and career opportunities are highlighted throughout the cycle.

Information Technology Services 9
Course # its103 Credits: 10
This semester-based course focuses on the skills required to support today's digital world and is a helpful on-ramp for technical career pathways. Students will learn the fundamental knowledge and skills required to identify and explain the basics of computer hardware, operating systems, IT infrastructure, software development, database use, and security concerns. This course aligns to the CompTIA ITF+ certification exam.

IT Essentials 10 ***Effective SY23-24, this course was discontinued***
Course # its200 *Credits: 16*
This full-year course introduces students to the fundamentals of computer hardware and software, mobile devices, security and networking concepts, and the responsibilities of an IT professional. Mobile devices, Linux, and client-side virtualization, as well as expanded information about Microsoft Windows operating systems, security, networking, and troubleshooting are covered.

Networking Essentials 10
Course # its210 Credits: 16
This full-year course introduces students to the fundamentals of networking. Networking is at the heart of the digital transformation. The network is essential to many business functions today, including business critical data and operations, cybersecurity, and so much more. A wide variety of career paths rely on the network -- so it's important to understand what the network can do, how it operates, and how to protect it. Networking Essentials is made up of four major curriculum units all offering a digital badge from Cisco's Networking Academy.
In the first unit, Networking Basics, students will learn the foundation of networking and network devices, media, and protocols. Students will observe data flowing through a network and configure devices to

connect to networks. Finally, students will learn how to use different network applications and protocols to accomplish networking tasks.

The second unit, Network Devices and Initial Configuration, covers the essentials of network devices and how to configure them. Students will learn the characteristics and benefits of Cloud and Virtualization technologies, and explore how to provide Internet Protocol (IP) addresses to devices both manually and automatically. Using this knowledge, students will calculate an IP addressing scheme, configure Cisco devices to create a small network, and test for connectivity issues.

The third unit, Network Addressing and Basic Troubleshooting, explores key concepts for Internet Protocol (IP) addressing and basic network troubleshooting. Students learn about the physical, data link, and network layers and how they work together to provide end-to-end connectivity. Understand how IP addresses are calculated and assigned. Then, students will practice troubleshooting skills to keep a network up and running.

In the final unit, Network Support and Security, students will begin to learn how to support endpoints, networks, and users by diagnosing problems and documenting them. Students will examine topics related to supporting users as a member of a help desk team and move on to an in-depth view of troubleshooting networks and endpoints as well as supporting users and networks remotely.

Computer Science Theory 10 (Formerly" Information Science Theory 10")
Course # its201 Credits: 4

This full-year, classroom-based course embeds a variety of basic computational thinking and programming concepts through a project-based learning environment. Students learn to design, write, debug, and run programs encoded in the Python language. Students demonstrate their learning by completing small projects and text-based games.

Introduction to Networks and Cyber Security 11 ***Effective SY23-24, this course was discontinued***
Course # its300 *Credits: 20*

This full-year course introduces students to a basic understanding of how networks operate and how to build simple local area networks (LAN), perform basic configurations for routers and switches, and implement the TCP/IP protocol stack across networks. Major units of study include network architecture, structure, functions and components of the Internet and other foundational OSI and TCP/IP protocol concepts.

Advanced Networking and Cloud Essentials 11 ***New Course Effective SY24-25***
Course # its310 Credits: 12

This full-year course introduces students to advanced switching technologies and router operations that support small-to-medium business networks as well as virtualization and cloud concepts, architecture and security. Students will configure VLANs and Inter-VLAN routing, EtherChannel, and first-hop redundancy protocols. Students will also understand how individuals and businesses benefit from virtualization and understand cloud concepts such as types of cloud computing and popular cloud deployment models.

Data Science Essentials 11 ***New Course effective SY24-25***
Course #its311 Credits: 8

This data analytics essentials course teaches the fundamental tools of a data analyst and of the field of data science in general. You will learn to transform, organize, and visualize data with spreadsheet tools. You will also learn how to query data from a relational database and how to improve your data presentations using powerful data visualization tools.

Applied Computer Science: Data Collection and Analysis 11
Course # its301 Credits: 4
This full-year, classroom-based course is an extension of the programming knowledge students learn as part of their IT curriculum. Students take their understanding of programming in Python, and use it to dive deeper into applications involving data collection and analysis. The primary programming skills covered include how to write and read from files in Python and the matplotlib python library as a tool for data analysis and graphing. Students will also learn about microcontrollers, specifically Raspberry Pis, and use these to build sensors to collect a variety of data to be analyzed. Students will learn the basics of electronics and circuitry design to accomplish this goal.

ITS Cooperative Education 11
Course # its305 Credits: 12
This semester-based course provides qualified students with a career vocational technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Routing and Switching Essentials 12 ***Effective SY23-24, this course was discontinued***
Course # its400 *Credits: 16*
This full-year course begins with the network architecture, components, and operations of routers and switches in small networks as an introduction to wireless local area networks (WLANs) and security concepts. Students learn how to configure and troubleshoot routers and switches for advanced functionality using security best practices and resolve common issues using protocols in both IPv4 and IPv6 networks.

Cybersecurity Essentials 12 ***New Course effective SY24-25***
Course # its410 Credits: 12

This full-year course introduces students to the fundamentals of Cybersecurity. It is made up of three major curriculum units, all offering a digital badge from Cisco's Networking Academy.
The first unit, Endpoint Security, introduces students to important foundational concepts in cybersecurity such as common attacks and attackers, threats, vulnerabilities, and risks, current trends in cybersecurity, network protocol and service vulnerabilities, Windows and Linux endpoints, and threat mitigation and defense. By the end of the unit, students can identify common threats and mitigation techniques, understand the concepts of threat, vulnerability, and risk, and gain experience analyzing common attacks, endpoint operation and security, and malware.
The second unit, Network Defense introduces important foundational concepts in cybersecurity such as system and network defense, access control, firewalls, cloud security, applications of cryptography, network

security data, and evaluating security alerts. By the end of the unit, students will implement defensive measures and access control, configure a simulated firewall, use different types of network data, and evaluate security alerts.
In the third unit of Cybersecurity Essentials, Cyber Threat Management, students are introduced to important foundational concepts in cybersecurity such as ethics and governance, network security testing, threat intelligence, endpoint vulnerability assessment, risk management, and post incident response. By the end of the unit, students will be prepared to participate in a wide range of threat management and incident response activities as a member of a cybersecurity operations team.

ITS Cooperative Education 11
Course # its305 Credits: 12
This semester-based course provides qualified students with a career vocational technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Linux Essentials 12 ***Effective SY23-24, this course was discontinued***
Course # its401 *Credits: 4*
This full-year course will expand student knowledge on Linux, terminal window commands, fundamental concepts of the operating system and its tools, and continue to build foundational knowledge of the open-source environment. Later in the year, students will work with Windows Server in a virtualized environment. Tasks include building a Windows Domain, DHCP service, deploying the Domain Name System (DNS) role on a Windows Server, installing and configuring a Domain Controller (DC), joining a Windows client to a Windows Domain, creating users, groups and Organizational Units (OUs) with Active Directory Users & Computers, Group Policy, and writing Powershell scripts.

Applied Data Science 12 ***New Course effective SY24-25***
Course #its411 Credits:8
This data analytics course builds on the foundations built in "Data Science Essentials" and provides students the opportunity to explore advanced topics in data science and analytics through project-based learning modules with a focus on community-based projects. This course focuses on real-world applications of data science principles (analysis, data acquisition, data presentation, and cloud systems automation).

ITS Cooperative Education 12
Course # its405 Credits: 24
This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Metal Fabrication & Joining Technologies*

The Metal Fabrication & Joining Technologies program offers a variety of opportunities for students to access real world experience in addition to the ability to graduate with certifications sought by regional employers. The curriculum offers practical skills in metal fabrication, layout, and welding with theory and welding practice. A wide range of skills surrounding welding and sheet metal are presented. Students are trained in many forms of welding using up-to-date equipment. They include; Oxyacetylene Cutting and Welding (OAC/W), Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Gas Tungsten Arc Welding (GTAW), Resistance Welding (spot welding), as well as, some soldering (silver soldering), and Arc Gouging and Cutting (air arc).

Course Number	Name	Credit	Grade Level
mf101	Metal Fabrication & Joining Technologies Exploratory 9	1.0	Grade 9
mf103	Metal Fabrication & Joining Technologies Fabrication Services 9	10.0	Grade 9

**Pending MA DESE approval anticipated SY24*

Metal Fabrication & Joining Technologies Exploratory 9
Course # mf101 Credits: 1

This five-day cycle exploratory course introduces grade 9 students to hands-on experience making a project under direct supervision. The primary focus of exploratory is to instill safety and to learn an array of welding skills, sheet metal skills, the proper use of hand tools, and how to properly operate fabrication equipment.

Metal Fabrication & Joining Technologies Fabrication Services 9
Course # mf103 Credits: 10

This semester-based course introduces students with the basic knowledge and skill training necessary for continued success in the Welding program. Students receive instruction in career opportunities, shop operational procedures, personal and shop safety, tool usage, basic operation of oxy-acetylene welding processes, shielded metal arc welding (SMAW), simple fabrication operations, and use of hand and power tools. Students receive instruction through a combination of presentations, demonstrations and hands-on performance.

SERVICES CLUSTER

Automotive Collision Repair & Refinishing, Automotive Technology, Cosmetology, Culinary Arts & Hospitality, Marketing

CTAE PATHWAY COURSES

CTAE Pathway courses are cluster-based courses scheduled during the academic cycle to meet the needs of Strands 1, 3, 4, 5, 6 of the *Vocational Technical Education Frameworks* under Chapter 74 Regulations (CMR 603).

Services Leadership I - Grade 11 Pathway
Course # pcs301 Credits: 4
This full-year, introductory business course provides students with an overview and understanding of core leadership themes that are necessary for students in the various Services Cluster CTAE areas of Automotive Collision Repair & Refinishing, Automotive Technology, Cosmetology, and Culinary Arts & Hospitality*. Quarterly topics will include Business Ethics Through the Lens of Diversity, Equity, and Inclusion; Business

Etiquette; Leadership Skills and Styles; and, Collaboration and Creative Problem Solving. Students will learn through a balanced approach of theory and application with attention to the knowledge and skills necessary for success in any service-related profession.

Services Leadership II - Grade 12 Pathway

Course # pcs401 Credits: 4

This full-year course explores trends in corporate social responsibility and the impact on employees and customers. The core vision that inspires a good corporate citizen is that of being guided by strong moral and ethical standards in interactions with customers, shareholders, and employees. Key topics will examine responsible business practices; environmental impact of business operations; and carefully balancing the company needs with those of the community. Students will work collaboratively to develop a capstone project involving a community impact event that encompasses all their pathway learning and culminates in a school-wide community service project.

*Beginning with the Class of 2025, Culinary Arts and Hospitality students may elect to participate in either the Services Cluster Pathway Courses or the Integrated English & Agricultural Science Pathway Courses (see Course# 1350 and #1450 for more information).

Automotive Collision Repair & Refinishing

Automotive Collision Repair & Refinishing has a curriculum based on Massachusetts *Vocational Technical Educational Frameworks* and hands-on experience working on a wide range of vehicles. Using the latest technology in damage assessment, materials, and electronics, students learn techniques to repair vehicles with collision or cosmetic damage. Students gain experience in all areas, including welding, metal straightening, frame repair, refinishing, plastic repair, computerized paint-mixing, mechanical system repairs, electrical repairs, and damage estimating for insurance requirements.

Course Number	Name	Credit	Grade Level
*cr101**	*Auto Collision Repair & Refinishing Exploratory 9*	*1.0*	*Grade 9*
*cr103**	*Auto Collision Repair & Refinishing 9*	*10.0*	*Grade 9*
*cr200**	*Automotive Collision Repair & Refinishing 10*	*16.0*	*Grade 10*
*cr201**	*Auto Collision Repair & Refinishing 10 Theory 10*	*4.0*	*Grade 10*
cr300	Automotive Collision Repair & Refinishing 11	20.0	Grade 11
cr301	Auto Collision Repair & Refinishing Theory 11	4.0	Grade 11
cr305	Auto Collision Repair & Refinishing Cooperative Education 11	12.0	Grade 11
pcs301	CTAE Pathway: Services Leadership I	4.0	Grade 11
cr400	Automotive Collision Repair & Refinishing 12	20.0	Grade 12
cr401	Auto Collision Repair & Refinishing 11 Theory	4.0	Grade 12
cr405	Auto Collision Repair & Refinishing Cooperative Education 12	24.0	Grade 12
pcs401	CTAE Pathway: Services Leadership II	4.0	Grade 12

These courses have been discontinued : cr101, cr103, cr200, cr201

Automotive Collision Repair & Refinishing Exploratory 9 ***Effective SY23-24, this course was discontinued***
Course # cr101 *Credit: 1*
This five-day cycle exploratory course introduces grade 9 students to many different career opportunities in the Collision Repair and Refinishing industry. These consist of auto damage appraising, non-structural technicians, structural technicians, refinishing technicians, detailers, custom refinishers and paintless, and dent-repair technicians. Students will learn about various vehicle construction methods. Students will use numerous hand tools to disassemble and reassemble a vehicle and repair dents with body filler to the same contour as the manufacturer. Students will complete their cycle applying primer and a top coat to restore the factory finish.

Automotive Collision Repair and Refinishing 9 ***Effective SY23-24, this course was discontinued***

Course # cr103 *Credits: 10*

This semester-based course introduces students to the latest procedures of Automotive Collision Repair, using the most latest technology and equipment. Students will learn how to repair motor vehicles with collision or cosmetic damage and be introduced to all areas of the industry, including welding, metal straightening, frame repair, refinishing, plastic repair, computerized paint mixing, mechanical repairs, electrical repairs, and damage estimating. Safety, proper tool usage, and product application will also be emphasized.

Automotive Collision Repair & Refinishing 10 ***Effective SY24-25, this course was discontinued***

Course # cr200 *Credits: 16*

This full-year course continues to develop student skills using the latest procedures, technology, and equipment. Students will continue to practice general repair and replacement procedures for damaged structural parts and collision damage. They will also continue to refine their skills in welding, metal straightening, frame repair, refinishing, plastic repair, computerized paint mixing, mechanical repairs, electrical repairs, and damage estimating.

Automotive Collision Repair & Refinishing Theory 10 ***Effective SY24-25, this course was discontinued***

Course # cr201 *Credits: 4*

This full-year, classroom-based course includes classroom and laboratory experiences that integrate technical application with academic theory. Students will be introduced to the theory of autobody fundamentals, painting and refinishing, structural and non-structural damage repair, mechanical and electrical component repair or replacement, and common industry practices.

Automotive Collision Repair & Refinishing 11

Course # cr300 Credits: 20

The full-year course offers students expanded training in the roughing and shaping procedures on automotive sheet metal necessary to make satisfactory body repairs. Emphasis will be on the alignment of component parts such as doors, hood, front-end assemblies, and deck lids. Students will continue to receive instruction in metal straightening, welding, panel replacement, refinishing, plastic repair, mechanical repairs, computerized paint mixing and damage estimating. The I-CAR Professional Development Program is introduced, and students can begin to earn various I-CAR certifications prior to graduation.

Automotive Collision Repair & Refinishing Theory 11

Course # cr301 Credits: 4

This full-year, classroom-based course helps students understand the science and related theory behind automotive collision specific safety practices, I-car training, fasteners, measuring procedures, hand tools, power tools, analyzing structural damage, and cutting and welding.

Automotive Collision Repair & Refinishing Cooperative Education 11

Course # cr305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students,

and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Automotive Collision Repair & Refinishing 12

Course # cr400 Credits: 20

The full-year course provides students with a continuation of general repair and replacement procedures for damaged structural parts and collision damage. Students refine their skill development in multi-stage refinishing techniques along with continued work in identifying problems and solutions in color matching and partial panel refinishing. Students will also learn the process of estimating. Students can continue in the I-CAR Professional Development Program and earn various I-CAR certifications prior to graduation.

Automotive Collision Repair & Refinishing Theory 12

Course # cr401 Credits: 4

This full-year, classroom-based course helps students understand the science and related theory behind refinishing procedures, refinishing equipment and refinishing materials. Students will also learn the key differences between solvent based paints as well as waterborne paints.

Automotive Collision Repair & Refinishing Cooperative Education 12

Course # cr405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Automotive Technology

Automotive Technology provides students with comprehensive training and hands-on experience working with automobiles that are complex systems, and which combine computer technology and integrated systems that include gasoline, hybrid and battery-powered engines, electronic braking systems and automated support systems for drivers. Students in the Automotive Technology program learn to diagnose automotive system problems, to repair them, and to handle general maintenance on automobiles of all kinds. The program focuses on the latest techniques and diagnostic procedures used in the industry. Students work on vehicles donated by automobile manufacturers and private citizens, as well as on automobiles needing repairs from customers within the community.

Course Number	Name	Credit	Grade Level
at101	Auto Technology Exploratory 9	1.0	Grade 9
at103	Automotive Technology 9	10.0	Grade 9
at200	Automotive Technology 10	16.0	Grade 10
at201	Automotive Technology Theory 10	4.0	Grade 10
at300	Automotive Technology 11	20.0	Grade 11
at301	Automotive Technology Theory 11	4.0	Grade 11
at305	Automotive Technology Cooperative Education 11	12.0	Grade 11
pcs301	CTAE Pathway: Services Leadership I	4.0	Grade 11
at400	Automotive Technology 12	20.0	Grade 12
at401	Automotive Technology Theory 12	4.0	Grade 12
at405	Automotive Technology Cooperative Education 12	24.0	Grade 12
pcs401	CTAE Pathway: Services Leadership II	4.0	Grade 12

Statewide articulation agreement in place for Automotive Technology

Automotive Technology Exploratory 9
Course # at101 Credit: 1
This five-day cycle exploratory course introduces grade 9 students to the basics of automotive repair and maintenance. Students learn about safety precautions and procedures, hand tool, equipment, and power tool use. Students are provided with a general overview of vehicle systems, service information systems, and general services, including oil changes, safety inspection, fuse testing and replacement, battery testing and replacement, and tire rotation, balance, and repair. In addition to this basic technical training, students will be introduced to the many career paths in the automotive industry as well as post-secondary opportunities in the field.

Automotive Technology Grade 9
Course # at103 Credits: 10
This semester-based course provides students with the basic knowledge and skills related to automotive

repairs and maintenance. After reviewing safety precautions and procedures, the proper use of equipment and hand and power tools, students will learn more about vehicle systems, service information systems, and preventative automotive services. Instructional approaches will include presentations, software, instructor demonstrations, and hands-on practice using vehicles and equipment.

Automotive Technology Grade 10
Course # at200 Credits: 16
This full-year course provides general knowledge of diagnosing and repair of engine mechanical systems, including mechanical diagnostic testing; cylinder block measurement, service and repair; cylinder head measurement, service, and repair; valve timing service, lubrication system service and repair; and cooling system service and repair. During Semester 2 students will acquire a general knowledge of brake systems diagnosis and repair, including disk brake service and repair; drum brake service and repair; hydraulic system service and repair; power assist service and repair; and anti-lock system fundamentals and service.

Automotive Technology Theory 10
Course # at201 Credits: 4
This full-year, classroom-based course provides students with the technical knowledge necessary for continued success in the Automotive Technology program. Students receive instruction in steering and suspension geometry; performance of pre-alignment checks and 4-wheel alignment; tire construction and service; fundamentals of electrical principles; use of digital multimeters, Ohm's law; basic circuit design, testing, and repair of batteries; starters, alternators and their related circuits; and introduction to hybrid technology. Students will also learn braking system fundamentals, including Pascal's law and how it relates to force/pressure, braking valves, and electronic brake controls. Instructional delivery includes interactive multimedia presentations, reading and writing assignments, computer-based instruction, and classroom demonstrations.

Automotive Technology 11
Course # at300 Credits: 20
This full-year course focuses during Quarter 1 on providing students with a general knowledge of diagnosis and repair of steering and suspension systems. This includes linkage steering systems, rack-and-pinion steering systems, power assist steering, steering column service, suspension design, Macpherson Struts, coil springs, leaf springs, torsion bars, air and electronic control suspensions, bearing and spindle service, tires, wheels and vehicle alignment. The remainder of the school year, student learning shifts to a general knowledge of diagnosis and repair of electrical and electronic systems, including general electrical diagnosis using electrical test equipment; battery, starter and charging systems; electronic and body accessories systems; and computer systems general diagnosis.

Automotive Technology Theory 11
Course # at301 Credits: 4
This full-year, classroom-based course will provide students with a theoretical overview of steering and suspension systems. Topics include linkage steering, rack-and-pinion steering, power assist steering, steering column service, suspension design, Macpherson Struts, coil springs, leaf springs, torsion bars, air and electronic control suspensions, bearing and spindle service, tires, wheels, and vehicle alignment.

Students will also explore the function of electronic systems: electrical test equipment, battery, starters and charging systems, electronic and body accessories systems, and computer systems.

Automotive Technology Cooperative Education 11

Course # at305 Credits: 12

This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Automotive Technology 12

Course # at400 Credits: 20

This full-year course focuses for the first three quarters of the school year on general diagnosis and repair of engine performance and control systems, including ignition system repair and service; fuel delivery system service and repair; emission system service and repair; and computer control system diagnosis and repair. In the final quarter, students will learn about the general diagnosis and repair of heating ventilation and air conditioning systems, including refrigerant system service and repair; compressor service and repair; air distribution service and repair; electronic climate control systems service and repair; and environmental concerns and regulation. Throughout the school year, students will also perform reinforcement work for previous technical courses that were completed.

Automotive Technology Theory 12

Course # at401 Credits: 4

This full-year, classroom-based course provides students with systems overview of the diagnosis and repair of engine performance and control systems. Systems topics explored include ignition, fuel delivery, emissions, computer control, heating, ventilation, and air conditioning, including refrigerants, compressor service, air distribution, climate control and environmental regulations.

Automotive Technology Cooperative Education 12

Course # at405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Cosmetology

Students in Cosmetology will develop the creative and technical skills required to be successful in the field which encompasses a broad range of services and customer-focused products. Students will learn how to perform all aspects of the program including hair, skin, nail care and personal responsibility, as well as the professional work ethic needed to secure employment in the industry. Hours spent learning and practicing these skills are eligible to be recorded with the state (towards a Massachusetts Cosmetology Operator's License requirements) once a student turns 16 years of age. Upon the completion of 1000 theory and practical hours, each student will have the opportunity to take the State Board Licensing Exam and receive an operator's license to become a contributing professional in the industry. Each graduate of the Cosmetology program has the opportunity to receive a high school diploma, a certificate of completion, and be able to sit for the State Board License Exam.

Course Number	Name	Credit	Grade Level
co101	Cosmetology Exploratory 9	1.0	Grade 9
co103	Cosmetology 9	10.0	Grade 9
co200	Cosmetology 10	16.0	Grade 10
co201	Cosmetology Theory 10	4.0	Grade 10
co300	Cosmetology 11	20.0	Grade 11
co301	Cosmetology Theory 11	4.0	Grade 11
co305	Cosmetology Cooperative Education 11	12.0	Grade 11
pcs301	CTAE Pathway: Services Leadership I	4.0	Grade 11
co400	Cosmetology 12	20.0	Grade 12
co401	Cosmetology Theory 12	4.0	Grade 12
co405	Cosmetology Cooperative Education 12	24.0	Grade 12
pcs401	CTAE Pathway: Services Leadership II	4.0	Grade 12

NOTE: Cosmetology Program students are required to take the MA State Board of Cosmetology Licensing Exam

Cosmetology Exploratory 9

Course # co101 Credit: 1

This five-day cycle exploratory course introduces grade 9 students to the basic knowledge and skill level used in the cosmetology field today. Students receive instruction in infection control, all aspects of the program including hair care, skin care, nail care, and personal responsibility as well as the professional work ethics needed to secure employment in the outside industry. Students receive instruction through a combination of presentations, demonstrations, and hands-on performances.

Cosmetology 9

Course # co103 Credits: 10

This semester-based course provides students with the basic knowledge and skill level used in the cosmetology field today. Students will receive instruction in infection control through all aspects of the

program including hair care, skin care, nail care, and personal responsibility. Another focus will be on the professional work ethics needed to secure employment in the outside industry. Students will receive instruction through a combination of presentations, demonstrations, and hands-on performances.

Cosmetology 10
Course # co200 Credits: 16
This full-year course is designed to continue developing student skills in equipment safety, infection control, and sanitation, along with customer service and communication skills in the Cosmetology program. Practical work will include the following: scalp care, shampooing and treatments, facials, day, evening, and fantasy make-up application, hair removal, advanced hairstyling, up-styling, advanced perm wrapping, and artificial nails review.

Cosmetology Theory 10
Course # co201 Credits: 4
This full-year, classroom-based course is designed to develop student comprehension of basic cosmetology theories and technical instruction. Students receive instruction on properties of the hair and scalp, principles of hair design, anatomy and physiology, skin structure and disorders, hair removal, skin care, make-up, chemistry and electricity, and haircutting. Instruction includes demonstrations, hands-on activities, writing assignments, weekly vocabulary and projects.

Cosmetology 11
Course # co300 Credits: 20
This full-year course will provide students with an opportunity to achieve proficiency in their knowledge and technical skills in the Cosmetology program. Students will receive advanced levels of instruction in skin care, make-up application, nail care techniques, haircutting, advanced hairstyling, permanent waving, chemical relaxing and keratin smoothing treatments, Ethnic hair care, hair removal, hair coloring, safe chemical use, as well as sanitation and disinfection practices. These skills and their outcomes can become part of students' comprehensive portfolio projects. Students can meet the State Board of Cosmetology hourly requirements through their work in "Salon365" that is open to the public.

Cosmetology Theory 11
Course # co301 Credits: 4
This full-year, classroom-based course is intended to help students develop the ability to analyze cosmetology by demonstrating an understanding of disinfectants, skin care, hair color, nail care, artificial hair enhancements, and professional styling products. Students will continue to use online software with tests, reviews and comprehensive reports of their progress to prepare for the licensing exam.

Cosmetology Cooperative Education 12
Course # co405 Credits: 24
This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Cosmetology 12

Course # co400 Credits: 20

This full-year course provides students with instruction in all aspects of running a full service salon or spa where they will continue to work on mastering prior tasks as well as learning new advanced or trending techniques. Students can meet the State Board of Cosmetology hourly requirements through their work in "Salon365" that is open to the public. Qualified seniors who are in good academic and career technical standing and successfully passed the State Board exam, can participate in our Cooperative Education program.

Cosmetology Theory 12

Course # co401 Credits: 4

This full-year, classroom-based course helps students continue to explore all topics related to Cosmetology from advanced styling, hair coloring, chemical texture services, anatomy, histology, job interviews and salon management. This will allow students when they have completed the mandatory hours to take the required State Board Examination to qualify for their Cosmetology license.

Cosmetology Cooperative Education 12

Course # co405 Credits: 24

This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Culinary Arts & Hospitality

The Culinary Arts Professional Certification Program provides students with experience in the foodservice, culinary arts, and baking industries. This program simulates a live working laboratory (i.e., restaurant, commercial bake shop, professional table service and front-of-the-house management, banquet and catering services). Students become knowledgeable and proficient with industry standards, safety, and quality workmanship. Students follow Core Curriculum based on the *Massachusetts Vocational Technical Educational Frameworks*.

Course Number	Name	Credit	Grade Level
cu101	Culinary Arts Exploratory 9	1.0	Grade 9
cu103	Culinary Arts 9	10.0	Grade 9
cu202	Baking & Pastry Arts 10	5.0	Grade 10
cu203	Culinary Production 10	5.0	Grade 10
cu204	Culinary Service Line 10	5.0	Grade 10
cu206	Hospitality 10	5.0	Grade 10
cu302	Baking & Pastry Arts 11	5.0	Grade 11
cu303	Culinary Production 11	5.0	Grade 11
cu304	Culinary Service Line 11	5.0	Grade 11
cu306	Hospitality 11	5.0	Grade 11
cu305	Culinary Arts Cooperative Education 11	12.0	Grade 11
cu301	Culinary Arts Theory 11	4.0	Grade 11
pcs301	CTAE Pathway: Services Leadership I	4.0	Grade 11
cu402	Baking & Pastry Arts 12	5.0	Grade 12
cu403	Culinary Production 12	5.0	Grade 12
cu404	Culinary Service Line 12	5.0	Grade 12
cu406	Hospitality 12	5.0	Grade 12
cu405	Culinary Arts Cooperative Education 12	24.0	Grade 12
cu401	Culinary Arts Theory 12	4.0	Grade 12
pcs401	CTAE Pathway: Services Leadership II	4.0	Grade 12

Articulated Credit Agreement with Culinary Institute of America
Articulated Credit Agreement with Johnson & Wales University
Articulated Credit Agreement with New England Culinary Institute
Statewide articulation agreement is available for Culinary Arts.

Culinary Arts Exploratory 9

Course # cu101 Credit: 1

This five-day cycle course introduces 9th grade students to the food and beverage industry from four vantage points: kitchen, restaurant, cafeteria and bake lab. The student spends time in each area learning hands-on applications. The student is introduced to safety, sanitation, personal hygiene, table settings, order taking, baking and the science behind ingredients, and basic knife skills. Instruction utilizing demonstrations, hands-on performance assessment, and written tests and quizzes are used to help determine the student's potential success in the food and beverage industry.

Culinary Arts 9

Course # cu103 Credits: 10

This semester-based course will provide students with an introduction to and development of their basic knowledge and skills in the Culinary Arts program. Students will receive introductory instruction in baking and pastry, hospitality and customer service, culinary production and service line. Students will be introduced to the following: frying, salads, sandwiches, vegetable preparation, cookies, brownies, pies and cake-making, institutional preparation and cooking, weights and measurements, order taking, point-of-sale system, restaurant service, and sanitation management.

Baking & Pastry 10

Course # cu202 Credits: 5

This quarter-based course prepares students with the knowledge and skill competency in the areas of artisan bread making, cookies, cakes, pastries, and plated desserts. This program simulates a live working laboratory as a commercial bakery that services The Maple Street Bistro, The Maple Street Bakery and The Eatery at Essex. A focus will be on helping students become more knowledgeable and proficient with industry standards, safety, and quality workmanship.

Culinary Arts Production 10

Course # cu203 Credits: 5

This quarter-based course provides students with a deeper understanding of skills necessary to safely and properly use industrial kitchen equipment, learn basic knife skills, learn measurements, how to read a recipe, and professionalism. Major units of study include butchery, stock making, soups, salads, dressings, sandwiches, international cuisines, customer service, vegetable fabrication, inventory management, and food safety. Students will demonstrate their learning through hands-on application, demonstrations, videos, quizzes, and readings.

Culinary Arts Service Line 10

Course # cu204 Credits: 5

This quarter-based course provides students with the culinary arts service line where they learn the flow of restaurant service in real time. Students prepare all the food needed for our quarterly menu and learn a variety of cooking methods and techniques required for success in the industry. The Maple Street Bistro is open to paying customers on a daily basis and students will be given an opportunity to apply skills learned throughout their tenure in the Culinary Arts program. Students will work in real-time stations, including garde manger, fry, grill, saute, sandwich, stone-fire oven, sous chef, and expediter. Through these stations, students will also reinforce necessary learning standards for the culinary arts industry, including health and

safety in food service, proper sanitation knowledge, basic fundamentals of food service, fundamentals of menu planning, ordering, receiving, storage of food, product identification, basic nutrition and allergy awareness, and the fundamental cooking methods. Students will also adhere to the "Brigade System" that is used throughout the industry as well as understand how to read standardized recipes. Students will learn about the multiple forms of service, including a-la-carte, buffet, plated, and catered meals. Students will be encouraged to use their creativity and display problem solving, critical thinking, and expedited action in a collaborative team environment to be successful.

Hospitality & Customer Service 10

Course # cu205 Credits: 5

This quarter-based course provides students with an introduction to The Maple Street Bistro, which serves as the perfect setting for them to practice the principles of hospitality and great customer service. The Maple Street Bistro is open to the public as well as to school staff each day for lunch. Students will learn various table settings such as formal, breakfast, lunch, and dinner, buffet service, and catered functions. Students will also participate in working real time in front-of-the-house positions of server, host, expeditor, cashier, beverage attendant, and front-of-the-house supervisor, along with quick-service representatives at our working bakery that serves a selection of fresh daily pastries, breads, and take-out foods. Students will learn the fundamentals of front-of-the-house terminology, the art of suggestive selling, safety protocols, allergy awareness, menu design, nutrition and quarterly project-based learning assignments, and reflection writings.

Baking & Pastry 11

Course # cu302 Credits: 5

This quarter-based course will offer students further preparation in the knowledge and skill competency in the areas of artisan bread making, cookies, cakes, pastries, and plated desserts. This program simulates a live working laboratory as a commercial bake shop that services The Maple Street Bistro, The Maple Street Bakery and The Eatery at Essex. The students will become knowledgeable and proficient with industry standards, safety, and quality workmanship.

Culinary Arts Production 11

Course # cu303 Credits: 5

This quarter-based course will help students to develop skills necessary to safely and properly use industrial kitchen equipment, learn basic knife skills, learn measurements, how to read a recipe, and professionalism to prepare them with an opportunity designed so that they can work in a food service establishment. Major units of study include butchery, stock making, soups, salads, dressings, sandwiches, international cuisines, customer service, vegetable fabrication, inventory management, and food safety. Students demonstrate their learning through hands-on application, demonstrations, videos, quizzes, and readings.

Culinary Arts Service Line 11

Course # cu304 Credits: 5

This quarter-based course continues to provide students with the culinary arts service line experiences in a real-time restaurant. Students continue to prepare the quarterly menu and practice and refine a variety of cooking methods and techniques in The Maple Street Bistro. Students will continue participating in real-time stations work to learn more about garde manger, fry, grill, saute, sandwich, stone-fire oven, sous

chef, and expediter. Students will also continue to practice in the "Brigade System" used throughout the industry and refine their work with standardized recipes. By participating in multiple forms of service: a-la-carte, buffet, plated, and catered meals, they will strengthen their creativity through problem solving, critical thinking, and expedited action in a collaborative team environment.

Hospitality & Customer Service 11
Course # cu305 Credits: 5
This quarter-based course provides students with more experience in The Maple Street Bistro, where they can continue to practice the principles of hospitality and great customer service. Students will continue to work in the various table settings, including formal, breakfast, lunch, and dinner, buffet service, and catered functions. Students will refine their skills by serving in front-of-the-house positions in the Bistro as well as serving at The Maple Street Bakery and the Eatery at Essex. Students will focus on mastering skills such as front-of-the-house terminology, suggestive selling, safety protocols, allergy awareness, menu design, nutrition and quarterly project-based learning assignments, and reflection writings.

Culinary Arts Theory 11
Course # cu301 Credits: 4
This full-year, classroom-based course offers students an opportunity to explore cooking methods, food-type identification, and baking fundamentals. Students will also be trained in ServSafe, a nationally recognized program, so that students can obtain a five-year certificate in sanitation that is accepted everywhere in the country. Food safety topics include purchasing, receiving, and storing food properly to help students understand the day-to-day importance of food safety.

Culinary Arts Cooperative Education 11
Course # cu305 Credits : 12
This semester-based course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle. Please note that juniors are eligible for Cooperative Education during third and fourth quarters only.

Baking & Pastry 12
Course # cu402 Credits: 5
The quarter-based course will offer students a final opportunity to refine their skills in baking and pastry work. Students will focus on practicing and improving upon their acquired knowledge and skills in artisan bread making, cookies, cakes, pastries and plated desserts. Through student work in the school's commercial bakery that services The Maple Street Bistro, The Maple Street Bakery and The Eatery at Essex, students will finalize their proficiency with industry standards, safety, and quality workmanship.

Culinary Arts Production 12
Course # cu403 Credits: 5
This quarter-based course will help students to refine their skills in industrial kitchen equipment, knife techniques, measurements, recipes, and professionalism in preparation for serving in a food service

establishment. Students will continue to learn about butchery, stock making, soups, salads, dressings, sandwiches, international cuisines, customer service, vegetable fabrication, inventory management, and food safety. Students will continue to demonstrate their learning through hands-on application, demonstrations, videos, quizzes, and readings.

Culinary Arts Service Line 12
Course # cu404 Credits: 5
This quarter-based course will offer students their final culinary arts service line experiences in The Maple Street Bistrot. Students will continue to prepare the quarterly menu and refine their skills in a variety of cooking methods and techniques. Students will continue participating in stations: garde manger, fry, grill, saute, sandwich, stone-fire oven, sous chef, and expediter. Students will also be given one final opportunity to serve in the "Brigade System" as they prepare a-la-carte, buffet, plated, and catered meals, as they work to strengthen their problem solving, critical thinking, and expedited action in a collaborative team environment.

Hospitality & Customer Service 12
Course # cu405 Credits: 5
This quarter-based course provides students with their final experience in The Maple Street Bistro, where they will be given a final opportunity to practice the principles of hospitality and great customer service that they have learned over the past four years. Students will continue to work in the various table settings, including formal, breakfast, lunch, and dinner, buffet service, and catered functions. Students will continue to refine their skills by serving in front-of-the-house positions in the Bistro as well as serving at The Maple Street Bakery and the Eatery at Essex. Students will focus on mastering skills such as front-of-the-house terminology, suggestive selling, safety protocols, allergy awareness, menu design, nutrition and quarterly project-based learning assignments, and reflection writings.

Culinary Arts Theory 12
Course # cu401 Credits: 4
This full-year, classroom-based course offers students an opportunity to deepen their understanding of entrepreneurship. Students will do so by creating a business plan to run a food service business with marketing concepts, recipe cost analysis, and a floor plan design. Students will also learn more about the science of baking and nutrition and the ingredients used in baking can be substituted to meet dietary restrictions.

Culinary Arts Cooperative Education 12
Course # cu405 Credits : 24
This full-year course provides qualified students with a career technical employment opportunity. The program is designed to allow students on-the-job training by involving them in work that is directly related to their technical area of study. Cooperating employers provide additional training, pays students, and reports their performance to the school for every cycle.

Marketing

Marketing students will develop knowledge and skills related to business development, entrepreneurship, management, and communications. The curriculum integrates marketing process, accounting, digital applications, advertising, product selection and display, inventory management, merchandising, and customer service. Students will discover the world of economics and study legal issues related to finance. Students will also learn about emerging trends in business and finance.

Course Number	Name	Credit	Grade Level
mk101	Marketing Exploratory 9	1.0	Grade 9
mk103	Marketing 9	10.0	Grade 9
mk200	Marketing 10	16.0	Grade 10
mk201	Marketing 10 Theory	4.0	Grade 10

Marketing Exploratory 9

Course #: mk101 Credits: 1

This five-day cycle exploratory course introduces grade 9 students to the careers in business and marketing, including social media, digital, and internet marketing. Students will participate in an engaging activity where they have to create a new product or service, promote or advertise the product, establish a price, and determine how the product or service will be sold through either retail or online sales.

Marketing 9

Course # mk103 Credits: 10

This semester-based course engages students in marketing as a means to promote a product or services. They will do so by using computer software to design promotional flyers, create advertisements, and participate in a group advertising project. Students will also explore industry standards, marketing regulations, policies, and laws, and various marketing associations code of ethics.

Marketing 10

Course # mk200 Credits: 16

This full-year course will further study the principles of marketing through the creation of a marketing plan to operate and manage a business. Students learning will focus on supporting this plan through consumer science, selling, advertising, and profit goals through cost management. In addition, students will explore the elements of supply chain management, distribution channels, and product and service pricing as a function of marketing.

Marketing 10 Theory

Course # mk201 Credits: 4

This full-year, classroom-based course will focus on marketing theories and their impact on consumer behavior. Students will further explore the impact that marketing theories have on marketing concepts, marketing mix, marketing research, target marketing, and the effect of social media on marketing. In

addition, students will learn about how marketing theories connect with technology, analytics, and advertisements.

Partnership/After Dark Programs

Advanced Manufacturing, Construction Craft Laborers, Early Education & Care, Health Assisting, Sustainable Horticulture

Chapter 74 Partnership "After Dark" designation allows school districts offering Chapter 74 vocational technical education programs to partner with other school districts to provide Chapter 74 VTE opportunities. Key Program Features include:

- Partnership between traditional high schools and schools with established C74 programs and facilities
- Altered schedule for participating students
    - Core academics at local high school
    - 900+ total hours of C74 instruction at a career technical or agricultural school
- Alignment with regional economic and workforce development priorities or other evidenced labor market demand
- Eligible seniors may participate in Cooperative Education placement in the second semester of the senior year.

Adapted from: https://www.doe.mass.edu/ccte/cvte/afterdark/

Advanced Manufacturing

Advanced Manufacturing provides training and work experience across the broad spectrum of manufacturing equipment. Students learn how to manufacture metal parts using lathes, milling machines, drilling machines, and grinders. Students learn to design components on Computer Aided Design (CAD) software and build components of complex machinery including engines and tooling systems, to make robotics parts, and other projects that require precision design, manufacturing and assembly using principles of engineering.

Course Number	Name	Credit	Grade Level
Pam300	Advanced Manufacturing 11	24.0	Grade 11
Pam400	Advanced Manufacturing 12	24.0	Grade 12
Pam405	Advanced Manufacturing Cooperative Education 12	12.0	Grade 12

Construction Craft Laborers

The construction industry is one of the most diverse and rewarding industries in the world. The program prepares students for meaningful employment in a variety of areas. The major types of construction are grouped into the following categories:

1. Building-construction and reconstruction of residential and commercial buildings.
2. Highway, Utilities and Land Development-construction and reconstruction of the following: major and minor highways, subdivisions, bridges, dams, tunnels and airfields, underground utilities (telephone & electric), piping systems (petroleum, water, sewer, natural gas and collection systems).
3. Environmental-remediation and activities associated with the following; asbestos abatement, decontamination and demolition of nuclear facilities, hazard waste removal, lead abatement, permit-required confined spaces, erosion control

Course Number	Name	Credit	Grade Level
Pccl300	Construction Craft Laborers 11	24.0	Grade 11
Pccl400	Construction Craft Laborers 12	24.0	Grade 12
Pccl405	Construction Craft Laborers Cooperative Education 12	12.0	Grade 12

Early Education & Care

Advanced Manufacturing provides training and work experience across the broad spectrum of manufacturing equipment. Students learn how to manufacture metal parts using lathes, milling machines, drilling machines, and grinders. Students learn to design components on Computer Aided Design (CAD) software and build components of complex machinery including engines and tooling systems, to make robotics parts, and other projects that require precision design, manufacturing and assembly using principles of engineering.

Course Number	Name	Credit	Grade Level
Pam300	Early Education & Care 11	24.0	Grade 11
Pam400	Early Education & Care 12	24.0	Grade 12
Pam405	Early Education Cooperative Education 12	12.0	Grade 12

Health Assisting

The Health Assisting program trains students to become certified nursing assistants with advanced skill training in electrocardiology and phlebotomy. This program is also an excellent foundation for nursing, physical therapy, athletic training or other health-related fields requiring college degrees. In this program, students will have the opportunity to become certified in both ECG and phlebotomy through the National Healthcare Association. Medical terminology is taught throughout the senior year, and students can receive three credits at North Shore Community College upon completion with a B grade or higher for this class. Students become certified in both CPR-Healthcare Provider and First Aid.

Course Number	Name	Credit	Grade Level
Pha300	Health Assisting 11	24.0	Grade 11
Pha400	Health Assisting 12	20.0	Grade 12
Pha405	Health Assisting Cooperative Education 12	24.0	Grade 12

Articulated college credit agreement in place with North Shore Community College - Danvers
Statewide Articulation agreement is available for Health Assisting.

Sustainable Horticulture

Students in Sustainable Horticulture enjoy working with plants and flowers. In our labs and greenhouses, students will learn how to create marketable floral designs for a variety of occasions, maintain interior plants in a variety of settings and also learn how to grow a variety of crops, including seasonal foliage and flowering plants, tropical plants and bedding plants. In this hands-on major, students are provided with real-world work experiences for careers in the floral industry where a broad understanding of floriculture and botany are important. Students can expect to find jobs in the greenhouse industry, within interior landscape firms, as well as in floral shops.

Course Number	Name	Credit	Grade Level
Psh300	Sustainable Horticulture Technology	24.0	Grade 11
Psh404	Advanced Concepts in Sustainable Horticulture	24.0	Grade 12
Psh405	Sustainable Horticulture Cooperative Education 12	12.0	Grade 12

Statewide articulation agreement in place
Articulated Credit Agreement with Unity College
Articulated college credit agreement in place with Stockbridge School of Agriculture U MA Amherst

GRADE 9 CTAE PATHWAY FOUNDATION COURSES

Freshman Seminar
Course #: ps001 Level: CP
Credits: 4

This full-year Pathway course begins with a common unit that introduces all grade 9 students to the Graduate Profile entitled: "What it means to be a Hawk?" This will familiarize freshmen with our expectations for them over the next four years at Essex Tech. This will be followed by sharing with students an overview of a service learning project that will provide the content as they develop their technology and presentation skills. Service learning integrates community service with student skills in entrepreneurship, leadership, and teamwork as students work with teachers and community partners to address needs and problems in our communities and identify and implement solutions to address them. Students will begin by learning about technology use that is guided by the ISTE (International Society for Technology in Education) and the following standards: Empowered Learner, Digital Citizen, Knowledge Constructor, Innovative Designer, Computational Thinker, Creative Communicator, and Global Collaborator. Students will also be introduced to appropriate communication through Social Media, accessibility tools and features, and research tools and skills. Throughout the year, the students will develop new technology skills and apply them to their service learning project in real-time. These technology skills include mastering tools and techniques with spreadsheets, presentation programs, proper researching techniques and many others. Students will learn how to adapt a presentation for different occasions and audiences related to service learning, how to support ideas effectively, how to select and organize materials in preparation for a presentation, and how to utilize multimedia tools in presentations, among other skills.

GRADE 10 CTAE PATHWAY FOUNDATION COURSES

United States Government & Politics - Grade 10
Course #: 4210 Level: CP Credits: 2
This required Pathway course is designed to provide tenth-grade students with knowledge of the purpose, structure, and operation of the national and state governmental systems. Based on the *History, Social Science, and Civics Education: Implementation Updates* (2020-2021), the primary focus will be on the Federal system and its underlying principles as they are related to national, state, and local levels. This course will be a thought-provoking exploration taught through the lens of current events and political issues. Topics will include: the Constitution, civil rights, interest groups, politics, voting, Congress, the Presidency, the Judiciary, laws, public policies, state and local government. This is a semester course and is paired with Personal Financial Literacy, both designed to help students become responsible citizens in a representative republic (Course #: 2250).

Financial Literacy - Grade 10
Course #: 2250 Level: CP Credits: 2
This required Pathways course is essential in meeting the financial challenges of the 21st century, with understanding and managing personal finances the key to one's future financial success. Based on the

Massachusetts Mathematics Curriculum Framework (2017) learning standards, this course teaches students to apply the knowledge and skills to various financial situations they will encounter later in life to make critical decisions regarding personal finances. Students will learn money management, savings and investing, income, and spending strategies. This course will teach students to identify and prioritize their personal money management goals, develop personal spending, savings, and investing plans, tax implications and understand the cost of using credit along with asset protection. This is a semester class and is paired with United States Government & Politics (Course # 4210).

ESSEX NORTH SHORE
AGRICULTURAL & TECHNICAL SCHOOL

ACADEMIC COURSE OFFERINGS

Massachusetts Department of
ELEMENTARY & SECONDARY
EDUCATION

NEASC NEW ENGLAND ASSOCIATION OF SCHOOLS AND COLLEGES

EARLY COLLEGE PROGRAM
Essex North Shore Agricultural & Technical School | North Shore Community College

ENGLISH CORE COURSES

English Grade 9

Course #: 1102, 1100 Level: Honors, CP Credits: 4

This course begins the four-year English Language Arts curriculum aligned with *The Massachusetts Curriculum Framework for English Language Arts and Literacy*. Students experience a broad range of literature, including non-fiction informational texts, fiction, drama, and poetry with an emphasis on critical thinking and analysis. Each unit is anchored by a text that allows students to learn critical reading and various writing modes to establish a foundation for success in all subsequent years. Students will be expected to participate in class discussion, respond to daily, in-class writing-to-learn activities, and deliver frequent oral presentations. MCAS close reading sets and test taking strategies are embedded into the curriculum and students will complete a series of common formative and summative assessments throughout the year.

English Grade 10

Course #: 1202, 1200 Level: Honors, CP Credits: 4

This course deepens students focus on acquiring the reasoning and analytical skills associated with literature and rhetoric, and the course will continue to focus on helping students make connections between literary and thematic elements and text-based support established in freshman year. Anchor and linking texts span long and short fiction, drama, and nonfiction. Synthesis of multiple texts will be integral to the curriculum, and students will complete classroom activities along with formative and summative assessments requiring synthesis throughout the year. Students will complete a series of common formative and summative assessments throughout the year. *(ACP level was discontinued effective SY 23-24).*

English Grade 11

Course #: 1302, 1300 Level: Honors, CP Credits: 4

This course examines American literature through fiction, nonfiction, poetry and drama from multiple perspectives. Students will analyze texts through stylistic, social, economic, historical, and critical lenses. The emphasis of this course is evaluating the relationship between form and content in a literary work, and then analyzing how both the author's intent and reader's perspective illuminate the meaning of the text. Students will produce short narratives, dramatic scenes, oral presentations, and analytical essays. *(ACP level was discontinued effective SY 24-25).*

English 11 and Agricultural Sciences

Course# 1350 Level: Honors Credits: 8

This full-year course is a double-block interdisciplinary course that combines the Grade 11 Pathways course for Agricultural Plant Sciences with English 11. This standards-based course is for students who are interested in learning about agricultural productivity through applied integration learning projects with embedded English content and skills. This course will deepen and extend the connections between the fundamental concepts of agricultural sciences, including food resources, sustainability, and the future of farming in America. Content standards from the *Massachusetts English Language Arts and Literacy Curriculum Framework* (2017), prescribe that students develop their reading, writing, listening, and

speaking skills by using their ability to make sense of problem situations in an applied field. The focus will be on deeper learning through problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing evidence, and communicating rigorous arguments to justify their thinking. This is a co-taught, high engagement course where application leads to deeper theoretical understanding. Co-teachers will serve as coaches to student-designed integration projects. This course satisfies the requirements for an English course as stipulated in MassCore and the Grade 11 Agricultural Science pathway course. Prerequisite: Enrollment in the Plant Science Cluster (Arboriculture, Landscape & Turf, Management, Sustainable Horticulture, Natural and Environmental Sciences) or Culinary Arts Program.

Advanced Placement in English Language and Composition - Grade 11

Course #: 1303 Level: AP Credits: 4

In the A.P. English Language and Composition course—the rhetoric course—students learn how to analyze, synthesize, and evaluate nonfiction texts, including essays, biographies and autobiographies, speeches, sermons, and passages from writings in the arts, history, social science, politics, science, and other areas of study. Students learn to evaluate and construct arguments drawn from articles in newspapers, magazines, and online "'zines" and "blogs." The course cannot help but be interdisciplinary, immersing students in a variety of sources. Students are expected to take the College Board A.P. English Language and Composition Exam in May. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

English Grade 12

Course #: 1402, 1401, 1400 Level: Honors, ACP, CP Credit 4

This course focuses on a variety of literary and informational texts that include the Western cultural philosophies of nihilism, modernism, idealism, existentialism, and magical realism, including rigorous practice in research, informational writing, and personal narrative. Students will identify critical lenses, recognize multiple themes, analyze in concrete and abstract perspectives, and evaluate multiple interpretations from secondary sources. Students will draw evidence from literary or informational texts to support their analysis, reflection, and research. Essays and discussions will relate the work to its historical circumstances, trace a symbol through a work or works, or consider a moral or philosophical question. The major works and ideas of Western literature will be addressed.

Advanced Placement English Literature and Composition - Grade 12

Course #: 1403 Level: AP Credits: 4

In the A.P. English Literature and Composition course, students engage in becoming skilled readers of prose and poetry written in a variety of rhetorical contexts, and in becoming skilled writers who compose for a variety of purposes. Through critical analysis and focused writing, students learn the interactions among a writer's purposes, audience expectations, and subjects, as well as the way genre conventions and the resources of language contribute to effectiveness in writing. The course follows A.P. curricular guidelines and prepares students for the A.P. test, given in the spring. Students should expect challenging college-level content and a workload requiring nightly preparation and independent study. The accelerated pace of A.P. coursework is designed to parallel an introductory college semester course. Students are expected to take the College Board A.P. English Literature and Composition Exam in May. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

English 12 and Agricultural Management Integration

Course# 1450 Level: Honors Credits: 8

This full-year course is a double-block interdisciplinary course that combines Englishs 12 with the Agricultural Plant Cluster Pathways course, Agricultural Management. This standards-based course is for students who are interested in learning about agricultural management through applied integration learning projects with embedded English content and skills. This course will deepen and extend the connections between the fundamental concepts of agricultural sciences, including the agribusiness management practices, agricultural technology, and effective communication practices. Content standards from the *Massachusetts English Language Arts and Literacy Curriculum Framework* (2017), prescribe that students develop their reading, writing, listening, and speaking skills by using their ability to make sense of problem situations in an applied field. The focus will be on deeper learning through problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing evidence, and communicating rigorous arguments to justify their thinking. This is a co-taught, high engagement course where application leads to deeper theoretical understanding. Co-teachers will serve as coaches to student-designed integration projects. This course satisfies the requirements for an English course as stipulated in MassCore and the Grade 12 Agricultural Science pathway course. Prerequisite: Enrollment in the Plant Science Cluster (Arboriculture, Landscape & Turf Management, Natural & Environmental Sciences, and Sustainable Horticulture.)

MATHEMATICS CORE COURSES

Mathematics I - Grade 9

Course #: 2112, 2110 Level: Honors, CP Credits: 4

Mathematics I formalizes and extends the mathematics that students learned in Grade 8 and is based on the Massachusetts *Mathematics Curriculum Frameworks* (2017). Mathematics I offers students the first sequence in what they are expected to learn in preparation for college and career. Instructional time focuses on six critical areas: (1) extend understanding of numerical manipulation to algebraic manipulation; (2) synthesize understanding of function; (3) deepen and extend understanding of linear relationships; (4) apply linear models to data that exhibit a linear trend; (5) establish criteria for congruence based on rigid motions; and (6) apply the Pythagorean Theorem to the coordinate planes. This course integrates Algebra I, Geometry, and Statistics and Probability with an emphasis on real-world applications.

Geometry - Grade 9

Course #: 2122 Level: Honors Credits: 4

This course transitions capable students who have successfully completed Algebra I in Grade 8 to introduce students to the *Massachusetts Mathematics Curriculum Framework* (2017) learning standards for Geometry. Geometry focuses on six critical areas: (1) establish criteria for congruence of triangles based on rigid motions; (2) establish criteria for similarity of triangles based on dilations and proportional reasoning; (3) informally develop explanations of circumference, area, and volume formulas; (4) apply the Pythagorean Theorem to the coordinate plane; (5) prove basic geometric theorems; and (6) extend work with probability. As the year progresses, students explore more complex geometric situations and deepen their explanations of geometric relationships by presenting and hearing formal mathematical arguments.

Mathematics II - Grade 10

Course #: 2212, 2210 Level: Honors, CP Credits: 4

Mathematics II focuses on quadratic expressions, equations, and functions; comparing their characteristics and behavior to those of linear and exponential relationships from Mathematics I in grade 9. For the high school Model Mathematics II course, instructional time should focus on five critical areas: (1) extend the laws of exponents to rational exponents; (2) compare key characteristics of quadratic functions with those of linear and exponential functions; (3) create and solve equations and inequalities involving linear, exponential, and quadratic expressions; (4) extend work with probability; and (5) establish criteria for similarity of triangles based on dilations and proportional reasoning. This course integrates Algebra I, Geometry, and Statistics and Probability with an emphasis on real-world applications.

Algebra II - Grade 10

Course #: 2232 Level: Honors Credits: 4

Continuing the progression for entering Grade 10 students who successfully completed Geometry in Grade 9, this course addresses the *Massachusetts Mathematics Curriculum Framework* (2017) learning standards for Algebra II. The focus is on the following four critical areas: (1) relate arithmetic of rational expressions to arithmetic of rational numbers; (2) expand understandings of functions and graphing to include

trigonometric functions; (3) synthesize and generalize functions and extend understanding of exponential functions to logarithmic functions; and (4) r
relate data display and summary statistics to probability and explore a variety of data collection methods. Students work closely with the expressions that define the functions, are facile with algebraic manipulations of expressions, and continue to expand and hone their abilities to model situations and to solve equations, including solving quadratic equations over the set of complex numbers and solving exponential equations using the properties of logarithms. (ACP level discontinued effective SY 23-24).

Geometry - Grade 10 ***Discontinued eff. SY24-25***
Course #: 2202, 2200 *Level: Honors, CP* *Credits: 4*
This course addresses the Common Core Standards for Geometry. Geometry focuses on six critical areas: (1) establish criteria for congruence of triangles based on rigid motions; (2) establish criteria for similarity of triangles based on dilations and proportional reasoning; (3) informally develop explanations of circumference, area, and volume formulas; (4) apply the Pythagorean Theorem to the coordinate plane; (5) prove basic geometric theorems; and (6) extend work with probability. (ACP level discontinued effective SY 23-24).

Algebra II - Grade 11
Course #: 2302, 2300 Level: Honors, CP Credits: 4
This course is a continuation of algebraic concepts. Topics include functions and graphs and more complex problem solving, complex numbers, matrices to solve linear systems, vectors, analytic trigonometry, and relates the connections between the fundamental concepts of algebra, trigonometry and analytic geometry. Several standards in the Algebra II course were moved to the Enhanced Algebra I course which made it possible to add standards from the Pre-calculus Course to the Enhanced Algebra II course. In this way students will be prepared for Calculus after successful completion of Enhanced Algebra II. This is a course which covers material at a fast pace and in great depth, with the expectation of stronger student performance. A greater emphasis will be placed on algebraic approaches to problem-solving. (ACP level was discontinued effective SY 24-25).

STEAM Integration H (Algebra II & Physics) - Grade 11
Course #: 9300 Level: Honors Credits: 8
STEAM (Science-Technology-Engineering-Arts-Mathematics) Integration is full year, double-block course that offers an interdisciplinary, standard-based mathematics and lab-based physics pathway for students who are interested in learning Algebra II through applied integration learning projects with embedded mathematical and physics content and skills. The intention of this course is for students to do highly engaging projects that deepen and extend the connections between the fundamental concepts of algebra, trigonometry, and analytic geometry connected to physics concepts of motion, energy, and electromagnetism. Content learning standards from both the *Massachusetts Mathematics Curriculum Framework* (2017) and the *Massachusetts Science and Technology Engineering Curriculum Framework* (2016) provide a foundation for allowing students to experience these standards in real-world problem learning situations. Students will collaborate for two back-to-back blocks with two teachers, one a mathematics teacher and the other a physics teacher to build integration learning projects using problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing

evidence, and communicating rigorous arguments to justify their thinking. Co-teachers will serve as coaches to student-designed integration projects. This course satisfies the requirements for an Algebra II and a lab-based Physics course as stipulated in MassCore. Prerequisites: Successful completion of Algebra 1 and Geometry; Enrollment in the Construction Cluster (Carpentry, Construction Craft Laborer, Electricity, HVAC-R, Plumbing), Engineering & Automation Technology, or Advanced Manufacturing.

Precalculus - Grade 11

Course #: 2322 Level: Honors Credits: 4

Continuing the progression for entering Grade 11 students who successfully completed Algebra II in Grade 10 and based on the *Massachusetts Mathematics Curriculum Framework* (2017) learning standards, this course combines the trigonometric, geometric, and algebraic techniques needed to prepare students for the study of calculus, and strengthens students' conceptual understanding of problems and mathematical reasoning in solving problems. Facility with these topics is especially important for students intending to study calculus, physics, and other sciences, and/or engineering in college. Because the standards for this course are (+) standards, students selecting this Model Precalculus course should have met the college and career ready standards. Instructional time will focus on four critical areas: (1) extend work with complex numbers; (2) expand understanding of logarithms and exponential functions; (3) use characteristics of polynomial and rational functions to sketch graphs of those functions; and (4) perform operations with vectors.

NOTE: Students who have not met the Competency Determination in Mathematics by earning the equivalent of a *Proficient* score of 240 or better on the Grade 10 Mathematics MCAS will be required to enroll in Algebra III during Grade 12. For more information see: https://www.doe.mass.edu/ccte/.

Algebra III/Trigonometry - Grade 12

Course #: 2400 Level: CP Credits: 4

This course is a continuation of concepts presented in Algebra II. It will emphasize the connection between algebra, geometry and trigonometry. The focus of this course is exponential/logarithmic functions, polynomials, trigonometric functions and trigonometric identities.

Precalculus - Grade 12

Course #: 2402, 2401 Level: Honors and ACP Credits: 4

This course addresses the Learning Standards for Precalculus and focuses on four critical areas: (1) extend work with complex numbers; (2) expand understanding of logarithms and exponential functions; (3) use characteristics of polynomial and rational functions to sketch graphs of those functions; and (4) perform operations with vectors.

Calculus - Grade 12

Course #: 2412 Level: Honors Credits: 4

This course is for students who have successfully completed Algebra II Enhanced. The course will include a brief review of the critical concepts and skills covered in Algebra II Enhanced followed by the concepts of limit, derivative, and definite and indefinite integral. Techniques of numerical and closed form integration with applications of the definite and indefinite integrals will be studied.

Advanced Placement Calculus AB - Grade 12

Course #: 2443 Level: AP Credits: 4

A.P. Calculus AB is a full year mathematics course, structured to closely resemble a first semester Calculus course in college. It is the intent of the course to develop a conceptual understanding and computational fluency in the basics of differential and integral calculus. This course will emphasize basic techniques, problem solving skills, critical thinking, and an understanding of various applications of calculus. Technology will also be emphasized as a problem-solving tool. Students will apply the techniques learned to a variety of different types of functions as well as different representations of functions, and use these to model real-world situations. The course will also introduce basic differential equations, and use them to model growth. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

SCIENCE CORE COURSES

Biology I - Grade 9

Course #: 3102, 3100 Level: Honors, CP Credits: 4

This course introduces students to a two-year sequence in the study of biological sciences and the specific terminology and methodology relating to the basic concepts of life and its processes. It begins with a short, standards-based, introductory unit: Scientific Skills and Metrics that will be used to review and enhance student understanding of scientific investigation. The remaining learning standards for Biology I provide the foundation for the following three units: Chemistry of Life; Cell Biology; DNA and Genetics and are based on the Massachusetts Science and Technology/Engineering Curriculum Framework. *(ACP was level discontinued effective SY 22-23).*

Advanced Placement Biology Part A - Grade 9 (beginning with the Class of 2028)

Course #: 3103 Level: AP Credits: 4

A.P. Biology is an introductory college-level course taken in a sequence over two years, and this is Part A or Year 1 in that sequence. Students cultivate their understanding of biology through inquiry-based investigations as they explore the following topics: evolution, cellular processes-energy and communication, genetics, information transfer, ecology, and interactions. Students are expected to take the College Board A.P. Biology Exam while enrolled in A.P. Biology (Part B) in May of their sophomore year. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

Biology II - Grade 10

Course #: 3202, 3200 Level: Honors, CP Credits: 4

This course completes the second year of the two-year sequence in the study of biological sciences and the specific terminology and methodology relating to the basic concepts of life and its processes. Learning standards for Biology II serve as the foundation for the following three units: Ecology; Evolution and Biodiversity; Anatomy and Physiology and are based on the Massachusetts Science and Technology/Engineering Curriculum Framework. (ACP level discontinued effective SY 23-24).

Advanced Placement Biology Part B - Grade 10 (beginning with the Class of 2029)

Course #: 3203 Level: AP Credits: 4

A.P. Biology is an introductory college-level course taken in a sequence over two years, and this is Part B or Year 2 in that sequence. Students continue to cultivate their understanding of biology through inquiry-based investigations as they re-examine the following topics: evolution, cellular processes-energy and communication, genetics, information transfer, ecology, and interactions. Students are expected to take the College Board A.P. Biology Exam while enrolled in A.P. Biology (Part B) in May of their sophomore year. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

Advanced Placement Biology - Grade 10

Course #: 3203 Level: AP Credits: 8

A.P. Biology is an introductory college-level course. Students cultivate their understanding of biology through inquiry-based investigations as they explore the following topics: evolution, cellular processes-energy and communication, genetics, information transfer, ecology, and interactions. Students are expected to take the College Board A.P. Biology Exam in May. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution. This Grade 10, double block course offering will conclude with the Class of 2027.

Chemistry - Grade 11

Course #: 3302, 3300 Level: Honors, CP Credits: 4

This course is designed to teach students the concepts of composition, structure and properties of substances and the changes they will undergo. Topics will include the classification of matter, atomic structure, periodic table and chemical formulas, chemical reactions and gas laws. Students will utilize qualitative as well as quantitative approaches to predict outcomes and identify unknowns. Use of a scientific calculator is required. Strong math skills are recommended for the Honors Level. *(ACP level was discontinued effective SY 24-25).*

Physics - Grade 11

Course #: 3312, 3310 Level: Honors, CP Credits: 4

This Physics course will introduce key concepts of the physical world including motion, energy, and electromagnetism. Hands on labs will reinforce these concepts. Measurement and problem solving including graphing and critical thinking will be introduced. Technology will be used to analyze data collected in lab activities. Use of a scientific calculator is required. Strong math skills are recommended for the Honors Level. *(ACP level was discontinued effective SY 24-25).*

STEAM Integration H (Algebra II & Physics) - Grade 11

Course #: 9300 Level: H Credits: 8

STEAM (Science-Technology-Engineering-Arts-Mathematics) Integration is full year, double-block course that offers an interdisciplinary, standard-based mathematics and lab-based physics pathway for students who are interested in learning Algebra II through applied integration learning projects with embedded mathematical and physics content and skills. The intention of this course is for students to do highly engaging projects that deepen and extend the connections between the fundamental concepts of algebra, trigonometry, and analytic geometry connected to physics concepts of motion, energy, and electromagnetism. Content learning standards from both the *Massachusetts Mathematics Curriculum Framework* (2017) and the *Massachusetts Science and Technology Engineering Curriculum Framework* (2016) provide a foundation for allowing students to experience these standards in real-world problem learning situations. Students will collaborate for two back-to-back blocks with two teachers, one a mathematics teacher and the other a physics teacher to build integration learning projects using problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing

evidence, and communicating rigorous arguments to justify their thinking. Co-teachers will serve as coaches to student-designed integration projects. This course satisfies the requirements for an Algebra II and a lab-based Physics course as stipulated in MassCore. Prerequisites: Successful completion of Algebra 1 and Geometry; Enrollment in the Construction Cluster (Carpentry, Construction Craft Laborer, Electricity, HVAC-R, Plumbing), Engineering & Automation Technology, or Advanced Manufacturing.

Chemistry - Grade 12

Course #: 3402, 3401, 3400 Level: Honors, ACP, CP Credits: 4

This course is designed to teach students the concepts of composition, structure and properties of substances and the changes they will undergo. Topics will include the classification of matter, atomic structure, periodic table and chemical formulas, chemical reactions and gas laws. Students will utilize qualitative as well as quantitative approaches to predict outcomes and identify unknowns. Use of a scientific calculator is required. Strong math skills are recommended for the Honors Level.

Physics - Grade 12

Course #: 3412, 3411, 3410 Level: Honors, ACP, CP Credits: 4

This Physics course will introduce key concepts of the physical world including motion, energy, and electromagnetism. Hands on labs will reinforce these concepts. Measurement and problem solving including graphing and critical thinking will be introduced. Technology will be used to analyze data collected in lab activities. Use of a scientific calculator is required. Strong math skills are recommended for the Honors Level.

Advanced Placement Physics - Grade 12

Course #: 3413 Level: AP Credits: 4

A.P. Physics 1 is an algebra-based, introductory college-level physics course that will address the principles of Newtonian mechanics; work, energy, and power: mechanical waves and sound; and introductory, simple circuits. Laboratory-based inquiry learning will develop students' scientific critical thinking and reasoning skills. There is a mandatory summer assignment. Students are expected to take the College Board A.P. Physics Exam in May. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

STEAM Integration II (Chemistry and Precalculus) - Grade 12

Course #: 9400 Level: H Credits: 8

STEAM (Science-Technology-Engineering-Arts-Mathematics) Integration II is full year, double-block course that offers an interdisciplinary, standard-based mathematics and lab-based chemistry pathway for students who are interested in learning Precalculus through applied integration learning projects with embedded mathematical and chemistry content and skills. The intention of this course is for students to do highly engaging projects that deepen and extend the connections between complex numbers, logarithms and exponential functions, the characteristics of polynomial and rational functions, and operations with vectors and the chemistry concepts of periodicity, bonding, and reactivity. Content learning standards from both the *Massachusetts Mathematics Curriculum Framework* (2017) and the *Massachusetts Science and Technology Engineering Curriculum Framework* (2016) provide a foundation for allowing students to experience these

standards in real-world problem learning situations. Students will collaborate for two back-to-back blocks with two teachers, one a mathematics teacher and the other a chemistry teacher to build integration learning projects using problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing evidence, and communicating rigorous arguments to justify their thinking. Co-teachers will serve as coaches to student-designed integration projects. This course satisfies the requirements for Pre-calculus and a lab-based Chemistry course as stipulated in MassCore. Prerequisites: Successful completion of Algebra 1, Algebra II and Geometry; MCAS mathematics Competency Determination; and enrollment in the Construction Cluster (Carpentry, Construction Craft Laborer, Electricity, HVAC-R, Plumbing), Engineering & Automation Technology Program, or Advanced Manufacturing Program.

Forensic Science - Grades 12

Course #: 3440 Level: CP Credits: 4

This is a lab-based elective designed to give students an in-depth look at the world of forensics. Students will be introduced to the basic application of science to the law. Students will learn how forensic scientists combine today's technology with the skills of the scientific community in order to help solve crimes. Topics covered include crime scene evaluation, fingerprinting, and DNA analysis as well as the examination of current cases as they relate to these topics. NOTE: Students enrolled in the Health Sciences Cluster are not eligible to enroll in this course as comparable coursework is required for these students as part of their Career Technical program.

HISTORY CORE COURSES

World History - Grade 9

Course #: 4102, 4100 Level: Honors, CP Credits: 4

This course examines the major changes that shaped the modern world, beginning with the Middle Ages through the eve of World War I. Major units include the Renaissance, the Age of Exploration, the Reformation and Counter-Reformation, Scientific Revolution and the Enlightenment, the Age of Absolutism, the French Revolution, the early Industrial Revolution, and Imperialism. The emphasis will be on the skills students need to become discerning historical thinkers: understanding geography; reading charts, graphs and tables; recognizing and understanding diverse viewpoints; comparing and contrasting information; conducting research, writing historical essays; working with primary and secondary source documents, and making presentations. Student learning will be assessed through homework, research, class participation, tests, quizzes, document-based questions, and historical analysis essays. (ACP Level discontinued effective SY22-23).

United States History I - Grade 10

Course #: 4202, 4200 Levels: Honors, CP Credits: 4

This course is the first part of a sequence of United States History that will be completed the following year in Grade 11. The goal is to deepen student understanding of the United States by examining the events leading up to the American Revolution to the early twentieth century. Major units include the study of the Constitution, the Early Republic, Jacksonian Democracy, Manifest Destiny, sectionalism, the U.S. Civil War, industrialization in the U.S., and U.S. Imperialism. Students will conduct critical reading and analysis using a variety of content to hone proficiency in primary and secondary source evaluation, evaluate cause and effect, develop and prove claims with evidence, and make inferences by critically evaluating content and writing supported arguments. Students will also begin publishing formal research papers with cited sources. Independent reading is a component of United States History I .*(ACP level was discontinued effective SY23-24).*

United States History II - Grade 11

Course #: 4302, 4300 Levels: Honors, CP Credits: 4

This course completes the second part of a sequence of United States History begun in Grade 10, by examining the major events in U.S. History from World War I to the 1960s. Major units include the study of World War I, the Great Depression and the New Deal, the Rise of Dictators, World War II, the Cold War, Civil Rights, the Vietnam War and Social Changes in the 1960s. As in previous years, students will continue to refine their critical reading and analytical writing, source evaluation, use of primary source documents, ability to make claims, evidence, and interpretation, and research methods. Honors students will pursue an accelerated program adding document analysis, debate, and rigorous practice writing supported essays based

on synthesizing multiple sources. Please note that the U.S. History II Honors program is a pre-Advanced Placement curriculum that will require regular and significant preparation by reading and writing outside of class. *(ACP level was discontinued effective SY 24-25).*

Advanced Placement United States History - Grade 11
Course #: 4303 Level: AP Credits: 4
A.P. United States History is designed to give grade 11 students a thorough understanding of United States History, requiring students to master historical interpretation, critical and analytical thinking, essay writing, and the integration of primary and secondary sources. The class prepares students to assess historical data and documents, evaluate relevance and reliability, and demonstrate historical knowledge of United States History. This course is equivalent to a full-year introductory college class and, therefore, all students enrolled in this course are expected to demonstrate their content mastery by taking the Advanced Placement exam in May. Please note that summer work is required. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

SPANISH CORE COURSES

Spanish I - Grade 9
Course #: 6100, 6102 Level: Honors, CP Credits: 4
This required course introduces students to the Spanish language by learning Spanish in preparation for the workplace. Students learn vocabulary and concepts of basic grammar acquisition, allowing them to communicate information about themselves and others using simple sentences, both orally and in writing. The practice of all four language skills: listening, speaking, reading, and writing, helps students solidify their acquisition of the Spanish language. Active participation in class activities and completion of homework assignments are required.

Spanish II - Grade 9
Course #: 6120 Level: H Credits: 4
Spanish II for entering grade 9 students builds upon middle school Spanish coursework or for heritage speakers who already possess more extended vocabulary and grammar concepts. While the focus for students will be on continuing to practice reading, writing, listening, and speaking in Spanish, the means to do so will be through the reading of authentic texts in Spanish. Meeting a proficiency benchmark on the ENSATS Spanish Placement Test is a prerequisite. Students must demonstrate proficiency (77 or better as a final grade) in order to progress to the next course in the sequence. (NOTE: This course offering will commence beginning with the Class of 2028).

Spanish I - Grade 10

Course #: 6210 Level: CP Credits: 4

This required course introduces students to the Spanish language by learning Spanish in preparation for the workplace. Students learn vocabulary and concepts of basic grammar acquisition, allowing them to communicate information about themselves and others using simple sentences, both orally and in writing. The practice of all four language skills: listening, speaking, reading, and writing, helps students solidify their acquisition of the Spanish language. Active participation in class activities and completion of homework assignments are required. This course is only available to sophomores who were not able to be enrolled in Spanish I as a freshman, based on individual service and scheduling needs.

Spanish II - Grade 10

Course #: 6200, 6202 Level: Honors, CP Credits: 4

This required course continues and solidifies the introduction to the Spanish language and culture with more extended vocabulary and grammar concepts. Students will continue to practice reading, writing, listening, and speaking in Spanish. Students learn how to conjugate stem-changing verbs in the present tense, as well as both types of past-tense verbs. Spanish I is a prerequisite.

Spanish III - Grade 10

Course #: 6230 Level: H Credits: 4

Spanish III for entering grade 10 students who have successfully completed Spanish II. Students will continue to develop their skills to communicate effectively in Spanish through spontaneous conversations, retelling stories, and using complex sentences to express their ideas and opinions. The coursework will include interpersonal, interpretive, and presentational communication through journal writing and role playing. Spanish culture from countries around the world will be studied through texts, videos, and music. (NOTE: This course offering will commence beginning with the Class of 2028).

Spanish I - Grade 11

Course #: 6300 Level: CP Credits: 4

This course introduces students to the Spanish language by learning Spanish in preparation for the workplace. Students learn vocabulary and concepts of basic grammar acquisition, allowing them to communicate information about themselves and others using simple sentences, both orally and in writing. The practice of all four language skills: listening, speaking, reading, and writing, helps students solidify their acquisition of the Spanish language. Active participation in class activities and completion of homework assignments are required. This course is only available to juniors who were not able to be enrolled in Spanish I as a freshman, based on individual service and scheduling needs.

Spanish II - Grade 12

Course #: 6400 Level: CP Credits: 4

Spanish II continues and solidifies the introduction to the Spanish language and culture with more extended vocabulary and grammar concepts. Students will continue to practice reading, writing, listening, and speaking in Spanish. Students learn how to conjugate stem-changing verbs in the present tense, as well as

both types of past-tense verbs. Spanish I is a prerequisite. This course is only available to seniors who were enrolled in Spanish I as juniors.

GRADE 12 ACADEMIC ELECTIVE COURSES

HISTORY & SOCIAL SCIENCES

AP African American Studies - Grade 12
Course #: 4460 Level: AP Credits: 4
A.P. African American Studies is designed to give grade 12 students an understanding of the historic and cultural basis of the African American experience. The course explores the history of African Americans from African origins to the present; slavery and freedom in colonial and early American history, the Civil War and Reconstruction, and the 20th century struggles for civil rights. This course requires students to master historical interpretation, critical and analytical thinking, essay writing, and the integration of primary and secondary sources. cultural artifacts, evaluate relevance and reliability, and demonstrate historical knowledge in the examination of major social, political and economic forces that have helped to shape African American history and the resulting impact of African Americans on American society. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

Advanced Placement World History - Modern Grade 12
Course #: 4455 Level: AP Credits: 4
A.P. World History - Modern focuses on the study of the cultural, economic, political, and social developments that have shaped the world from c. 1200 CE to the present. The breadth of this course will offer students an opportunity to analyze epochal shifts that help to understand the modern world through an historical lens. Students will analyze texts, visual sources, and other historical evidence and write essays expressing historical arguments. Student skills will involve evaluating primary and secondary sources, analyzing claims, evidence,e and reasoning in sources, putting historical developments in context and making connections between them, and developing a claim and explaining and supporting it in writing. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

Genocide Studies - Grade 12
Course #: 4482 Level: Honors Credits: 4
This course examines the 20th century as “the century of genocide,” beginning with the Armenian genocide, the horrors of the Holocaust, and ending with the atrocities in Bosnia and Rwanda and the violence in Darfur, the Democratic Republic of Congo, and Northern Iraq. We will consider many questions in this course: What is genocide? Where did the term come from and how has it been defined and examined over time? What conditions lead to genocide? What are the warning signs? What allows people to act in such evil ways and what causes others to stand by? How can genocide be prevented? Which genocides have been emphasized, and which have been overlooked? We will explore these and other ideas through a historical lens, with critical review of primary sources and research, and through a literary lens, with first-hand accounts and survivor testimony. This course is a semester class.

Using History to Understand Contemporary Issues - Grade 12

Course #: 4410 Level: CP Credits: 4

The 21st century has brought with it unprecedented access to information through various media sources. This presents an amazing opportunity for students to explore contemporary topics with an eye toward critical discernment of sources, and the agendas and motives behind them. This course will actively explore complex issues in our contemporary society through the prism of history. Topics include: globalism and nationalism, bias in media, the Culture War, economic trends of the modern world, and major social issues and their change over time. In order to become better-informed citizens, students will practice evaluating various sources of media and bias. This will be accomplished in a variety of ways including socratic seminar, project-based learning, and facilitated debates and oral presentations. This course is a full-year semester class.

MATHEMATICS

Accounting - Grade 12

Course #: 2460 Level: CP Credits: 4

Accounting is an applied mathematics course where students learn about the operational principles necessary for success in the workplace. Topics include basic accounting procedures, debits and credits, customer needs assessment, investment activities, analyzing, evaluating, and creating financial reports, and technology applications for operating systems and budgets. This is a full-year class.

SCIENCE

Chemistry - Grade 12

Course #: 3402, 3401, 3400 Level: Honors, ACP, CP Credits: 4

This course is designed to teach students the concepts of composition, structure and properties of substances and the changes they will undergo. Topics will include the classification of matter, atomic structure, periodic table and chemical formulas, chemical reactions and gas laws. Students will utilize qualitative as well as quantitative approaches to predict outcomes and identify unknowns. Use of a scientific calculator is required. Strong math skills are recommended for the Honors Level.

Physics - Grade 12

Course #: 3412, 3411, 3410 Level: Honors, ACP, CP Credits: 4

This Physics course will introduce key concepts of the physical world including motion, energy, and electromagnetism. Hands on labs will reinforce these concepts. Measurement and problem solving including graphing and critical thinking will be introduced. Technology will be used to analyze data collected in lab activities. Use of a scientific calculator is required. Strong math skills are recommended for the Honors Level.

Advanced Placement Physics - Grade 12

Course #: 3413 Level: AP Credits: 4

A.P. Physics 1 is an algebra-based, introductory college-level physics course that will address the principles of Newtonian mechanics; work, energy, and power: mechanical waves and sound; and introductory, simple circuits. Laboratory-based inquiry learning will develop students' scientific critical thinking and reasoning skills. There is a mandatory summer assignment. Students are expected to take the College Board A.P. Physics Exam in May. College credit following successful completion of an A.P. exam will be determined by the receiving post-secondary institution.

Forensic Science - Grade 12

Course #: 3440 Level: CP Credits: 4

This is a lab-based elective designed to give students an in-depth look at the world of forensics. Students will be introduced to the basic application of science to the law. Students will learn how forensic scientists combine today's technology with the skills of the scientific community in order to help solve crimes. Topics covered include crime scene evaluation, fingerprinting, and DNA analysis as well as the examination of current cases as they relate to these topics.

WELLNESS

Dance - Grade 12

Course #: 5450 Level: CP Credits: 4

This is a full-year elective open to seniors seeking an introduction to dance with no previous experience required. The purpose of this course is to give students of varying dance abilities and experience the opportunity to enrich their kinesthetic awareness by learning several genres of dance (ballet, jazz, hip-hop, modern, social and cultural dance) as well as learning basic fitness principles, the history of dance, dance terminology, choreography, and dance production.

ENSATS EARLY COLLEGE PROGRAM COURSES

ENSATS has partnered with North Shore Community College (NSCC) to offer Early College Program courses to enrolled ENSATS students beginning in Grade 10. ENSATS Early College Program courses will be taught by NSCC instructors and supported by an ENSATS faculty member or support staff. Learning will take place on both the ENSATS and NSCC campuses throughout the term of the course. Successful completion of Early College Program courses will result in students earning both ENSATS high school credit and NSCC college credit. ENSATS Early College Program course enrollment is free to eligible students. Enrollment in the Early College Program is subject to ENSATS and NSCC funding and staffing.

Understanding Higher Education and Career Pathways - Grade 10
NSCC Course # FFL103 NSCC Credits: 3
ENSATS Course # ec4204 ENSATS Credits: 4
This course provides an introduction to higher education, including the different purposes, functions, and structures of postsecondary institutions. Students will gain a comprehensive understanding of degree and career pathways available across institutional types as well as familiarity with the social and emotional factors that influence student persistence and completion across educational settings. A variety of contemporary issues in higher education will be explored, with particular emphasis on the ways in which student experiences intersect with these issues. Topics include but are not limited to: academic discourse, social-emotional learning, educational planning, financial planning, college placement options, prerequisites/corequisites, and teaching and learning modalities. While this course focuses on higher education specifically, course topics will have application to educational settings and successful learning more broadly. This NSCC course will be taught by an NSCC instructor-of-record and will be supported by ENSATS staff. Learning will take place on both the ENSATS and NSCC campuses and transportation will be provided*. Successful completion of this Early College course will result in students earning both ENSATS high school credit along with NSCC college credit. NOTE: Grade 10 students enrolled in UHE/CP 101 will be waived from enrolling in and completing United States Government & Politics. Prerequisite: ENASTS Early College Program enrollment. This course is transferable only at North Shore Community College, Middlesex Community College, Fitchburg State University and Salem State University.

Speech - Grade 11
NSCC Course # SPE102 NSCC Credits: 3
ENSATS Course # ec1304 ENSATS Credits: 4
This Early College Program course focuses on the nature and effects of verbal communication. Students will become familiar with the communication process, including some of the following: principles of organization, purpose, language structure, effective delivery, and audience analysis. Students individually will use these elements in informative and persuasive speaking in the traditional speaker-audience relationship. Speech will be taught by an NSCC instructor-of-record and will be supported by ENSATS staff. Learning will take place on both the ENSATS and NSCC campuses and transportation will be provided*. Successful completion of this Early College course will result in students earning both ENSATS

high school credit along with NSCC college credit and may fulfill an open, liberal arts and/or social science elective requirement at NSCC and/or other Massachusetts public universities. This course is a Semester 1 only class. This course is transferable only at all public Massachusetts Colleges and Universities. Prerequisite: ENASTS Early College Program enrollment.

Composition 101 - Grade 11 NSCC Course # CMP101 NSCC Credits: 3
ENSATS Course # ec1305 ENSATS Credits: 4
Emphasis is on developing skills of writing, reading, analytical thinking, and research. Students are introduced to thought provoking ideas in readings from a variety of disciplines and learn to organize material, analyze ideas, and produce clear writing. This NSCC course will be taught by an NSCC instructor-of-record in and will be supported by ENSATS staff.. Learning will take place on both the ENSATS and NSCC campuses and transportation will be provided*. Successful completion of this Early College course will result in students earning both ENSATS' high school credit along with NSCC college credit. This course is a Semester 2 only class. This course is transferable only at all public Massachusetts Colleges and Universities. Prerequisite: ENASTS Early College Program enrollment.

Introduction to Psychology - Grade 12
NSCC Course # PSY 102 NSCC Credits: 3
ENSATS Course # ec4405 ENSATS Credits: 4
This Early College Program course engages students in systematic study of behavior including the development of psychology as a science, the biological basis of behavior, learning and memory, motivation, sensation and perception, personality development, cognitive processes, maturation and development, and adjustment. "Introduction to Psychology "will be taught by an NSCC instructor-of-record and will be supported by ENSATS staff. Learning will take place on both the ENSATS and NSCC campuses and transportation will be provided. Successful completion of this Early College course will result in students earning both ENSATS' high school credit along with NSCC college credit and may fulfill an open, liberal arts and/or social science elective requirement at NSCC and/or other Massachusetts public universities. This course is a Semester 1 only class. This course is transferable only at all public Massachusetts Colleges and Universities. This course is a Semester 2 only class. Prerequisite: ENASTS Early College Program enrollment.

Introduction to Sociology - Grade 12
NSCC Course # SOC 106 NSCC Credits: 3
ENSATS Course # ec4404 ENSATS Credits:4
This Early College Program course introduces students to the study of society, employing all the basic concepts of sociology, such as: the structure and functions of society, culture, norms, roles and status. Attention is given to the origins of sociology, its methods and its place as one of the social sciences. "Introduction to Sociology " will be taught by an NSCC instructor-of-record and will be supported by ENSATS staff. Learning will take place on both the ENSATS and NSCC campuses and transportation will be provided. Successful completion of this Early College course will result in students earning both ENSATS' high school credit along with NSCC college credit and may fulfill an open, liberal arts and/or social science elective requirement at NSCC and/or other Massachusetts public universities. This course is a

Semester 1 only class. This course is a Semester 1 only class. This course is transferable only at all public Massachusetts Colleges and Universities. Prerequisite: ENASTS Early College Program enrollment.

MULTILINGUAL - ENGLISH LEARNER COURSES

ML English - Grade 9

Course # 1105 4 Credits

This course is designed for students at the beginning/entering English language proficiency level. This culturally responsive course focuses on developing a student's listening, speaking, reading, and writing skills in English. Students will regularly interact with text and each other in these classes. . Students will learn how to write compositions aligned with the WIDA Standards, Massachusetts Curriculum Frameworks and MCAS with a focus on narrative in ESL 1.

ML English - Grade 10

Course #1205 4 Credits

This course is designed for students at the beginning/entering English language proficiency level. This culturally responsive course focuses on developing a student's listening, speaking, reading, and writing skills in English. Students will regularly interact with text and each other in these classes. . Students will learn how to write compositions aligned with the WIDA Standards, Massachusetts Curriculum Frameworks and MCAS with a focus on narrative in ESL 1.

ML English - Grade 11

Course #1305 4 Credits

This course is designed for students at the beginning/entering English language proficiency level. This culturally responsive course focuses on developing a student's listening, speaking, reading, and writing skills in English. Students will regularly interact with text and each other in these classes. . Students will learn how to write compositions aligned with the WIDA Standards, Massachusetts Curriculum Frameworks and MCAS with a focus on narrative in ESL 1.

ML English - Grade 12

Course #1405 4 Credits

This course is designed for students at the beginning/entering English language proficiency level. This culturally responsive course focuses on developing a student's listening, speaking, reading, and writing skills in English. Students will regularly interact with text and each other in these classes. . Students will learn how to write compositions aligned with the WIDA Standards, Massachusetts Curriculum Frameworks and MCAS with a focus on narrative in ESL 1.

WELLNESS COURSES

Wellness - Grade 9

Course #s: 5100, 5110 Level: CP Credits: 4

Freshmen will be enrolled in a semester of Physical Education and a semester of Health Education. Wellness courses take place during the CTAE Week. During Physical Education, students will learn how to safely use the equipment in the fitness center, participate in cooperative activities, and utilize the adventure course to teach appropriate risk taking and team building. Students will also have the opportunity to participate in various yoga and mindfulness type activities when available. During Health Education, students will learn and understand the leading causes of death in the U.S. and how their lifestyle choices can help prevent them. They will become aware of the signs and symptoms of the most commonly diagnosed mental illness. Students will also be exposed to the proper nutritional guidelines around food preparation, serving sizes, food labels, and counting calories. In addition, students will learn about how to manage their time better to reduce stress.

Wellness - Grade 10

Course #s: 5200, 5210 Level: CP Credits: 4

Sophomores will be enrolled in Physical Education and Health Education. Wellness courses take place during the CTAE Week. During Health Education, students will talk about the many risks youth face today, including drug/alcohol abuse, violence, and sexually transmitted diseases. One of the goals of this course is to help teens understand the causes of drug/alcohol abuse and to prevent its onset. The Human Sexuality unit will present factual information and encourage students to apply the information when making responsible decisions. Other topics that will be discussed include: anatomy, physiology, sexual responsibility, danger of teenage pregnancy, contraception, and sexually transmitted diseases. During Physical Education, students will continue to learn how to safely use the equipment in the fitness center, participate in cooperative activities, and utilize the adventure course to teach appropriate risk taking and team building. Students will also have the opportunity to participate in various yoga and mindfulness type activities when available.

Wellness - Grade 11

Course #s: 5300, 5310 Level: CP Credits: 4

Juniors will be enrolled in Physical Education and Health Education. Wellness courses take place during the CTAE Week. During Health Education, students will learn and explore more complex aspects of nutrition. Students will have an opportunity to understand the essential components of nutrition and their personal needs based on their current health, activity level and future goals. Focus will also be spent on developing healthy relationships, while learning about effective communication and understanding and respecting differences. Lastly, an in depth look at the components of physical fitness will be explored. Students will understand these components and learn about the various types of exercises that can be done to increase their overall physical fitness. During Physical Education, students will have the opportunity to design personal workout routines, participate in cooperative activities, and utilize the adventure course. Personal workout routines are designed daily by students using a workout template sheet and may consist of favorite exercise routines or exercises they have been exposed to previously in the fitness center. Cooperative activities consist of net games, invasion games, and team building activities. Students will also have the opportunity to participate in various yoga and mindfulness type activities when available.

Wellness - Grade 12

Course #: 5400, 5410 Level: CP Credits:4

Seniors will be enrolled in Physical Education and Health Education. Wellness courses take place during the CTAE Week. During Physical Education, students will have the opportunity to design personal workout routines, participate in cooperative activities, and utilize the adventure course. Students must commit to either choice for an entire cycle. Personal workout routines are designed daily by students using a workout template sheet and may consist of favorite exercise routines or exercises they have been exposed to previously in the fitness center. Cooperative activities consist of net games, invasion games, and team building activities. Students will also have the opportunity to participate in various yoga and mindfulness type activities when available. During Health Education, students will learn about First Aid/CPR education. Students will understand how to perform CPR correctly and in what situations it would be used. Students will also gain knowledge in First Aid and how to perform various fundamental treatments on others when needed. Another focus of this course will be to provide students with an understanding of the responsibilities of parenthood and different factors they will encounter in their lives. This unit will go into how those specific factors will influence an individual as well as the entire family's ability to raise a child and how their components of wellness are affected differently. The last aspect of this course will cover a community based service learning project where students will take an active role as a class to help out around the community or to create a fundraising event for good causes around the area.

ADDITIONAL COURSES

Curriculum Seminar - Grade 9, 10, 11, 12

Course #: 7100i, 77200i, 7300i, 7400i Level: CP Credits: 4

Curriculum Seminar is designed to support the academic learning and organizational needs of students seeking additional support to complete their academic coursework at Essex North Shore Agricultural & Technical School. In addition to providing students with focused in-school time to continue working on their academic coursework assignments, the Curriculum Seminar classroom also provides explicit instruction in organizational strategies and ongoing support to help students successfully complete their academic work. With that in mind, the daily classroom protocols must (a) maximize instructional time, (b) create a supportive, predictable environment, and (c) foster self-regulating learning skills. Enrollment in this course requires IEP team recommendation.

Academic Seminar 11, 12

Course #: 7311, 7411 Level: CP Credits: 4

The Academic Seminar is designed to support the academic learning and organizational needs of students seeking additional support to complete their academic coursework at Essex North Shore Agricultural & Technical School. In addition to providing students with focused in-school time to continue working on their academic coursework assignments, the Academic Seminar classroom also provides explicit instruction in organizational strategies and ongoing support to help students successfully complete their academic work. With that in mind, the daily classroom protocols must (a) maximize instructional time, (b) create a supportive, predictable environment, and (c) foster self-regulating learning skills. Students taking Academic Seminar courses are required to sign and return this Academic Seminar Student & Parent/Guardian Contract

Study Strategies

Course: # 7120i, 7220i, 7320i, 7420i Level: CP Credits:1

This full-year course focuses on developing strategies to meet individual student goals in learning and lifelong success. Lessons include fostering an understanding of personal strengths and weaknesses and reflective practices for individual accountability. Students will learn about a variety of strategies, including organization, planning, self-advocacy, time management, and assessment preparation. A portion of each class block will be designated to course work for students to apply taught skills and strategies. Enrollment in this course requires IEP team recommendation.

Comprehensive STEM

Course # CSTEM300 Level: CP Credits: 4

This full-year course offers students the opportunity to review algebraic and geometric concepts, and, if necessary, select biology units to prepare them for taking either, or both, the MCAS Mathematics Retest and/or MCAS Biology Retest. The curriculum will be customized based on the students' prior MCAS diagnostics. The course meets the requirements of an Educational Proficiency Plan and counts as a mathematics or science course per Mass CORE.

STUDENT SUPPORT SERVICES

SCHOOL COUNSELING SERVICES

The Essex North Shore Agricultural & Technical School Counseling faculty provides comprehensive, school-based services to all students with the goal of nurturing skills for students' success during high school and beyond. Freshman students are assigned to a Grade 9 freshman counselor who assists them with their transition to a regional, career technical and agricultural high school. The Grade 9 counselors also work closely with Grade 9 students to assess their career interests in preparation for participation in the Grade 9 Exploratory Program and the ensuing career technical and agricultural program placement. These freshman counselors continue to work with students throughout their ninth grade experience. Beginning in Grade 10 ~~to~~ and through Grade 12, students are assigned to a CTAE program-specific School Counselor.

At all grade levels, students participate in developmental academic and career guidance lessons delivered by school counselors throughout each year and students graduate having developed a Four-Year Career Plan with the support of their school counselors. Students and their families may access information in their respective student's Career Plan and explore career and college opportunities on their student's *Naviance Student* account (link below).

All students have access to supportive interventions from school counselors and school adjustment counselors to address their developmental, social, and emotional needs. Collaboration with caregivers is also an essential component of our school counseling model. Caregivers are encouraged to contact their student's school counselor as circumstances arise. Appointments with school counselors and school adjustment counselors are welcome and can be scheduled by emailing or calling the counselor directly.

In addition to providing regular parent/family support on an individual basis, the Essex North Shore Agricultural & Technical School Counseling Department also sponsors the following family information sessions annually:

New Student Family Orientation
College Fair
Senior College & Career Planning Family Info Session
Financial Aid Information Session
Freshmen CTAE Program Selection Family Info Session
Sophomore & Junior Post Secondary Planning Family Info Session

HEALTH SERVICES

The Essex North Shore Agricultural & Technical School Health Office is staffed by four full time School Nurses (RN's). The School Nurses promote health and safety and facilitate the success and well-being for all members of the ENSATS school community by intervening with actual and potential health problems and by building student and family capacity for adaptation, self-management, self-advocacy and lifelong learning as it relates to wellness. Specifically, our School Nurses address/implement:

- First aid for injuries and initial care for illness for students and staff
- Assessment of students health, growth and development
- Detection, treatment, and follow-up on health issues interfering with student learning

- Referrals to parent or physician as necessary
- Student medication administration
- State-Mandated Health Screenings
- Coordinate receipt and review of physical exams and immunization records
- Responsible for communicable disease reporting and control.

For students with specific health care needs due to chronic or emergent needs or conditions, including those whose Individual Education Programs or 504 Accommodation Plans document health related needs and services, the School Nurses may be identified as a school based service provider. In doing so, ENSATS School Nurses are frequently in communication with family contacts, health care providers and community resources as necessary and appropriate.

The School Nurses are also available to facilitate health education, social welfare referrals, health insurance referrals and/or dental referrals. They guide and develop school and district health policies, nutritional guidance and encourage staff wellness. Our School Nurses also share responsibility for crisis intervention and education and are active participants in awareness training and response to crises teams.

EDUCATIONAL STABILITY

EDUCATIONAL OPPORTUNITIES FOR HOMELESS CHILDREN & YOUTH

The McKinney-Vento Homeless Assistance Act and the Elementary and Secondary Education Act (ESEA), as amended by the Every Student Succeeds Act (ESSA) of 2015, ensure educational rights and protections for children and youth experiencing homelessness. The Massachusetts Department of Elementary and Secondary Education has adopted Section 725(2) of this Act regarding the definition of homeless children and youth to include:

> Individuals who lack a fixed, regular, and adequate nighttime residence or have a primary nighttime residence in a supervised, publicly or privately, operated shelter for temporary accommodations (including welfare hotels, congregate shelters, and transitional housing for the mentally ill), an institution providing temporary residence for individuals intended to be institutionalized, or a public or private place not designated for, or ordinarily used as, a regular sleeping accommodation for human beings. This definition shall include: children and youth who are sharing the housing of other persons due to loss of housing, economic hardship, or a similar reason; are living in motels, hotels, trailer parks, or camping grounds due to the lack of alternative adequate accommodations; are living in emergency or transitional shelters; are abandoned in hospitals; children and youth who have a primary nighttime residence that is a public or private place not designed for or ordinarily used as a regular sleeping accommodation for human beings; children and youth who are living in cars, parks, public spaces, abandoned buildings, substandard housing, bus or train stations, or similar settings; migratory children (as such term is defined in section 1309 of the Elementary and Secondary Education Act of 1965) who qualify as homeless because they are living in

circumstances described above; and unaccompanied youth a youth not in the physical custody of a parent or guardian.

EDUCATIONAL OPPORTUNITIES FOR CHILDREN IN FOSTER CARE

The Essex North Shore Agricultural & Technical School District (ENSATSD hereafter) and Essex North Shore Agricultural & Technical School (ENSATS hereafter) are committed to ensuring continued enrollment, attendance, and the opportunity to succeed in school for youth engaged in the foster care system consistent with ESSA (2015) excerpts related to Title 1 Part A foster care enrollment provisions. The purpose of this policy is to ensure the educational stability of students in foster care and their equal access to the same free and appropriate public education through high school graduation as provided to other students as required by law. Educational stability has a lasting impact on students' academic achievement and wellbeing. ENSATSD is committed to supporting school and community efforts to ensure that students in foster care have access to high-quality, stable educational experiences.

EDUCATIONAL OPPORTUNITIES FOR MILITARY CHILDREN

The Essex North Shore Agricultural & Technical School District (ENSATSD hereafter) and Essex North Shore Agricultural & Technical School (ENSATS hereafter) are committed to ensuring continued enrollment, attendance, and the opportunity to succeed in school for students experiencing housing or living transitions due to a family member's military status or connection as it is appropriate and necessary to remove barriers to educational success imposed on children of military families because of their parents'/guardians' frequent moves and deployment. In an effort to facilitate the placement, enrollment, graduation, data collection and provision of special services for students transferring into or out of the District because of their parents/guardians being on active duty in the U.S. Armed Services, ENSATSD supports and will implement its responsibilities as outlined in the Interstate Compact on Educational Opportunity for Military Children.

NEWCOMER & MIGRANT STUDENT ENROLLMENT

"Newcomer and refugee school-aged students are legally entitled to equal access to a free public education without regard to their or their parents' or guardians' national origin or immigration status as established by the U.S. Supreme Court in *Plyler v. Doe*, 457 U.S. 202 (1982). Newcomer and refugee school-aged students have the right to attend the public schools in the town in which they reside and must be permitted to enroll in public schools without undue delay." (Source: the Massachusetts Department of Elementary & Secondary Education, A Memo from the Commissioner: Welcoming Newcomer and Refugee Students and Families, 2022). For more information visit doe.mass.edu/ele/resources/immigrant-refugee or contact the ENSATS' Educational Stability Point of Contact (also known as the District Homeless Liaison and Foster Care Point of Contact).

To view these policies in their entirety, visit: EssexNorthShore.org/district/. For additional information on these district policies, or to refer a student for support and intervention consistent with these district policies contact the ENSATSD District Homeless Education Liaison and/or Foster Care Point of Contact.

STUDENT ACTIVITIES

Participation in extracurricular clubs and student government can be a rewarding and meaningful educational experience that enhances a child's secondary education. It is important that students realize the time demands, responsibility, dedication and sacrifices required when making this kind of commitment. The following information defines the extra-curricular policies and procedures for all students participating in our High School activities. Please refer to the Student Activities Handbook for a better understanding of our philosophy, goals, and policies, or when a question about your child's extra-curricular experience arises.

FFA

FFA is an intra-curricular student organization for those interested in agriculture and leadership. It is one of the three components of agricultural education. FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education. FFA develops members' potential and helps them discover their talent through hands-on experiences. FFA members can compete in Career Development Events (CDE) that cover job skills.

SKILLSUSA

SkillsUSA is a partnership of students, teachers, and industry working together to ensure America has a skilled workforce. We provide educational programs, events, and competitions that support career and technical education (CTAE) in the nation's classrooms. SkillsUSA's mission is to empower its members to become world-class workers, leaders and responsible American citizens. SkillsUSA improves the quality of America's skilled workforce through a structured program of citizenship, leadership, employability, technical and professional skills training.

ART CLUB

Students are encouraged to come to this club to explore their creative talents and enjoy some DIY projects, art appreciation and have fun!

CHORUS

Chorus and Advanced Chorus offer students an opportunity to sing acapella and contemporary choral pieces. Chorus meets on Thursdays until 4:00, and Advanced Chorus meets on Thursdays until 5:45. The Chorus season runs from September – December. Singers will work towards a December concert. All levels of singers welcome!

COMMUNITY SERVICE-KEY CLUB

Key Club is a service leadership organization for high school students who love to help in their communities and get involved.

DANCE CLUB

Dance Club is an extra-curricular group of students who are passionate about dance and creative movement and most importantly, are willing to try new things. Students who participate in Dance Club will commit to

a student dance performance at least once during the school year. All students are encouraged to join the Dance Club or reach out to the club advisor with any questions.

DECA

Distributive Education Clubs of America (DECA) Club is an intra-curricular organization that prepares emerging leaders and entrepreneurs as they pursue careers in business management and administration, entrepreneurship, finance, hospitality and tourism, marketing, and personal financial literacy. Students compete with other DECA members in state and national competitions. Student leadership, social endeavors, and philanthropic activities are the focus of this program.

DRAMA CLUB

Drama Club promotes creativity, community, and an opportunity for students to be involved in all aspects of production – from acting to stagecraft. The year will include a fall play, a winter entry into the Massachusetts Educational Theater Guild's High School Festival, and a spring musical.

ENVIRONMENTAL ACTION CLUB

Activities include recycling, trail maintenance, setting up bat or bird boxes, composting, outdoor recreation, beach cleanup and volunteer work with other organizations.

EQUESTRIAN CLUB DRILL TEAM

An equestrian drill team is a group of horses and riders performing choreographed maneuvers to music.

GOAT CLUB

Learn more about goats! Activities include completing an agility course, maintaining their coats and nails, and providing environmental enrichment.

GSA

Gay Straight Alliance (GSA), also known as Essex North Shore Agricultural & Technical School Awareness Group (ETAG), is a forum of support for every sort of diversity, including but not limited to gender and sexual orientation issues, religious issues, and racial issues. GSA is a group of thoughtful and caring Essex North Shore Agricultural & Technical School citizens who are excited to belong to a school where diversity is not only accepted but encouraged. GSA sponsors social activities as well as forums for the education of the school community about the importance of tolerance and diversity.

HORROR LITERATURE CLUB

Horror Literature Club is for students who are interested in reading and writing horror stories. Participants will examine classic and contemporary horror stories and novels from Edgar Allan Poe to Stephen King. Participants will learn about the development of the horror genre by focusing on the six elements of effective horror.

LATINO STUDENT ORGANIZATION

The Latino Student Organization welcomes students from any background who are interested in learning more about latino culture! The purpose of the Latino Student Organization is to promote cultural awareness

and education as well as to provide a safe space for students to meet, express, and engage with the Latino culture.

LITERARY MAGAZINE (The Hawk and the *Quill*)
The purpose of the "Magazine" is to provide the experience of writing, evaluating, and publishing creative works–paintings, line art, photography, graphic art, stories, poetry, and personal narratives–by students. All students are welcome to participate–contributions will be accepted throughout the year, focused on two publications–Winter and Spring, depending on interest and contribution.

LIVESTOCK SHOWING-CATTLE CLUB
This club is for students who want to learn to show cattle in fitting and showmanship competitions. Students will choose a school cow to work with and train to show in local cattle shows, such as the Topsfield Fair.

MATH TEAM
If you love math and a challenge, the Math Team is for you! Members collaborate to solve puzzles, brain teasers, and challenging math problems in the areas of Algebra 1, Geometry, Algebra 2, and Related Tech. We are always coming up with new ways to think "outside the box!" All grade levels and math backgrounds are welcome.

MODEL UNITED NATIONS
Model United Nations (or UN) is a club for students interested in sharing views on global issues, diplomacy, and current events, along with those looking to improve their negotiation and public speaking skills. Student delegates attend Model UN conferences at colleges and high schools in the area during the school year. At these conferences, members act as diplomats from various nations and negotiate solutions to pressing problems facing our world today.

MUSIC CLUB
Music club invites any student who has a passion for music to bring and play instruments, sing or just appreciate the bands and music they love with like-minded peers. This will be an informal gathering for music lovers; voluntary performances are a possibility if students are interested, but no musical ability is required to attend.

NATIONAL HONOR SOCIETY & NATIONAL TECHNICAL HONOR SOCIETY
Celebrating outstanding educational achievement and advancement in career and technical education. Open to juniors and seniors with a cumulative grade point average of ~~3.5~~ 3.87 who demonstrate leadership, service, and good character. This is an application process through invitation.

POLITICAL ACTION CLUB
ETPAC (Essex North Shore Agricultural & Technical School Political Action Club) is a forum for allowing students to explore politics and have civil discourse on issues relating to federal, state, and local government.

SCIENCE TEAM

The Essex North Shore Agricultural & Technical School Science Team participates in the North Shore Science League. In the North Shore Science League, schools compete against each other in events involving building, invention, engineering, lab techniques, and application of knowledge. All areas of science are included in events during the year. Students travel to seven meets over the course of the year.

SNAPSHOT PHOTOGRAPHY CLUB

Snapshot Photography club welcomes any student who wants to learn more about photography, use high-quality cameras, edit photos in Photoshop, or simply just have fun snapping cool shots. This club offers complete creative freedom since students will choose their own projects and can work in groups or individually.

STUDENT MENTORS

The Student Mentors are a select group of upperclass students who are committed to helping our freshmen transition to Essex North Shore Agricultural & Technical School. These students help at orientation and make connections with freshmen throughout their first year as Essex North Shore Agricultural & Technical School students.

U-ACT

The U-ACT at Essex North Shore Agricultural & Technical School has as its mission to educate our school community to respect the differences within our culture, and that our similarities far outweigh our differences. Our goal is to create an atmosphere where all who enter our school community feel comfortable being a part of our school.

WEIGHTLIFTING CLUB

Physical fitness plays an essential role in longevity, health and character building. The education that can be attained in this club will not only help students stay fit and healthy, but they will also learn the significance and fundamentals of dedication, loyalty, and setting goals.

YEARBOOK

Come and make some lasting memories while creating and organizing the School Yearbook. Yearbook is open to all students to work on a student-designed yearbook that covers the whole school and school year. If you are creative, like to take photos and create some cool pages – we'd love to have you.

VIDEO GAME CLUB

Video Game Club is the place to go to play and discuss games. Video Game Club is dedicated to not only working on cooperation and teamwork through exciting games but also about having fun and working on social skills with the other players. Games and consoles may vary, but some of the games that are often brought in include Mario Kart 8, Super Smash Bros, and Kirby Star Allies. The Video Game Club and their adviseor believe in equality and friendliness.

ATHLETICS

At Essex North Shore Agricultural & Technical School, athletics are considered an integral part of the educational experience. Athletics provides opportunities which will help students develop physically,

mentally and emotionally. Participation in athletics is viewed as a healthy, educational and psychological activity. It challenges each student to excel, discover their physical limits, and requires students to work cooperatively as members of a team. While competition and winning are natural goals in the pursuit of excellence, the principles of good sportsmanship and competition take precedence at all times and enhance the educational value of contests. For more information contact the ENSATS Athletic Director or visit https://essexnorthshore.org/athletics-activities/athletics/.

FALL SPORTS

- Cheer (Varsity, JV)
- Cross Country Boys & Girls (Varsity)
- Field Hockey - (Varsity, JV)
- Football (Varsity, JV, Freshman)
- Golf (Varsity, JV)
- Soccer - Boys (Varsity, JV)
- Soccer - Girls (Varsity, JV)
- Volleyball - Girls (Varsity, JV, Freshmen)

WINTER SPORTS

- Basketball - Boys (Varsity, JV, Freshman)
- Basketball - Girls (Varsity, JV, Freshman)
- Cheer (Varsity)
- Gymnastics - Coed (Varsity)
- Ice Hockey – Boys (Varsity, JV)
- Ice Hockey – girls (Varsity, JV) – Coop with Bishop Fenwick host school
- Indoor Track -– Boys & Girls (Varsity, JV)
- Swimming - Boys & Girls (Varsity, JV) – Coop with Peabody host school
- Wrestling – (Varsity) Coop with Masco

SPRING SPORTS

- Baseball (Varsity, JV, Freshman)
- Lacrosse - Boys (Varsity, JV)
- Lacrosse - Girls (Varsity, JV)
- Track and Field - Boys & Girls (Varsity, JV)
- Softball (Varsity, JV, Freshman)
- Volleyball – Boys (Varsity, JV)

APPENDIX

POST SECONDARY PLACEMENT CLASS of 2022

4 year College, University	59.5%	Career	21.9%
2 year College, University or Post Secondary Education	10.6%	Military	.8%

STANDARDIZED ASSESSMENT INFORMATION FOR POST-SECONDARY & COLLEGE ADMISSIONS

There are many preparation tests and general information regarding scoring and statistics found on this website.

AP information can be found at www.collegeboard.org.

PSAT information can be found at www.collegeboard.org.

SAT information and registration can be found at www.collegeboard.org.

ACT information and registration can be found at www.act.org.

ACCUPLACER information can be found at www. Accuplacer.collegeboard.org.

ASVAB information can be found at https://www.officialasvab.com/.

ARTICULATION AGREEMENTS

Articulation agreements are formal agreements or partnerships between Essex North Shore Agricultural & Technical School and participating colleges or post-secondary educational institutions (Community College, Technical Program or 4 year college) documenting transfer policies that define a pathway from an academic or technical program in one place to the other. Eligible students may access course articulations to not only ensure that the courses they complete while in high school will not have to be repeated at the post secondary institution which they are attending but also to earn advanced college credit when applicable.