Montachusett Regional Vocational Technical School

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Program of Studies 2018 - 2019

Serving the Communities of
Ashby ◆ Ashburnham ◆ Athol ◆ Barre ◆ Fitchburg ◆ Gardner ◆ Harvard
Holden ◆ Hubbardston ◆ Lunenburg ◆ Petersham ◆ Phillipston ◆ Princeton
Royalston ◆ Sterling ◆ Templeton ◆ Westminster ◆ Winchendon

An Academic / Vocational Technical Integrated Educational Plan

Montachusett Regional Vocational Technical School does not discriminate on the basis of race, color, gender, gender identity, ethnicity, sexual orientation, disability, religion or national origin.

District Title IX Compliance Coordinator: Principal Thomas Browne, (978) 345-9200 x5205

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Message from the Principal

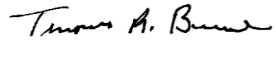
Dear Students, Parents and Guardians,

On behalf of the entire faculty, staff and administration, I cannot emphasize enough the importance of the document that you have in your hand. The essential goal of any secondary school is to fully prepare its students to either enter the work force as a highly skilled employee or to enroll at a college, university or institute with the skills to immediately begin a pathway towards a degree without any remediation. We take great pride in the fact that, at Montachusett Regional Vocational Technical School, we provide a multitude of resources and skilled instructors who can ensure that you will graduate from our school fully prepared to choose either of these options.

However, while Monty Tech will provide the opportunity, it is up to the student to decide which pathway they want to take and which destination they seek – college, career or even military or civic service. This document, The Program of Studies, is the map for this journey. I strongly encourage all families to review this document together to help develop the best possible four-year journey for each student. The choices arise quickly as each incoming freshman will immediately participate in our Exploratory Program as they consider which vocational program satisfies their ambitions. However, the journey also immediately begins in terms of academics. Students need to plan ahead and consider, for example, if they want to prepare themselves for our rigorous advanced placement offerings or dual enrollment programs as an opportunity to experience college-level instruction while still enrolled at Monty Tech. The best method of considering all these options is to be fully aware of the information in this Program of Studies.

To conclude, while all students, parents and families should recognize that there are certainly academic and vocational expectations that must be met in order to receive a diploma, there are numerous opportunities to personalize your school experience through elective offerings, co-operative education placements, extracurricular activities and athletics. However, it is up to you to make these choices as you shape what we as teachers, instructors, paraprofessionals and administrators hope will be four years that offer you academic and vocational experiences that will provide you with a boundless future.

No matter which leg of this journey you are embarking on, I wish you nothing but good fortune.



Thomas Browne, Principal

MISSION STATEMENT

Every student will graduate from Montachusett Regional Vocational Technical School with the skills, knowledge, and abilities to be a productive and effective member of an ever-changing society.

NEASC ACCREDITATION

Most recently in 2016, Montachusett Regional Vocational Technical School was accredited by the New England Association of Schools and Colleges (NEASC), a non-governmental, nationally recognized organization whose affiliated institutions include elementary schools through collegiate institutions offering post-graduate instruction. Specifically, Monty Tech is accredited by the Commission on Public Schools, one of the four commissions that comprise NEASC.

Accreditation of an institution by the New England Association indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer review process. An accredited school or college is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the New England Association is not partial but applies to the institution as a whole. As such, it is not a guarantee of the quality of every course or program offered, or the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the institution.

Inquiries regarding the status of an institution's accreditation by the New England Association should be directed to the administrative staff of the school or college. Individuals may also contact the Association:

New England Association of Schools and Colleges
209 Burlington Road, Bedford, MA 01730
(781) 271-0022

Montachusett Regional is an equal opportunity educational institution. All courses and activities are open to all students without regard to race, ethnicity, color, gender, sexual orientation, religion, national origin or handicap.

REQUIREMENTS – CREDITS AND GRADUATION

Carnegie Credit System

Satisfactory completion of all courses at Monty Tech results in students earning "Carnegie Credits" which are accounted for on a student's transcript. A student's academic and vocational courses alternate from week to week (A week/B week) with students moving through nine scheduled periods during academic week and remaining in their shop program throughout the day during vocational week.

Each individual period during a full-year academic course is valued at .5 Carnegie credits. Therefore, successful completion of a two-period, full-year, course such as in English, Math and Science results in earning one full Carnegie credit. Completion of a full-year, one period class, such as U.S. History or Spanish earns .5 credits, and the completion of a semester long, one period, elective earns .25 credits.

In terms of the vocational week, since students remain in the shop for all nine periods, successful completion earns 4.5 credits. During any given year, successful completion of all coursework will result in 9 credits.

Promotion and Graduation

Using the Carnegie credit system described above, students must earn the following number of credits to be promoted to the next grade and eventually graduate. For promotion to the next grade, students are required to satisfy grades in English, Math and Science during the current school year or, in the case of failure, during that school year's summer school session.

In order to advance from…	***Students must have earned…***
Freshmen to Sophomore year…	8 credits
Sophomore to Junior year…	17 credits
Junior to Senior year…	26 credits
In order to graduate…	35 credits

All families are further reminded that since the adoption of the Education Reform Act in 1993, the Massachusetts Department of Elementary and Secondary Education mandates that all students must receive a competency determination by earning a passing score on the Massachusetts Comprehensive Assessment System (MCAS) in the areas of English Language Arts, Mathematics and Science in order to graduate and earn a diploma.

Distribution of Required Course Credit

In order to fully ensure the college and career readiness of all Monty Tech students, the following cumulative graduation requirements must be met by all students.

	Years	**Credits**
English	4	4
Math	4	4
Science	4	4
History / Social Sciences	4	2
Related Theory and/or Electives: *Physical Education, World Language, Leadership, Visual Arts, Yoga and Meditative Art, Freshmen Seminar, Directed Studies, etc.*	4	3
Vocational Program	4	18.00
Total		**35.00**

Students should particularly note the following –

- All seniors must have earned all of their graduation credit requirements in order to participate in the annual Graduation ceremony.
- Beginning with the Class of 2021, all students will be required to successfully complete Chemistry or Physics in order to meet graduation requirements.
- Physical Education is a federally mandated course for students.
- Earning a passing grade/credit in a student's Vocational Shop course (and for Exploratory during Freshmen year) is non-negotiable. Failure in these areas will result in automatic retention.
- Credits are counted cumulatively. Therefore, students should be mindful that multiple failures even in lower-credit bearing courses can affect a student's graduation status.

COURSE SCHEDULING PROCEDURES

In late winter, students will begin selecting courses for the next year. All students will be provided access to the Program of Studies and a course selection form. Faculty will make time available to provide recommendations for the next appropriate course and level in a particular core subject area. Students will also select a sufficient number of electives to meet the nine credits per year requirement. **Be aware that certain courses need teacher approval and/or grade prerequisites.** Students will meet with their guidance counselor to review and finalize their course selections.

Students are encouraged to critique their final choices with their parents. Any changes can be discussed with their guidance counselor and/or possibly the Director of Academics or Director of Vocational Programs. Students must be attentive to fulfilling the required distribution of credits needed for graduation in selecting their courses.

Honoring Students' Course Selections

Every effort will be made to honor all course selections. Core courses will receive priority. We are, however, limited by our facilities and size of faculty. Since we attempt to individualize each student's program, the school is complicated to schedule. All students ***must select*** three or four alternative electives during the course request period. We reserve the right to assign students to their alternate choices, or other available electives, when their primary choices will not schedule. In such cases, students may not be notified. Course offerings may be limited due to enrollment, staffing, and course requests. To accommodate scheduling, we reserve the right to change the semester a student will take a course when the course is offered both semesters. This option will help balance class sizes.

Receiving Course Schedules

After all course selections have been finalized, a master schedule will be developed. All students will be scheduled by computer, using the master schedule. Once schedules have been completed for all grades they will be made available to all students in early August.

Course Change Policy

A great deal of time and thought is devoted, each year, to student course selection and a master schedule with an appropriate number of course sections to successfully meet the needs of our students. It is the view of Monty Tech that part of a student's education involves learning to adjust to a variety of personalities, instructional styles, class management techniques, and course assignments. Therefore, changing student schedules should not be a whimsical exercise.

To accommodate the changes of heart or career pathways, there will be a two week window of opportunity offered at the beginning of each semester, during which students can, where space permits, change courses. After this period, changes to individual schedules will generally not be permitted.

An exception to the above mentioned policy will be changes to course levels. An example would be moving from Honors Chemistry to Chemistry (CP4). This process may be initiated by a parent, student or teacher. A Change of Course Form must be secured from the student's guidance counselor. The completion of this form, to include a statement of reason for the change along with the signatures of the parent, guidance counselor, classroom teacher, and appropriate Director approving the change, is required to make any adjustments. If there is no consensus, a meeting involving these parties will be initiated. If no agreement is attained, the parent may request, in writing, a review by the designated school administrator. If the request for a change is approved, a (WP) Withdrawn-Passing or (WF) Withdrawn-Failing will appear on the transcript. Whatever grades the student has achieved will be transferred to the new class.

A change of teacher while keeping the same course is discouraged. Parents are requested to discuss classroom conflicts or issues with that teacher and, if needed, the appropriate administrator. If unsatisfied, a parent can make a request for teacher change with the Principal. This request must be in writing and detail the specific complaints or concerns initiating the change. The Principal will not review any request not submitted, with details, in writing. Like above, all grades from dropped courses will transfer to the new class.

PATHWAYS TO COLLEGE

The overall function of the curriculum at Montachusett Regional Vocational Technical School is twofold. First and foremost, the curriculum is designed to guarantee that students, upon graduation, have employable skills so that they are adequately prepared for the world of work. Furthermore, in order to ensure that all potential pathways are accessible, the curriculum is doubly designed to provide challenging college preparatory courses to those students who, upon graduation, intend to pursue higher education in the form of college, university or technical schools. No matter what path a student is considering, it is extremely important that students reflect on their goals and identify their pathway as early as freshman year in order to meet the professional expectations or collegiate admissions standards**.**

In terms of those collegiate standards, the Massachusetts High School Program of Studies (MassCore) is the recommended program of study that Massachusetts high school students need in order to be better prepared for college and a career. Developed by a statewide advisory group consisting of K-12, higher education and business representatives, MassCore intends to provide consistent standards for students and high schools while allowing districts to set their own additional graduation requirements. Courses included in MassCore are rigorous, engaging, and based on appropriate Massachusetts Curriculum Frameworks high school level standards.

MASSCore Requirements for Admission to a four-year Public College/University:

Course Subject Area	Number of Full Academic Years Recommended
English	**4 years**
Math	**4 years** - Including the completion of Algebra II or completion of the Integrated Math equivalent
Science	**3 years** – Lab-based coursework taken in technology/ engineering will count for MassCore science credit
History/Social Science	**3 years** - Including US History and World History.
World Language	**2 years (of the same language)** *Note - Students enrolled in a state-approved Career and Technical Education program of studies have the option of opting out of Foreign Language and still fulfill MassCore.*
Physical Education	(M.G.L. c. 71,s. 3) states: "Physical education shall be taught as a required subject in all grades for all students."
The Arts	**1 year** *Note - Students enrolled in a state-approved Career and Technical Education program of studies have the option of opting out of Art and still fulfill MassCore.*

Additional Core Courses	**5 years -** Business Education, Health, Technology, Career and Technical Education (CTE) or any of the subjects above. *Note: Most students majoring in CTE will take more than 5 units in a CTE program of study.*
Additional Learning Opportunities	**Complete as many of the following as possible:**
	Advanced Placement (AP); Capstone or Senior Project; Dual Enrollment courses taken for both high school and college credit; Online courses; Service Learning; and Work-based Learning.

Students should discuss plans with guidance counselors who will be able to advise them on grade point average (GPA), SAT scores, etc. The option to attend college remains open to all students who plan to further their education. Any student who plans to attend college should discuss such plans with his/her counselor to guarantee he/she selects the appropriate college preparatory courses to gain admittance.

MASSACHUSETTS STATE UNIVERSITY SYSTEM AND UMASS MINIMUM ADMISSIONS REQUIREMENTS

The admissions standards for the state universities and UMass emphasize a strong academic high school background so that students enter college ready to learn. These standards represent minimum requirements; meeting them does not guarantee admission, since campus officials consider a wide range of factors in admissions decisions. Students shall have fulfilled all requirements for the high school diploma or its equivalent upon enrollment. *It is important to note that admissions standards for the state's community colleges differ. Community colleges may admit any high school graduate or GED recipient.*

Freshman Applicants - The admissions standards for freshmen applicants have two main parts:

1. 16 required academic courses.
2. A minimum required grade point average (GPA) earned in college preparatory courses completed at the time of application.

Applicants must also submit an SAT or ACT score.

Academic Course Requirement - 16 college preparatory courses distributed as follows are required. (A course is equivalent to one full school year of study.)

UMASS Minimum Admissions Requirements

Subject	Fall 2017 and Beyond
English	4 years
Mathematics	4 courses – *(Algebra I & II and Geometry or Trigonometry, or comparable coursework) including mathematics during the final year of high school*
Sciences	3 courses – (*Drawn from Natural Science and/or Physical Science and/or Technology/ Engineering), including 3 courses with laboratory work*
Social Sciences	2 courses *(including 1 course in U.S. History)*
Foreign Languages	2 courses *(in a single language)*
Electives	2 courses *(from the above subjects or from the Arts & Humanities or Computer Sciences)*

Vocational-Technical Student Applicants - Vocational-technical students must complete 16 college preparatory courses, distributed in the same manner and with the same minimum grade point averages required of other high school graduates, with the following exceptions:

- Two vocational-technical courses may be used to fulfill the two required electives.

- Vocational-technical high school graduates who do not complete the two required college preparatory foreign language courses must complete an additional elective college preparatory course, for a total of three such courses, and satisfy *one* of the following options:

    1. Complete at least one Carnegie unit of foreign language;
    2. Complete a fourth Carnegie unit of mathematics or science, which need not be a laboratory course; or
    3. Complete one Carnegie unit of computer science.

Note: A Carnegie unit represents a full academic year of study or its equivalent in a specific subject.

According to the College Boards, AP is a rigorous academic program built on the commitment, passion, and hard work of students and educators from both secondary schools and higher education. AP courses provide willing and academically prepared high school students with the opportunity to study and learn at the college level. Colleges and universities worldwide reward strong performance on AP Exams. AP is recognized by most universities in more than 60 countries outside the United States, and more than 90 percent of four-year colleges and universities in the United States grant students credit, placement or both on the basis of AP Exam scores.

Performing well on an AP exam means more than just successful completion of a course; it is a gateway to success in college. Research consistently shows that students who score a 3 or higher on AP Exams typically experience greater academic success in college and have higher graduation rates than their non-AP peers. Most four-year colleges and universities in the United States, and universities in more than 60 countries, recognize AP in the admissions process and grant students credit, placement, or both on the basis of successful exam scores. Students taking AP will be required to complete summer work prior to starting the class. Students must take the AP exam in May to receive AP credit on their transcript. Monty Tech offers the following AP courses:

AP Language & Composition **AP Literature and Composition**
AP Statistics **AP Calculus**
AP Environmental Science **AP Chemistry**
AP Computer Science Principles – ***Information Technology students only***

Excluding AP Computer Science Principles, taught as a part of the Information Technology curriculum, enrollment is open to all students; however, students must meet the prerequisite coursework for AP subjects. Students who elect to take AP course(s) are required to take the AP exam at the conclusion of the course. The average cost for this exam is $84.00. Students should see their guidance counselor to apply for financial aid.

Please note: Some courses may not run during a given school year due to student interest and/or teacher availability.

The Commonwealth Dual Enrollment Partnership, a program managed and supported by the Massachusetts Department of Higher Education, provides opportunities for qualified high school students to take college-level courses at a discounted rate. Mount Wachusett Community College is working together with Monty Tech to provide dual enrollment opportunities for students within the program of studies as well as through alternative scheduling. For students to be eligible for dual enrollment, their coursework must meet the advanced placement program goals or be related to their vocational program. Students should review their handbook for registration requirements.

Dual enrollment courses provide Monty Tech students an opportunity to take college courses that count for both high school and college credit. As a result, our students will be better prepared for college and will accumulate much lower college debt during their freshmen year. Typically, these courses are offered after school.

To date, Monty Tech students have saved approximately $106,000 in college tuition and fees by taking advantage of the dual enrollment courses offered through a unique partnership between Mount Wachusett Community College and Monty Tech.

Monty Tech is proud to offer qualified students an opportunity to get a "jump start" on their college career. Thanks to the Commonwealth Dual Enrollment Program, each course costs only $30.00, and the book is provided at no extra charge – a savings of more than $560 per course!

Monty Tech students have taken the following courses at a discounted price, earning credit toward high school completion and their future college degrees:

Introduction to Sociology
College Writing I
Strategic Management
Spanish I
Introduction to Biotechnology I and II*
Introduction to Psychology
Introduction to Criminal Justice
Statistics
Emergency Medical Technician*

*Monty Tech offers these dual enrollment courses during the school day – Introduction to Biotechnology/ Introduction to Biotechnology II and Emergency Medical Technician which is only available to students in the Health Occupations program. Students should see their guidance counselor for more information. All students are required to take an Accuplacer test in order to qualify.

Please note: Some dual enrollment courses may not run during a given school year due to student interest and/or teacher availability.

PROJECT LEAD THE WAY (PLTW)
"Creating Tomorrow's Technologies Today"

The Monty Tech Science Department has entered into a unique partnership with Project Lead The Way, a nationally recognized provider of rigorous and innovative Science, Technology, Engineering, Mathematics (STEM) education programs used in middle and high schools across the country.

PLTW classes are nationally standardized project-based courses that prepare students for college-level work and culminate with a student assessment, which colleges and universities can use to determine if a student earns college credit. Because of this innovative partnership, qualified graduates from Monty Tech may benefit from a number of college credits between PLTW/Monty Tech and post-secondary institutions.

Principles of Biomedical Science (PLTW) – grade 11
Human Body Systems (PLTW) – grade 12

The Massachusetts Comprehensive Assessment System (MCAS) is a statewide achievement test administered in the spring. Students are required to pass MCAS in English, Math, and Science in order to graduate. **For students who have not passed the test, programs will be developed to remediate the deficiencies that are identified.**

- **Grade 9**: Freshmen completing Biology (CP4) will take the MCAS test in Biology in the spring of their freshmen year.

- **Grade 10:** All students will take the English Language Arts and Math MCAS in the spring of their sophomore year. Sophomores taking Biology Part II (CP2) will also take the Biology MCAS in grade 10.

MCAS Tips – Your support for your teenager is critical now and throughout this school year. Here are some tips that could help you to help your child prepare for the tests:

- *Talk with your student's teachers regularly to see what you can do at home to support his/her work in school.*
- *Make sure that your student gets enough rest, eats properly, and gets to school on time every day.*
- *Talk to your student about his or her previous experience with the MCAS in the eighth grade.*
- *Discuss the subjects that need improvement and whether your student thinks there has been improvement. If the answer is no, find out why.*
- *Ask your student about the homework that is due tomorrow and next week, and make sure it gets done. Send your student to school prepared to learn.*
- *Ask your student to explain to you what he or she is studying. These conversations help you to follow your student's progress, and to help him/her to remember what has been learned.*
- *If your student has a disability, ask the teachers how MCAS fits into the IEP or 504 Plan.*
- *Read the MCAS questions and the corresponding education standards in the curriculum frameworks and discuss them with your student and his or her teacher.*
- *Help your student identify his/her learning strengths in order to use them to focus on the weak areas.*
- *Help your student practice MCAS questions, and look over the tests together so you will all become familiar with the expectations.*
- *Encourage your student to take an active part in class and in other school activities. A well-rounded student has a better outlook and does better on tests. If possible, limit your child's activities to just a few outside of school. While other pursuits are very important, too many hours spent on extracurricular activities, including watching TV or working at a job, can seriously affect attitude, effort and academic performance.*

Academic Programs

ACADEMIC PROGRAM

Grade 9	Grade 10	Grade 11	Grade 12
English			
EN190 English 9 (Pre-AP) EN172 English 9 (CP4) EN131 English 9 (CP2)	EN290 English 10 (Pre-AP) EN272 English 10 (CP4) EN231 English 10 (CP2)	EN398 AP Language & Composition (AP) EN390 English 11 (H) EN372 English 11 (CP4) EN331 English 11 (CP2)	EN499 AP Literature & Composition (AP) EN490 English 12 (H) EN472 English 12 (CP4) EN431 English 12 (CP2)
Math			
MA192 Algebra II (H) MA171 Algebra I (CP4) MA141 Algebra IA (CP2)	MA295 Geometry (H) MA276 Geometry (CP4) MA245 Algebra IB (CP2)	MA397 Precalculus (H) MA382 Algebra II (CP4) MA381 Discrete Math (CP4) MA356 Geometry (CP2) MA354 Algebra IIA (CP2)	MA490 AP Calculus (AP) MA499 AP Statistics (AP) MA487 Precalculus (CP4) MA482 Algebra II (CP4) MA483/484 Intro to Trig./Stats (CP4) MA451 Modeling in Algebra IIB (CP2) MA434 Modeling in Fin. Literacy (CP2)
Science			
SC190 Biology (H) SC172 Biology (CP4) SC151 Biology, Part I (CP2)	SC295 Chemistry (Pre-AP) SC266 Environ. Science (CP4) SC285 Chemistry (CP4) SC254 Biology, Part II (CP2) SC236 Environ. Science (CP2)	SC397 AP Chemistry (AP) SC399 AP Environmental Science (AP) SC394 Principles of Biomedical Science (PLTW) SC393 Anatomy & Physiology (H) SC391 Physics (H) SC383 Anatomy & Physiology (CP4) SC385 Chemistry (CP4) SC381 Physics (CP4) SC343 Anatomy & Physiology (CP2) SC338 Applied Chemistry (CP2) SC341 Applied Physics (CP2)	SC497 AP Chemistry (AP) SC499 Intro to Biotechnology (DE) SC490 Human Body Systems (PLTW) SC493 Anatomy & Physiology (H) SC491 Physics (H) SC483 Anatomy & Physiology (CP4) SC485 Chemistry (CP4) SC481 Physics (CP4) SC466 Environmental Science (CP4) SC473 Zoology and Botany (CP4) SC443 Anatomy & Physiology (CP2) SC438 Applied Chemistry (CP2) SC441 Applied Physics (CP2) SC436 Environmental Science (CP2)

Social Studies (*semester courses)				
	SS191 U.S. History I (H) SS171 U.S. History I (CP4) SS131 U.S. History I (CP2)	SS292 U.S. History II (H) SS272 U.S. History II (CP4) SS232 U.S. History II (CP2)	SS393 U.S. History III (H) SS373 U.S. History III (CP4) SS333 U.S. History III (CP2)	SS494 *World History (H) SS490 *Cultural Studies (H) SS495 *Law & Society (H) SS484 *World History (CP4) SS465 *Law & Society (CP4) SS454 *World History (CP2) SS425 *Law & Society (CP2)
Physical Education (semester electives)				
	PE130 Phys. Educ./Health 9 EL58A Yoga & Med. Art I	PE230 Physical Educ./Health 10 EL58B Yoga & Meditative Art I EL59B Yoga & Meditative Art II	PE331 Physical Education 11 PE332 Personal Fitness 11 PE333 Pilates 11 EL58A Yoga & Meditative Art I EL59A Yoga & Meditative Art II	PE431 Physical Education 12 PE432 Personal Fitness 12 PE433 Pilates 12 EL58B Yoga & Meditative Art I EL59B Yoga & Meditative Art II
Spanish (year-long electives)				
	EL172 Spanish I EL173 Spanish II	EL272 Spanish I EL273 Spanish II EL274 Spanish III	EL372 Spanish I EL373 Spanish II EL374 Spanish III	EL473 Spanish II EL474 Spanish III
Electives				
	Semester Electives EL54A Visual Arts I BU150 Freshmen Seminar EL100 Leadership Ed. IA EL101 Leadership Ed. IB ***Year-long Electives*** EL110 Math Lab EL111 Writing Lab EL121S Learning Support EL611A ESL 1 EL612A ESL 2 EL613A ESL 3 EL614A ESL 4	***Semester Electives*** EL54B Visual Arts I EL55B Visual Arts II EL244 Personal Finance EL200 Leadership Ed. IIA EL201 Leadership Ed. IIB EL231 Directed Study ***Year-long Electives*** EL210 Math Lab EL211 Writing Lab EL221S Learning Support EL611B ESL 1 EL612B ESL 2 EL613B ESL 3 EL614B ESL 4	***Semester Electives*** EL54A Visual Arts I EL55A Visual Arts II EL344 Personal Finance EL300 Leadership Ed. IIIA EL301 Leadership Ed. IIIB EL331 Directed Study ***Year-long Electives*** EL321 Learning Support EL321S Learning Support EL611A ESL 1 EL612A ESL 2 EL613A ESL 3 EL614A ESL 4	***Semester Electives*** EL54B Visual Arts I EL55B Visual Arts II EL444 Personal Finance EL400 Leadership Ed. IVA EL401 Leadership IVB EL431 Directed Study ***Year-long Electives*** EL421 Learning Support EL421S Learning Support EL611B ESL 1 EL612B ESL 2 EL613B ESL 3 EL614B ESL 4

Academic Course Descriptions

English Department

COURSE OFFERINGS, GRADES 9-12

GRADE 9	GRADE 10	GRADE 11	GRADE 12
		AP Language & Comp. (AP)	AP Literature & Comp. (AP)
English 9 (Pre-AP)	English 10 (Pre-AP)	English 11 (H)	English 12 (H)
English 9 (CP4)	English 10 (CP4)	English 11 (CP4)	English 12 (CP4)
English 9 (CP2)	English 10 (CP2)	English 11 (CP2)	English 12 (CP2)

The English Department provides meaningful opportunities for students to become proficient readers, writers, speakers, listeners, and critical thinkers. Students will demonstrate the academic knowledge, skills, and practices necessary to enter into and succeed in entry-level, credit bearing courses in college and post-secondary programs and/or workplace training programs requiring an equivalent level of ELA/Literacy skills. The curriculum exposes students to a rich diversity of high-quality, authentic literature from multiple genres, cultures, and time periods in an effort to sharpen skills of comprehension and analysis. Students will read literature from writers who will instill a deep appreciation for art, beauty, and truth, while broadening their understanding of the human condition from differing points of view.

Reading and discussing important works of prose and poetry will also help students develop empathy for others while learning about who they are as individuals and members of a wider civilization and world. Students will also read and analyze a wide variety of literature and informational text that covers multiple complexities, various genres and cultures leading to well-versed students who appreciate diversity in people and cultures. The curriculum emphasizes proficient writing habits using common language and assignments that will ensure success in college and career. The curriculum also reflects the values and needs of society, enabling students to become productive members of their community.

GRADE 9 ENGLISH COURSE OFFERINGS

Course descriptions are organized by course/level

English 9 (Pre-AP) (2 periods/full year) 1.0 credit

This pre-AP course will include a literature component in which the student will read, interpret and analyze various literary genres (including novels, plays, myths, selected short stories, and poems) at an accelerated pace and in greater depth. Emphasis will be on the application of literary elements. In addition, students will apply writing strategies and demonstrate mastery of English grammar. Students will develop critical thinking skills and must be able to work independently and collaboratively. Also, library/media and vocabulary skills will be taught to enhance the student's communication abilities. This course prepares students for the AP curriculum.

English 9 (CP4) (2 periods/full year) 1.0 credit

This course will include a literature component, in which the student will read, discuss, and write about various literary genres (including novels, plays, myths, selected short stories, and poems) with an emphasis on the application of literary elements. In addition, students will be applying process-writing strategies. Also, library/media and vocabulary skills will be taught to enhance the student's communication abilities.

English 9 (CP2) (2 periods/full year) 1.0 credit

This course includes a literature component, in which the student will read, discuss, and write about various literary genres (including novels, plays, myths, selected short stories, and poems) with an emphasis on the application of literary elements. In addition, students will be introduced to process writing strategies integrating the study of English grammar in response to the student's writing needs. Also, library/media and vocabulary skills will be taught to enhance the student's communication abilities.

GRADE 10 ENGLISH COURSE OFFERINGS

English 10 (Pre-AP) (2 periods/full year) 1.0 credit

This pre-AP course will include a literature component in which the student will read, interpret and analyze various literary genres (including novels, plays, myths, selected short stories, and poems) at an accelerated pace and in great depth. A general review of grammar and usage will be provided with an emphasis on skills needed to improve writing. Vocabulary development will be ongoing. Students will develop critical thinking skills and must be able to work independently and collaboratively. A review of library/media skills will be taught to enhance the student's communication skills. This course prepares students for the AP curriculum.

English 10 (CP4) (2 periods/full year) 1.0 credit

In this college-prep course, students will be introduced to a variety of literary works. Students will read, discuss, and write about various literary genres, including fiction and nonfiction, drama, selected short stories, poems and various novels. A general review of grammar and usage will be provided with an emphasis on skills needed to improve writing. Vocabulary development will be ongoing. A review of library/media skills will be taught to enhance the student's general communication skills.

English 10 (CP2) (2 periods/full year) 1.0 credit

In this college-prep course, students will be introduced to a variety of literary works. Students will read, discuss, and write about various literary genres, including fiction and nonfiction, drama, selected short stories, poems and various novels. A general review of grammar and usage will be provided with an emphasis on skills needed to improve writing. Vocabulary development will be ongoing. A review of library/media skills will be taught to enhance the student's communication skills.

GRADE 11 ENGLISH COURSE OFFERINGS

AP Language & Composition (2 periods/full year) 1.0 credit
Prerequisite*:* **Successful completion of grade 10 English (CP4 or H).**

The AP Language and Composition course is a college-level rhetoric course designed to prepare students for analytical, argumentative, and expository writing, and to teach students the importance of these modes as a "basis of academic and professional communication, as well as the personal and reflective writing that fosters the development of writing facility in any context." The course is organized by modes of discourse encompassing the three specified categories of writing and including a variety of literature selections, primarily non-fiction. Upon completion of this course students should be able to identify and explain an author's use of rhetorical strategies and techniques as they analyze and interpret samples of good writing, create and sustain arguments based on reading and/or research, demonstrate understanding and mastery of standard written English as well as stylistic maturity in their own writings, produce expository and argumentative compositions that introduce a complex central idea and develop it with appropriate, specific evidence, and finally, move effectively through the stages of the writing process with careful attention to inquiry and research, drafting, revising, editing, and review. Students will be required to take and pay for the AP exam at the end of the year. Students passing the AP exam with a score of 3-5 receive college credit at most universities.

English 11 (H) (2 periods/full year) 1.0 credit

This honors course includes a literature component based on various themes and novels of various genres. Special focus will be on reading comprehension, analytical and argumentative writing skills, and the application of literary elements and rhetorical strategies in great depth. Students will be expected to work at an accelerated pace. Students will develop and apply critical thinking skills and must be able to work independently and collaboratively. Timed writing assignments are regularly administered. Reading, writing, listening, speaking, problem-solving and vocabulary skills are fostered.

English 11 (**CP4)** (2 periods/full year) 1.0 credit

This college-prep course includes a literature component based on an anthology and on novels of various genres. Focus will be on reading appreciation as well as the application and interpretation of literary elements. Students will develop and integrate critical thinking skills. Reading, writing, listening, speaking, problem-solving and vocabulary skills are fostered.

English 11 (**CP2)** (2 periods/full year) 1.0 credit

This college-prep course includes a literature component based on an anthology and on novels of various genres. The focus will be on reading appreciation as well as the application and interpretation of literary elements. Students will be introduced to critical thinking skills and encouraged to integrate them throughout the year. Reading, writing, listening, speaking, problem-solving and vocabulary skills are fostered.

GRADE 12 ENGLISH COURSE OFFERINGS

AP Literature & Composition (2 periods/full year) 1.0 credit
Prerequisite*:* **Successful completion of grade 11 English (CP4 or higher)**

The AP English Literature and Composition course is designed to engage students in the careful reading and critical analysis of imaginative literature. Through the close reading of selected texts, students can deepen their understanding of the ways writers use language to provide both meaning and pleasure for their readers. As they read, students should consider a work's structure, style, and themes, as well as such smaller-scale elements as the use of figurative language, imagery, symbolism, and tone. This course is a rigorous college-level course. The reading is challenging, the writing is frequent, and requires an independent mind. Students will be expected to read at an increased complexity and sophistication. The student will conduct extensive analysis and interpretation of writing and demonstrate an understanding and mastery of standard written English. Students will also produce lengthy papers that introduce a complex central idea with sustaining arguments and exercise research skills, drafting, revising, and peer editing. Students will be required to take and pay for the AP exam at the end of the year. Students passing the AP exam with a score of 3-5 receive college credit at most universities.

English 12 (H) (2 periods/full year) 1.0 credit

In this honors course, students will be required to read, interpret, and analyze a wide range of classic and contemporary literature in great depth. A variety of writing applications, project-based activities, and alternative assessments are incorporated at an accelerated pace. Students will develop and apply critical thinking skills and must be able to work independently and collaboratively. Vocabulary instruction will be ongoing.

English 12 (CP4) (2 periods/full year) 1.0 credit

This college-prep course is designed to expose the student to a wide range of classic and contemporary literature. Students will be required to read, interpret, and analyze literature of various genres. Students will also develop and integrate critical thinking skills. A variety of writing applications, project-based activities, and alternative assessments is incorporated. Vocabulary instruction will be ongoing.

English 12 (CP2) (2 periods/full year) 1.0 credit

This college-prep course is designed to expose the student to a wide range of classic and contemporary literature. Students will be required to read and interpret literature of various genres. A variety of writing applications, project-based activities, and alternative assessments is incorporated. Vocabulary instruction will be ongoing.

Mathematics Department

COURSE OFFERINGS, GRADES 9-12

GRADE 9	GRADE 10	GRADE 11	GRADE 12
Algebra II (H)	Geometry (H)	Precalculus (H)	AP Calculus (AP) AP Statistics (AP)
Algebra I (CP4)	Geometry (CP4)	Algebra II (CP4) Discrete Mathematics (CP4)	Precalculus (CP4) Algebra II (CP4) Intro to Trig. & Intro to Stats. (CP4)
Algebra IA (CP2)	Algebra IB (CP2)	Geometry (CP2) Algebra IIA (CP2)	Modeling in Algebra IIB (CP2) Modeling in Financial Literacy (CP2)

The Math Department provides a curriculum that meets the diverse needs of all students. We will endeavor to provide meaningful opportunities for students to demonstrate the academic knowledge, skills, and practices necessary to enter into and succeed in postsecondary and/or workplace training programs. We will prepare students who are interested in careers involving science, technology, engineering, and mathematics. Students will be able to identify and model problems, justify conclusions, and apply concepts to real-life situations. Students will develop reasoning and analytical skills to make conclusions. Students will be given opportunities to discuss the relevance of mathematics to their vocational trade. Our mathematics program ensures that students are college and career ready.

GRADE 9 MATHEMATICS COURSE OFFERINGS

Course descriptions are organized by course/level

Algebra II (**H)** (2 periods/full year) 1.0 credit
Prerequisites: **"A" or "B" for Algebra I in middle school and placement testing**

This grade 9 honors course is for students who have achieved a grade of B or higher in a full year Algebra I course in their middle school. It focuses on skills for such topics as solving and graphing: systems of equations, systems of linear equalities, quadratic equations, absolute value equations, polynomial functions, radical equations, and exponential equations. This course will also cover factoring techniques, matrices, complex numbers, rational and negative exponents, logarithms, rational expressions and equations, arithmetic and geometric series and sequences, and working with trigonometric functions. This is an honors level course which progresses at an accelerated pace.

Algebra I (CP4) (2 periods/full year) 1.0 credit
Prerequisite: **Grade 9 placement testing**

This is a college-preparatory course involving operations with real numbers. The topics include solving equations and inequalities, factoring trinomials and simplifying fractional expressions with variables. Students will find the equations of lines, parallel and perpendicular lines, solve and graph systems of linear equations and inequalities, quadratic equations, absolute value equations and inequalities. Students will also work with exponents and exponential functions, polynomials, and data analysis.

Algebra IA (CP2) (2 periods/full year) 1.0 credit

Algebra IA (CP2) is the first part of a two year Algebra I (CP2) course. The course includes solving and graphing; linear equations, inequalities and absolute value, solving systems of linear equations, exponents and exponential functions. It also involves solving word problems within each of the topic areas.

GRADE 10 MATHEMATICS COURSE OFFERINGS

Geometry (H) (2 periods/full year) 1.0 credit
Prerequisite: **Algebra II (H)**
Recommendation**:** 80% or higher in prerequisites

This grade 10 honors level course is for students who have achieved at least an 80% average in Honors Algebra 2 or with a recommendation from the Honors Algebra 2 instructor. This course addresses Geometry from an Algebra 2 emphasis with a strong concentration on geometric proofs and geometric constructions. The course will cover definitions, congruency, similarity, transformations, right triangle relationships, trigonometric ratios, probability, and statistics. Students will determine the attributes of polygons, circles, special quadrilaterals, similar figures, as well as determine cross-sections of geometric figures. Students will do constructions to determine midpoints, angle bisectors, congruency, and points of concurrency. This is an honors level course which progresses at an accelerated pace.

Geometry (CP4) (2 periods/full year) 1.0 credit
Prerequisite: **Algebra I (CP4)**

This sophomore level course is designed to explore in detail topics such as definitions, reasoning and proof, triangles, parallels and perpendiculars, polygons, quadrilaterals, ratio and proportion, similar figures, transformations, right triangle relationships, trigonometric ratios, area, volume and facts about circles. Students will also learn how to do geometric constructions.

Algebra IB (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Algebra IA (CP2)**

This course consists of a brief review of operations with real numbers, linear equations and inequalities, and word problems. It will also cover topics, which include factoring and operations with polynomials, solving and graphing quadratic equations, and data analysis.

GRADE 11 MATHEMATICS COURSE OFFERINGS

Precalculus (H) (2 periods/full year) 1.0 credit
Prerequisite: **Geometry (H)**

This junior level honors course begins by discussing advanced topics in algebra. Topics covered include functions and their graphs, finding real and complex roots of functions, and properties of polynomial, rational, radical, exponential, and logarithmic functions. The second part of this course focuses on trigonometry. During this part of the course, trigonometric functions will be analyzed from both an algebraic and graphical perspective. Additional trigonometric concepts include solving triangles, working with trigonometric identities, and applications of trigonometry involving complex numbers. The course concludes with a study of parametric equations and polar coordinates, using matrices to solve systems of equations, properties of sequences and series, and mathematical induction. If time allows, a brief overview of combinatorics and probability will be included. Students will be expected to derive many of the formulas introduced throughout the course. Additionally, graphing calculators will be used to analyze functions and it is highly recommended that students obtain their own graphing calculator. Recommended graphing calculators include the TI-83+, TI-84+, or TI-84+ CE.

Discrete Mathematics (CP4) (2 periods/full year) 1.0 credit
Prerequisites: **Algebra 1(CP4) and Geometry (CP4)**

This is a course for junior CP4 students and focuses on graph theory, which is the study of vertex-edge graphs. Topics covered include: Number and Set theory, Counting Methods, Probability, Logic, Isomorphism, Coloring, Planarity, Trees, Digraphs, Tournaments, Circuits, Vectors, Matrices, and Sequences.

Algebra II (CP4) (2 periods/full year) 1.0 credit
Prerequisite: **"70" or above in Algebra I (CP4)**

This junior college-prep course focuses on skills for such topics as solving and graphing: quadratic equations, polynomial functions, absolute value equations, radical equations, and exponential equations. This course will also cover factoring techniques, complex numbers, rational and negative exponents, logarithms, composition of functions, inverse functions, rational expressions and equations, arithmetic and geometric series and sequences, and working with trigonometric functions.

Algebra IIA (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Algebra I (CP4)**

This junior level course focuses on skills for such topics as solving quadratic equations, polynomial functions, absolute value equations, and radical equations. Graphing techniques as well as similar features of graphs will be examined. This course will also cover multiple types of factoring techniques, complex numbers, and rational and negative exponents. It will also cover exponential growth and decay.

Geometry (CP2) (2 periods/full year) 1.0 credit
Prerequisites: **Algebra IA (CP2) and IB (CP2)**

In this junior level course, students will explore in detail topics such as basic definitions, proofs, triangles, parallels and perpendiculars, polygons, quadrilaterals, ratio and proportion, similar figures, transformations, right triangle relationships, area, and volume.

GRADE 12 MATHEMATICS COURSE OFFERINGS

AP Calculus (AP) (2 Periods/Full Year) 1.0 credit
Prerequisite: Precalculus (H)

This AP Course will cover the material applicable to the Advanced Placement (AP) Calculus AB exam. Course topics include limits, derivative techniques, higher order derivative properties and applications, transcendental function calculus, basic and intermediate analytic integration, numerical differentiation, numerical integration, and area/volume/cross section integrals. Time will also be dedicated to ensuring that students are able to use technology as a complement to their calculus skills. Throughout this course, students will have the opportunity to apply these concepts and skills to real-world problems. Students are encouraged to take the AB Calculus exam. A score of 3-5 on this exam will be sufficient for credit at most colleges and universities.

AP Statistics (AP) (2 periods/full year) 1.0 credit
Prerequisite**:** Algebra II

This AP course is designed to follow the Advanced Placement (AP) Statistics course guidelines as set forth by the College Board for AP Statistics. AP Statistics is the study of data analysis, experimental design, and probability as it relates to statistical inference, and the practice of data gathering and evaluation of statistical inference in an elementary statistics setting. This course is activity-based with a variety of activities, labs, and projects. Students will be able to communicate effectively the statistical concepts taught throughout this course. Applications will be drawn from other disciplines that

include but are not limited to psychology, sociology, health fields, engineering, business, and liberal arts. It also incorporates the routine use of TI-84 graphing calculators as well as computers. Students will be required to take and pay for the AP exam at the end of the year. Students passing the AP exam with a score of 3-5 receive college credit at most universities.

Precalculus (CP4) (2 periods/full year) 1.0 credit
Prerequisites**: Algebra II (CP4 or H) and Geometry (CP4 or H)**
Recommendation: **80% average in prerequisites**

This senior level CP4 course begins by discussing advanced topics in algebra. Topics covered include functions and their graphs, finding real and complex roots of functions, and properties of polynomial, rational, radical, exponential, and logarithmic functions. The second part of this course focuses on trigonometry. During this part of the course, trigonometric functions will be analyzed from both an algebraic and graphical perspective. Additional trigonometric concepts include solving triangles, working with trigonometric identities, and applications of trigonometry involving complex numbers. The course concludes with a study of parametric equations, polar coordinates, and using matrices to solve systems of equations. If time allows, a brief overview of sequences and series will be included. Additionally, graphing calculators will be used to analyze functions and it is highly recommended that students obtain their own graphing calculator. Recommended graphing calculators include the TI-83+, TI-84+, or TI-84+ CE.

Algebra II (CP4) (2 periods/full year) 1.0 credit

This grade 12 college-prep course consists of a brief review of Algebra I (CP4) skills. It focuses on increased knowledge of solving linear and quadratic equations and inequalities, as well as systems of equations. It also covers all word problems, factoring of trinomials and application of geometry skills.

Introduction to Trigonometry (CP4) (2 periods/half year) .50 credit
Prerequisites**: Algebra I (CP4), Geometry (CP4 or H), Algebra II (CP4 or H)**
This course must be taken with Introduction to Statistics to satisfy the full-year math requirement.

Introduction to Trigonometry is a college and career preparatory course for grade 12 students, emphasizing degrees, radians, unit circle trigonometry, trigonometric functions and their graphs, inverse trigonometry and solving right triangles. Additionally, we will cover law of sines and cosines, vectors, and polar coordinates. If time permits additional topics will include trigonometric identities, Heron's formula, and logarithms.

Introduction to Statistics (CP4) (2 periods/half year) .50 credit
Prerequisites**: Algebra I (CP4), Geometry (CP4 or H), Algebra II (CP4 or H)**
This course must be taken with Introduction to Trigonometry to satisfy the full-year math requirement.

This college-prep course for grade 12 students requires that students collect, organize, summarize and analyze data using numeric and graphic techniques to gain insights into trends and make predictions of behavior. Students will study measures of central tendency and compute standard deviation. They will use math modeling to test their hypotheses. Students will also learn the basic rules of probability, and the properties of probability distribution. Students will investigate, design, and conduct experiments and complete projects independently and in small groups.

Modeling in Financial Literacy (**CP2**) (2 periods/full year) 1.0 credit
Prerequisite: **Algebra I (or Algebra IA and IB); Geometry; Qualifying score on Placement Test**

Students in this course will develop college and career readiness skills, starting with a comprehensive review of basic mathematics skills and study of algebra and culminating in the study of math modeling. Students will learn to think critically and model real world mathematical problems that include number and quantity, algebra, geometry, functions, and statistics and probability. The secondary focus will be on learning important personal financial management skills such as maintaining a personal checking and savings account; proper use of credit; buying/financing a vehicle; and

becoming knowledgeable about various types of insurance (home, health, life, disability, etc.). *After successful completion of this course (70 or better), students will be eligible for 4 institutional credits through Mount Wachusett Community College:* MAT092 Basic Math Skills.

Modeling in Algebra IIB (**CP2**) (2 periods/full year) 1.0 credit
Prerequisite: **Algebra I (or Algebra IA and IB); Geometry; Qualifying score on Placement Test**

Students in this course will develop college and career readiness skills, starting with a comprehensive review of basic mathematics skills and continuing with the study of algebra and culminating in the study of math modeling. Students will learn to think critically and model real world mathematical problems that include number and quantity, algebra, geometry, functions, and statistics and probability. This course is designed to prepare students for the credit-bearing courses of College Algebra, Topics in Math, Statistics, or Elements of Math. Topics include: graphing equations and inequalities, exponents and polynomials; factoring polynomials; solving quadratic equations by factoring; rational expressions; roots and radicals. *After successful completion of this course (70 or better), students will be eligible for 4 institutional credits through Mount Wachusett Community College:* MAT092 Basic Math Skills.

Science Department

COURSE OFFERINGS, GRADES 9-12

GRADE 9	GRADE 10	GRADE 11	GRADE 12
		AP Chemistry (AP) AP Environmental Science (AP) PLTW Principles of Biomed. Science	AP Chemistry (AP) Biotech & Media Preparation (DE) PLTW Human Body Systems
Biology (H)	Chemistry (Pre-AP)	Physics (H) Anatomy & Physiology (H)	Physics (H) Anatomy & Physiology (H)
Biology (CP4)	Chemistry (CP4) Environ. Science (CP4)	Chemistry (CP4) Physics (CP4) Anatomy & Physiology (CP4)	Chemistry (CP4) Physics (CP4) Anatomy & Physiology (CP4) Environmental Science (CP4) Zoology & Botany (CP4)
Biology, Pt I (CP2)	Biology, Part II (CP2) Environ. Science (CP2)	Anatomy & Physiology (CP2) Applied Chemistry (CP2) Applied Physics (CP2)	Anatomy & Physiology (CP2) Applied Chemistry (CP2) Applied Physics (CP2) Environmental Science (CP2)

The Science Department provides meaningful opportunities for students to become proficient critical thinkers in science, technology, and engineering. Students will learn to understand the world around them and to apply analytical and innovative thinking to solve complex problems facing our global environment. The curriculum focuses on the application of concepts, inquiry, and design skills that students need to successfully engage in classrooms, civic life, and post-secondary opportunities. All students will participate in practical inquiry-based laboratory experiences that emphasize proficient scientific skills using common assessments that will ensure success in college and career. We offer core science courses and electives that increase student interest in the exploration of science in order to nurture their ability to become productive global thinkers in 21st century society.

All students will be required to successfully complete Chemistry or Physics in order to meet graduation requirements.

GRADE 9 SCIENCE COURSE OFFERINGS

Course descriptions are organized by course/level

Biology (H) (2 periods/full year) 1.0 credit
Prerequisite: **Grade 9 placement test scores and teacher recommendation**

This honors course is a survey of the fundamental concepts of the biological sciences. Topics covered will include simple organisms, cell structure and function, classification, evolution, genetics, heredity, biotechnology, basic human anatomy & physiology. It stresses conceptual development, develops science inquiry skills, requires experimental design, critical thinking and data analysis and encourages creative writing and design. Emphasis is placed on direct student involvement through activities and the completion of an independent research project. This is a laboratory science course and should be taken by students with college aspirations. Students will be eligible to take the Biology MCAS exam at the end of this course. *Note: This class is an Honors class and independent work is given weekly. Shop week homework is also given regularly. It is essential that both students and parents understand the extra time commitment before selecting this class.*

Biology (CP4) (2 periods/full year) 1.0 credit

Prerequisite: **Grade 9 placement test scores and teacher recommendation**

This course is a survey of the fundamental concepts of the biological sciences. Topics covered will include simple organisms, cell structure and function, classification, evolution, chemistry of life, ecology, biodiversity, genetics, heredity, biotechnology, and basic human anatomy & physiology. It stresses conceptual development, develops science inquiry skills, requires experimental design, critical thinking and data analysis and encourages creative writing and design. Emphasis is placed on direct student involvement through activities. This is a laboratory science course. Students will be eligible to take the Biology MCAS exam at the end of this course.

Biology Part I (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Grade 9 placement test scores and teacher recommendation**

This grade 9 Biology Part I (CP2) course is the first component of a two-year Biology program. Topics from the Massachusetts State Frameworks (10/06) Standards 1, 2, 5, 6 will be covered. These include: Chemistry of Life, Cell Biology, Evolution, Biodiversity, and Ecology. This is a laboratory science course. It stresses conceptual development, science inquiry skills, requires experimental design, critical thinking and data analysis. Students will be eligible to take the Biology MCAS exam once they complete Biology Part II at the end of their sophomore year.

GRADE 10 SCIENCE COURSE OFFERINGS

Chemistry (Pre-AP) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Algebra II**
Recommendation**: C+ or better in Algebra II, or currently enrolled in, Algebra II**

This Pre-AP laboratory course includes topics in the fundamental nature of matter and how it reacts. Topics include solutions, acids, bases, chemical reactions, formulas and equations, bonding, atomic structure, the mole, periodicity, nomenclature, and gas laws. Additional topics in thermo chemistry, nuclear and organic will be explored. It stresses conceptual development, develops science inquiry skills, and requires experimental design, critical thinking and data analysis. Strong Algebra skills are recommended for this course. Emphasis is placed on direct student involvement through hands-on activities, labs and the completion of independent research projects.

Chemistry (CP4) (2 periods/full year) 1.0 credit
Prerequisites: **Successful completion of Algebra I (CP4)**
Recommendation: **Student earns a 70 or better in Algebra 1 (CP4)**

This college-preparatory laboratory course includes topics in the fundamental nature of matter and how it reacts. Topics include solutions, acids, bases, chemical reactions, formulas and equations, bonding, molecular structure, the mole, periodicity, and nomenclature. It stresses conceptual development, develops science inquiry skills, requires experimental design, critical thinking and data analysis. Strong Algebra skills are recommended for this course. Emphasis is placed on direct student involvement through activities and the completion of an independent research project.

Environmental Science (CP4) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology**

Environmental Science engages students in the physical, biological, and earth systems that shape our environment. Scientific concepts, principles and modern science practices allow students to analyze environmental issues, both natural and human induced, and engage in evidence-based decision making in real world contexts. Included this year is a special focus on aquatic ecology. This is a laboratory science course. ***Note - All students are required to successfully complete Chemistry or Physics in order to meet graduation requirements.**

Environmental Science (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology**

Environmental Science engages students in the physical, biological, and earth systems that shape our environment. Scientific concepts, principles and modern science practices allow students to analyze environmental issues, both natural and human induced, and engage in evidence-based decision making in real world contexts. Included this year is a special focus on aquatic ecology. This is laboratory science course. ***Note - All students are required to successfully complete Chemistry or Physics in order to meet graduation requirements.**

Biology Part II (CP2) (2 periods/full year) 1.0 credit
This grade 10 Biology Part II (CP2) course is the second component of a two-year Biology (CP2) program. Topics from the Massachusetts State Frameworks include Cell Biology, Genetics, and Anatomy & Physiology. Students will also be introduced to significant figures, calculating percent error, SI units, and Celsius scale. This is a laboratory science course. It stresses conceptual development, science inquiry skills, requires experimental design, critical thinking and data analysis. Students will be eligible to take the Biology MCAS exam at the end of this course.

GRADE 11 SCIENCE COURSE OFFERINGS

AP Chemistry (Advanced Placement) (2 periods/full year) 1.0 credit
Required: **Successful Completion of Chemistry (CP4 or Pre-AP)**
Recommendation: **Completion of, or currently enrolled in, Algebra II**

The AP Chemistry course provides students with a lab based college level foundation to support future advanced course work in chemistry. Through inquiry-based learning, students develop critical thinking and reasoning skills. Students cultivate their understanding of chemistry and science practices as they explore topics such as: atomic structure, intermolecular forces and bonding, chemical reactions, kinetics, thermodynamics, and equilibrium. Students will be required to take and pay for the AP Chemistry exam at the end of the year. Students passing the AP exam with a score of 3-5 receive college credit at most universities.

Chemistry (CP4) (2 periods/full year) 1.0 credit
Prerequisites: **Successful completion of Algebra I (CP4)**
Recommendation: **Student earns a 70 or better in Algebra 1 (CP4)**

This college-prep laboratory course includes topics in the fundamental nature of matter and how it reacts. Topics include solutions, acids, bases, chemical reactions, formulas and equations, bonding, molecular structure, the mole, periodicity, and nomenclature. It stresses conceptual development, develops science inquiry skills, requires experimental design, critical thinking and data analysis. Emphasis is placed on direct student involvement through activities and the completion of an independent research project. This course is recommended for college bound students. This course prepares students for a four-year college program. Strong Algebra skills are recommended for this course.

Applied Chemistry (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology (CP2)**

This course covers traditional topics in chemistry such as the study of matter, acid bases, elements, compounds and mixtures. It is intended to enhance the chemistry background for those students who will be working in trades dealing with the health industry and chemicals. This is a laboratory course, but it is not intended for students who plan to major in a science-related field in college. For those students who will be entering college and pursuing college degrees in science and science-related fields please see **Chemistry (CP4)**.

Physics (H) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Algebra I or II (H)**
Recommendation: **Grade of 70 or better in Algebra I or II (H)**

This course covers the traditional Physics topics of matter and energy using the study of motion and force in one, two, and three dimensions. Additionally, investigations into the nature of heat, sound and vibration, and light are pursued. The course emphasizes a conceptual development of topics through examples, problem solving, independent research, and laboratory investigations. A strong background in algebra is essential and an introduction to basic trigonometry is helpful. This course qualifies as a lab science.

Physics (CP4) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Algebra I (CP4)**

This course covers the traditional Physics topics of matter and energy. The course emphasizes a conceptual development of topics through examples and problem solving. A strong background in algebra is essential and an introduction to basic trigonometry is helpful. This course qualifies as a lab science course.

Applied Physics (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Algebra I (CP2)**

This is a laboratory-oriented applied physics course. The emphasis is on practical applications. Each concept (force, momentum, energy, power, etc.) is explored from a "systems" approach. Videotapes introduce the concept and then class work and laboratories complete the investigations of mechanical, fluid, electrical and thermal systems for each topic. The labs utilize current trade and industry equipment and techniques. This course qualifies as a lab science course.

Principles of Biomedical Science (PLTW Level) (2 periods/full year) 1.0 credit
Recommendation: Successful Completion of Biology (85%)

From the moment students walk into this classroom, they are immersed in the mysterious death of Anna. They are asked to investigate, document, and analyze evidence to solve the case. This course provides an introduction to biomedical science through exciting hands-on projects and problems. Students will investigate concepts of biology and medicine as they explore health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. They will determine the factors that led to the death of a fictional woman as they sequentially piece together evidence found in her medical history and her autopsy report. Students will also investigate lifestyle choices and medical treatments that might have prolonged the woman's life and demonstrated how the development of disease is related to changes in human body systems. Students practice problem solving with structured activities and progress to open-ended projects and problems that require them to develop planning, documentation, communication and other professional skills.

The Monty Tech Science Department has entered into a unique partnership with Project Lead The Way (PLTW), a nationally recognized provider of rigorous and innovative Science, Technology, Engineering, Mathematics (STEM) education programs used in middle and high schools across the country. PLTW classes are nationally standardized project-based courses that prepare students for college-level work and culminate with a student assessment, which colleges and universities can use to determine if a student earns college credit.

Anatomy & Physiology (H) (2 periods/full year) 1.0 credit
Prerequisites: **Successful completion of Biology and teacher recommendation**

This honors course in human anatomy & physiology will cover topics including the chemical and cellular basis of human body systems. Students will work at an accelerated pace while studying the structure and function of the muscular, digestive, skeletal, endocrine reproductive, cardiovascular, respiratory, excretory, lymphatic, and nervous systems. Theoretical concepts will be modeled in lab through hands-on experiments, computer-assisted exercises, models, microscopy, as well as dissection. This is a laboratory science course.

Anatomy & Physiology (CP4) (2 periods/full year) 1.0 credit
Prerequisites: **Successful completion of Biology and teacher recommendation**
**Please refer to grade 9 and 10 science course offerings for course description information*

Anatomy & Physiology (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology**

This is an introductory course in human anatomy & physiology. Topics in this course include the chemical and cellular basis of human body systems. Focus is on an in-depth study of the structure and function of the muscular, digestive, skeletal, digestive, endocrine, reproductive, cardiovascular, respiratory, excretory, lymphatic, and nervous systems. Theoretical concepts will be modeled in lab through hands-on experiments, computer-assisted exercises, models, microscopy, as well as dissection. This is a laboratory science course.

AP Environmental Science (Advanced Placement) (2 periods/full year) 1.0 credit
Prerequisite: 2 years of high school science (1 year of life science, 1 year of physical science); Algebra

This AP course is designed to be the equivalent of an introductory college course in environmental science, through which students engage with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. The course requires that students identify and analyze natural and human-made environmental problems, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving or preventing them. Environmental Science is interdisciplinary, embracing topics from geology, biology, environmental studies, environmental science, chemistry, and geography. Students will be required to take and pay for the AP Environmental Science exam at the end of the year. Students passing the AP exam with a score of 3-5 receive college credit at most universities.

GRADE 12 SCIENCE COURSE OFFERINGS

AP Chemistry (Advanced Placement) (2 periods/full year) 1.0 credit
Required: **Successful Completion of Chemistry (CP4 or Pre-AP)**
Recommendation: **Completion of, or currently enrolled in, Algebra II**

The AP Chemistry course provides students with a lab based college level foundation to support future advanced course work in chemistry. Through inquiry-based learning, students develop critical thinking and reasoning skills. Students cultivate their understanding of chemistry and science practices as they explore topics such as: atomic structure, intermolecular forces and bonding, chemical reactions, kinetics, thermodynamics, and equilibrium. Students will be required to take and pay for the AP exam at the end of the year. Students passing the AP exam with a score of 3-5 receive college credit at most universities.

Chemistry (CP4) (2 periods/full year) 1.0 credit
Prerequisites: **Successful completion of Algebra I (CP4)**
Recommendation: **Student earns a 70 or better in Algebra 1 (CP4)**
**Please refer to grade 11 science course offerings for course description information*

Applied Chemistry (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology (CP2)**
**Please refer to grade 11 science course offerings for course description information*

Physics (H) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Algebra I or II (H)**
Recommendation: **Student earns 70 or better in Algebra I or II (H)**

**Please refer to grade 10 and 11 science course offerings for course description information*

Physics (CP4) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Algebra I (CP4)**
**Please refer to grade 10 and 11 science course offerings for course description information*

Applied Physics (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Algebra I (CP2)**
**Please refer to grade 10 and 11 science course offerings for course description information*

Introduction to Biotechnology I / Introduction to Biotechnology II 1.0 credit
(8 Dual Enrollment credits eligible; 2 periods/full year)
Prerequisite: Algebra II (CP4) and Biology (CP4) and Chemistry (CP4); Placement Test
Recommendation: 70% or higher in prerequisites

This course is designed to acquaint students with the diverse field of biotechnology. Topics will include a brief history of biotechnology, job opportunities in biotechnology, recombinant DNA and protein products, microbial biotechnology, plant biotechnology, medical biotechnology, DNA fingerprinting and forensic analysis. Current ethical issues such as stem cell research and cloning will also be discussed. Students will develop fundamental skills in the set-up of typical growth plates and media used in standard culturing of microorganisms or tissue culture as well as preparation of common solutions and reagents. In addition, students will develop fundamental skills in the use, maintenance, and calibration of common laboratory instruments like spectrophotometers and pH meters. Lab sessions will be hands-on experiences revolving around and applying the topics listed in the lab section of the syllabus. Principles of laboratory safety, documentation, and the use of computers in the lab will also be covered. The practical aspect of the course involves preparation of media for numerous biology classes currently offered in college. After successful completion of this course (B or better), students are eligible for 4 dual enrollment credits through MWCC: BTC101 Introduction to Biotechnology I and 4 dual enrollment credits through MWCC: BTC102 Introduction to Biotechnology II (for a total of 8 credits).

Human Body Systems (PLTW) (2 periods/full year) 1.0 credit
Recommendation: Successful Completion of Biology (85%)

Step inside the human body and explore the systems that help us move, protect us from disease or injury, and facilitate communication within the body and with the outside world. Students will solve a medical mystery, analyze a medical case file and diagnose disease, and design experiments to explore structure and function of the human body. Students will examine the interactions of the body systems as they explore identity, communication, power, movement, protection, and homeostasis. Students will design experiments, investigate the structure and functions of the human body, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeleton manikin, work through interesting real world cases, and often play the role of biomedical professionals to solve medical mysteries. Students practice problem solving with structured activities and progress to open-ended projects and problems that require them to develop planning, documentation, communication and other professional skills.

The Monty Tech Science Department has entered into a unique partnership with Project Lead The Way (PLTW), a nationally recognized provider of rigorous and innovative Science, Technology, Engineering, Mathematics (STEM) education programs used in middle and high schools across the country. PLTW classes are nationally standardized project-based courses that prepare students for college-level work and culminate with a student assessment, which colleges and universities can use to determine if a student earns college credit.

Anatomy & Physiology (H) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology**
**Please refer to grade 9 and 10 science course offerings for course description information*

Anatomy & Physiology (CP4) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology**
**Please refer to grade 9 and 10 science course offerings for course description information*

Anatomy & Physiology (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology**
**Please refer to grade 10 and 11 science course offerings for course description information*

Zoology & Botany (CP4) (2 period/full year) 1.0 credit
Prerequisite: **Successful completion of Biology**

Zoology is the study of animals. The curriculum examines the ecology, classification, structural characteristics, behavior, and life cycles of animals in each of the major invertebrate and vertebrate phyla. Activities center on microscopy, observation of prepared specimens, video, and research. This course is paired with Botany/Ornithology to give students an opportunity to study both plants and animals. *Botany* is the study of plants and ornithology is the study of birds. This course combines the two disciplines to examine the interactions between them and connections to habitat. Students will learn the evolution and classification of plants as well as basic plant structure. The curriculum also examines the physiology of birds and their mating and migration behaviors. Students must successfully complete this course to satisfy the full-year science requirement. This is a laboratory science course. *Note – This course sequence will be team taught with each teacher instructing one of the course topics.*

Environmental Science (CP4) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology**

Environmental Science engages students in the physical, biological, and earth systems that shape our environment. Scientific concepts, principles and modern science practices allow students to analyze environmental issues, both natural and human induced, and engage in evidence-based decision making in real world contexts. Included this year is a special focus on aquatic ecology. This is laboratory science course. ***Note - All students are required to successfully complete Chemistry or Physics in order to meet graduation requirements.**

Environmental Science (CP2) (2 periods/full year) 1.0 credit
Prerequisite: **Successful completion of Biology**
**Please refer to grade 9 and 10 science course offerings for course description information*

Social Studies Department

COURSE OFFERINGS, GRADES 9-12

GRADE 9	GRADE 10	GRADE 11	GRADE 12
U.S. History I (H)	U.S. History II (H)	U.S. History III (H)	World History (H) Cultural Studies (H) Law & Society (H)
U.S. History I (CP4)	U.S. History II (CP4)	U.S. History III (CP4)	World History (CP4) Law & Society (CP4)
U.S. History I (CP2)	U.S. History II (CP2)	U.S. History III (CP2)	World History (CP2) Law & Society (CP2)

The Social Studies Department uses standards-based curriculum to develop informed, creative, and independent thinkers. The instructors use the four years of social studies education to help students prepare for their role as citizens of the United States and the world. Students are exposed to a variety of ideologies, primary sources, informational text, and historical approaches. The department works as a cohesive unit to keep curriculum current and relevant.

GRADE 9 SOCIAL STUDIES COURSE OFFERINGS

Course descriptions are organized by course/level

U.S. History I (H) (1 period/full year) .50 credit
Prerequisite: **Grade of 85% or better in 8th grade Social Studies**

This honors course consists of a survey of U.S. History from colonization to 1890. Students must be able to demonstrate critical thinking skills, analyze historical concepts and be an active participant. Students will work at an accelerated pace and will learn about colonization, the events leading up to the American Revolution, and Declaration of Independence, post-war nationalism, the Constitution, Age of Reform, the Civil War and Reconstruction. Students will show the ability to evaluate primary sources and outside readings and to synthesize that material into more in-depth view of American History. In addition, students will be required to do outside reading of historical text and literature. Significant project based activities will accompany outside reading assignments. Students will also take a mid-term and final exam in this class.

U.S. History I (CP4) (1 period/full year) .50 credit

This course consists of a survey of U.S. History from colonization to 1890. Students will learn about colonization, the events leading up to the American Revolution, and Declaration of Independence, post-war nationalism, the Constitution, Age of Reform, the Civil War and Reconstruction. Students will show the ability to evaluate primary sources and outside readings and to synthesize that material into more in-depth view of American History. Students will be required to examine selected readings from historical literature. Significant project-based assignments will be given in conjunction with these readings. Students will also take a mid-term and final exam in this class.

U.S. History I (CP2) (1 period/full year) .50 credit

This course consists of a survey of U.S. History from colonization to 1890. Students will learn about colonization, the events leading up to the American Revolution, the Declaration of Independence, post-war nationalism, the Constitution, Age of Reform, the Civil War and Reconstruction. Students will show the ability to evaluate primary sources and outside readings and to synthesize that material into a more in-depth view of American History. Students will be required to

examine selected readings from historical literature. Project-based assignments will be given in conjunction with these readings. Students will also take a mid-term and final exam in this class..

GRADE 10 SOCIAL STUDIES COURSE OFFERINGS

U.S. History II (H) (1 period/full year) .50 credit
Prerequisite: **Grade of 85% or higher in U.S. History I and teacher recommendation**

This honors level course consists of a survey of the history of the United States from 1890 to 1945. Students must be able to demonstrate critical thinking skills, analyze historical concepts and be an active participant. The course covers the Industrial Revolution, development of cities, Imperialism, World War I, The New Deal, The Depression, and World War II. All aspects of life are touched upon, including the impact of art, music, religion, business, industry, politics and the global economy as they relate to American society. Students will show ability to evaluate primary sources and outside readings and synthesize that material into a more in-depth view of American History. Students will be expected to demonstrate an understanding of the connections between the 20th Century and modern American politics. In addition, students will be required to do outside reading of historical text and literature. Significant project based activities will accompany outside reading assignments. Students will also take a mid-term and final exam in this class. Students will also be expected to develop independent work projects and a variety of alternative activities that will broaden their understanding of America's place in the world today.

U.S. History II (CP4) (1 period/full year) .50 credit

This course consists of a survey of the history of the United States from 1890 to 1945. The course covers the Industrial Revolution, development of cities, Imperialism, World War I, The New Deal, The Depression, and World War II. All aspects of life are touched upon, including the impact of art, music, religion, business, industry, politics and the global economy as they relate to American society. Students will show ability to evaluate primary sources and outside readings and synthesize that material into a more in-depth view of American History. Students will be required to examine selected reading from historical literature. Significant project based assignments will be given in conjunction with these readings. Students will take a mid-term and final exam in this class.

U.S. History II (CP2) (1 period/full year) .50 credit

This course consists of a survey of the history of the United States from 1890 to current times. The course covers the Industrial Revolution, development of cities, Imperialism, World War I, The New Deal, The Depression, World War II, the Cold War, and post-Cold War to the present. All aspects of life are touched upon, including the impact of art, music, religion, business, industry, politics and the global economy as they relate to American society. Students will be required to examine selected readings from historical literature. Project based assignments will be given in conjunction with these readings.

GRADE 11 SOCIAL STUDIES COURSE OFFERINGS

U.S. History III (H) (1 period/full year) .50 credit

This course consists of a survey of the history of the United States from the Cold War and post-Cold War to the present. Students must be able to demonstrate critical thinking skills, analyze historical concepts and be an active participant. All aspects of life are touched upon, including the impact of art, music, religion, business, industry, politics and the global economy as they relate to American society. Students will show ability to evaluate primary sources and outside readings and synthesize that material into a more in-depth view of American History. Students will be expected to demonstrate an understanding of the connections between the 20th Century and modern American politics. Students will work at an accelerated pace and be required to read supplemental novels relating to topics being covered. A significant project will accompany these novels. Students will also take a mid-term and final exam in this class. Students will also be expected

to develop independent work projects and a variety of alternative activities that will broaden their understanding of America's place in the world today.

U.S. History III (CP4) (1 period/full year) .50 credit

This course consists of a survey of the history of the United States from the Cold War and post-Cold War to the present. All aspects of life are touched upon, including the impact of art, music, religion, business, industry, politics and the global economy as they relate to American society. Students will be required to examine selected readings from historical literature. Significant project based assignments will be given in conjunction with these readings. Students will also take a mid-term and final exam in this class.

U.S. History III (CP2) (1 period/full year) .50 credit

This course consists of a survey of the history of the United States from the Cold War and post-Cold War to the present. All aspects of life are touched upon, including the impact of art, music, religion, business, industry, politics and the global economy as they relate to American society. Students will be required to examine selected readings from historical literature. Project based assignments will be given in conjunction with these readings. Students will also take a mid-term and final exam in this class.

GRADE 12 SOCIAL STUDIES COURSE OFFERINGS

World History is a required course for all grade 12 students

World History (H) (1 period/half year) .25 credit
Prerequisite**: Grade of 85% or better in Grade 11 History, and teacher recommendation**

This course is a survey of topics from the study of world history. Students must be able to demonstrate critical thinking skills, analyze historical concepts and be an active participant. Students will work at an accelerated pace to cover topics which will include major religions (Hinduism, Buddhism, Christianity and Islam), The Renaissance, The Enlightenment, The French Revolution, The Russian Revolution, and The Industrial Revolution. Students will demonstrate the ability to evaluate primary source documents and outside readings in order to develop a more in-depth understanding of World History. In addition, students will be required to do outside reading of historical text and literature. Significant project based activities will accompany outside reading assignments. Students will take a final exam.

World History (CP4) (1 period/half year) .25 credit

This course is a survey of topics from the study of world history. Topics will include major religions (Hinduism, Buddhism, Judaism, Christianity, and Islam), The Renaissance, The Enlightenment, The French Revolution, The Russian Revolution, and The Industrial Revolution. Students will demonstrate the ability to evaluate primary source documents and outside readings in order to develop a more in-depth understanding of World History. Students will be required to examine selected readings from historical literature. Significant project based assignments will be given in conjunction with these readings. Students will take a final exam.

World History (CP2) (1 period/half year) .25 credit

This course is a survey of topics from the study of world history. Students will work at an accelerated pace to cover topics which will include major religions (Hinduism, Buddhism, Christianity and Islam), The Renaissance, The Enlightenment, The French Revolution, The Russian Revolution, and The Industrial Revolution. Students will be required to examine selected readings from historical literature. Project-based assignments will be given in conjunction with these readings. Students will take a final exam.

Cultural Studies (H) (1 period/half year) .25 credit

Prerequisite: **Grade of 85% or better in Grade 11 history, and teacher recommendation.**

This honors level course will take another look at American and World History. Students must be able to demonstrate critical thinking skills, analyze historical concepts and be an active participant. Unlike other history courses, this course will focus on the development of culture, rather than politics. This course will connect trends in human thinking with time periods and events studied in past history classes. Topics will include music, art, psychology, and philosophy. Students will be expected to read the novel 1984 and discuss the role of government, psychology, and technology in culture. Students will be required to develop two major projects and take a final exam. .

Law and Society (H) (1 period/half year) .25 credit
Prerequisite**: Grade of 85% or better in Grade 11 history, and teacher recommendation.**

This honors level course will cover basic law principles that every citizen living within society should be aware of. Students must be able to demonstrate critical thinking skills, analyze historical concepts and be an active participant. The following topics will be addressed: an introduction to law and the legal system, criminal law and civil law, juvenile justice, family law, individual rights and liberties. Students will gain a practical understanding of local, state and federal law through the study of various real life cases. Students will demonstrate the ability to evaluate primary source documents and outside readings in order to develop a more in-depth understanding of the law and the legal system. This course is taught at an accelerated pace and students will be required to read supplemental novels related to topics covered. A significant project will accompany these novels and students will also take a final exam in this class.

Law and Society (CP4) (1 period/half year) .25 credit

This course will cover basic law principles that every citizen living within society should be aware of. The following topics will be addressed: an introduction to law and the legal system, criminal law and civil law, juvenile justice, family law, individual rights and liberties. Students will gain a practical understanding of local, state and federal law through the study of various real life cases. This course is taught at an accelerated pace and may require additional reading. Students will also take a final exam in this class.

Law and Society (CP2) (1 period/half year) .25 credit

This course will cover basic law principles that every citizen living within society should be aware of. The following topics will be addressed: an introduction to law and the legal system, criminal law and civil law, juvenile justice, family law, individual rights and liberties. Students will gain a practical understanding of local, state and federal law through the study of various real life cases. Students will also take a final exam in this class.

ELECTIVES

PHYSICAL EDUCATION / HEALTH

The Physical Education/Health program provides opportunities for students to practice the skills necessary to participate in physical activities and mental awareness that promote a healthy lifestyle. Often, students will participate in independent skill building, collaborative activities and/or competitive sports. Students will learn the value of good sportsmanship and ethical play. These skills will allow students to develop a keen sense of self awareness and a sound mind and body, which will help each of our students meet the everyday challenges of the mental, emotional, social, and physical aspects of maintaining good health. We are proud to offer students an array of fitness courses that are suitable for students at all fitness levels, encouraging an appreciation for personal fitness and a healthy lifestyle.

COURSE DESCRIPTIONS, GRADES 9-12

Physical Education/Health - Grade 9 (1 period/half year) – Required .25 credit

Physical Education at the 9th grade level places an emphasis on the development of basic movement skills and strategies through the use of lead-up games and drills. Personal fitness concepts are presented as an individual unit in addition to the continuous goal of educating the individual towards lifelong fitness.
Health Education in Grade 9 centers on Family Life Education and Sexuality. This course is designed to make students aware of health risks that may be associated with human sexuality. Included in the course will be information on child abuse, dating violence, birth control, STD's, sexual orientation, teen pregnancy and responsible decision-making. Additionally, a health screening for postural abnormalities is administered to all grade 9 students.

Physical Education/Health - Grade 10 (1 period/half year) - Required .25 credit

Physical Education at the 10th grade level begins with a review of the basic skills previously taught. Activities progress towards intermediate skills through the implementation of controlled scrimmages and coaching. Fitness activities will be incorporated as a continuing process of personal fitness. Health Education in Grade 10 centers on substance abuse and resistance. Students will be made aware of the problems associated with chemical dependency. Topics included will be decision-making skills, influences, alcohol, tobacco, controlled substances, designer drugs, steroids, smoking cessation, the addiction process and offering help to others.

Physical Education - Grade 11 & 12 (1 period/half year) .25 credit

Lifetime and carryover activities as well as individual and dual sports are more prevalent at the junior and senior level. Basic and intermediate skills and strategies are incorporated into competitive scrimmages. Advanced skills are developed throughout the semester. Having students develop personal fitness routine and encouraging health-enhancing decisions is a priority.

Personal Fitness – Grade 11 & 12 (1 period/half year) .25 credit

This fitness course shall be offered to juniors and seniors. The class will include self -evaluations and instructor guidance to plan a personalized fitness plan designed to enhance body composition, increase flexibility, develop cardio endurance and manage weight. Students will participate in a variety of activities to meet their goals.

Pilates Beginner Mat Principles - Grade 11 & 12 (1 period/half year) .25 credit

This course is a method of body conditioning that focuses on a unique system of stretching and strengthening exercises developed nearly a century ago by Joseph H. Pilates. This class is designed to strengthen and tone muscles, improve posture, provide flexibility and balance, and unite body and mind. Students taking this course will gain an in-depth understanding of the Pilates methodology by learning the Pilates mat program through the Classical Approach. Each mat exercise will be broken down and studied to give students a deeper comprehension of the Pilates method of body conditioning as well as create a stronger sense of awareness and control within their own body.

Yoga and Meditative Art I, Grades 9-12 (1 period/half year) .25 credit

This course will combine yoga, meditation, and creative arts to support health and physical education and character development in its participants. This class will combine rigorous, alignment based flow yoga (Vinyasa Yoga) with creative arts activities. The arts element of this class will offer students an opportunity to express themselves through drawing, collage, painting, mixed media, etc. Projects will be done independently, in small groups, and class/community collaborations. There will also be opportunities for creative writing, journaling, self-reflection, and centering. As students deepen their yoga practice and connect with their bodies, the art making process will often emerge as a reflection of the movement. The fundamental 8 limbs of yoga will be woven into the semester to guide class themes and provide inspiration during art making opportunities. Scheduling may require students to be in classes that include multi-grade levels.

Yoga and Meditative Art II, Grades 9-12 (1 period/half year) .25 credit

Yoga and Meditative Art 2 builds on the foundations laid in Yoga and Meditative Art 1 and gives students the opportunity to build an intermediate yoga practice with more rigorous postures and breath work. Class emphasis will be on holding postures longer, with intermediate/advanced flow sequences and smoother transitions between positions. Breath-work and Kundalini style meditations will also be introduced and incorporated into weekly asana practices. This course serves to develop an overall deeper understanding of yoga methodology, posture awareness, and yoga philosophy. Art projects will be a reflection of each student's yoga practice and will emerge from their understandings and personal connections to their bodies and energy.

SPANISH ELECTIVES

Students interested in learning and mastering a foreign language while at Monty Tech may enroll in our comprehensive Spanish program. Instructors have developed a course sequence that emphasizes vocabulary, conversational expressions and grammar, while ensuring students are able to apply their knowledge in practical, real-world situations. Students will be exposed to a variety of teaching styles, and will demonstrate their knowledge through a wide variety of assessments and projects. Reading, writing, listening and speaking skills are developed in each course. Students will become proficient in both written and oral language presentation, and will develop a true appreciation for Spanish-speaking cultures around the globe as they explore Hispanic culture, music, literature and film.

COURSE DESCRIPTIONS, GRADES 9-12

Spanish I (1 period/full year) .50 credit
Recommendation: Score of 70% or above in English

This course will provide students with a general introduction to the Spanish language. Emphasis will be on building proficiency and the acquisition of four skills: reading, writing, listening, and most importantly, speaking. The main objective of the course is to provide students with a basic understanding of Spanish vocabulary, grammar, and culture.

Students are expected to use Spanish in this class. This course is available for students in grades 9 - 11. Scheduling may require students to be in classes that include multi-grade levels.

Spanish II (1 period/full year) .50 credit
Prerequisite: Successful Completion of Spanish I

This course builds upon the knowledge gained in Spanish I. We will continue practicing the four skills of reading writing, listening, and speaking. Emphasis will be on increased communicative proficiency and acquisition of functional vocabulary and grammar. The main objective of the course is to build on the basic concepts of Spanish vocabulary, grammar, and culture. Students are expected to use Spanish in this class. This course is available for students in grades 9 - 12. Scheduling may require students to be in classes that include multi-grade levels.

Spanish III (1 period/full year) .50 credit
Prerequisite: Successful Completion of Spanish II
Recommendation: Student earns at least a 70 in Spanish II

This course is a rigorous continuation of Spanish II. Students will integrate a more advanced vocabulary and grammar through listening, speaking, reading, and writing in the target language. There will be an emphasis on Latin American culture and project-based learning. Students are expected to use Spanish in this class. This course prepares students for a four-year college program. This course is available for students in grade 10-12. Scheduling may require students to be in classes that include multi-grade levels.

ART ELECTIVES

Visual Arts I, Grades 9-12 (1 period/half year) .25 credit

Visual Arts is a semester long introductory studio art course for all levels, abilities and understandings of basic art principles. The primary goal of this class is to encourage students to develop awareness and appreciation for visual art and to recognize the unlimited possibilities for making objects of beauty through self-expression. Students will develop their own visual style through a variety of art mediums and will explore traditional and contemporary techniques. This course is available for students in grades 9-12. Scheduling may require students to be in classes that include multi-grade levels.

Visual Arts II, Grades 9-12 (1 period/half year) .25 credit

Visual Arts 2 is a semester long studio art course for students looking to further develop the concepts and skills cultivated in Visual Arts 1. Students will build upon the skills and techniques in two-dimensional media (graphite, charcoal, pastels, colored pencil, acrylic, watercolor and ink techniques). Students will develop an ability to make effective choices concerning media, techniques, subject matter, methods of interpretation and compositional design while continuing to cultivate personal style. This class will develop critiquing skills as well as discuss portfolio development. Visual Arts 1 is a prerequisite for this course.

TITLE I ELECTIVES

Writing Lab (1 period/full year) **Counselor recommendation only** .50 credit
Title I / Grade 9 and 10 only

This Title I support course is designed to provide supplemental academic support to eligible Title I students in the areas of reading and writing. This course is designed to provide extensive targeted instruction that will help prepare students to meet the proficiency score requirements MCAS. Eligibility criteria are based on students' performance on standardized tests, placement test scores, and guidance counselor and teacher recommendations. For more information, please see your student's guidance counselor. This course is available for students in grades 9 – 10 only.

Math Lab (1 period/full year) **Counselor recommendation only** .50 credit
Title I / Grade 9 and 10 only

This Title I support course is designed to provide supplemental academic support to eligible Title I students in math as well as extensive targeted instruction that will help prepare students to meet the proficiency score requirements of MCAS. At the freshmen level, this support will focus on the topics of rational numbers (integers, fractions, and decimals), equations, proportions and percent of change, linear equations, systems of linear equations, and exponents. For sophomores, the topics include operations with polynomials, factoring, quadratic equations, summary statistics, and various introductory geometry units. Problem-solving strategies, open-response questions, and test-taking techniques will accompany each unit throughout the course, targeted to the following standards: number and quantity, algebra and functions, geometry, and statistics and probability. Eligibility criteria are based on students' performance on standardized tests, placement test scores, and guidance counselor/teacher recommendations. For more information, please see your student's guidance counselor. This course is available for students in grades 9 - 10.

ADDITIONAL ELECTIVE COURSES

Freshmen Seminar (1 period/half year) .25 credit

Freshman Seminar is a course designed to promote a successful transition between middle and high school with a focus on digital citizenship, technology and 21st century learning. Taught by the Monty Tech technology and guidance departments, the course provides students the opportunity to familiarize themselves with Naviance/Guidance software, improve organizational and communication skills and establish a career or college plan through personal exploration. Students will also be exposed to skills and resources for academic success such as time management, goal setting, and critical thinking through hands on activities, classroom discussions, and group work. Students will demonstrate the safe and responsible use of technology and an understanding of security, privacy, and ethics pertaining to computers. In addition, students will be instructed on Chromebook usage as well as how to manage the many G-Suite for Education tools. The goal is for students to become independent and effective users of information and computer technology.

Personal Finance (1 period/half year) .25 credit

This course focuses on learning personal financial money management skills such as developing personal financial goals; learning various types of income; selecting and maintaining the right checking and savings accounts; establishing and maintaining excellent credit; how to avoid Identity Theft; buying/financing a vehicle and first home; investment options; and various types of insurance. This course is available for students in grades 10 - 12. Scheduling may require students to be in classes that include multi-grade levels.

MARINE CORPS JUNIOR RESERVE OFFICER TRAINING CORPS (MCJROTC) LEADERSHIP EDUCATION PROGRAM

Leadership Education IA (1 period/half year) .25 credit
Leadership Education IB (1 period/half year) .25 credit

Leadership Education, more commonly referred to as Marine Corps Junior Reserve Officer Training Corps (MCJROTC), is a four-year academic program. Enrollment does not obligate a student to join the Marine Corps or any other branch of the service. Students, however, must accept Marine Corps standards of discipline, appearance and training. It is a nationally recognized program that has received accreditation by The Commission of International and Trans-Regional Accreditation (CITA). The CITA Alliance includes the Southern Association of Colleges and Schools (SACS-CEMS and SACS-CSMS). It is designed to instill in high school students a value of citizenship, service to the United States, personal responsibility, and a sense of ethics and honor. This course is available for students in grade 9.

Leadership Education IIA (1 period/half year) .25 credit
Leadership Education IIB (1 period/half year) .25 credit
Both A & B are required

This course will build on the subject matter covered in Leadership Education I. However, the completion of Leadership Education I is not a prerequisite for this course. Special application and approval to Leadership Education II is required. This course is available for students in grade 10.

Leadership Education IIIA (1 period/half year) .25 credit
Leadership Education IIIB (1 period/half year) .25 credit
Both A & B are required

This course will build on the subject matter covered in Leadership Education I & II. However, the completion of Leadership Education I & II is not a prerequisite for this course. Special application and approval to Leadership Education III is required. This course is available for students in grade 11.

Leadership Education IVA (1 period/half year) .25 credit
Leadership Education IVB (1 period/half year) .25 credit
Both A & B are required

This course will build on the subject matter covered in Leadership Education I, II & III. However, the completion of Leadership Education I, II & III is not a prerequisite for this course. Special application and approval to Leadership Education IV is required. This course is available for students in grade 12.

ENGLISH LANGUAGE EDUCATION COURSES

A limited English proficient (LEP) student is a student whose first language is a language other than English and who is unable to perform ordinary classroom work in English. A student is primarily identified as limited English proficient (LEP) through the ACCESS for ELLs test. Limited English proficient (LEP) students will be educated at Monty Tech in general education classrooms with accommodations and modifications of the Massachusetts Frameworks Curriculum. Student will be educated in a Sheltered English Immersion classroom taught by trained teachers. The student also receives English as a Second Language (ESL) instruction, which is designed to teach English to English language learner students. Limited English proficient (LEP) students will be placed in these ESL classes based on progress in the classroom, recommendations by teachers, test results from previous administrations of ACCESS for ELLs.

English as a Second Language (ESL) 1

(1 period/full year) **Counselor recommendation only** .50 credit

Students will learn basic grammatical structure and skills, and will explore writing simple sentences as well as various kinds of writing while developing reading skills that are necessary for daily life and academic assignments. This course will allow students to learn essential vocabulary and provide opportunities for students to improve their speaking and listening skills in the English language. This is a beginner ESL course and it is designed for students who are English language learners.

English as a Second Language (ESL) 2
(1 period/full year) **Counselor recommendation only** .50 credit

Students will continue to learn and understand grammatical structure, while implementing their writing skills from ESL 1 into more complex sentence structures and multiple paragraphs. Students will incorporate daily vocabulary with ease while learning and adapting academic language to their daily listening, speaking, reading and writing activities and lessons. Students will gain confidence and practice in reading a variety of genres as well as building upon their comprehension, vocabulary and fluency skills. This is an early intermediate ESL course and it is designed for students who are English language learners. All students enrolled in this class are expected to be simultaneously enrolled in the appropriate core English course as well.

English as a Second Language (ESL) 3
(1 period/full year) **Counselor recommendation only** .50 credit

Students will increase their basic to advanced grammatical skills by emphasizing the perfect verb tense, modal auxiliaries, passive voice and prepositions through in-class and out-of-class practice and drills. Students will concentrate on writing grammatically correct sentences, well-developed paragraphs, and short essays which will provide opportunities for proofreading, sentence combining, and vocabulary building while enhancing reading fluency and comprehension. Through a broad range of student-centered activities, students are given the opportunity to practice and reinforce the English language through conversation, dialogue, discussion, debates, and the use of idioms. This course is intended to actively engage the student in meaningful conversation. This is an intermediate ESL course and it is designed for students who are English language learners. All students enrolled in this class are expected to be simultaneously enrolled in the appropriate core English course as well.

English as a Second Language (ESL) 4
(1 period/full year) **Counselor recommendation only** .50 credit

Student will learn advanced grammar forms including adjectives, adverb and noun clauses, modal auxiliaries and the passive voice. Emphasis will be on the writing of grammatically clear sentences and well-developed paragraphs and essays. The materials used will expand the student’s vocabulary and provide the student with the tools necessary to improve comprehension and increase reading fluency. Students will be exposed to the complexity of the English language used in college textbooks. The class will read and discuss such texts. Student's conversational language will focus on the sound/spelling patterns, word endings, syllables, stress, rhythm and intonation of the language. This is an advanced ESL course and it is designed for students who are English language learners. All students enrolled in this class are expected to be simultaneously enrolled in the appropriate core English course as well.

STUDENT SUPPORT SERVICES

SUPPORT SERVICES

Support services include special education and related counseling services. Students are afforded opportunities to meet with a guidance counselor, school psychologist, adjustment counselor and/or social worker when the need arises. Special Education students meet regularly with assigned personnel.

GUIDANCE

The guidance counselors at Montachusett Regional assist students through individual and group counseling to gain insight into understanding their environment and needs so that choices and decisions made will culminate in an effective and satisfying academic and vocational life. The counselors meet with students in order to assist them in developing an awareness of the world of work and in creating an academic and vocational program that ensures they receive the necessary training and skills needed for college admissions, post-secondary vocational-technical training, or employment.

The Guidance Department, in addition to vocational and academic counseling, assists students with personal and social problems that may affect their learning process. The services of the guidance counselors at Montachusett Regional are available to all students and parents by appointment. Unscheduled conferences are held when deemed necessary.

SPECIAL EDUCATION SERVICES

The Montachusett Regional Vocational Technical School District complies with the special education laws known as IDEA at the federal level and Chapter 766 at the state level. Students with disabilities are identified, evaluated and determined to be eligible for special education services through the mandated Team process. If it is determined at the Team meeting that a student will not make effective progress in regular education classes without specialized assistance, then an Individualized Educational Plan is written by the Team for that student. Only students with IEP's can be assigned to special education classes.

HEALTH EDUCATION/SERVICES

Monty Tech's comprehensive Health Education/Services program provides students with counseling, support and information to assist them in dealing effectively and positively with health-related and social issues. Peer Leadership, Peer Mediation, Mentoring and Support Groups are some of the many programs that have been established. Brochures, videos and other resources covering a wide range of teen issues are available to students and their families.

LEARNING SUPPORT

Learning Support (1 period/full year) .5 credits

Learning Support is a credit-bearing course designed for students who require additional specialized educational services through an IEP (Individualized Educational Program). This course will introduce the instruction and practice of the skills necessary for the student to be able to access the common core and vocational curriculum. Students will be instructed on skills specific to their individual needs that are tied to their Individual Education Program. Students will be required to integrate skills taught within their subject area classes on a weekly basis. Time will be allotted for one-on-one and small group instruction to assist in clarification of content area material.

Vocational Technical Educational Plan

The Key to Your Future

VOCATIONAL TECHNICAL PROGRAMS

Auto Body: Collision Repair

Automotive Technology

Business Technology

Cabinetmaking

CAD/Drafting & Design

Cosmetology

Culinary Arts

Dental Assisting

Early Childhood Education

Electrical

Engineering Technology

Graphic Communications

Health Occupations

House Carpentry

HVAC & Property Maintenance

Information Technology

Machine Technology

Masonry

Plumbing

Veterinary Science

Welding/Metal Fabrication

VOCATIONAL TECHNICAL SAFETY

VOCATIONAL TECHNICAL SAFETY IS OUR PRIORITY

BELOW IS AN OUTLINE OF MEASURES TAKEN TO ENSURE STUDENTS LEARN AND MAINTAIN SAFE WORK HABITS.

During the pre-exploratory week, each freshman is given a *'General Safety Rules for Vocational Programs'* booklet and takes an assessment based on the information in the booklet. A score of 100% is required, and the completed test sheets are kept in the vocational office.

Students in the construction trades are required to take a 10-hour class given by one of Monty Tech's certified "OSHA train the trainers". This training usually occurs in May during the Sophomore year of the students vocational technical program. The course provides each student with an OSHA 10-hour construction safety card, which is a requirement within the Vocational Technical Curriculum Frameworks, as well as an industry requirement. All public funded work projects require the OSHA card. The professional development required, for our teachers that conduct the classes, is funded through the Carl D. Perkins federal grant.

Each of the twenty vocational technical programs has their own set of safety tests, specific to the equipment and materials used in their programs. Students are re-tested annually to assure comprehension and understanding of all safety rules within their program. Vocational Technical teachers maintain these safety tests in their own student records folders.

Each vocational technical teacher has a "Standard Shop Procedures" manual, which covers safety requirements for all vocational technical programs. This manual is revisited annually to assure compliance with any new safety rules and regulations.

The Co-op Coordinator, responsible for the Cooperative Education Program, uses a Department of Secondary & Elementary generated safety checklist prior to sending students out on Co-op. This document is entitled "*Cooperative Education Site Safety Checklist*", and assures worksite is safe.

Monty Tech is also required to have a Comprehensive Health & Safety Plan, which goes into details about our goals and requirements throughout the building. Section 9 is particular to Health & Safety training of students, staff and faculty, and describes the safety training for each vocational technical area. This document is reviewed annually.

SHOP SAFETY

Shop safety and safe operation of tools and equipment are stressed in all programs. **Many shops require work boots, safety glasses, shop hats/hairnets, and personal clothing restrictions.**

Safety is of paramount importance and cannot be overemphasized. Students should be alert and focused on assigned activities at all times.

A WORLD OF OPPORTUNITIES - Freshmen Exploratory Program

Montachusett Regional Vocational Technical School offers 20 vocational-technical programs. These programs are introduced to the 9th grade student through a Pre-Exploratory Program and an Exploratory Program.

PRE-EXPLORATORY PROGRAM

The Pre-Exploratory Program at the beginning of Grade 9 enables students to visit each of the 20 vocational technical programs. Students are scheduled into each of these programs for a 2 hour segment during his or her first shop week. The curriculum includes: a) overview of trade occupation; b) specialized skills performed; c) related occupation and pay scales.

At the conclusion of the program, students select vocational technical programs for further exploration.

EXPLORATORY PROGRAM

The Exploratory Program at Monty Tech enables the student to more completely explore vocational technical programs. Students are graded on conduct, effort, cooperation, willingness to follow instructions, follow through on assigned tasks, responsibility in attendance and towards obligations, personal safety and care of equipment, apparent abilities for trade, quality of work, understanding and use of tools and equipment. These are important criteria used in the selection process for a final program. It is important that students work to the best of their abilities in ALL Exploratories.

Vocational Program or Shop Selection: Program placement/selection is made halfway through the 9th grade based on the criteria in the above paragraph. This placement occurs in late January and places students in their trade for the next 3-1/2 years. **Shop safety and safe operation of tools and equipment are stressed at all levels in all programs.**

COOPERATIVE EDUCATION PROGRAM

The Cooperative Education (Co-op) Program makes it possible for eligible students to combine classroom and technical training with actual work experience. When students reach the second semester of their junior year, they may be eligible to participate in the Co-op program. To qualify, students must maintain certain grades, have good attendance, and have a good discipline record. The benefit to the students is that it enables the student to practice their chosen trade through state and federal Child Labor Law exemptions for student learners participating in cooperative education programs. If the student's shift is during school hours on their trade week, the student will use that time to be at the work site. Many companies hire co-op students for full-time positions following graduation. Another service provided by this program is Job Placement. Working with numerous employer contacts in the area, students may be placed in temporary, part-time, summer or full-time jobs. This service does not cease upon graduation.

Internship/externship/job shadowing is also an extension of work-based learning. These are un-paid work studies with intent of gaining valuable experience which may result in a Co-op job.

The following is a partial listing of area companies, which have employed Monty Tech students and graduates:

ABH Plumbing & Heating Aldrich Auto Body & Repair Amazing Kids Child Development Center Appleseed Dental Atlantic Precision Sheet Metal LLC Barrett Plumbing & Heating Bay State Apparel, Inc. Baystate Concrete Construction Becki's Bistro Blessington Corporation Blossom Station Child Care Ctr Bob Glover Flooring Cain Electric Co, Inc. Capeway Interiors Castine Movers Central MA Powersports Commonwealth Electrical Technologies D & G Custom Graphics D-E Corporation DMH Electrical Contractors, Inc. E. Desilets Auto Repair East Coast Electric Feens Country Living, Inc. Foamtech GeoSearch, Inc. Giombetti Electric, Inc. Glenwood Kitchens USA Inc. Heritage Welding IBM Interstate Electrical Services J.C. Madigan, Inc. J.A Landry Kitchen Associates, Inc. Klever Klippers Salon	L.S. Starrett Company LaRoche Law Leominster Dermatology LLP Lindgren Electric LUK Inc. M.H Parks Company, Inc. M.P. Gionet & Son Plumbing & Heating Millside Plumbing Monty Tech MT. Auburn Co. New England Wire Products New Hampshire Ball Bearings NyproMold O'Leary Welding Corp P.K. McGuane Plumbing & Heating Poske Corp Precision Electrical Systems, Inc. Prime Toyota Process Cooling Systems, Inc. Quality Home Solutions Quality Masonry Ray Hachey, Inc. Rutter Networking Technologies SRB Signature Kitchens & Baths Sterling Municipal Light Dept Technical Products, Inc. Three Phase Electric Trellis Structures Truimph Play Systems, Inc. Twin City Machining Wayne J. Griffin Electric, Inc. Woodmeister Master Builders Wayne J. Griffin Electric, Inc. Workers Credit Union

Auto Body Collision Repair Technology

Auto Body Collision Repair trains students with the latest technology through hands-on experience in an NATEF (National Automotive Technicians Education Foundation, Inc.) Certified shop. The curriculum is I-Car (Inter-Industry Conference on Automotive Repair) based in accordance with established national standards. Graduates are prepared to take the ASE (Automotive Service Excellence) tests in Auto Body Repair. Students graduate with I-CAR Pro-Level One in refinishing and non-structural repair. Areas of employment:

- *Auto Painter*
- *Industrial Painter*
- *Auto Assembler*
- *Frame Technician*
- *Auto Body Supply/Equipment Sales*
- *Parts Specialist*
- *Service Representative*
- *Insurance Auto Damage Appraiser*
- *Insurance Claims Adjuster*

Students in the Monty Tech Auto Body/ Collision Repair program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

McPherson College	Accelerated Acceptance for up to five (5) students from Monty Tech. Accelerated application deadline for submission of portfolios and application for admission (December 1)
New England Institute of Technology	AUB 101 Fundamentals of Auto Body Metal Repair (3) AUB 102 Fundamentals of Auto Body Metal Repair Lab (2) AUB 137 Fundamentals of Paints and Refinishing Equip (2) AUB 138 Fundamentals of Paints and Refinishing Equip Lab (2) TT 114 Oxy and Electric Welding and Cutting (2)

VAB1X **Auto Body: Collision Repair Exploratory**

The program starts with safety. All equipment and tools that students will be using throughout the week are covered. Each student will have hands-on experience in at least three areas of the shop; they will complete a metal shaping and welding project, they experience a complete vehicle detail, and they will design a custom paint job on a car and paint it. This is a fun, educational, fast paced week that will peak the interest of all students.

VAB1 **Auto Body: Collision Repair Level I** 2.25 credits

Program includes reinforcement of all shop equipment safety rules and regulations. The I-CAR Worker Safety Program covers all OSHA guidelines, EPA Regulations, Hazardous Communication and how a worker can protect himself from any potential hazards in the collision industry. Other programs covered are: basic measuring theory, hand tool identification and safe use, and vehicle detailing.

VAB2 **Auto Body: Collision Repair Level II** 4.5 credits

The program includes reinforcement of all shop equipment safety rules and regulations. The I-CAR Worker Safety Program covers all OSHA guidelines, EPA Regulations, Hazardous Communication and how a worker can protect himself from any potential hazards in the collision industry. Other programs are: cutting and welding, fasteners and hardware, hand tools, repair plans, dent repair theory and practical, in-depth detailing to industry standards.

VAB3 **Auto Body: Collision Repair Level III** 4.5 credits

The program includes reinforcement of all shop equipment safety rules and regulations. The I-CAR Worker Safety Program covers all OSHA guidelines, EPA Regulations, Hazardous Communication and how a worker can protect himself from any potential hazards in the collision industry. Other hand-on skills experience are: advanced dent repair and metallurgy to shape metal back to original contour and finish with plastic body filler to industry standards. Intermediate MIG (metal inert gas) welding learning, fillet welds, plug welds, butt weld and butt weld with backing, all in multiple positions. Single stage urethane refinishing, basecoat/clear-coat refinishing, tri-state urethane refinishing will be used by all students to experience how they differ. Vehicle estimating and damage analysis using CCC Pathways computerized estimating.

VAB3R **Auto Body: Collision Repair Related Level III** .5 credit

The program includes reinforcement of all shop equipment safety rules and regulations. The I-CAR Worker Safety Program covers all OSHA guidelines, EPA Regulations, Hazardous Communication and how a worker can protect himself from any potential hazards in the collision industry. Other programs are: advanced dent repair and metallurgy, intermediate MIG welding, single stage urethane refinishing, basecoat/clear-coat refinishing, tri-state urethane refinishing, vehicle estimating and damage analysis.

VAB4 **Auto Body: Collision Repair Level IV** 4.5 credits

The program includes reinforcement of all shop equipment safety rules and regulations. The I-CAR Worker Safety Program covers all OSHA guidelines, EPA Regulations, Hazardous Communication and how a worker can protect himself from any potential hazards in the collision industry. Other hand-on experiences are: advanced MIG (metal inert gas) welding with destructive tests done to identify proper weld penetration and quality to industry standards. Students will also experience hands-on plastic and composite material repair, including adhesive repairs and plastic welding. Supplementary Restraints Systems (Airbags) diagnostic repair will be taught. Vehicle measuring using chief laser measuring system, mechanical damage analysis and part identification will also be taught.

VAB4R **Auto Body: Collision Repair Related Level IV** .5 credit

The program includes reinforcement of all shop equipment safety rules and regulations. The I-CAR Worker Safety Program covers all OSHA guidelines, EPA Regulations, Hazardous Communication and how a worker can protect himself from any potential hazards in the collision

industry. Other programs covered are: I-CAR MIG (metal inert gas) welding, alternative fuels and damage analysis, plastic and composite material repair, supplementary restraints systems (airbags), vehicle measuring and mechanical damage analysis.

Automotive Technology

Automotive Technology focuses on training students in all aspects of automotive repair and maintenance. Students learn on all types of vehicles using the latest equipment available. The program is NATEF (National Automotive Technician Education Foundation, Inc.) and ASE (Automotive Service Excellence) certified in all eight areas. Areas of employment:

- *New/Used Car Dealerships*
- *Rental/Fleet Operations*
- *Auto Parts/Accessories*
- *Engine/Transmission Rebuilding*
- *Trucking Firms*
- *Independent Garages*

Students in the Monty Tech Automotive Technology program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

Benjamin Franklin Institute of Technology	AT-259 Automotive Hybrid Safety and Technology (4)
Massachusetts Bay Community College	BMW AB 100 Automotive Fundamentals (5) Chrysler AY 100 Fundamentals of Automotive Technology (5) General Motors As 100 Automotive Fundamentals (5) Toyota-Lexus AT 101 Introduction to Automotive Service (4) TSEP AI 100 Automotive Fundamentals (1)
Mount Wachusett Community College	AUT 113 Electrical Systems (4) AUT 127 Suspension and Steering (4) AUT 122 Brakes (4)
New England Institute of Technology	TT 110 Basic Engine Theory (3) TT 111 Basic Engines Lab (2) TT 112 Basic Electricity Fundamentals (3) TT 113 Basic Electricity Fundamentals Lab (2) AUT 137 Advanced Electricity and Electronics (4) AUT 138 Advanced Electricity and Electronics Lab (2) AUT 139 Advanced Engines (4) AUT 140 Advanced Engines Lab (2)
STATEWIDE: 15 Massachusetts Community Colleges	One or more of the following course(s) or up to 5 credits: • Automotive Fundamentals • Basic Auto Systems • Fundamentals of Auto Technology • Fundamentals of Automotive Service • Introduction to Automotive Service • Introduction to Automotive Technology
University of Northwestern Ohio	AU 126 Suspension and Steering (6) AU127 Hydraulic Brake Systems (6)

VAT1X **Automotive Technology Exploratory**

Topics explored are basic measuring skills, hand tools, vehicle maintenance, basic engine component identification, disassembly and assembly, and shop safety.

VAT1 **Automotive Technology Level I** 2.25 credits

Instructional topics include shop equipment, tool crib, tires, basic automotive maintenance, basic component and system identification and interaction, introduction to component diagnosis and replacement. School/Industry shop safety and safe operation of tools and equipment are stressed throughout the course.

VAT2 **Automotive Technology Level II** .5 credit

Safety and basic use of automotive equipment, brake diagnosis and repair, use of mechanical engine diagnostic tools, use basic electrical diagnosis tools, diagnose and repair of basic electrical circuits, basic automotive machining and measurement. Also, theory is taught on operation of brake systems, basic electrical circuits, basic measurement conversions, internal combustion engines, and investigation of alternative fuel sources. Basic service and operation of hybrid vehicles are demonstrated. School/Industry shop safety and safe operation of tools and equipment are stressed throughout the course.

VAT3 **Automotive Technology Level III** 4.5 credits

Instructional topics include diagnosis and repair of ABS, overhaul front end suspension components, perform alignments, R + R manual and automatic transmissions, transfer case differential, drivetrain, repair heating and air conditioning systems, diagnose and repair mechanical engine components, repair electrical circuits, diagnosis and repair drivability complaints. School/Industry shop safety and safe operation of tools and equipment are stressed throughout the course.

VAT3R **Automotive Technology Related Level III** .5 credit

Instructional topics include ABS brake system theory and operation, suspension and steering theory and operation, alignment theory and operation, manual transmission theory and operation, automatic transmission theory and operation, theory and operation of heating and air conditioning, electrical theory and operation (starting and charging systems). Read and diagnose electrical circuits, basic engine performance and drivability diagnosis.

VAT4 **Automotive Technology Level IV** 4.5 credits

Instructional topics include theory, operation and repair of engine performance, automatic transmission, and Federal and California emission systems diagnosis. During this course offering, we also provide theory and operation related to hybrid vehicle safety/operation and instruction on multiple scan tool platforms. School/Industry shop safety and safe operation of tools and equipment are stressed throughout the course.

VAT4R **Automotive Technology Related Level IV** .5 credit

Instructional topics include theory and operation of fuel system and control unit networking advanced electrical theory, advanced mechanical engine diagnosis, diagnosis of drivability complaints, advanced electrical operations, and automatic transmissions diagnostics.

Business Technology

Business Technology prepares students for employment in today's computerized and technical business office. The 'business world' is a dynamic, wide-ranging and competitive place that offers opportunity. An introduction to marketing, entrepreneurship, customer service, records management, keyboarding and Microsoft Office, will enhance student development of professional business communication skills. Word processing, spreadsheets, database, presentation and publishing software are taught using Microsoft Office. Students will perform these skills while managing, marketing, and operating the school store. Students prepare for advanced studies in Entrepreneurship. Students become familiar with the skills, abilities, and attitudes needed for successful job performance. The competencies provide the basic skills needed to begin a business career in any field or pursue an entrepreneurial enterprise. These procedures blend both theory and application. Our students are prepared for the 21st century. Areas of employment:

- ★ *Accounting/Finance Offices*
- ★ *Accounts Payable/Receivable*
- ★ *Administrative Medical Assistant*
- ★ *Administrative Support*
- ★ *Bank Teller*
- ★ *Business Offices*
- ★ *Business Technology Instructor*
- ★ *Customer Service Rep*
- ★ *Data Entry Specialist*
- ★ *Hospitals*
- ★ *Insurance Agencies*
- ★ *Legal Office Assistant*
- ★ *Office Manager*
- ★ *Payroll Supervisor*
- ★ *Promotional Sales Assistant*
- ★ *Real Estate Office*
- ★ *Receptionist*
- ★ *Retail Management*
- ★ *Spreadsheet Specialist*
- ★ *Word Processing Specialist*

Upon completion of Business Technology, students will be better prepared for post-secondary education in the following courses of study:

- ★ *Accounting*
- ★ *Finance*
- ★ *Global Management*
- ★ *International Business and Economics*
- ★ *Management*
- ★ *Marketing*

Students in the Monty Tech Business Technology program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

Mount Wachusett Community College	BUS 112: Introduction to Customer Relations (3) BUS 125: Communicating for Business and Industry (3) MGT 110: Small Business Management (3) ACC 101: Accounting 101 (3) EOA 107: Word Processing (3) EOA 180: Externship Experience (3) - Credit will be granted if the student passes EOA110 with a B or higher and the student's grade for the high school co-op experience was a B or higher.
New England Institute of Technology	MGT 113 Introduction to Computers (3) MGT 121 Word Processing II (3) MGT 232 Database Management (3) MGT 227 Spreadsheets (4) MGT 250 Integrated Software (3)

VBT1X **Business Technology Exploratory**

The focus of this exploratory course is to introduce students to the basic knowledge and skills necessary to continue in the Business Technology Program. Students experience a wide range of activities while exploring the career area of business and retail management. All activities are hands-on and are designed to allow the student to experience the world of computers, business management, advertising, marketing, and entrepreneurship. Each student will create a business that they can start and run. They will create a logo, tagline, brochure, business card, floor plan, newspaper advertisement, website, and PowerPoint according to the guidelines. Students will run an online lemonade stand business.

VBT1 **Business Technology Level I** 2.25 credits

Basic skills of spelling and punctuation, accuracy, word processing, document duplication, records maintenance, and introduction of all aspects of the trade are built upon. Students will be introduced to the computer and its uses. They will be familiarized with answering the telephone properly, office printers, copy machines, electronic calculators, and a computerized POS cash register. Students will be introduced to accounting practices and will learn financial literacy. Through the use of realistic projects, activities, oral presentations, and discussions, the students work on in-depth problem solving, personal finance and interpersonal communication. Students will begin their study of desktop publishing, advertising, Microsoft computer applications, accounting and finance. They will also be exposed to the daily operation of the school store, "Gear House."

VBT2 **Business Technology Level II** 4.5 credits

Intermediate skills in spelling, grammar, punctuation, and accuracy continue. Students are introduced to more extensive training in accounting, data entry, spreadsheet development, and activities designed to strengthen their computer application and problem-solving skills. Students begin to develop skills in creating and showing electronic presentations on a variety of career-related topics. Also, students are actively engaged in the daily operation of the school store, "Gear

House," along with the daily operations of the Monty Tech Greenhouse. These aid them in the development of their advertising and customer service skills.

VBT3 **Business Technology Level III** 4.5 credits

Students will enter an advanced program of study using the Microsoft Office Suite Program and develop competency in the use of Access, Excel, PowerPoint, Publisher, and Word. Students enter an in-depth program of study designed to polish their computer skills, presentation skills, and customer service skills. Students become well-versed in desktop publishing and produce informational brochures, flyers, business cards, and menus. Students will learn the process of owning and managing a business. They will focus their attention on the real skills required of entrepreneurs-start with a meeting a market need and work through planning, financing, incorporating technology, hiring, managing, and avoiding legal problems. Students also engage in developing a business plan for a business of their choosing. This project is geared to help them gain an understanding for the need of setting goals, understanding the world of finance, as well as marketing. They continue their work in the school store, "Gear House", managing inventory, handling ordering, pricing, and the marketing of the store. Students continue a more in depth training in accounting. With the addition of Workers' Credit Union at Monty Tech, we provide Business Technology students with the opportunity to learn about financial literacy, gain teller training, and hands-on experience as a student employee of the bank. The teller training and the National Endowments for Financial Education's (NEFE) curriculum have been aligned with the Business Technology curriculum. Two juniors will apply to be working at the bank as a Co-Operative Education experience, once they are eligible.

VBT4 **Business Technology Level IV** 4.5 credits

Students are encouraged with the opportunity, through the Co-Operative Education Program, to be placed into a real world work environment where they employ their skills learned during the previous three years. A variety of hands-on activities, writing assignments, accounting, and oral presentations are utilized to help students achieve the goals of the course. The curriculum further enhances their skills using technology and business management. They continue their work in the school store, "Gear House", training as managers to the underclassmen. Students are introduced and trained in Quickbooks Pro for a basic understanding of electronic accounting. The foundations of ethics will be discussed and the nature of ethics will be investigated, as well as, principles that can be used in making ethical decisions. Ethical issues in the workplace and the process of moral development will be focused upon. Students will explore what makes actions right or wrong, why people choose to do what is right, and how to apply those ideas to the workplace. Two seniors will continue their training at the bank as a co-operative experience.

Cabinetmaking

Students learn the art of building customized furnishings and cabinets of all types. They also learn special finish techniques and precision work while crafting beautiful custom furnishings. Students make and install (in an actual off-campus house) all kitchen and bathroom cabinets and countertops, gaining experience in millwork, cabinetmaking and lamination. Areas of employment:

- *Cabinet Shops*
- *Furniture Shops*
- *Woodworking Mills*
- *Custom Home Improvement*
- *Architectural Woodworking*

Students in the Monty Tech Cabinetmaking program may benefit from an articulation agreement with New England Institute of Technology, as listed below. This agreement is intended to save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

New England Institute of Technology	CR 113 Tool and Site Work Lab (3) CR 212 Cabinetmaking I (4) CR 213 Cabinetmaking I Lab (3)

VCB1X **Cabinetmaking Exploratory**

Program includes topics of shop safety (procedures and rules), cabinetmaking vocabulary, identification and correct use of hand tools, machine identification, and use of hand tools to build a small furniture project.

VCB1 **Cabinetmaking Level I** 2.25 credits

Program topics include correct use and maintenance of hand tools as applied to a specific task. By building projects, students learn about different woodworking joinery including dado joints, butt joints, rabbet joints, dovetail joints, and mortise and tenon joints. Students also learn about adhesives and proper gluing clamps and techniques. Shop safety and safe operation of tools and equipment are stressed. Additional topics include shop rules and procedures stressing shop safety. Introduction to wood finishing includes staining techniques and finish preparation

VCB2 **Cabinetmaking Level II** 4.5 credits

Program topics include planning and construction of assigned projects: Nantucket Bench seat, Cabriole Leg, Raised Panel Bookcase, Half-Round Table, a production/assembly line product, and group choice project upon completion of all assigned projects. Shop safety and safety tests are done on all machinery and hand tools, figuring board footage, proper use of spray equipment, spray booth, staining, sanding and rubbing finishes.

VCB3 **Cabinetmaking Level III** 4.5 credits

Program topics include cabinets and casework, doors and entrance units, window units, trim and moldings; and the complete planning, construction and finishing of various types of furniture: home, school, and commercial, correct use and care of advanced machinery; planning and construction of advanced cabinet and millwork projects; layout, open casework, drawer construction and fitting, cabinet construction and plastic laminating; designing, construction and installation of kitchen cabinets for the house building project. Shop safety and safe operation of tools and equipment are stressed. Students will also be introduced to CNC machinery.

VCB4 **Cabinetmaking Level IV** 4.5 credits

Program topics include correct use and care of advanced machinery, planning and construction of advanced cabinet and architectural millwork projects; layout, open casework, designing, construction and installation of kitchen cabinets, template, fabricate, and installation of custom laminate and solid surface counter tops. Shop safety and safe operation of tools and equipment are stressed. Students will also experience advanced use of CNC machinery.

CAD/Drafting & Design

Students are taught to produce two and three-dimensional drawings and models utilizing mechanical drafting machines and computer aided drafting. Advanced detail, assembly and 3D solid modeling is covered by use of Autodesk Inventor and Solidworks. Areas of employment:

* *3D Model Maker*	* *Architectural Drafter*	* *Civil Drafter*
* *Commercial Drafter*	* *Construction Drafter*	* *Construction Estimator*
* *Designer*	* *Detailer*	* *Industrial Designer*
**Mechanical Drafter*	* *Sign Maker, Layout Artist*	* *Stereo Lithographer*

Students in the Monty Tech CAD/Drafting and Design program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

New England Institute of Technology	ABT 114 Introduction to CAD (4) ABT 112 Technical Drafting & Graphic Communications (3) DR 113 Technical Drafting (3) DR 123 Machine Drawing (3) DR114 Introduction to CAD (4)
STATEWIDE: 15 Massachusetts Community Colleges	One or more of the following course(s) or equivalent: ▪ Introduction to Drafting (e.g. Architectural, Mechanical) ▪ Introduction to Computer Aided Drafting (CAD)
Vermont Technical College	ARE 1011 Intro to Construction Drawings ARE 2022 Architectural CAD II

VDT1X **CAD/Drafting and Design Exploratory**

Program topics include basic drafting, use of mechanical drafting instruments, computer aided design and drafting, line work, measuring, shop safety, introduction to home design concepts, design projects, and introduction to 3D design.

VDT1 **CAD/Drafting and Design Level I** 2.25 credits

Program topics include the principles and concepts behind geometric construction, orthographic projection, dimensioning, basic machine drawings, an introduction to computer aided drafting and design, and safe use of tools and equipment. Additional topics include career exploration and various design projects.

VDT2 **CAD/Drafting and Design Level II** 4.5 credits

Program topics include advanced working drawings, sectioning, auxiliary views, weldments, piping drawings, pictorials, assembly drawings, and safe use of tools and equipment. Drawings are produced using AutoCAD and Inventor software. Students learn to layout and create vinyl signs and graphics.

VDT3 **CAD/Drafting and Design Level III** 4.5 credits

Program topics include developing skills in dimensioning and geometric tolerancing in the generation of detail and assembly drawings using proper drawing techniques. Additional topics include: threads and fasteners, revolutions, developments and intersections, cams and gears, and safe use of tools and equipment. This is accomplished with the use of computer-aided drafting programs such as AutoCAD, Inventor, and Solidworks. Students will also learn the principles of three-dimensional wire frame and three-dimensional solid modeling as well as computerized sign making. Students will utilize 3D printing (stereo lithography) and 3D modeling.

VDT3R **CAD/Drafting and Design Related Level III** .5 credit

Program topics include the theory supporting drawing techniques, threads and fasteners, developments and intersections, geometric tolerancing, auxiliary views, revolutions, cams and gears, and professional practices.

VDT4 **CAD/Drafting and Design Level IV** 4.5 credits

Topics include advanced 3 dimensional modeling, civil drafting, and architectural design. Students will be required to develop a complete set of house plans using architectural drafting software. Students will complete plot plans and various civil and architectural models while demonstrating the safe use of tools and equipment. All students will be required to complete a senior project and portfolio. Students will use AutoCAD Architecture, REVIT and SolidWorks.

VDT4R **CAD/Drafting and Design Related Level IV** .5 credit

Program topics reinforce the shop program and include the theory to support architectural drafting and design, and professional practices.

Cosmetology

In addition to receiving comprehensive training in all areas of hairdressing and related fields, students also learn how to manage a salon, start a business and deal effectively with clientele. Curriculum includes inventory control, record keeping and computers in the salon. Areas of employment:

Hair Stylist	*Salon Manager*	*Make-up Artist*
Nail Technician	*Salon Owner*	*Booth Renter*
Platform Artist		*Hair Extension Specialist*

VCO1X **Cosmetology Exploratory**

The exploratory program stresses shop and professional safety, sanitation, and a clear understanding of license requirements. Hands-on practice includes long hair graphics, manicures and pedicures.

VCO1 **Cosmetology Level I** 2.25 Credits

Students are trained in infection control, property of hair and scalp, shampooing, rinsing & conditioning. Manicuring & nail structure, pedicuring & nail diseases, finger waving, pin curls, as well as, equipment operation safety and equipment care are also taught.

VCO2 **Cosmetology Level II** 4.5 credits

Students are introduced to Chemistry, Anatomy and Physiology, basic haircutting, facials and makeup application, appropriate chemical and equipment use. Safety and sanitation practices and procedures are taught and reinforced in all hands-on instruction.

VCO3 **Cosmetology Level III** 4.5 credits

Students will begin using computerized salon management applications with Salon Iris Software. Students receive more in-depth training on hair cutting, perming, coloring, chemical relaxers, and waxing. Qualified students will perform limited services on clients. Appropriate equipment and safety procedures are reinforced in all hands-on instruction.

VCO3R **Cosmetology Related Level III** .5 credit

In addition to the basic information, principles, and theory related to the shop tasks, students learn about hair coloring, nail and skin disorders (related to hygiene), and chemical texturizing. Students will have an introduction to salon business skills.

VCO4 **Cosmetology Level IV** 4.5 credits

Students prepare for job entry by learning to perform (independently) all tasks on clients and developing strong social skills for the professional workplace. After 1000 hours, passing the state board exam, students have the opportunity to participate in a co-op program. Students continue with reinforcement of safety and sanitation procedures for all hands-on instruction and client services.

VCO4R **Cosmetology Related Level IV** .5 credit

Students learn instruction in wigs, extensions, and braiding, as well as general instruction in hair and scalp properties. Students review all course material to prepare for the State Board exam. They receive instruction in starting, owning, and operating a salon business. Students will also be exposed to various career advancement considerations.

Culinary Arts

Monty Tech offers a comprehensive cooking and baking program, where students become involved in the entire spectrum of the food industry including planning, preparation and presentation. The "Mountain Room" restaurant is located within the school where meals and bakery items are served to the public. Areas of employment:

- *Chef*
- *Sous Chef*
- *Line Cook*
- *Baker*
- *Hotels*
- *Resorts*
- *Schools*
- *Hospitals*
- *Bakery*
- *Restaurants*
- *Institutional Food Service*

Students in the Monty Tech Culinary Arts program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

Newbury College	CU100 Culinary Concepts & World Flavors (3) CU104 Breads & Rolls (3) CU299 Culinary Arts Internship (3), or CU290 Culinary Internship (3)
Quinsigamond Community College	HRM 115 Sanitation Certificate Course (1) HRM 218 Dining Room & Banquet Management (3) HRM 888 Hotel & Restaurant Management Elective (3)
STATEWIDE: 15 Massachusetts Community Colleges	One or more of the following course(s) or equivalent, up to 4 credits: • Basic Skills for Cooks • Basic Culinary Techniques • Culinary Concepts • Culinary Foundations • Culinary Skills • Food Preparation • Fundamentals of Professional Cooking • Introduction to Culinary Arts
Johnson & Wales University	CUL 1035 Culinary Fundamentals (3) CLU 1055 Cooking in Today's Restaurant: Breakfast & Lunch (3) CLU 1385 Foundations of Baking & Pastry Arts (3) In order to earn these credits, student must take and pass the practical exam ($300 fee)
The Culinary Institute of America	Food Safety (1.5) Mathematics (if student passes challenge test 1.5)

VCA1X **Culinary Arts Exploratory**

This one week course provides the students with an introduction to the foodservice industry. The student is introduced to basic food preparation, safety, sanitation, personal hygiene, table setting, dishwashing, bakery, and the use and care of hand tools. Students are assessed through the use of written tests, quizzes and hands-on performance tests.

VCA1 **Culinary Arts Level I** 2.25 credits

Program topics for 9th grade students include the basic knowledge and skills to succeed in the program. Students receive instruction in the use of small hand tools and equipment, sanitation, safety, personal hygiene, cooking methods, salads and dressings, dining room service, weights and measurements, and portion control. Areas covered in bakery include breads and rolls, pie production, cookies, quick breads, pate choux, frosting, custards, sauces pudding, brownie products, and plated desserts. Instruction utilizes presentations, demonstrations, textbook lessons and student hands on performance tests to assess student achievement of competencies. Students are graded daily in shop. Students take the National Restaurant Association Allergen Awareness Certificate Test.

VCA2 **Culinary Arts Level II** 4.5 credits

Program topics include further development of the basic skills and knowledge in the program. Students receive instruction in cooking techniques and methods, salad preparation, sandwiches, soups and sauces, vegetables and fruit preparation, deep fat frying, garnishes, sanitation, baking, frosting, pate choux products, pudding, jello, custards, breads and rolls, pie dough products, and quick breads. Safety and the proper use of tools and equipment are stressed. Students are graded on a daily basis.

VCA3 **Culinary Arts Level III** 4.5 credits

Program topics include instruction in advanced cooking techniques, product identification, garde manger, advanced soups and sauces, sauté, broiler, plating techniques, garnishes, wait staff procedures and restaurant management. Also included are baking skills in sweet dough production, laminated doughs, bavarians, mousse, tarts, specialty items, cake production, decorated cakes and plated dessert. Students are graded on a daily basis.

VCA3R **Culinary Arts Related Level III** .5 credit

Students complete the National Serve Safe Certification as administered by the National Restaurant Association. Students receive instruction through lectures, demonstration, written tests and quizzes. Baking methodology and function of ingredients are also taught during the second half of the year.

VCA4 **Culinary Arts Level IV** 4.5 credits

Students receive advanced training in food and restaurant management, modern sauces, meat fabrication, menu planning, roasting, braising, broiling, fish and shellfish, plating techniques, seasoning, marinades and brines, sauté, maître d and wait staff procedures, deep fat frying, poaching, buffet presentation, and service techniques. Areas covered in baking include cake decorating, French pastries, artisan breads, rolls, rich doughs, laminated doughs, cake production, mousse, Bavarian tarts, and specialty items. Students are graded on a daily basis.

VCA4R **Culinary Arts Related Level IV** .5 credit

Students receive advanced instruction in nutrition, cooking methods, inventory, food cost control, marketing, storeroom operation, menu development and design, buffet service, restaurant management, and marketing.

Dental Assisting

Students learn how to assist the dentist and are taught various procedures and practices used in dental offices and clinics. Students have the opportunity to earn certificates from the Dental Assisting National Board™ in infection control and radiation health & safety. Areas of employment:

- *Dental Offices*
- *Dental Laboratories*
- *Dental Clinics*
- *Dental Supply & Equipment Industry*
- *Dental Product Sales Rep./Specialist*

Students in the Monty Tech Dental Assisting program may benefit from an articulation agreement with Mount Wachusett Community College, as listed below. This agreement is intended to save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

Mount Wachusett Community College	DHY 103 Dental Radiology (3) DHY 106 Dental Materials (3) DAS 115 Clinical Rotation (7)

VDA1X **Dental Assisting Exploratory**

Program topics include introduction to clinical, clerical and laboratory areas of dentistry. Students are instructed in oral health care and prevention of dental disease. Students complete several sets of study models in the laboratory and fabricate a dental appliance from the models. Students gain knowledge of their own dental health, dental radiation, laboratory safety and disinfection.

VDA1 **Dental Assisting Clinical Level I** 2.25 credits

Introduction to the Dental Profession, psychology, communication, multicultural interaction, oral health and preventative techniques, nutrition, general anatomy and physiology, head and neck anatomy, embryology and histology, tooth morphology, and introduction to infection control techniques.

VDA2 **Dental Assisting Clinical Level II** 4.5 credits

Topics include microbiology, infection control, management of hazardous materials, preparation for patient care, dental charting, pharmacology, emergency management, introduction to the dental office and basic chair-side assisting, instrument transfer and maintaining the operation field, basic chair-side instruments and tray systems, anesthesia and sedation, community service projects include the Child Identification Program (CHIP) and dental health education to elementary schools.

Students earn certification from the American Red Cross in CPR/AED. Qualified students receive infection control certification from the Dental Assisting National Board (DANB).

VDA3 **Dental Assisting Clinical Level III** 4.5 credits

Program topics include endodontics, oral and maxillofacial surgery, oral pathology, orthodontics, pediatric dentistry and enamel sealants, periodontics and coronal polish, fixed prosthodontics and gingival retraction, cosmetic dentistry and teeth whitening, removable prosthodontics, dental cements, bases, liners, and bonding agents, restorative materials, dental dam, matrix and wedge, laboratory materials and techniques. Terms 3 and 4 include a clinical affiliation in a local dental office.

VDA4 **Dental Assisting Clinical Level IV** 4.5 credits

Program topics include ethics, Jurisprudence and the Health Information Portability and Accountability Act, introduction to dental radiography and equipment, production and evaluation of dental radiographs, extraoral and digital radiography, dental office management and employment strategies. Qualified students receive Radiation Health and Safety Certification from the Dental Assisting National Board (DANB). Terms 3 and 4 include a clinical affiliation in both specialty and general practice dental offices and cooperative education for eligible students. Students earn certification from the American Red Cross in CPR/AED.

*Anatomy & Physiology is highly recommended for Dental Assisting students.

Early Childhood Education

Students develop the necessary skills to become early childhood professionals. They will be educated and trained to work with young children from birth to five-years. They assist at the on-site child care facility as well as, off-campus affiliation sites. Areas of employment:

- *Child Care Centers*
- *Special Needs Classroom Assistant*
- *Infant, Toddler, and Pre-School Teacher*
- *Family Child Care Provider*

Students in the Monty Tech Early Childhood Education program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

Mount Wachusett Community College	ECE 101 Introduction to Early Childhood Education (3) ECE 124 Early Childhood Practicum I (4)
Quinsigamond Community College	ECE 101- Introduction to Early Childhood Education (3) ECE 888- ECE Course Elective
STATEWIDE: 15 Massachusetts Community Colleges	One or more of the following course(s) or equivalent, up to 3 credits: ▪ Child Development and Behavior ▪ Child Growth and Development ▪ Development in Early Childhood ▪ Early Childhood Curriculum and Program Planning ▪ Early Childhood education Elective ▪ Early Childhood Growth ▪ Early Childhood Programs ▪ Foundations of Early Childhood Education ▪ Growth & Development of the Young Child ▪ Introduction to Early Childhood Education

VEC1X **Early Childhood Education Exploratory**

Students will explore activities developmentally appropriate for various stages of child development. Projects vary in nature from team to individual. Students will spend one morning in the Monty Tech Child Care Center. Also, students will experience an activity in caring for an infant using the newborn simulators.

VEC1 **Early Childhood Education Level I** 2.25 credits

Topics include an introduction to careers in the area of Early Childhood Education, types of early childhood programs, observing children, and introduction to theories and principles of child development. Students will observe children in the lab preschool to gain a better understanding of the topics discusses. They will also have the opportunity to work in the Monty Tech Child Care Center throughout the semester.

VEC2 **Early Childhood Education Level II** 4.5 credits

Topics include creating a safe and healthy environment for children, discipline and guidance techniques, an introduction to curriculum development and writing lesson plans. Students work in the Monty Tech Child Care Center one day a week starting in the second term.

VEC3 **Early Childhood Education Level III** 4.5 credits

Program topics build on the foundation established at Level II. Students continue to work in the Monty Tech Child Care Center, plan and develop curriculum. In the second semester, students participate in an intensive practicum experience via affiliation at area childcare centers. Weekly journaling allows for students to reflect on various topics and issues that involve children and observations from the practicum experience.

VEC3R **Early Childhood Education Related Level III** .5 credit

Program topics examine learning experiences for children as well as methods and materials. Students have a comprehensive unit on the child with Special Needs, which includes an extensive term paper on a special need of their choice. Also included is a review of guidance and discipline as well as a look at the family and the role they play in early education.

VEC4 **Early Childhood Education Shop Level IV** 4.5 credits

Students prepare for an intense externship experience, which includes planning curriculum and observing children. Students are placed in centers and classrooms based on their future goals in education. Some students may be placed in cooperative educational opportunities.

VEC4R **Early Childhood Education Related Level IV** .5 credit

Students study the growth and development of young children. Topics that introduce and influence development are discussed. Topics include: prenatal development and the newborn and continues with the physical, social, emotional, and cognitive growth of children from infancy through five years. In addition, students will look at how to provide for the children's needs at each stage of development and the importance of play. Students complete a cumulative project that aligns with National CDA Standards.

Electrical

Students learn residential, commercial, and industrial wiring in accordance with the Massachusetts Electrical Code plus the basic skills necessary to become an electrician. Areas of employment:

- *Commercial Contractor*
- *Industrial Contractor*
- *Telephone Company*
- *Power Company*
- *Electrical Apprentice*
- *Electrical Supply House*
- *Audio/Visual & Computer Networks*
- *Security System Installer*

Students in the Monty Tech Electrical program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

Benjamin Franklin Institute of Technology	EL 110 Circuit Theory I (DC) (3) EL 127 Design and Layout/ NEC I (5) EL 129 Design and Layout II/ NEC II (5) EL 213 Circuit Theory II (AC) (4)
New England Institute of Technology	ELY 116 Intro to Residential Wiring/ NEC I (3) ELY 117 Basic Wiring Techniques (1) ELY 126 Residential Wiring/ NEC II (1) ELY 127 Residential Wiring Lab II (2) ELY 138 Residential Wiring/ NEC III (4) ELY 139 Advanced Residential Wiring Lab (2)

VEL1X **Electrical Exploratory**

The student will be familiarized with electrical safety, shop safety, various wiring methods and electrical circuits. Students will assemble projects which reflect the required vocational competencies needed in all four levels of the electrical trade.

VEL1 **Electrical Level I** 2.25 credits

Topics include shop safety, fire prevention, tool identification, splicing, Romex wiring of various circuits, electron theory, series/parallel circuits, Ohms Law, magnetism, circuitry, and the Massachusetts Electrical Code.

VEL2 **Electrical Level II** 4.5 credits

Shop experiences include shop safety, various wiring methods, house wiring, meters and testers, ladder work, Massachusetts Electrical Code, various light fixtures, introduction to low voltage wiring, hardware identification and conduit bending.

VEL3 **Electrical Level III** 4.5 credits

Shop experiences include safety, lighting, heating systems, motors and controllers, transformers, various control circuits, wiring for school's House Building Program, troubleshooting and voltage testing, electrical maintenance of school's properties, services, various wiring projects within the District and the Massachusetts Electrical Code, data, communication, CAVTV systems, lockout/tagout and more.

VEL3R **Electrical Related Level III** .5 credit

Instructional topics include safety, Massachusetts Electrical Code, ladder diagrams, motors and control circuits, generators, alternators, heating systems, transformers, AC/DC theories, services, commercial and industrial wiring systems, blueprint reading, electrical board rules and regulations.

VEL4 **Electrical Level IV** 4.5 credits

Topics in this program are a continuation and extension of the topics covered in Electrical Shop III. In addition, cooperative education opportunities are available for students who qualify. Shop safety and safe operation of tools and equipment are stressed. Course includes Introduction to NFPA 70E. OSHA Construction regulations and job hazard analysis forms.

VEL4R **Electrical Related Level IV** .5 credit

Topics covered in this program are a continuation and extension of those covered in Electrical Related III. Also, three-phase systems, lighting systems and theory related to programmable logic controllers and Category 5+T Base 10 wiring and line certification to BISCI standards. Solar photovoltaic systems are also covered.

Engineering Technology

Engineering technology offers students a solid foundation in the technical skills needed to support design, testing and manufacturing of products, systems and device used in every industry and household in the world. Engineering concepts and principles are taught and reinforced through project work. A wide variety of engineering fields and skills are covered including: Electronics, Mechanics, Structural, Automation, Manufacturing, Civil and Industrial Engineering. The Engineering Design Process will be a continuing theme throughout all of Engineering Technology courses. Areas of employment upon completion of your time in ET include:

- *Engineer (4-Yr College)*
- *CNC Machinist*
- *Quality Control Technician*
- *Manufacturing Technician*
- *CAM Programmer*
- *Field Service Technician*
- *Customer Service Technician*
- *Engineering Technician*
- *Test Technician*
- *R&D Technician*
- *Electronic Assembler*
- *Mechanical Assembler*

Students in the Monty Tech Engineering Technology program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

New England Institute of Technology	ELS 112 DC Principles (4) ELS 113 DC Principles Lab (1) ELS 115 Computer Applications (2) ELS 116 Technical Skills in the Lab (3) ELS 117 AC principles (4) ELS 118 AC Principles Lab (1)

STATEWIDE: 15 Massachusetts Community Colleges	One or more of the following course(s) or equivalent, up to 8 credits: • Basic Electricity I • Basic Engineering Circuit Lab • DC Circuit Theory & Lab • Electrical Circuits I • Electrical Principles I • Electronics for Technicians I • Electronics I • Engineering Essentials and Design • Engineering Fundamentals • Fundamentals of Electronics • Introduction to Electrical Circuits • Introduction to Electricity & Electronics • Introduction to Engineering & Lab • Introduction to Engineering, Science, Technology and Society • Introduction to Robotics I • Pre-Engineering Elective • Principles of Electric Circuits

PROJECT LEAD THE WAY (PLTW)
"Creating Tomorrow's Technologies Today"

The Monty Tech Engineering Technology program has entered into a unique partnership with Project Lead The Way, a nationally recognized provider of rigorous and innovative Science, Technology, Engineering, Mathematics (STEM) education programs used in middle and high schools across the country.

PLTW classes are nationally standardized project-based courses that prepare students for college-level work and culminate with a student assessment, which colleges and universities can use to determine if a student earns college credit.

Because of this innovative partnership, qualified graduates from the Monty Tech Engineering Technology Program may benefit from a number of articulation agreements between PLTW/Monty Tech and post-secondary institutions. The following colleges and universities have agreed to provide course substitution credit, advanced standing credit, partial course credit, and/or test-out or challenge exams to qualified students:

Arkansas Tech University	Oregon Institute of Technology	San Diego State University
Duke University	Worcester Polytechnic Institute	Sinclair Community College
Iowa State University	Rochester Institute of Technology	University of Colorado at Colorado Springs
Penn State University		University of Iowa

ET1X **Engineering Technology Exploratory**

Students are introduced to electronic and mechanical systems, as well as, other hands-on applications. Students will design and build their own electro-mechanical device using various mechanical computer-aided-design (CAD) tools, to capture the design that they subsequently fabricate and keep. During this process, they also learn the basics of electronic component soldering to create the electronic portions of their design. Shop safety and general OSHA regulations are taught and enforced.

VET1 **Engineering Technology Level I** 2.25 credits

Freshman year is devoted to learning and exploring the engineering design process. Students will learn the steps in the design process and how to sketch in 2D & 3D formats, read blueprints, make measurements and use statistics as an analytical tool. They capture designs, create assemblies and technical drawings using mechanical CAD tools. They reverse-engineer a product and work in design teams, including virtual teams not in the same building. Shop safety and safe use of tools and equipment are stressed.

VET2 **Engineering Technology Level II** 4.5 credits

During the sophomore year, students finish their exposure to the engineering design process. They proceed to study digital electronics giving them an introduction to electronic circuits and the circuit-design process that are used in process and control applications. The basics of analog circuits and DC voltage are first introduced, followed by a concentration upon digital electronics. Topics covered include basic digital logic, combinational and sequential logic, programmable logic devices, microprocessors, and state machines. Teamwork, communication methods, engineering standards, and technical documentation are also covered.

Upon completion of digital electronics, students proceed to the end of the year through the first half of the principles of engineering program of study. This program provides an understanding of the fundamental physics concepts used by engineers, through the use of problems, by which they become fully engaged and challenged. Using activities, projects, and problem-based learning, students study various topics that include simple machines, centroids, free-body diagrams, beam deflection, heat transfer, and thermodynamics. Students also learn how to document their work and communicate their solutions to their peers and members of their class. Throughout the year, they are taught how to explore material-safety and electronic-component datasheets. Shop safety and safe use of tools and equipment are stressed.

VET3 **Engineering Technology Level III** 4.5 credits

During the junior year, students will continue through the second half of the principles-of-engineering program of study, where they explore topics, such as material properties, material failure, stress and strain, robotics programming, pneumatics, hydraulics, dynamics, and kinematics. Students continue to learn how to document their work and communicate their solutions to their peers and members of their class. Following their study of the principles of engineering, students proceed to an exploration of computer integrated manufacturing (CIM). This course covers such topics as manufacturing processes, product design, robotics, and factory automation. Knowledge of computer-aided design (CAD) will be extended to computer-aided manufacturing (CAM) allowing students to convert their designs into actual items using computer numerical controlled (CNC) milling machines. In addition, additive manufacturing processes such as 3D printing of plastic parts, computer integrated manufacturing work cells, and various manufacturing processes are explored and studied. Shop safety and safe use of tools and equipment are stressed.

VET4 **Engineering Technology Level IV** 4.5 credits

During the Senior year, students identify and justify a capstone design project that will complete their studies. Projects may be self-selected or sponsored by outside parties. Students are expected to utilize all the electrical, electronic, mechanical, and design skills learned to complete a successful project. Their final project is presented to fellow students, parents, relatives, sponsors, school committee members, faculty, staff and administration. Students are expected to self-direct their efforts on their project with minimal input from the instructor or sponsor, who acts as the program/project manager providing guidance and direction. Shop safety and safe use of tools and equipment are stressed.

Graphic Communications

Training in Graphic Communications includes basic skills in the following areas of employment:

- *Advertising Design*
- *Multimedia Design*
- *Illustration/Fine Arts*
- *Photography*
- *Offset Printing*
- *Silk Screen Printing*
- *Paper Sales*
- *Purchasing/Invoicing*
- *Marketing & Branding*
- *Print Technician*
- *Customer Service*
- *Sales*
- *Ink Mixing/Pantone Matching*
- *Repair Technician*

Students in the Monty Tech Graphic Communications program may benefit from a statewide articulation agreement, granting college credits at each of the fifteen (15) Massachusetts community colleges, as listed below. The statewide agreement is intended to save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

STATEWIDE: 15 Massachusetts Community Colleges	One or more of the following course(s) or equivalent, up to 3 credits: • Computer Aided Graphic Design • Computer Graphics • Computers for Graphic Designers I • Design Theory • Digital Design Concepts I • Digital Imaging • Digital Page Layout • Electronic Imaging • Graphic Production and Layout I • Illustration I • Introduction to Computer Graphics • Introduction to Desktop Publishing • Introduction to the Electronic Studio • Introduction to the Graphic Arts Computer • Publication Design

VGC1X **Graphic Communications Exploratory**

Exploratory program include design from concept to presentation, product design, advertising techniques, principles of design, measuring, Introduction to Adobe CC Illustrator, Photoshop & In-design and printing a single color project on an offset press. Basic photography, videography, painting and illustration are also included. Shop safety and safe operation of tools and equipment are stressed.

VGC1 **Graphic Communications Level I** 2.25 credits

Program topics include basic printing preparation, single and two color press projects. Bindery procedures including cutting, folding, perforating, and book binding will be taught. Additional topics include silk screen, Adobe CC, photography, trade terminology and professional development skills. Shop safety and safe operation of tools and equipment are stressed.

VGC2 **Graphic Communications Level II** 4.5 credits

Program topics include extensive layout and design; complex layout work; introduction to basic work in bindery area, press area and silkscreen area; and introduction to electronic pre-press. Illustration and photo manipulation is also taught. Shop safety and safe operation of tools and equipment are stressed.

VGC3 **Graphic Communications Level III** 4.5 credits

Program topics include comprehensive layouts, color principles, margins, page and book layout; cropping and scaling; working with two color presses; complex bindery work; scanning and touch-up of images; Adobe Acrobat editing of PDF files; electronic prepress and digital printing; multi-colored silkscreen projects; photography and video editing. Shop safety and safe operation of tools and equipment are stressed.

VGC4 **Graphic Communications Level IV** 4.5 credits

Program topics include complex use of electronic prepress, electronic imaging, including training on state-of-the-art software such as Adobe Illustrator, Adobe Photoshop and Indesign. Students will also assemble portfolios of their work to prepare themselves for the workforce. Other skills such as purchasing, sales and customer relations, order writing and other trade-related job skills will be included. Shop safety and safe operation of tools and equipment, including understanding of material safety data sheets and OSHA regulations are stressed.

Health Occupations

Students develop specific skills in areas of nursing and medical assisting. Students work toward meeting both classroom and clinical requirements to be eligible for state and/or national certification testing. The Certified Nurse Assistant component focuses on the care of the resident or patient in an in-patient setting. Students sit for the Massachusetts Nurse Aide Certification exam. The Medical Assistant component of the program focuses on clinical procedures needed to work in an out-patient setting: such as a doctor's office. Students meet the requirements for sitting for the National Health Career Association Clinical Medical Assistant certification exam. The Emergency Medical Technician component of the program focuses on ideas and concepts related to emergency care of patients and victims. Students are eligible to sit for the Emergency Medical Technician certification exam. Students graduating from the Health Occupations program find employment opportunities in any of the following areas:

- *Physicians Office*
- *Hospitals*
- *Long term care centers*
- *Home health care*
- *Outpatient services: rehab, physical therapy, patient registration, medical records*
- *Clinics*
- *Sub-acute care*
- *Adult day health*
- *Assisted Living Centers*
- *Activity Departments*
- *Resident feeding programs*
- *Ambulances*

Students in the Monty Tech Health Occupations program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

STATEWIDE: 15 Massachusetts Community Colleges	One or more of the following course(s) or equivalent, up to 4 credits: • Medical Terminology • Award three elective credits upon submission of current registration from the Department of Public Health and current Healthcare Provider CPR/First Aid Certification
New England Institute of Technology	BIO 110 Anatomy & Physiology I (4) CMA 128 Comprehensive Word Processing I (2)
Mount Wachusett Community College	MAS 105 Introduction to Medical Assisting (2) MAS 130 Medical Terminology and the Body System (4) HEA 101 Health and Disability in the Older Adult (3) In addition, students who pass and hold the Red Cross CNA certification exam will be granted the following elective credits toward the Allied Health degree: HEA 115 Nurse Assistant Theory (3) HEA 116 Nurse Assistant Practicum (2)

VHO1X **Health Occupations Exploratory**

Program topics include introduction to the roles of Certified Nurse Assistant and Medical Assistant. Students experience activities that address job opportunities in healthcare and the roles of healthcare

providers. Much of the time is spent using equipment and practicing basic procedures that are part of a healthcare provider's job expectation.

VHO1 **Health Occupations Level I** 2.25 credits

Students are introduced to the role of the Certified Nursing Assistant and Medical Assistant, and their place as part of the healthcare team in different types of healthcare facilities. They will achieve an understanding of the state/national and OBRA requirements for certification. Students will learn about and practice care and clinical skills in the classroom setting including; infection control, safety, communication, medical abbreviations, and resident/patient rights. The students will obtain their 10 hour OSHA certification, as well as, a Medical Terminology certification.

VHO2 **Health Occupations Level II** 4.5 credits

Students will continue to learn about the role and job responsibilities of the CNA and Medical Assistant. Classroom work involves a more in-depth study of healthcare systems, disease processes and patient/resident care in both the in-patient and out-patient setting. Skills learning and testing in the areas of vital signs, bed making, patient hygiene and grooming, nutrition, transporting, positioning, and comfort measures are addressed for the CNA portion of the program. The physical exam, urinalysis, infection control, sterile technique, history and interview, vision testing, and medical emergencies are addressed at this time for Medical Assisting. During this year, the students are certified in CPR/First Aid.

VHO3 **Health Occupations Level III** 4.5 credits

The third year of the program for the Nurse Assistant component focuses on preparing for the state certification exam, scheduled in the winter and spring, and meeting clinical practice requirements. Classroom work involves serious review and practice of care skills, which are applied in a real clinical setting under the direction and supervision of an instructor. Clinical sites include resident care in a long-term care setting.

The Medical Assistant component topics address medical laboratory skills, assisting with physical exams, medical law and ethics, diagnostic testing and capillary punctures for specimens that will be directly tested to yield results for hematology studies. Students will apply classroom work to real clinical settings. Clinical sites include physicians' office and clinics.

VHO4 **Health Occupations Level IV** 4.5 credits

Medical Assistant curriculum focuses on venipuncture, EKG, first aid techniques, office simulation for booking appointments, minor surgery, and medication administration. Those who qualify for Cooperative Education find numerous opportunities to work as CNAs and MAs. Those who do not go out on co-op will be afforded the opportunity to continue to prepare for and sit for the MA National Certification exam in January. The students will then take a college Emergency Medical Technician program by Mount Wachusett Community College and be eligible to sit for the certification exam and qualify for 8 college credits.

*Anatomy & Physiology is highly recommended for all Health Occupation students.

House Carpentry

This course teaches the basics of residential construction. Students progress from framing to interior carpentry, and on to finish work. Juniors and seniors participate in the construction of an actual house each year. Areas of employment:

- *Home Construction Companies*
- *Industrial Construction Companies*
- *Self Employment*
- *Commercial Construction*
- *Union Employment*

Students in the Monty Tech House Carpentry program may benefit from a number of articulation agreements with area colleges, universities, and labor organizations, as listed below. These agreements save qualified students time and money, making a college education and advanced technical training much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

Boston Carpenters Apprenticeship & Training Fund	Acceleration in the training program as follows: Accepted graduates with additional credit will enroll as first year apprentices, and will be eligible for promotion to third year level upon satisfactory completion of one-year probationary period.
Construction Craft Laborers Apprenticeship Program	Acceleration in the training program as follows: Accepted graduates receive credit of 1,000 hours of on the job training hours. All accepted graduates will start at 70% of the Journeyworkers' rate for the zone in which they will be working in.
Eastern Massachusetts Carpenters Apprenticeship & Training Committee	Acceleration in the training program as follows: Accepted graduates with additional credit will enroll as first year apprentices, and will be eligible for promotion to third year level upon satisfactory completion of one-year probationary period.
New England Institute of Technology	CR 113 Tool and Site Work Lab (3) CR 117 Introduction to Blueprint Reading (2) CR 122 House Framing I (5)

VHC1X **House Carpentry Exploratory**

Program topics include orientation to the trade, shop safety rules and the use of basic hand tools. Students, working together in small groups, complete a miniature house building project. The project includes basic framing techniques including, typical 16 inch o.c layout, door and window openings and roof systems, roof shingle installation and door and window installation.

VHC1 **House Carpentry Level I** 2.25 credits

Students will complete all safety training associated with the tools, machines and equipment in the shop through the completion of a basic wood-working project. They will then increase their skill sets in the correct use of tools, machines and equipment along with basic tape measure use and

identification of building materials through such projects as Adirondack chairs and saw horse construction.

VHC2 **House Carpentry Level II** 4.5 credits

Students will construct practice buildings which will develop their skills and knowledge of floor and wall framing systems, roof framing systems, door and window systems, exterior siding and trim systems. Students will also be introduced to interior finish systems and deck construction. Additional shop projects can include outdoor furniture and garden sheds. Students will also complete the 10-hour OSHA construction safety course.

VHC3 **House Carpentry Level III** 4.5 credits

The student will identify and observe shop rules and demonstrate proper construction safety practices, especially in the introduction to the House Building Project. Advanced operations of hand and portable power tools are demonstrated in layout work and framing of floors, walls, ceilings and roofs. The house project enables the student to advance through a sequence of framing, sheathing, roofing, siding, window and door installation, interior finishing, and stair construction. Job site safety and safe operation of tools and equipment are stressed.

VHC3R **House Carpentry Related Level III** .5 credit

Program topics include review of shop rules and procedures, and tool and machine safety procedures. Building Construction is introduced starting with the permitting process, and then moving through the building systems such as foundations, floor framing, and roofing. The students learn basic drawing techniques and apply the text curriculum to draft a basic set of working construction drawings.

VHC4 **House Carpentry Level IV** 4.5 credits

Program topics include trade vocabulary, job safety, shop rules and procedures. The student learns and demonstrates advanced operations on machines and tools. Work processes include: roof framing, window dormers, valley and hip roof construction, stair construction and finishing. Also window and door trimming, exterior cornice construction and interior finishing are mastered. Closet shelving, built-ins and mantles are assigned. Job site safety and safe operation of tools and equipment are stressed.

VHC4R **House Carpentry Related Level IV** .5 credit

Program topics include review of shop rules and procedures, trade vocabulary and job safety, review use of table saw, band saw, router, jointer, lathe, sanding machines, pneumatic nailer, guards, and sharpening tools. Also included is review of drawing and design (house plans and shop drawings), framing, roofs (including openings), walls and floors (including openings and bracing), exterior finish (cornice work, water tables and millwork) and stairs, casework and staining finish.

Heating, Ventilation, Air Conditioning (HVAC) & Property Maintenance

This course covers the overall management of a maintenance program in an industrial complex setting. Students learn basic skills in carpentry, welding, heating/ventilation and air conditioning, metal machining, metal fabrication, and small engine repair. Areas of employment:

- *Power Products Mechanic*
- *Facilities Mechanic*
- *Industrial Maintenance Mechanic*
- *Carpenter's Assistant*
- *HVAC Apprentice Mechanic*
- *Building Energy Analyst*

Students in the Monty Tech Heating, Ventilation, Air Conditioning & Property Maintenance program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

Massasoit Community College	HVAC 111 Basic Electricity and Control Theory (4) HVAC 114 Heat Principles and Application (4)
University of Northwestern Ohio	HV 101 Service & Procedures I (6)

VHM1X **HVAC & Property Maintenance Exploratory**

Program topics include shop safety, measurement, use of hand tools, and making a project that will introduce the exploratory student to various trade skills used in the program.

VHM1 **HVAC & Property Maintenance Level I** 2.25 credits

Program topics include performing tasks in sheet metal, gas welding, carpentry skills, and machine shop. Shop safety and safe use of tools and equipment are stressed. Additional topics include theory to support sheet metal, gas welding, carpentry, machine shop and reading and interpreting technical drawings and plans. The theory and design of a building envelope will also be studied.

VHM2 **HVAC & Property Maintenance Level II** 4.5 credits

Program topics include theory and practical application of knowledge in the following areas: arc welding, machine shop, building repairs and alterations to same, HVAC, air and liquid cooled engine repair, and general mechanical practices. General safety and safe use of tools and equipment is stressed in all assigned tasks.

VHM3 **HVAC & Property Maintenance Level III** 4.5 credits

Program topics include repair and adjustments of live jobs such as snow blowers, lawn mowers, chain saws, and maintaining heating and air conditioning systems according to current industry standards. Operation of lathes, millers and drill presses, building construction and maintenance of various operating systems will be covered. Cooperative education opportunities are available for students who qualify. Shop safety and safe use of tools and equipment are stressed.

VHM3R **HVAC & Property Maintenance Related Level III** .5 credit

Program topics include theory of electricity and theory of basic refrigeration systems. Crossover skills will include Math, Science, and Technology theory as they apply in a shop setting and workplace environment. Introduction to building envelope design methods.

VHM4 **HVAC & Property Maintenance Level IV** 4.5 credits

Program topics include a continuation of hands-on live repair, troubleshooting and maintenance construction tasks begun in HVAC Shop III. Scheduling of building maintenance issues including snow removal, flat roof repair, floor care and building energy consumption. Cooperative education opportunities are available for students who qualify. Shop safety and safe use of tools and equipment are stressed.

VHM4R **HVAC & Property Maintenance Related Level IV** .5 credit

Program topics include the design and construction of an energy efficient single family home using the current Massachusetts state building performance standards. Students will Math, Science and Technology Engineering theories as they apply to shop setting.

Information Technology

Information Technology trains students in the use and maintenance of computer systems in today's high-tech environment. Students become proficient in computer repair, hardware and software maintenance, local area network setup and maintenance, client/server setup and maintenance, cyber-security, programming and web page design.

Areas of employment:

- *Help Desk Technician*
- *Programmer*
- *Network Technician*
- *Web Designer*
- *Support Specialist*

***Articulation Credits**: Students in the Monty Tech Information Technology program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.*

Benjamin Franklin Institute of Technology	CT 121 Web Design I: HTML and Dreamweaver (3)
Mount Wachusett Community College	CIS 118 Mobile and Web Development: 3credits CIS 127 Computer Technologies: 3 credits CIS 131 Linux Programming: 4 credits CIS 143 Computer Service and Repair: 3 credits
New England Institute of Technology	CIS 100 Word Processing (1) CIS 112 Intro to Computers (3) CST 120 Operating Systems for Technicians (6) CST 130 Personal Computer Hardware Fundamentals (6) CIS 250 Computer Applications II (2)
STATEWIDE: 15 Massachusetts Community Colleges	One or more of the following course(s) or equivalent, up to 4 credits: • CISCO Networking I • Computer Concepts • Computer Concepts with Applications • Computer Configuration and Hardware • Computer Hardware and Support • Computer Networks I • Computer Service and Repair • Internetworking • Introduction to Computer Networks • Introduction to Computer Systems • Introduction to Data Communications & Networks • Introduction to Information Technology • Introduction to Networking • Introduction to Operating Systems • Microcomputer Environment • Network Fundamentals • Network Workstation Administration • Networking Essentials • Networking I • Operating Systems • PC Hardware & Software • System Support- Hardware • Wireless Networking

VIT1X **Information Technology Exploratory**

As part of their Information Technology Exploratory experience, each student will have hands-on exposure to the tools, techniques, and methodologies used in today's IT business world. Students will design a web site, create a multimedia application, fabricate a network wire, develop an animated logo and program a robot to navigate a maze.

VIT1 **Information Technology Level I** 2.25 credits

Students will be introduced to the most widely used computer applications for web site design and multimedia development (Dreamweaver, Fireworks, and Flash). They will program their own interactive project with a new innovative programming language called Scratch. They will also learn the fundamentals of computer software and hardware along with ethical and security concerns in today's information society. Students will gain the skills to complete the Internet Computing Core Certification (IC^3). Students will be introduced to Skills USA PDP level 1.

VIT2 **Information Technology Level II** 4.5 credits

Students will learn intermediate level techniques in computer repair and networking. The curriculum includes online resources from Testout and Cisco Academy Coursework. Cisco IT Essentials and Testout are taught in the first two terms. Introduction to Networking is taught in the second two terms of the sophomore year. The student will begin learning how to perform Help Desk Support. Students will be introduced to Skills USA PDP level 2.

VIT3 **Information Technology Level III** 4.5 credits

Students will advance their knowledge of computer network setup and operation and will begin learning the operation of the school's Help Desk.

Students will continue the Cisco Networking curriculum with the Routing and Switching Essentials course to prepare them for industry standard certifications such as the Cisco Certified Entry Networking Technician (CCENT).

Cyber security concepts will be introduced. Students will learn how to defend a network against outside intrusion.

Students will advance their knowledge of web design with HTML coding and software such as Adobe Dreamweaver. They will develop web sites for the school intranet, as well as, outside organizations and gain the skills to complete the Certified Internet Web (CIW) Professional Certification.

Programming concepts will be introduced through programming the VEX robotics platform and/or designing mobile apps.

VIT4 **Information Technology Level IV** 4.5 credits

Those students not taking part in Monty Tech's cooperative work experience will be assisting in the support tasks needed to maintain the school's computer systems and network infrastructure as part of the operation of the school's Help Desk.

Students can continue learning local and wide area network design concepts with the Cisco Academy curriculum and/or advanced Web Design with the CIW curriculum.

Advanced cyber-security and programming training will be available.

In addition, during their senior year, Information Technology students will have the opportunity to receive instruction to prepare them to participate in the Advanced Placement Computer Science Principles exam. Students who choose this opportunity will receive credit on their transcript that specifically acknowledges their participation in this program. Students will be eligible to take the AP exam in the spring of their senior year. A qualifying score of three (3) or better may earn the student college credit.

Machine Technology

Students learn a variety of skills by studying blueprints and drawings, applying math and science to operate engine lathes, milling machines, grinders, drill presses, EDM (Electrical Discharge Machine) and CNC machines (Computer Numerical Control). CAD (Computer Aided Design) and CAM (Computer Aided Machining) software skills are also learned. Students have the opportunity to achieve MACWIC (Manufacturing Advancement Center Workshop Innovation Collaborative) levels 1 and 2 certifications. The program currently has articulation agreements where our students can graduate with 12 credits completed at a local college. Students will have the opportunity to get a third party accredited certification in twelve metrology areas. Areas of employment:

Machinist *Machine Operator* *Tool and Die Maker*

Engineering *CNC Programmer*

***Articulation Credits**: Students in the Monty Tech Machine Technology program may benefit from a number of articulation agreements with area colleges and universities, as listed below. These agreements save qualified students time and money, making a college education much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.*

Quinsigamond Community College	MNT101 Mechanical CAD I (3) MNT108 Basic Machine Operation (3) MNT210 Computer Numerical Control (with MACWIC 2 or NIMS 1 certification) (4)
Mount Wachusett Community College	PLT105 Blueprint Reading (3) CAD101 Introduction to CAD (3)

VMT1X **Machine Technology Exploratory**

Program topics include shop safety, basic machine types and functions, measurements and job opportunities. The program also includes projects utilizing basic machine shop skills on lathes, milling machines, saws, and bench work.

VMT1 **Machine Technology Level I** 2.25 credits

Program topics include an introduction to or review of the engine lathe, bench work, saws, drill press, pedestal grinder and milling machines. Shop safety and safe operation of tools and equipment are stressed. Additional topics include machine shop occupations, use of hand tools, simple layout, basic blueprint reading and computations.

VMT2 **Machine Technology Level II** 4.5 credits

Program topics include a continuation of lathe work, milling machine work, work with saws, drill presses and bench grinder. Shop safety and safe operation of tools and equipment are stressed.

VMT3 **Machine Technology Level III** 4.5 credits

Program topics include advanced, in-depth objectives in the use of saws, lathes, drill presses, grinder, milling machines, and the introduction to CNC machining utilizing CAD and CAM software. Shop safety and safe use of tools and equipment are stressed.

VMT3R **Machine Technology Related Level III** .5 credit

Program topics include the theory and history of the operation of saws, lathes, drill presses, grinders, milling machines, and introduction to writing of programs for CNC machines, as well as advanced blueprint reading, layouts and computations.

VMT4 **Machine Technology Level IV** 4.5 credits

Program topics include the advanced operation of CNC machines, use of CAD and CAM software, electrical discharge machines, and advanced objectives utilizing lathes, grinders and milling machines. Shop safety and safe use of tools and equipment are stressed.

VMT4R **Machine Technology Related Level IV** .5 credit

Program topics include the theory of advanced CNC concepts, introduction to 'world class' operations in manufacturing, the design process, use of precision measuring devices, identifying the use of emerging and specialized machining equipment.

Masonry

This program exposes students to all aspects of the masonry trade. Students will learn the art of bricklaying, block laying, tile setting, stone setting as well as concrete finishing. They will be involved in shop projects as well as live work on school grounds. Students work in the community and on the annual house project. Areas of employment:

- *Union Worker*
- *Marketing Professional*
- *Design Professional*
- *Cost Estimator*
- *Self-employed Contractor*
- *Tile Setter*
- *Stone Setter*
- *Concrete Worker*

VMR1X **Masonry Exploratory**

This program introduces the student to the various career opportunities in the masonry field coupled with a history of the trade. The course provides a brief exposure to the basic tools, measuring devices and materials found in the masonry career field. Practicing the techniques of paving and ceramic tile installation will help students develop an awareness of these skills necessary to succeed as a mason. Projects include basic bricklaying and scaffolding construction.

VMR1 **Masonry Level I** 2.25 credits

The Level I course exposes the student to all the tools used in the Masonry field and why, where, and how they are used and maintained. Students are shown basic brick and block bonding, types of jointing and how to plan basic concrete flatwork.

VMR2 **Masonry Level II** 4.5 credits

Program topics include the review of Level I objectives as well as the introduction to repair work, block corners, and some stone work. They will be working with the wet saw as well as portable hand tools such as power drill, demolition hammer, skill saw, and grinder exc. Shop safety and safe use of tools and equipment are stressed.

VMR3 **Masonry Level III** 4.5 credits

The students will identify and observe shop rules and demonstrate proper safety practices, of erecting masonry scaffolding, constructing of masonry walls, installing window and door openings, flashing and waterproofing procedures, and reinforcing of masonry. Job site safety and safe operation of tools and equipment are stressed.

VMR3R **Masonry Related Level III** .5 credit

Students will review and further study basic masonry math, offset measurements and formulas. Estimating and accepted construction practices are additional theoretical topics to be covered. Students will also be introduced to all types of arches, used in masonry construction.

VMR4 **Masonry Level IV** 4.5 credits

Program topics include trade vocabulary, job safety, shop rules and procedures. The student learns and demonstrates advanced operations on machines and tools. Work processes include learning to flash a chimney on a roof, construct fireplaces, arch construction, and ornamental masonry construction. Students will learn the fundamentals of stone masonry and constructing masonry in cold weather. The student will also learn how to work independently and safely on all tasks in shop and on the job site.

VMR4R **Masonry Related Level IV** .5 credit

Program topics include review of shop rules and procedures, trade vocabulary and job safety, review safety procedures with all shop tools such as wet saw, portable drill and saw, rotary drill, and gas and electric mixer. Also included is review of drawing and design (house plans and shop

drawings) and review form work for arches and concrete work. Students will further study masonry math, learn the building codes for fireplaces and chimneys, and other various building codes in the masonry field. Reinforcement of offset measurements and formulas will also be studied.

Plumbing

This program exposes students to many aspects of the plumbing trade. Students learn pipefitting, gas-fitting, sanitary plumbing, and hydronic heating. They will do shop projects, as well as, live work. Plumbing students also work in the community. They install the plumbing, heating, and fuel piping in the annual house job project and maintain the facility at Monty Tech. Eligible students may participate in a Co-op agreement with trade professionals. Areas of employment include:

- *Plumbing/Heating/Mechanical Contractors*
- *Wholesale and Retail Supply Companies*
- *Plumbing/Heating Service Companies*
- *Manufacturing and Industrial Facilities*
- *Pipefitting Contractors/Fire Protection & Sprinkler Fitters*

Students in the Monty Tech Plumbing program may benefit from a number of articulation agreements with area colleges and labor organizations, as listed below. These agreements save qualified students time and money, making a college education and advanced technical training much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

New England Institute of Technology	PL 114 Pipe Fitting Basics (4) PL 115 Pipe Fitting Lab (3)
Plumbers & Pipefitters Local No. 4	Acceleration in the training program Earlier completion of apprenticeship training All associated wage and benefit improvements

VPL1X **Plumbing Exploratory**

Program topics include an introduction to the plumbing trade, shop safety and safe use of hand tools. The exploratory students will attempt some simple mechanical and mathematical tasks that form the basis for the plumbing trade. They will learn to cut and assemble a variety of piping materials, including: copper, plastic, steel, and cast iron pipe and fittings. Students will perform work based off drawings, be introduced to basic systems design and, experience fixture installation. They will be involved in some problem solving projects that require individual attention as well as teamwork to complete.

VPL1 **Plumbing Level I** 2.25 credits

Students will receive an in-depth introduction to the plumbing trade including the fundamentals of the industry, the historical development of plumbing, and future developments of the trade. Students will be introduced to various piping materials as well as the tools and joining methods of each material. Students will be introduced to drawings and blue prints, learn to read a scale rule, and practice material take offs. Students will build various projects out of steel pipe, copper tube, and pex/cpvc according to spec drawings. Students will be introduced to general OSHA safety

standards and develop safe work habits. Students will develop measuring skills, learn basic plumbing math, and develop critical thinking skills. Students will gain the basic foundation needed to prepare them for future levels of plumbing. The Massachusetts competencies, frameworks, and Plumbing Board Tier system will guide the curriculum.

VPL2 **Plumbing Level II** 4.5 credits

Program topics include the review of Level I objectives adding more complex pipefitting and mechanical projects. There will be a higher level of plumbing math, including offset calculations. Students will also be working towards proficiency in the use and care of hand tools, working with steel piping, and assembling and soldering copper tubing and fittings. The students will begin using some basic power tools and will learn to cut and thread pipe using a variety of pipe machines. Power tool safety is strongly re-enforced.

Students will learn basic blueprint reading and will complete projects from isometric, orthographic, and plan-view drawings Students will learn about pipe hangers and supports, and will secure piping projects accordingly. Students will study plumbing terms, definitions, and abbreviations. Students will learn some basics of water and gas piping identify and describe the function of a variety of valves used in the plumbing field. Students will be introduced to water heating methods and appliances. The Massachusetts competencies, frameworks, and Plumbing Board Tier systems will guide the curriculum.

VPL3 **Plumbing Level III** 4.5 credits

Topics include a review of Level II objectives and reinforcement of earlier topics; shop safety and safe use of tools & equipment, technical drawing and blueprints, plumbing principles and standards, pipe joining methods & techniques. Students will learn to work with cast iron piping, including: No-Hub and service-weight piping materials. They will also work with plastic piping, including: ABS and PVC pipe and fittings. Those materials will be applied as students will be introduced to drainage, waste, and venting (DWV) systems. Projects will be constructed using shop drawings and student designed drawings. The students will also learn basic plumbing repairs by working on the Monty Tech campus and will learn new house plumbing and heating by working on the annual home building project(s). The Massachusetts competencies, frameworks, and Plumbing Board Tier system will guide the curriculum.

VPL3R **Plumbing Related Level III** .5 credit

Students will learn about plumbing and gas-fitting codes and statutes. They will work with the Massachusetts Plumbing Code and receive lessons in the scope, jurisdiction, the General Regulations and the Basic Principles of Plumbing. Students will be introduced to the drainage, waster, and vent system, as well as, the potable water supply systems and their anatomy and how to size each system. Plumbing math and science will be integrated into classroom study. Students will also be introduced on how to read and draw plumbing diagrams and isometric drawings. The Massachusetts competencies, frameworks and Tier system will guide the Related curriculum.

VPL4 **Plumbing Level IV** 4.5 credits

Program topics include the review of Level III objectives and continuation of plumbing work through advanced shop projects. Students will do approved, on-campus plumbing work, as well as, participate on the annual home building project(s). Emphasis is placed on using the Massachusetts Fuel Gas and Plumbing Codes. In addition, designing, sizing, and installing the drainage, waste, and vent (DWV) systems, as well as, water supply and distribution systems piping is stressed. Finish plumbing fixture installation is also covered along with plumbing systems maintenance, trouble shooting, and repairs. Additional topics covered include: shop safety and safe use of tools & equipment, technical drawing and blueprints, plumbing principles and standards, pipe joining methods, techniques, and installation of fuel gas systems. The Massachusetts competencies, frameworks, and Plumbing Board Tier system will guide the curriculum.

VPL4R **Plumbing Related Level IV** .5 credit

Students will continue to work in depth with the Massachusetts Plumbing Code and will receive lessons in water supply & distribution, sanitary drainage and vent systems, and sizing storm drains. Students will also study the installation and sizing of gas systems utilizing NFPA 54 National Gas Code along with Massachusetts Modifications. Plumbing math and science in the Related class will be at a level consistent with preparation for entry into an apprenticeship program. Students will be introduced to hydronic heating and safety controls. The Massachusetts competencies, frameworks, and Plumbing Board Tier system will guide the Related curriculum.

Veterinary Science

Students enrolled in the Veterinary Science program will understand the fundamentals of animal science, be introduced to a variety of species, breeds, and characteristics of both large and small animals. They will compare animal anatomy and physiology, research animal disease and prevention, and study genetics, breeding and reproduction of domestic animals. Working and learning in the school's new Veterinary Science Training Center & Community Clinic, these students will be introduced to all aspects of a comprehensive veterinary practice, and will earn college credits and industry-recognized certifications throughout the course of study.

Program graduates will be prepared for both college and career pathways upon graduation. Students who choose to pursue related advanced educational programs may benefit from an articulation agreement with Becker College, which grants qualified students six college credits, at no cost. Students entering the workforce may pursue a number of occupations including:

- *Animal Care & Service Workers*
- *Administrative Support in Clinics & Hospitals*
- *Groomers*
- *Shelter Medicine & Animal Sheltering Practice*
- *Small Animal Veterinary Clinical Practice*
- *Surgical Specialty Practice*
- *Research & Laboratory Animal Technicians*
- *Veterinary Assistants & Technicians*
- *Wildlife Rehabilitators*
- *Zookeeper*
- *Animal Law*
- *Governmental lobbyists, regulatory medicine & programs*

VVS1X **Veterinary Science Exploratory**

Program topics include an introduction to medical terminology, the study of blood and the cardiovascular system, the study of disease, canine behavior and animal welfare. Students are instructed in the causes of disease and the transmission of infective organisms. Students complete several hands-on laboratory procedures, including the determination of hematocrit and dissection of a heart. Students will also learn to take the pulse of a canine patient.

VVS1 **Veterinary Science Level I** 2.25 credits

Students will be introduced to the world of animal science, and the primary 9 species (or groups) that are considered in the veterinary field. These are horses, cattle, pigs, sheep, goats, dogs, cats, poultry, avian, and exotics. They will learn husbandry of those species and work through units on nutrition, genetics, and reproduction. Students will complete the OSHA 10-hour safety course, learn about animal handling and safety around animals, and demonstrate proficiency in knot tying of various types. Students will also be introduced to the concepts of animal welfare and animal rights, with discussions on many on the topics currently scrutinized in our society.

VVS2 **Veterinary Science Level II** 4.50 credits

Students will continue to advance their knowledge of animal husbandry, while delving more deeply in the areas of anatomy, physiology and disease. Students will work through each body system, while focusing on areas of difference between species and the diseases which affect them. Students will learn about disease prevention, vaccination and infection control. Students will perform a number of laboratory procedures, such as fecal analysis, urinalysis, blood smears and slide preparation. They will be introduced to companion animal grooming, and be able to bathe, dry and clip a dog or cat. Students will explore animal behavior and begin practicing the skills of animal restraint, bandaging, nursing care and disease prevention. Students will learn medical record-keeping, office procedures, client relations and basic hospital management.

VVS3 **Veterinary Science Level III** 4.50 credits

Students will progress in their clinical skills, particularly in respect to animal handling, laboratory procedures and nursing care. They will be introduced to the concepts of radiology (X-ray) and pharmacology, as well as inventory management and the legalities of prescription medications. Students will learn surgical assisting, surgical instrument identification and preparation, as well as care of the surgical patient. Students will function as groomers, receptionists and veterinary assistants within the Veterinary Science Training Center & Community Clinic. Classroom work involves serious review and practice of care skills, which are applied in clinical settings. Students may be offered the opportunity to apprentice in a co-op or affiliated setting.

VVS4 **Veterinary Science Level IV** 4.50 credits

Students will continue to learn and apply the topics covered in the previous years. Students may be able to qualify for co-operative education opportunities, affiliations or externships at clinical settings. Students will be offered the opportunity to continue at the Veterinary Science Training Center & Community Clinic to progress their clinical skills.

Anatomy & Physiology is highly recommended for Veterinary Science students.

Welding/Metal Fabrication

Welding processes taught include oxy-fuel Cutting and Welding, Shielded Metal Arc Welding, Gas Metal Arc Welding, and Gas Tungsten Arc Welding, as well as light plated and sheet metal fabrication. Metal Fabrication practices taught include: layout, forming, rolling, bending, punching, shearing and inspection, using the latest manual and semi-automatic equipment found in today's fabrication facilities. Areas of employment:

- *Welder*
- *Welding Technician*
- *Cutting Table Operator*
- *Sheet Metal Mechanic*
- *Welding Inspector*
- *Metal Fabrication Technician*

Students in the Monty Tech Welding/ Metal Fabrication program may benefit from an articulation agreement with the Sheet Metal Workers Local Union, as listed below. This agreement is intended to save qualified students time and money, making advanced technical training much more attainable. Graduating students are encouraged to visit with their guidance counselor to verify eligibility.

Sheet Metal Workers Local Union No. 17 & Local No. 63	<u>Acceleration in the training program as follows</u>: Accepted graduates with additional credit will enroll as first year apprentices, and will be eligible for promotion to third year level upon satisfactory completion of one-year probationary period.

VWM1X **Welding/Metal Fabrication Exploratory**

Program topics include shop safety, career opportunities in welding/metal fabrication, fabrication of small sheet metal projects and oxy-fuel welding. Equipment used includes shears, bending brakes, folders, spot welders, Gas Metal Arc welders, CNC plasma cutters, and related hand tools.

VWM1 **Welding/Metal Fabrication Level I** 2.25 credits

Program topics include industry rules of safety and fabrication inspection practices. The instruction of equipment selection and set up includes oxy-fuel and welding equipment as well as mechanical cutting and forming equipment. While fabricating shop projects, students learn the basic fabrication theory and practices, including project layout, shearing, cutting and forming operations. Strong emphasis is focused on accident prevention, shop safety, occupational hazards, employment opportunities, and related mathematical calculations.

VWM2 **Welding/Metal Fabrication Level II** 4.5 credit

The industry rules of safety and fabrication practices taught in Level I are taken to greater depths in Level II. The program includes: 1) the setup, adjustment and repair of oxy-fuel welding equipment, as well as oxy-fuel welding and brazing methods of carbon steel and cast iron materials; 2) manual and semi-automatic flame and plasma-arc cutting methods, as well as pipe and plate beveling; 3) the accurate use of industrial (electric, mechanical, hydraulic) equipment such as power shears, saws, drills, punches, notchers, bending brakes, press brakes, presses and other forming equipment; 4) integration of computer programs to draw and calculate projects as well as operate

the equipment; layout and fabrication principles; power tools; related math; measurement and calculation; and use of tables and trade data.

VWM3 **Welding/Metal Fabrication Level III** 4.5 credits

Program topics include the continuation of industry rules of safety and fabrication practices as performed in Freshmen and Sophomore years. This course introduces multiple electric arc welding processes such as Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), and Flux Core Arc Welding (FCAW). Other advanced electric welding processes such as Aluminum Gas Metal Arc Welding and Air Carbon Arc gouging will be performed. During each welding task, students will be interpreting basic blueprints and performing standard welding positions and joint designs commonly applied to the American Welding Society D1.1 Structural code

VWM3R **Welding/Metal Fabrication Related Level III** .5 credit

Students are introduced to the theory of Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), Gas Metal Arc Welding (GMAW), Flux Core Arc Welding (FCAW), and other advanced welding/cutting processes commonly found in industry. Students will engage in advanced concepts of safety precautions, power sources, multiple electrode numbering systems, electrode and filler metal selection, electrode manipulation techniques and metallurgical trouble shooting when welding on different metals. Students will also be introduced to basic and advanced welding symbols found on industry blueprints, along with common mathematics for welders.

VWM4 **Welding/Metal Fabrication Level IV** 4.5 credits

Program topics include the continuation of industry rules of safety and fabrication practices as performed in underclassmen courses Program topics include the introduction to shielded metal arc pipe welding and the American Welding Society (AWS) Certification process. The AWS D1.1 certification process will include shielded metal arc welding and flux core arc welding. Other advanced electric welding processes such as Gas Tungsten Arc Welding on 16 gauge stainless steel and Shielded Metal Arc Welding on 11 gauge carbon steel will be performed. During each welding task, students will be interpreting basic blueprints and performing standard welding positions and joint designs commonly applied to the American Welding Society D1.1 Structural code.

VWM4R **Welding/Metal Fabrication Related Level IV** .5 credit

Program topics include the introduction and review of composing basic blueprints that include different types of views, basic lines, notes and specifications, finding dimensions, making up material lists, and identifying structural shapes. This course will also outline the basics of metallurgy which will include: understanding the affects of heat treatments, other strengthening mechanisms, and metal hardness in junction to how it effects welding. Other topics include the various types off welding and metal inspection generated by the standards of AISI and the AWS; along with the basic theory of SMAW pipe welding.