Mission Statement

Assabet Valley Regional Technical High School is a dynamic and supportive school system that prepares students to meet the challenges of the future by providing a rigorous and relevant education in a safe and secure environment resulting in academic, career and technical proficiency.
Dear Parents and Guardians:

Please be sure to take note of the changes listed below:

- *The Engineering Academy* has moved from a Pilot program to full launch – see a full description of the Engineering Academy below. For more information on the Engineering Academy go to www.assabettech.com

- *Business Electives* have a broadened scope and will be offered as College and Career Readiness courses

- *Marine Corps Junior Reserve Officer Training Corps (MJROTC)* curriculum now offers Leadership I and Leadership II due to increased popularity and enrollment

- *AP Psychology & American Architecture* are new electives in the Social Studies department

- *College Math IV* is a new senior math offering in connection with Quinsigamond Community College for students who have not passed the math portion of the Accuplacer and want to complete their college math remediation courses here at Assabet Valley

- *Pre-Calculus* courses for juniors have been renamed *Advanced Mathematics & Trigonometry*. *Honors Intro to Calculus* will be our more rigorous *Pre-Calculus* offering

- *Title I Math is now available for freshmen and sophomores*

- *Integrated Math Concepts* is our new offering for sophomore students during their technical week program for increased MCAS support

- *The World Language Lab* course is an opportunity for selected students to choose a variety of online language course offerings

**INFORMATION / INFORMAÇÃO / INFORMACIÓN**

**IN ENGLISH:** If you need information in Portuguese or Spanish please call 508-485-9430 or 1-800-537-6663 and speak with Mrs. Aldina Vieira at extension 1425. Thank you.

**EM PORTUGUÊS:** Se necessita de ajuda ou informação em Português ligue para o número 508-485-9430 ou 1-800-537-6663 extensão 1425 e fale com a Sra. Aldina Vieira. Obrigada.

**EN ESPAÑOL:** Si necesita de ayuda o información en Español llame el número 508-485-9430 o 1-800-537-6663 extensión 1425, y hable con la Sra. Aldina Vieira. Gracias.
SCHOOL PHILOSOPHY

Education is shaped by society to satisfy certain needs, both general and specific, current and anticipated and should be a composite of vocational, technical, and academic courses.

Vocational/Technical education is an integral part of education and is designed primarily to prepare students to enter the work force with marketable occupational skills upon leaving high school. Such an education must include an academic base, which will support and enhance vocational/technical skills as well as prepare students for life in a pluralistic society.

High school graduation marks the beginning of a lifelong need for new learning, skill enhancement and personal fulfillment. Flexible opportunities and varied programs for adults enrich the educational experience of all students.

Essential to all education is the development of a safe, positive, and caring atmosphere, which allows professional staff, students, and all parties, involved to progress. The individual students, whose talents, interests, and needs are recognized as unique, must be the focus in the development of curriculum which remains flexible and encourages each person to develop to the level of his/her capacity.

Aware of its growing responsibilities, the educational staff of Assabet Valley Regional Technical High School accepts with confidence the task of preparing our students realistically for the world of work and for a productive life.
SCHOOL GOALS

- To provide academic, vocational and technical programs that prepare our students to be productive members of society;

- To provide integrated academic and vocational/technical programs that challenge each student to achieve state performance standards;

- To provide programs and activities that contribute to a safe and supportive environment for a diverse student body;

- To provide counseling services for all students to achieve academic, personal-social and career goals;

- To use student assessment results to review and improve curricula, courses, programs and instructional practices;

- To utilize the expertise of the Advisory Committees in order to provide new areas of training required for community and industrial development;

- To support special populations in their classrooms and technical programs to help them achieve academic and career goals;

- To provide staff with the professional development opportunities, resources and support needed to motivate and engage students to master challenging content in standards based classrooms and shops;

- To provide teachers with courses and practices that enable them to facilitate student mastery of technology competencies;

- To provide professional development opportunities that will assist staff in obtaining and maintaining professional licensure;

- To develop partnership with parents, businesses, industries and community agencies;

- To provide on-going safety programs;

- To obtain 3rd party certification in our vocational programs;

- To align vocational programs with the Certificate of Occupational Proficiency requirements.
ASSABET VALLEY REGIONAL VOCATIONAL DISTRICT

SCHOOL COMMITTEE

Lynn G. Ryan, Chairperson Berlin
Paul L. George, Vice-Chair Westborough
Joseph Valarioti, Secretary Marlborough
James W. Denman Southborough
Virginia Simms George Northborough
Laura Ross Maynard
William Charbonneau Hudson

ADMINISTRATION

Ernest Houle Superintendent-Director
Kristopher Luoto Director of Business Operations
Mark Hollick Principal
Alyssia Berghaus Director of Pupil Personnel Services
Jerry Gahagan Assistant Principal/Dean of Students
Russell Mangsen Director of Technical Programs
Robert McCann III Director of Academics & Title I
Patrick O’Rourke Assistant Principal/Dean of Students
# ASSABET VALLEY REGIONAL TECHNICAL HIGH SCHOOL
## PROGRAM OF STUDIES
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</table>
ASSABET VALLEY REGIONAL
TECHNICAL HIGH SCHOOL

STATEMENT OF PURPOSE

Assabet Valley recognizes that each student is a unique individual with specific strengths, needs, and preferred learning styles. We will provide opportunities for students to develop their capabilities in grades 9 through 12 through work in a variety of academic course areas and at appropriate levels of learning challenge.

The courses presented here are intended to be flexible, adaptable and responsive in terms of student needs as well as the perceived needs of today’s society. They represent our current efforts to match up with the Massachusetts Common Core of Learning as well as with the valued advice from the many advisory groups of the school. Our academic program is designed to not only support and enhance the high school vocational pursuits of our student body but also to encourage and prepare students for learning beyond high school. We are also committed to providing those experiences which lead students to becoming participating, productive and competent citizens of a pluralistic democratic society.

Students and their parents / guardians should consider the following outline carefully, in conjunction with our guidance department, in terms of past achievements, future goals, and the requirements for a diploma from Assabet Valley. Please call on anyone at the school if assistance is needed in charting a long-range plan or in selecting specific courses or levels.

Any parent /guardian who desires that their child be exempt from a portion of the curriculum, because it involves issues that are deemed controversial, may request an exemption by writing a letter to the Principal. If granted, such exemption shall be without penalty to the student provided an alternative lesson is completed.

Please also note that we are committed to providing whatever individual assistance is necessary to promote student success. Extra-help sessions and homework coaching from our professional staff are available at least three days per week to any student. We strongly recommend that students who are experiencing academic difficulties take advantage of these opportunities.
## Diploma Requirements

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Years</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational / Technical</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>English</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Mathematics</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Social Studies</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Science</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Phys Ed / Health</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Senior Capstone Requirements</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Credit Total</td>
<td></td>
<td>94</td>
</tr>
<tr>
<td>Required Elective Credits</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>109</td>
</tr>
</tbody>
</table>

Student schedules must include 18 academic and 10 vocational credits per year. A maximum of 21 credits from elective courses is obtainable. There are a total of 115 possible credits - 72 academic, 40 vocational, and 3 for Senior Project. A student must successfully pass all MCAS exams currently required by the Commonwealth and earn a minimum of 109 credits in the configuration described above, in order to graduate with a high school diploma and a vocational certificate.

Rank in class is established by deriving a quality point average (Q.P.A.) based on points accumulated from the grade in each course. Honors course grades (marked with an *) are weighted with a factor of 1.25. Advanced Placement, Pre-Engineering and Quinsigamond Community College courses (marked with **) are weighted with a factor of 1.5. Valedictorian and Salutatorian are selected using the weighted Q.P.A. and rank in class. The Valedictorian and Salutatorian will be determined at the end of the second marking period of their senior year.

Specific values are clearly illustrated in the “grading system” section of the Student Handbook. Students should note that outside evaluators often look at rank in class as a basis for making predictions regarding success in employment or higher education.
Mass Core and the Massachusetts Board of Higher Education (BHE) Standards

<table>
<thead>
<tr>
<th>Subjects</th>
<th>MassCore Standards</th>
<th>BHE Admissions Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4 years</td>
<td>4 years</td>
</tr>
<tr>
<td>Math</td>
<td>4 years</td>
<td>4 years (eff. Fall ‘16)</td>
</tr>
<tr>
<td>Science</td>
<td>3 years lab-based science and tech/engineering</td>
<td>3 years, 2 with lab natural/physical sciences</td>
</tr>
<tr>
<td>History/Social Studies</td>
<td>3 years</td>
<td>2 years, including 1 course in U.S. History</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>2 years of the same language</td>
<td>2 years of the same language</td>
</tr>
<tr>
<td>The Arts</td>
<td>1 year</td>
<td>--</td>
</tr>
<tr>
<td>Other</td>
<td>5 additional “core” courses in business education, career and technical education, health, technology Additional learning opportunities, e.g., AP, dual enrollment, online, work-based learning, senior project</td>
<td>2 electives from the above subjects or from the Arts &amp; Humanities or Computer Sciences</td>
</tr>
</tbody>
</table>

**Physical Education**

State law (M.G.L. c. 71, s. 3) states: “Physical education shall be taught as a required subject in all grades for all students.”

Health can be integrated into Physical Education, science, or taught as a stand-alone course.

**ASSABET VALLEY IS A STATE SCHOLAR SCHOOL**

**Objective of State Scholars Initiative:**
To encourage ALL high school students to take and complete a **defined rigorous academic course of study** to prepare for success in career and technical education, military service, college or university coursework, or entry into today’s competitive job market.

**The Benefits of the State Scholar Initiative:**

**For Students—**

**Academic Preparation.** Rigorous academic coursework prepares students for postsecondary education and training without remediation and provides them with greater lifelong flexibility to pursue education and careers.

**For Employers and the Business Community—**

**Prepared Workforce.** Employers need applicants who have a strong academic foundation upon which to build the technical and intellectual training for an entry-level position and, ultimately, a career. State Scholars Initiatives encourage students to complete courses that will provide them with a fundamentally sound background for the future.

**For the Community—**

**Motivated Students.** State Scholars Initiatives encourage students to set high standards and goals for themselves and then utilize community support to reward those efforts. The State Scholars Initiative defines an academic pathway for achieving future success.
Teamwork. Educating youth is everyone’s responsibility. The State Scholars Initiative provides a simple, straightforward means of involving many different elements of a community, from initial steering committee to the volunteer presenter to the sponsor of the rewards and recognition.

Course Requirements

To be a State Scholar, students must complete, at a minimum, the following core academic plan:

<table>
<thead>
<tr>
<th>Department</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4 years of English</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3 years, including Algebra I, Geometry, and Algebra II</td>
</tr>
<tr>
<td>Science</td>
<td>3 years, including Biology, Chemistry, and Physics</td>
</tr>
<tr>
<td>Social Studies</td>
<td>3.5 years, chosen from U.S. History, World History, U.S. Government, World Geography, Economics</td>
</tr>
<tr>
<td>World Language</td>
<td>2 years of the same language (non-English)</td>
</tr>
<tr>
<td>Health and Physical Education</td>
<td>2 years</td>
</tr>
</tbody>
</table>

Quality Point Average (Q.P.A.) Requirements for State Scholars

- At the end of a student’s sophomore year, the student must have a minimum 2.75 Q.P.A. in order to continue in the State Scholar Program.
- In order to graduate as a State Scholar, a student must achieve a minimum Q.P.A. of 3.0 at the end of their senior year.
Engineering Academy

Science-Technology-Engineering-Mathematics

The Engineering Academy at Assabet Valley is a new and exciting program for students interested in a focused program of studies in Science, Technology, Engineering, and Mathematics.

Assabet Valley has designed a Certificate Program in Engineering/STEM that will:

- Provide students with a rigorous and comprehensive curriculum rich in all Engineering/STEM disciplines throughout their four years of high school in both their academic classes and technical programs
- Introduce students interested in Engineering to career and college opportunities in Engineering/STEM related fields

**PROGRAM OUTLINE**

Students enrolled in the Engineering Academy will have requirements beyond AVRTHS graduation requirements in order to receive their certificate and special designation on their transcript. Students will be required to complete four (4) years of Science, a minimum of twelve (12) credits in Engineering/STEM electives, and one (1) full year commitment in one of our many Engineering/STEM related extra-curricular clubs or activities (i.e. Robotics, Math Club, SkillsUSA, Punkin’ Chunkin’ etc.)

Students interested in the Engineering Academy may be enrolled in any of the seventeen (17) technical programs Assabet Valley offers. There will be two different pathways for students interested in earning an Engineering certificate at the conclusion of their high schools studies.

The following Technical programs are currently preparing students for careers in engineering. Students choosing these technical programs will be eligible for the Advanced Engineering Academy certificate program:

- Drafting & Design Technology
- Advanced Manufacturing
- Metal Fabrication
- Computer Programming and Web Development
- Biotechnology
- Electrical Wiring

These technical programs provide a rigorous curriculum related to engineering as well as established college articulation agreements for college credit in engineering majors. Some of the schools involved in our Engineering Academy program are WPI, New Hampshire Technical Institute and the Rochester Institute of Technology.

Students in Drafting and Design Technology are eligible for a statewide articulation agreement with all Massachusetts Community Colleges offering Engineering majors.
The Engineering Academy at Assabet Valley directs students in a course sequence that addresses the educational needs of students planning on a post high school educational program in a two or four year college, leading to a career in engineering or engineering technology. Students participating in the Engineering Academy will receive a rigorous engineering curriculum complete with advanced coursework in their Science and Math courses during their academic week as well through our Project Lead the Way (PLTW) program.

**PROGRAM CURRICULUM**

Academic classes within the Project Lead the Way (PLTW) curriculum are:

- Introduction to Engineering
- Principles of Engineering
- Civil Engineering and Architecture
- Aerospace Engineering
- Digital Electronics
- Engineering Design and Development

Honors/Advanced Placement Courses:

- **Science Curriculum**: upper level courses in Chemistry and Physics
- **Technical Program Curriculum**: Biotechnology, Computer Programming and Web Development, Drafting and Design Technology, Metal Fabrication, and Precision Machining and Automated Manufacturing
- **Engineering Technology (Project Lead the Way)**
- **Mathematics Curriculum**: upper levels courses in Calculus and Statistics
- Successful Completion of STEM extracurricular work/activities including: portfolios, field-trips, possible internship opportunities and participation in STEM based co-curricular activities
COURSE CHANGE POLICY

Students select their courses in the spring each year for the following school year. Students have the chance to review course offerings, discuss their choices with their parents and teachers, and review their choices with their guidance counselor prior to submitting their final requests. Once these decisions regarding their schedules are complete, course changes are difficult, if not impossible to make.

Schedule Change Procedure

- **Add/Drop Period**

While we encourage students to solidify schedule requests at the end of the previous school year, there are circumstances that may necessitate a change at the start of the school year. Students may request a change prior to September 30th by making an appointment with their guidance counselor. Changes will be honored only for unusual circumstances, and reassignments are subject to course availability. Students are not allowed to change courses due to teacher preference. Any level changes may require a parent, teacher, and/or department head signature.

- **Changes Requested after September 30th**

Course changes after September 30th are extremely rare. In addition to the above procedure, any course changes made after this date require completion of a Student Schedule Change Form. Changes may also require approval of the parent, teacher, respective department head and the Academic Chairman. Any changes made after September 30th are reflected on the students' transcript.

- **Changes Requested after Mid-Term**

In addition to the above procedures, all changes requested after marks close for the first mid-term must be approved by the parent, teacher, respective department head and the Academic Chairman. Any course change this late in the school year would only be considered in an extraordinary circumstance.
<table>
<thead>
<tr>
<th>COURSE</th>
<th>PERIODS</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENGLISH</strong> (Choose 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Honors English 9</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>College Prep English 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELL English</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MATH</strong> (Choose 1)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>* Honors Algebra II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algebra I</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SOCIAL STUDIES</strong> (Choose 1)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>* Honors U.S. History I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. History I</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SCIENCE</strong> (Choose 1)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>* Honors Cellular and Ecological Biology Laboratory</td>
<td></td>
<td></td>
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<tr>
<td>Cellular and Ecological Biology Laboratory</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PHYS. ED. / HEALTH</strong></td>
<td>1</td>
<td></td>
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<tr>
<td>Physical Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
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<tr>
<td>(2 terms)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>(1 term)</td>
<td>1</td>
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<tr>
<td><strong>TOTAL REQUIRED</strong></td>
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<td>15</td>
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<tr>
<td><strong>ELECTIVES</strong> (Choose 3 credits)-</td>
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<td></td>
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<tr>
<td>Classic Film Forum</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Ceramics/Art Techniques</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Art Techniques</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CCR Foundations</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>CCR Build A Better You</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>ELL Academic Support (by recommendation)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Reading (by recommendation)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Writing Workshop I (by recommendation)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>* Honors Band</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Band</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>* Honors Chorus</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Chorus</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>DJ Skills</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>** Introduction to Engineering Design (application required)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Virtual High School</td>
<td>1</td>
<td>3/6</td>
</tr>
<tr>
<td>Spanish I, II</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>World Language lab (application required)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Study Skills (by recommendation)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Algebra I Topics/Title I Math (by recommendation)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>MJROTC Leadership Education I</td>
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<td>3</td>
</tr>
<tr>
<td><strong>TOTAL ELECTIVES</strong></td>
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<td>3</td>
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<tr>
<td><strong>ACADEMIC</strong></td>
<td>6</td>
<td>18</td>
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<tr>
<td><strong>VOCATIONAL EXPLORATORY</strong></td>
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<td>6</td>
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<tr>
<td><strong>SELECTED SHOP</strong></td>
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<td>4</td>
</tr>
<tr>
<td><strong>TOTAL YEAR</strong></td>
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<td>28</td>
</tr>
<tr>
<td>* Course given extra weight of 1.25</td>
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<td></td>
</tr>
<tr>
<td>** Course given extra weight of 1.5</td>
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## GRADE 10

<table>
<thead>
<tr>
<th>REQUIRED</th>
<th>PERIODS</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>ENGLISH (Choose 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Honors English 10</td>
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<tr>
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| MATH (Choose 1)                      |         |         |
| * Honors Geometry                    | 1       | 3       |
| Geometry                              |         |         |

| SOCIAL STUDIES (Choose 1)            |         |         |
| ** Advanced Placement United States History | 1       | 3       |
| * Honors U.S. History II             |         |         |
| U.S. History II                      |         |         |

| SCIENCE (Choose 1)                   |         |         |
| * Honors Systemic Biology Laboratory | 1       | 3       |
| Systemic Biology Laboratory          |         |         |

| PHYS. ED. / HEALTH                   |         |         |
| Physical Education                   |         |         |
| (2 terms)                            |         | 2       |
| Health                               |         | (1 term) 1 |

** TOTAL REQUIRED **  

| ELECTIVES (Choose 3 credits)         |         |         |
| Contemporary Film Forum              | 1       | 3       |
| Ceramics/Art Techniques              | 1       | 3       |
| Art Techniques                       | 1       | 3       |
| CCR Build A Better You               | 1       | 3       |
| CCR Management & Entrepreneurship    | 1       | 3       |
| ELL Academic Support (by recommendation) | 1       | 3       |
| Reading (by recommendation)          | 1       | 3       |
| Novel and Film                       | 1       | 3       |
| Sports Literature                    | 1       | 3       |
| Creative Writing                     | 1       | 3       |
| Writing Workshop II (by recommendation) | 1       | 3       |
| * Honors Band                        | 1       | 3       |
| Band                                 | 1       | 3       |
| * Honors Chorus                      | 1       | 3       |
| Chorus                               | 1       | 3       |
| DJ Skills                            | 1       | 3       |
| ** Principles of Engineering (application required) | 1       | 3       |
| ** Introduction to Engineering Design (application required) | 1       | 3       |
| Virtual High School                  | 1       | 3/6     |
| Spanish I, II, III                   | 1       | 3       |
| World Language lab (application required) | 1       | 3       |
| Study Skills (by recommendation)     | 1       | 3       |
| MJROTC Leadership Education I        | 1       | 3       |
| MJROTC Leadership Education II       | 1       | 3       |
| Integrated Geometry & Algebra I Topics/Title I Math (by recommendation) | 1       | 3       |
| MCAS Math Strategies (by recommendation-technical program week) | 1       | 3       |

** TOTAL ELECTIVES **  

| ACADEMIC                             |         |         |
|                                      | 6       | 18      |

| VOCATIONAL MAJOR                     |         |         |
|                                      | 10      |         |

| TOTAL YEAR                           |         |         |
|                                      | 28      |         |

* Course given extra weight of 1.25  
** Course given extra weight of 1.5
### GRADE 11

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<tr>
<td>ENGLISH (Choose 1)</td>
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</tr>
<tr>
<td>** Advanced Placement Language &amp; Composition</td>
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<tr>
<td>* Honors Introduction to Calculus</td>
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<tr>
<td>* Honors Chemistry Laboratory</td>
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<tr>
<td>Chemistry Laboratory</td>
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<tr>
<td>Principles of Chemistry Laboratory</td>
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<td>* Honors Physics Laboratory</td>
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<tr>
<td>Honors Anatomy &amp; Physiology Lab (HT students)</td>
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**TOTAL REQUIRED**

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### ELECTIVES (Choose 6 credits)

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<th>ELECTIVES</th>
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<tbody>
<tr>
<td>Classic Film Forum</td>
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<tr>
<td>Ceramics/Art Techniques</td>
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<td>3</td>
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<tr>
<td>Art Techniques</td>
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<tr>
<td>* Art Techniques – Advanced</td>
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<tr>
<td>Advanced Ceramics &amp; Sculpture</td>
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<td>3</td>
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<tr>
<td>CCR Build A Better You</td>
<td>1</td>
<td>3</td>
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<tr>
<td>CCR College &amp; Career Planning</td>
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<td>3</td>
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<tr>
<td>CCR Management &amp; Entrepreneurship</td>
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<tr>
<td>QCC Future Steps (application required)</td>
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<tr>
<td>Self-Directed Seminar (application required)</td>
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<td>1.5/3</td>
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<td>Reading (by recommendation)</td>
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<tr>
<td>MCAS ELA, Math, Science (by recommendation)</td>
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<td>3</td>
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<td>* Honors Band</td>
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<tr>
<td>Band</td>
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<td>* Honors Chorus</td>
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<td>Chorus</td>
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<tr>
<td>DJ Skills</td>
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<td>Physical Education</td>
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<tr>
<td>Health: &quot;The Real World&quot;</td>
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<tr>
<td>** Principles of Engineering (application required)</td>
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<tr>
<td>** Civil Engineering and Architecture (application required)</td>
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<td>** Introduction to Engineering Design (application required)</td>
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<td>Spanish I, II, III</td>
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** TOTAL ELECTIVES **  

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** ACADEMIC **  

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** VOCATIONAL MAJOR **  

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** TOTAL YEAR **  

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* Course given extra weight of 1.25  
** Course given extra weight of 1.5
### Grade 12

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<td>Principles of Physics Laboratory</td>
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**TOTAL REQUIRED**

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<th>3 or 4</th>
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**ELECTIVES** (Choose 6 or 9 credits)

- Contemporary Film Forum | 1 | 3 |
- Ceramics/Art Techniques | 1 | 3 |
- Art Techniques | 1 | 3 |
- * Art Techniques – Advanced | 1 | 3 |
- Advanced Ceramics & Sculpture | 1 | 3 |
- Law and Order | 1 | 3 |
- CCR Build A Better You | 1 | 3 |
- CCR Management & Entrepreneurship | 1 | 3 |
- QCC Future Steps (application required) | 1 | 3 |
- Personal Finance | 1 | 3 |
- College Math (Math IV) | 1 | 3 |
- ELL Academic Support | 1 | 3 |
- Reading (by recommendation) | 1 | 3 |
- MCAS ELA, Math, Science (by recommendation) | 1 | 3 |
- Novel and Film | 1 | 3 |
- Sports Literature | 1 | 3 |
- Creative Writing | 1 | 3 |
- * Honors Band | 1 | 3 |
- Band | 1 | 3 |
- * Honors Chorus | 1 | 3 |
- Chorus | 1 | 3 |
- DJ Skills | 1 | 3 |
- Physical Education | 1 | 3 |
- Health: “Consumer Health” | 1 | 3 |
** Introduction to Engineering Design (application required) 1 3
** Aerospace Engineering (Application required) 1 3
** Principles of Engineering (application required) 1 3
** Engineering Design and Development (application required) 1 3
  Forensic Science 1 3
  21st Century Money Matters 1 3
  Leadership – Life Development & Community Responsibility 1 3
Psychology 1 3
War in Film 1 3
Virtual High School 1 3/6
Self-Directed Seminar (application required) 1 1.5/3
** QCC – Introductory Sociology 1 1.5
** QCC- Introduction to Psychology 1 1.5
Spanish I, II, III 1 3
World Language lab (application required) 1 3
Study Skills (by recommendation) 1 3
MJROTC Leadership Education I 1 3
MJROTC Leadership Education II 1 3
American Architecture 1 3

TOTAL ELECTIVES 2 or 3 6 or 9

ACADEMIC

VOCATIONAL MAJOR 10

SENIOR CAPSTONE REQUIREMENTS 3

TOTAL YEAR 31

* Course given extra weight of 1.25
** Course given extra weight of 1.5
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*Italicics = Elective course*
### Sample: Accelerated Academic Schedule

This is a typical schedule for students wanting to take honors and AP level courses to prepare for a 4 year college program.

<table>
<thead>
<tr>
<th>Period</th>
<th>Grade 9</th>
<th>Grade 10</th>
<th>Grade 11</th>
<th>Grade 12</th>
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<tr>
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<td>Honors English 9</td>
<td>Honors English 10</td>
<td>AP English Language &amp; Composition</td>
<td>AP English Literature &amp; Composition</td>
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<tr>
<td>4</td>
<td>Honors Cellular and Ecological Biology Lab</td>
<td>Honors Systemic Biology Lab</td>
<td>Honors Chemistry Lab</td>
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<td>College &amp; Career Readiness Elective</td>
<td>Virtual High School Elective</td>
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</tbody>
</table>

### Sample: College Prep Academic Schedule

This is a typical schedule for a student wanting to attend 2-4 year college programs, continued technical training and/or entry into the work force.

<table>
<thead>
<tr>
<th>Period</th>
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<th>Grade 10</th>
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<td>Geometry</td>
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<td>College Math IV</td>
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<td>Art Techniques Elective</td>
<td>Health in the Real World Elective</td>
<td>Law &amp; Order Elective</td>
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</table>
Sample Engineering Academy Schedule
This is a typical schedule for a student who wants a rigorous Engineering Curriculum and who wants to attend 2-4 year college programs, continued technical training and/or entry into the workforce.

<table>
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<th>Grade 11</th>
<th>Grade 12</th>
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<tbody>
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<td>Honors English 9</td>
<td>Honors English 10</td>
<td>Honors English 11</td>
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<tr>
<td>2</td>
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<td>Honors Geometry</td>
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<td>AP Calculus</td>
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<tr>
<td>4</td>
<td>Cellular and Ecological Biology Lab</td>
<td>Systemic Biology Lab</td>
<td>Honors Physics Lab</td>
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</tr>
<tr>
<td>5</td>
<td>Phys. Ed / Health</td>
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<td>Spanish I Elective</td>
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<tr>
<td>6</td>
<td>Introduction to Eng. Design Elective</td>
<td>Principles of Engineering Elective</td>
<td>Digital Electronics Elective</td>
<td>Civil Engineering and Architecture Elective</td>
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</tbody>
</table>
ENGLISH DEPARTMENT
Nancy Capparelli, Lead Teacher
ncapparelli@assabet.org x1203

STATEMENT OF PURPOSE

The English Department of Assabet Valley Regional Technical High School seeks to provide students with experiences that will make them literate people of the twenty-first century. This will enable them to be well prepared for post-high school choices: either college or career choices. Students will read both fiction and informational texts. This will include short stories, novels, drama and poems. Students will be engaged, open-minded and discerning readers and listeners. They will learn to evaluate literature critically and show understanding through different writing assignments, including research projects. Through these writing assignments, students will demonstrate command of the conventions of Standard English grammar and mechanics with the use of academic vocabulary. Students will also showcase understanding of other perspectives through articulate speaking assignments and present information, findings and evidence in a range of conversations with diverse partners. Students will employ technology to enhance their reading, writing, and language use. Students will meet the standards developing the skills in reading, writing, speaking, and listening that are the foundation of the Massachusetts Curriculum Framework for English Language Arts and Literacy. Curriculum in each grade is aligned to these Common Core Standards of the College and Career Readiness Anchor Standards.

Specifically, the student will exhibit

- Increased academic vocabulary
- Clear and coherent writing appropriate to task, purpose and audience
- Mechanically correct writing assignments which incorporate use of technology
- Critical ability to determine central ideas or themes of a text
- Critical ability to evaluate the central argument of a text
- Critical ability to conduct short and more sustained research projects
- Proficient command of the conventions of Standard English grammar and usage
- Critical ability to prepare and participate effectively in a range of conversations and collaborations with diverse partners

Level Key:
Level 1: College Prep
Level 2: Honors
Level 3: Advanced Placement
ENGLISH FOR ENGLISH LANGUAGE LEARNERS (E.L.L.)

This course is designed for students whose first language is not English. Placement will be determined by the results of student’s formal testing and teacher’s input. Emphasis will be on acquiring proficiency in reading comprehension, writing skills and oral language skills. There are different levels within the course which target students’ levels of proficiency. The curriculum is aligned with the strands of the ELA frameworks as well as the World-Class Instruction Design and Assessment (WIDA) standards incorporating the mandated requirements by the DESE Office of English Language Acquisition. The ELL student will be mainstreamed into English classes upon acquisition of necessary skills.

**Learning outcome:**
- Will be evaluated using a Placement Test and Assessing Comprehension and Communication in English State to State (ACCESS) results.

**COLLEGE PREP ENGLISH 9**
*Course: 114A  Level: 1  Credits: 3*

This course is an introduction to written and oral communication. It focuses on the necessary tools, such as grammar, mechanics, and vocabulary, to develop greater proficiency in sentence and paragraph and essay development. Readings include mythology, short stories, novels and poetry to analyze each for style, form, central ideas and historical significance. Students will also learn strategies to prepare for the MCAS examination.

**HONORS ENGLISH 9**
*Course: 111AH  Level: 2  Credits: 3*

This course is designed for the individual who demonstrates advanced proficiency in reading, writing, and speaking skills. Students explore literal and inferential meanings of many genres: poems, short stories, myths, plays and novels. Through the writing of paragraphs and essays, students demonstrate their understanding of basic and more complex grammar rules and mechanics. Students will also learn strategies to prepare for the MCAS examination.

**Prerequisites** Students must have earned a grade of B+ or better in their 8th grade ELA course. In addition, a strong record of attendance is needed. Sending school recommendations as well as 8th grade testing is also considered.

**COLLEGE PREP ENGLISH 10**
*Course: 124B  Level: 1  Credits: 3*

This course reviews and expands the communication skills introduced in English 9. It emphasizes increased literary analyses and expansion of writing skills through different essays and open response questions. Readings include short stories, novels, plays with historical themes and non-fiction essays. Students will determine the central ideas of these texts. Students will also learn strategies to prepare for the MCAS examination.
HONORS ENGLISH 10
Course: 121BH    Level: 2    Credits: 3

This course prepares students for advanced literature study through examination of genre, figures of speech, and literary techniques. It also prepares students for the possibility of following the advanced placement pathway in English through close reading and analysis of both fiction and nonfiction. Students design and execute writing and speaking projects which reflect the knowledge of literature, of self, and of the world. Students will also learn strategies to prepare for the MCAS examination.

Prerequisites Students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.

COLLEGE PREP ENGLISH 11
Course: 134A    Level: 1    Credits: 3

This course continues to develop and deepen communication skills practiced in English 9 and English 10. With a core of American literature, this course focuses on the development of the American culture, its people and its history. Literature is critiqued as a source of social commentary and inquiry. Central ideas of these texts will be exhibited in writing and speaking activities. Note taking, self-generated questions, and outlining are learning activities which prepare students for formulating a research paper. The Research Paper is a requirement of the junior curriculum. Proper grammar and mechanics along with increased vocabulary use is incorporated in all written and oral communication. Students will also prepare a professional resume and cover letter.

HONORS ENGLISH 11
Course: 131AH    Level: 2    Credits: 3

This course is designed for the student who demonstrates advanced proficiency in language, composition, and reading skills. With a core of American literature, this course focuses on the development of the American culture, its people and its history. Students will develop a research paper based upon a variety of sources and use appropriate rhetorical, logical, and stylistic criteria for assessing the final version of a research project. The Research Paper is a requirement of the junior curriculum. Students will analyze the development of American Literature through a variety of projects and compositions. Students will also prepare a professional resume and cover letter.

Prerequisites Students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.
**ADVANCED PLACEMENT ENGLISH– LANGUAGE AND COMPOSITION** **(GRADE 11)**

**Course: 130A**  **Level: 3**  **Credits: 3**

The AP English Language and Composition course engages students in the careful reading and critical analysis of nonfiction prose written in a variety of periods, disciplines, and rhetorical contexts. In this course, students think deeply about language as a persuasive tool. To accomplish this task, the course requires expository, analytical, and argumentative writing assignments based on readings representing a wide variety of prose styles and genres. Focusing on rhetoric, students will become aware of the interactions among a writer’s purposes, audience expectations, and subjects, as well as the way generic convention and the resources of language contribute to effective writing. Also, students must write a research paper, which is a requirement of the junior curriculum.

This course prepares the students to take the Advanced Placement Test in English Language and Composition. The AP exam is given in May as the culminating assessment for the course. All students enrolled in the course are required to take this exam. Students who earn a grade of 3 or higher are eligible for college credit at most colleges and universities in the United States. Additional time may be required beyond the regular school day.

**Additional Course Requirement:** Students enrolled in AP Language and Composition will complete online lessons and assignments both during academic and technical weeks. At times, they also attend some required meetings after school and monthly Saturday classes.

**Prerequisites** Students must have earned a grade of B+ or better in Honors English 10. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered. Students must also complete all assignments over the summer.

**COLLEGE PREP ENGLISH 12**

**Course: 144B**  **Level: 1**  **Credits: 3**

This course promotes critical thinking through differentiated learning activities to enable all students to become lifelong learners. This course reviews and strengthens oral and written communication through a study and analysis of short stories, novels, plays, and poems of British and world literature. Students will determine and evaluate central ideas of these texts. This course will enable students to design and evaluate criteria for successful essays with exemplary grammar, mechanics and vocabulary. College entrance application and essays will be created and reviewed.

All students will be required to write a Senior Capstone Paper.
HONORS ENGLISH 12  
Course: 141BH       Level: 2       Credits: 3  

This course is designed for the student who demonstrates advanced proficiency in language composition and reading and plans to enter college. Students will identify and analyze themes and structures of short stories, novels, plays, and poems of British and world literature and translate those into oral and written projects. Students will examine and discuss the development of cultural trends in British and world literature. All students will be required to write a Senior Capstone Paper.  

Prerequisites  Students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.

ADVANCED PLACEMENT ENGLISH LITERATURE AND COMPOSITION (GRADE 12)  
Course: 140B       Level: 3       Credits: 3  

The AP English Literature and Composition course engages students in the careful reading and critical analysis of imaginative literature. Through the close reading of selected texts, students deepen their understanding of the ways writers use language to provide both meaning and pleasure for their readers. As they read, students consider a work’s style, structure, and themes as well as such elements as the use of figurative language, imagery, and tone. Students must be recommended by their grade 11 English teacher for enrollment in this course. 

Writing is an integral part of the AP English Literature and Composition course. Writing assignments focus on the critical analysis of literature and include expository, analytical, and argumentative essays. 

The AP Exam is given in May as the culminating assessment for the program. All students enrolled in the course are required to take this exam. Students who earn a grade of 3 or higher are eligible for college credit at most colleges and universities in the United States. Additional time may be required beyond the regular school day. 

Students will prepare, plan and write a Senior Capstone Paper.  

Additional Course Requirement:  Students enrolled in AP Literature and Composition will complete online lessons and assignments both during academic and technical weeks. At times, they also attend some required meetings after school and monthly Saturday classes. 

Prerequisites  Students must have earned a grade of B+ or better in Honors English 11 or a grade of C or better in AP English Language and Composition. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered. Students must also complete all assignments over the summer.
The Math Department of Assabet Valley Regional Technical High School will provide students with experiences that will enhance their ability to understand mathematics and the mathematical procedures necessary to make informed judgments on issues, to act as wise consumers, and to come to logical determinations as they pertain to personal and professional endeavors.

Our curriculum provides students with the opportunities to develop a foundation from which they can pursue a profession and/or further their education at a higher level, such as two or four year colleges.

The purpose of the mathematics curriculum at Assabet Valley is to:

- Provide a rigorous and relevant course of studies to meet the needs of all students
- Prepare all students for all graduation requirements of the Commonwealth of Massachusetts and of Assabet Valley Regional Technical High School
- Instruct students in how to reason, solve problems and to produce a level of competence required for their high school years and their adult lives

Level Key:
Level 1: College Prep
Level 2: Honors
Level 3: Advanced Placement
**ALGEBRA I**  
*Course: 211A   Level: 1   Credits: 3*

In Algebra I, students will develop proficiency with mathematical skills, expand understanding of mathematical concepts and improve logical thinking. This course establishes a strong foundation for subsequent studies in mathematics. Integrated into the Algebra I curriculum are certain introductory elements of Geometry and Statistics.

**ALGEBRA II**  
*Course: 213A   Level: 1   Credits: 3*

In Algebra II students will discover more advanced algebraic concepts and apply them to the solution of real-life problems. This class lays the groundwork for continuing mathematical education in high school and beyond. Algebraic concepts will be approached in many different ways including the use of examples, manipulatives, and projects that will promote concept mastery. Through differentiated instruction students will be able to practice newly acquired skills.

**ALGEBRA II HONORS**  
*Course: 213AH   Level: 2   Credits: 3*

This course contains the standard topics of Algebra II in addition to extending polynomials identities to the complex numbers, representing and modeling with vector quantities, understanding that rational expressions form a system analogous to the rational numbers, and extending the domain of trigonometric functions using the unit circle, modeling periodic phenomena with trigonometric functions as well as proving and applying trigonometric functions. Calculators and computers will serve as instructional tools in concept development.

**Prerequisites**  
Incoming Grade 9 students must have earned a grade of B+ or better in their 8th grade Algebra course. In addition, a strong record of attendance is needed. Sending school recommendations as well as 8th grade testing is also considered. Note that simply taking Algebra I in middle school does not automatically qualify students for Honors Algebra II.

Grade 11 students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous Honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.

**GEOMETRY**  
*Course: 212B   Level: 1   Credits: 3*

In Geometry, students will develop skills in the application of geometric concepts to solve problems involving planar and solid figures. Students in this course will be expected to integrate Algebraic and Geometric concepts. This course will provide the groundwork necessary for students to move on to upper level courses offered in Algebra, Pre-Calculus, AP Calculus, Statistics, AP Statistics and Contemporary Mathematics as well as post-secondary education.
HONORS GEOMETRY
Course: 212BH       Level: 2       Credits: 3

This course contains the standard topics of Geometry in addition to performing more advanced proofs such as proving the Laws of Sines and Cosines and use them to solve problems as well as applying geometric concepts in modeling situations. This course will provide the groundwork necessary for students to move on to upper level courses offered in Algebra, Advanced Math & Trigonometry, AP Calculus, Honors Statistics, College Math, as well as post-secondary education.

Prerequisites Students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous Honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.

ADVANCED MATH & TRIGONOMETRY
Course: 219A       Level: 1       Credits: 3

In Advanced Math & Trig, the students will use their knowledge of Algebra and Geometry to solve problems through reasoning and proper procedures. Students will develop a deeper understanding of functions; this includes an overview of linear, quadratic, logarithmic, exponential and trigonometric properties. The comprehension of these properties enables students to appreciate and find its use in real world applications.

HONORS INTRODUCTION TO CALCULUS
Course: 215BH & 218AH       Level: 2       Credits: 3

Introduction to Calculus course is designed to acquaint students with calculus principles such as derivatives, integrals, limits, approximation, and applications and modeling. During this course students will gain experience in the use of calculus methods and learn how calculus methods may be applied to practical applications.

This course acts as a prerequisite for AP Calculus AB and/or college.

Prerequisites Students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous Honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.
ADVANCED PLACEMENT CALCULUS

Course: 250B  Level: 3  Credits: 3

AP Calculus course is designed with 3 main purposes. 1) Prepare students for the AP Calculus exam. 2) Emphasize a multi-representational approach to calculus with concepts, results, and problems being expressed graphically, numerically, analytically, and verbally. 3) Prepare students for future calculus courses in college. The main topics students will learn are limits and continuity, derivatives and their applications, integration and its applications, differential equations and slope fields.

This course prepares the students to take the Advanced Placement Calculus test. The AP exam is given in May as the culminating assessment for the course. All students enrolled in the course are required to take this exam. Students who earn a grade of 3 or higher are eligible for college credit at most colleges and universities in the United States.

Additional Course Requirement: Students enrolled in AP Calculus will also be expected to complete lessons and assignments both during academic and technical weeks. At times, they also attend some required meetings after school and monthly Saturday classes.

Prerequisites Students must have earned a grade B+ or better in Pre-Calculus and/or Introduction to Calculus. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered. Students must also complete all assignments over the summer.

HONORS STATISTICS AND PROBABILITY (GRADE 12)

Course: 217BH  Level: 2  Credits: 3

Decisions or predictions are often based on data – numbers in context. These decisions or predications would be easy if the data always sent a clear message, but the message is often obscured by variability. Statistics provides tools for describing variability in data and for making informed decisions that take it into account. Students in statistics and probability will gather, display, summarize, examine and interpret data as well as discuss randomization; how the data was collected etc. Situations such as flipping a coin, rolling a number on a cube, or drawing a card will be investigated.

Prerequisites Students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous Honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.
COLLEGE MATH IV (GRADE 12)
Course: 232B Level: 1 Credits: 3

This course is an integrated math course created by the Math Department at Quinsigamond Community College and offered to seniors who place into Developmental Math courses (MAT 090, 095, 099) once they take the Accuplacer. College Math IV combines the content of developmental courses MAT 095 (Beginning Algebra) and MAT 099 (Intermediate Algebra). The course is intended to accelerate student learning in Algebra where curricular gaps may exist. Part one of this course covers all basic operations of real numbers, linear and literal equations, graphing lines (using tables, x- and y-intercepts), the arithmetic of polynomial expressions including properties of exponents, solving and graphing linear inequalities, perimeters and areas of basic figures, scientific notation and intersystem metric conversions. Part two of this course covers major topics in the study of algebra. Students learn to factor polynomials (common factor, grouping, difference of squares and trinomials), perform arithmetic operations on rational expressions and complex fractions, and solve rational, quadratic and literal equations. The course also covers applications including the use of the Pythagorean Theorem, understanding the definition of radical expressions, simplifying radical expressions containing numerical and variable radicands, graphing linear equations using slope-intercept concepts, and solving systems of linear equations.

CONTEMPORARY MATH FOR THE INFORMED CONSUMER (GRADE 12)
Course: 213B Level: 1 Credits: 3

This course is a unique blend of math concepts that will prepare students for post-secondary issues. Aligned with the Massachusetts Frameworks for 12th grade probability and statistics, as well as the National Standards for Consumer Math, the course will cover a variety of key topics. Students will develop an expertise with computerized spreadsheet applications, data analysis, and financial literacy, including the most important life skills for independent living. Contemporary Math is available to students who have completed Algebra II. Note: Contemporary Math is not an option for senior students who have interest in any post-secondary schooling.
STATEMENT OF PURPOSE

The Science Department at Assabet Valley Regional Technical High School seeks to promote both an interest and an awareness of science as a problem-solving tool to be used in all facets of life. It offers courses which supply experiences designed to bring about this goal.

The department hopes to develop in students the skills and attitudes needed to succeed in either the world of work or in the world of academics. The department has designed courses with the vocational student in mind. Laboratory work is emphasized and applications of science to various trade and vocational areas is highlighted within the confines of a given subject area.

The science department at Assabet Valley Regional Technical High School offers a selection of courses which will help its students to:

- change the perception of science from something that happens in the laboratory to a process that occurs in all facets of daily life
- develop a set of positive feelings and attitudes toward science and scientists
- achieve measurable gains in the comprehension of scientific subject matter
- develop a facility with the manipulative skills of science
- develop the ability to carefully follow written directions
- acquire the knowledge and skills necessary to pursue post-secondary education
- develop a feeling of faith in the ability of science to help solve some of the problems of contemporary society
- develop a scientifically literate society
- develop an approach to problem-solving that will carry over to other areas of work and study

Level Key:
Level 1: College Prep
Level 2: Honors
Level 3: Advanced Placement
This course begins a hands-on immersion into the field of biology. The intent of the course is to foster an understanding of the diversity and complexity of living organisms. Those students who successfully complete this program will have an appreciation for the structure and function of biological systems.

**HONORS CELLULAR AND ECOLOGICAL BIOLOGY LABORATORY**

*Course: 312AH  Level: 2  Credits: 3*

Honors Cellular and Ecological Biology Laboratory is an in-depth approach to biology. Topics to be covered include the chemistry of life, organic molecules, introductory biochemistry, molecular and cell biology, continuity and genetic diversity of life, and ecology. The topics and depth of coverage will offer a rigorous and challenging course for the student who possesses advanced mathematics and reading skills. This course begins a hands-on immersion into the field of biology. The intent of the course is to foster an understanding of the diversity and complexity of living organisms. Those students who successfully complete this program will have an appreciation for the structure and function of biological systems.

**Prerequisites** Students must have earned a grade of B+ or better in their 8th grade science and math courses. In addition, students will need a strong record of attendance.

**SYSTEMIC BIOLOGY LABORATORY**

*Course: 320B  Level: 1  Credits: 3*

Systemic Biology Laboratory is a continuation of the Cellular and Ecological Biology Laboratory course, which was completed by the student in the 9th grade. Like Cellular and Ecological Biology Laboratory, this course addresses the learning standards required by the State of Massachusetts for Biology courses. Systemic Biology Laboratory introduces the basic concepts associated with DNA structure and functions, genetics and anatomy and physiology along with the survey of the six kingdoms, and the hierarchical taxonomic system. Details concerning these topics are taught with a hands-on approach to foster both interest and comprehension.

**HONORS SYSTEMIC BIOLOGY LABORATORY**

*Course: 320BH  Level: 2  Credits: 3*

Honors Systemic Biology Laboratory is an in-depth approach to biology. Topics to be covered include heredity and genetics, anatomy and physiology, and evolutionary processes. The topics and depth of coverage will offer a rigorous and challenging course for the student who possesses advanced mathematics and reading skills. Systemic Biology Laboratory is a continuation of the Cellular and Ecological Biology Laboratory course, which was completed by the student in the 9th grade. Like Cellular and Ecological Biology Laboratory, this course addresses the learning standards required by the State of Massachusetts for Biology courses. Systemic Biology
Laboratory introduces the basic concepts associated with, DNA structure and functions, genetics and anatomy and physiology along with the survey of the six kingdoms, and the hierarchical taxonomic system. Details concerning these topics are taught with a hands-on approach to foster both interest and comprehension.

**Prerequisites** Students will have earned a grade of B- or better in both their previous science and math Honors courses or B+ or better in their previous college-prep science and math courses. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.

**PRINCIPLES OF CHEMISTRY LABORATORY**

*Course: 336A & 336B  Level: 1  Credits: 3*

Students who are successful in Principles of Chemistry Laboratory will demonstrate an understanding of the nature of matter and chemistry particularly as it applies to materials encountered and situations occurring in daily life. This course is designed for students to understand chemical structure and how it relates to the properties and behavior of substances. In addition, students will collect, organize, and analyze laboratory data in order to support laboratory conclusions.

**CHEMISTRY LABORATORY**

*Course: 332A & 332B  Level: 1  Credits: 3*

Chemistry involves the study of matter and energy relationships in chemical reactions, atomic structure and bonding, acids and bases, and other related topics. Students will use scientific inquiry to design and conduct experiments, and apply science writing skills to writing formal laboratory reports. Students will develop and apply problem solving skills in the lab by working collaboratively in groups, analyzing data, and applying concepts learned in class to the real world.

**HONORS CHEMISTRY LABORATORY**

*Course: 332AH & 332BH  Level: 2  Credits: 3*

This course is designed for students with above average academic ability, a good working knowledge of mathematics (especially algebra and word problems) and an active interest in science. It is a challenging course and the major goals are (1) prepare the student for more advanced courses in college (2) Give the student an opportunity to think about and to solve complex chemical problems and (3) to spark interest and appreciation for science and its function in the modern world.

**Prerequisites** Students will have earned a grade of B- or better in both their previous science and math Honors courses or B+ or better in their previous college-prep science and math courses. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.
PRINCIPLES OF PHYSICS LABORATORY
Course: 338A & 338B  Level: 1  Credits: 3

The study of energy and its interactions with matter is the focus of this course. Emphasis will be placed more on the understanding of the concepts involved in these interactions and not so much upon mathematical problem solving. The student who succeeds in this course will come to appreciate that physics is not just found in school and in textbooks, but is found all around them in everyday life.

PHYSICS LABORATORY
Course: 333A & 333B  Level: 1  Credits: 3

The student who successfully completes this course will have developed a clear understanding of the relationships that exist in the interactions of matter and energy. Students will be asked to describe physical situations both qualitatively as well as quantitatively. Through experimentation, students will be able to verify various physical laws and relate the laws of physics to everyday examples.

HONORS PHYSICS LABORATORY
Course: 333AH & 333BH  Level: 2  Credits: 3

The honors level physics class is designed for students looking to attend college in the fields of either the sciences or engineering. Though it is not mandatory it is strongly suggested for any student planning to take AP Physics 1 as a senior. In this course students will gain a clear understanding of the interactions that take place between matter and energy. Students will use algebra in order to solve various physical problems in the areas of mechanics, thermodynamics, electricity, magnetism, waves and optics.

Prerequisites: Students will have earned a grade of A- or better in their previous college prep science course or B+ in their previous Honors science course. Students must also have earned a grade of B or better in their previous math course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.

ADVANCED PLACEMENT PHYSICS I LABORATORY
Course: 350B  Level: 3  Credits: 3

AP Physics 1 is intended for those students who wish to major in science or engineering in college. Extensive knowledge of algebra is required. Calculus will be an integral part of the curriculum as well as basic trigonometry. The course will focus only on the kinematics and dynamic forms of mechanics. Through complex labs and in depth problem solving, students will gain an understanding of physics that will prepare them for an intensive college program. The AP exam is given in May as the culminating assessment for the course. All students enrolled in the course are required to take this exam. Students who earn a grade of 3 or higher are eligible
for college credit at most colleges and universities in the United States. Additional time may be required beyond the regular school day.

From College Board: AP Physics 1 Algebra-Based is the equivalent to a first-semester college course in algebra-based physics. The course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy, and power; and mechanical waves and sound. It will also introduce electric circuits.

This course prepares the students to take the Advanced Placement Physics 1 test. The AP exam is given in May as the culminating assessment for the course. All students enrolled in the course are required to take this exam. Students who earn a grade of 3 or higher are eligible for college credit at most colleges and universities in the United States.

Additional Course Requirement: Students enrolled in AP Physics 1 will also be expected to complete lessons and assignments both during academic and technical weeks. At times, they also attend some required meetings after school and monthly Saturday classes.

It is recommended that the class be taken alongside calculus, but it is not required.

Prerequisites: Students must have earned a grade of A- or better in both their previous science and math courses. In addition, a strong record of attendance and recommendations from both a science and math teacher is required. Current 1st term grades and 2nd term progress reports also considered. Students must also complete all assignments over the summer.

HONORS ANATOMY & PHYSIOLOGY LAB
Course: 344AH Level: 2 Credits: 3

This full year course can be taken as a science requirement or as an elective. The course will examine the structure and function of the human body. Essential principles of human anatomy and physiology are presented. This will include basic chemistry, organization and development, metabolism, and mechanisms for maintaining homeostasis. Students can also expect an intensive study of cells, tissues and organs, as well as overview of all the body systems. Students will be required to perform many hands-on observations including physical dissections of small mammals.

Prerequisites Students interested in Honors A&P must be in Health Tech.
SOCIAL STUDIES DEPARTMENT
Frank Ferreer, Lead Teacher
fferreer@assabet.org x1310

STATEMENT OF PURPOSE

The Social Studies Department of Assabet Valley Regional Technical High School will provide students with the opportunity to develop their analytical capabilities in grades 9 through 12 in a variety of Social Studies courses and at appropriate levels of learning.

The courses required for all students at Assabet Valley are U. S. History I & II, Modern World Geopolitics and Government and Society. We also offer a number of electives. Through this curriculum, which will consider each student’s individual needs, students will be prepared to undertake the rights and responsibilities of citizenship, to enter the world of work, and to pursue higher education.

With the four-year Social Studies requirement, we envision that the required and elective courses will function as a continuum addressing the six strands of learning identified by the Massachusetts Social Studies Curriculum Framework Content Standards. The six theme-based areas include:

- Time, Continuity and Change
- People and Environments
- Power and Participation
- Production and Distribution
- Cultures and Identities
- Interdependence

Our goal as a department will be to impress upon students a “connectedness” in the various disciplines called the Social Studies.

Level Key:
Level 1: College Prep
Level 2: Honors
Level 3: Advanced Placement
**U. S. HISTORY I**  
*Course: 420A  Level: 1  Credits: 3*

This course will examine the major areas of U.S. History from the Revolutionary Era through the end of the Civil War. All freshmen will be required to successfully pass a U.S. History I course by showing an understanding of the basic themes and events related to this course. Through rigorous reading, writing, and analytical activities, students will examine major themes in early-American History relating to the War for Independence, the growth of the new nation, foreign and domestic policies of the early presidents, and the conflict between the North and South that eventually led to the Civil War.

**HONORS U. S. HISTORY I**  
*Course: 420AH  Level: 2  Credits: 3*

This course prepares students for advanced U.S. History study. It is designed for the student who intends to go on to higher education and / or is willing to accept a more challenging academic workload while completing the freshman requirement of understanding the basic themes and events related to early U.S. History. It will focus on the Revolutionary Era through Civil War Reconstruction and requires that additional selective reading and independent academic work be completed during shop weeks.

**Prerequisite** Students must have earned a grade of B or better in their previous 8th grade history and ELA courses. In addition, students will need a strong record of attendance.

**U. S. HISTORY II**  
*Course: 430B  Level: 1  Credits: 3*

This course will examine U.S. History from Reconstruction through the end of the Second World War. All sophomores will be required to successfully pass a U.S. History II course by showing an understanding of the basic themes and events related to this course. Through rigorous reading, writing, and analytical activities, students will examine major themes in American History relating to Reconstruction, the Jim Crow South, the rise of industry and the growth of cities, Imperialism, the Great Depression, and the World Wars.
HONORS U. S. HISTORY II
Course: 430BH   Level: 2   Credits: 3

This course prepares students for advanced U.S. History study. It is designed for the student who intends to go on to higher education and/or is willing to accept more challenging academic work workload while completing the sophomore requirement of understanding the basic themes and events related to modern era U.S. History. It will focus on the latter 19th century and the 20th century and requires that additional selective reading and independent academic work be completed during shop weeks.

Prerequisites: Students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous Honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.

ADVANCED PLACEMENT UNITED STATES HISTORY (GRADE 10)
Course: 431B   Level: 3   Credits: 3

The AP program in US History is designed to provide students with the analytic skills and factual knowledge necessary to deal critically with the problems and materials in U.S. History. The course will prepare students for future college courses and the AP Exam in May and make demands upon them equivalent to those made by full-year introductory college courses. Students will learn to assess, analyze and interpret historical materials as they relate to a given topic. The course will challenge students to develop skills necessary to arrive at an informed judgment and to present reasons and evidence clearly and persuasively in essay format. Students enrolled in AP US History will be required to take the AP Exam as the culminating assessment for the course.

Course topics include social, political and economic developments in Colonial America through Manifest Destiny and the Civil War and Reconstruction. The course will then cover Industrialization and the 20th Century through The Cold War. The course will end with the United States at the beginning of the 21st century and its place in the modern world. This course will fully address the Massachusetts frameworks for United States History to fulfill the graduation requirement.

Additional Course Requirement: Students enrolled in AP US History will complete assignments both during academic and technical weeks. At times, they also attend some required meetings after school and monthly Saturday classes.

Prerequisite: Students must have earned a B+ or higher for the year in Honors US History I and Freshman Honors English or an A- or higher in both college prep US History I and English. In addition, a strong record of attendance and teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered. Students must also complete all assignments over the summer.
MODERN WORLD GEOPOLITICS
Course: 435  Level: 1  Credits: 3

This course is designed to go beyond the typical name and place social studies course by studying relationships between people, places and events and seeing how they have impacted world civilizations. All juniors will be required to successfully pass a Modern World Geopolitics course by showing an understanding of the basic themes and events related to this course. Students will examine the development of modern nations since the Renaissance and seek to understand the development of new social, political and economic movements.

HONORS MODERN WORLD GEOPOLITICS
Course: 435AH  Level: 2  Credits: 3

This course prepares students for advanced social studies analysis. It is designed for the student who intends to go on to higher education and / or is willing to accept a more challenging academic workload while completing the junior requirement of understanding the basic themes and events related to modern world history. It will study relationships between people, places and events and analyze how they have impacted world civilizations. Students will examine the development of modern nations since the Renaissance and seek to understand the development of new social, political and economic movements. This course requires additional selective reading and independent academic work performed during shop weeks.

Prerequisite Students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous Honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.

US HISTORY III/GOVERNMENT AND SOCIETY (GRADE 12)
Course: 440B  Level: 1  Credits: 3

The first half of this course will focus on Modern American History from the end of the Second World War through the 2003 invasion of Iraq and selected present day topics. It will cover both the geopolitical history of the United States in the modern era in addition to the causes and impact of major events that shaped American society in the latter half of the 1900s and the first decade of the 21st century. The second half of this course will examine American social institutions and the cultural evolution of American society and government. All seniors will be required to successfully pass a Government and Society course by showing an understanding of the basic themes and events related to this course.

HONORS US HISTORY III/GOVERNMENT AND SOCIETY (GRADE 12)
Course: 442BH  Level: 2  Credits: 3

This Course is designed for the student who intends to go on to higher education and/or is willing to accept a more challenging academic workload while completing the senior
requirement of understanding the basic themes and events related to modern U.S. History and American Government. This first half of this course will focus on Modern American History from the end of the Second World War through the 2003 invasion of Iraq. It will cover both the geopolitical history of the United States in the modern era in addition to the causes and impact of major events that shaped American society in the latter half of the 1900s and the first decade of the 21st century. The second half of this course will examine American social institutions and the cultural evolution of American society and government. It is designed for the student who intends to go on to higher education and / or is willing to accept a more challenging academic workload. All seniors will be required to successfully pass a US History III/Government and Society course by showing an understanding of the basic themes and events related to this course.

Prerequisites Students must have earned a grade of B+ or better in their previous college prep course or B- or better in their previous Honors course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered.

ADVANCED PLACEMENT U.S. GOVERNMENT (GRADE 12)
Course: 441B Level: 3 Credits: 3
This course is designed for the highly motivated student who intends to go on to higher education and is willing to accept the challenge of an accelerated university-level curriculum. This course will give students an analytical perspective on government and politics in the United States. It includes both the study of general concepts used to interpret U.S. politics and the analysis of specific examples. Students will become acquainted with the variety of theoretical perspectives and explanations for various behaviors and outcomes.

Topics for this course include Constitutional Underpinnings of U.S. Government, Political Beliefs and Behaviors, Political Parties, Interest Groups, Mass Media, Institutions of National Government, Public Policy, and Civil Rights and Civil Liberties

This course prepares the students to take the Advanced Placement Test in U.S. Government. The AP exam is given in May as the culminating assessment for the course. All students enrolled in the course are required to take this exam. Students who earn a grade of 3 or higher are eligible for college credit at most colleges and universities in the United States. Additional time may be required beyond the regular school day.

Additional Course Requirements: Students enrolled in AP U.S. Government will complete assignments both during academic and technical weeks. At times, they also attend some required meetings after school and monthly Saturday classes.

Prerequisites Students must have earned a grade of B+ or better in their previous history course. In addition, a strong record of attendance and a teacher recommendation is required. Current 1st term grades and 2nd term progress reports also considered. Students must also complete all assignments over the summer.
PHYSICAL EDUCATION / HEALTH DEPARTMENT
Sandra Stuart, Lead Teacher
sstuart@assabet.org x2762

STATEMENT OF PURPOSE

The Physical Education / Health Department at Assabet Valley Regional Technical High School seeks to promote a sense of self-awareness and well-being in all of our students. Our Health Education Program will provide our students with the information needed to make informed decisions regarding their health as well as any necessary associated preventative measures.

Through our Physical Education Program, we will provide our students with the opportunity to develop lifelong skills and techniques in various physical activities while giving them an understanding of the value of fair play and sportsmanship.

The goal of this integrated department is to develop a sound mind in a sound body which will help each of our students meet the everyday challenges of the mental, emotional, social and physical aspects of health.

PARENTAL ADVISORY

Any parent / guardian who desires to exempt his / her child from a portion of the curriculum, because it primarily involves human sexual education or human sexuality issues, may request an exemption by writing a letter to the Principal. Such exemption will be granted without penalty to the student provided an alternative assignment is completed.

Level Key:
Level 1: College Prep
Level 2: Honors
Level 3: Advanced Placement
PHYSICAL EDUCATION / HEALTH

GRADE 9

It is the goal of the Physical Education / Health curriculum to develop resiliency in our students through the understanding of current concepts of health promotion, disease prevention, and risk assessment in relationship to lifelong health.

Physical Education: (2 terms)
Course: 611A   Level: 1   Credits: 2

This course is designed to develop and condition the heart, lungs, muscles, and other organic systems of the body to meet daily and emergency needs. Students will develop and express (in a socially acceptable way) respect for human rights and personal relationships in and through physical activity. Students will demonstrate the basic skills and techniques required to successfully contribute to the participation in team orientated activities such as soccer, flag football, basketball, volleyball, floor hockey, softball, speedball, team handball, track and field and others. The course will focus on basic skills and techniques required to successfully contribute to the participation in individual and dual lifetime activities such as archery, badminton, aerobics, weight training, skating dancing and others. Students will demonstrate an understanding of the rules and regulations of all activities learned and recognize the need to remain physically fit and incorporate exercise into daily life.

Health: (1 term)
Course: 611AHE   Level: 1   Credits: 1

This course will explain the elements of a balanced diet and the sources of the essential nutrients and factors that influence food choices. Students will be able to identify and understand the consequences of bullying and harassment (especially in the school environment).

The risks and consequences of using tobacco, alcohol, and other drugs will be stressed and students will learn the essential skills and strategies for prevention of substance abuse. Issues related to feelings, stress and self-acceptance, focusing on the development of positive coping strategies will be discussed.

Sexuality and managing sexual feelings and behaviors responsibly will be emphasized.

Students will learn to recognize factors that lead to injury and violence with an emphasis on educational strategies for prevention.
GRADE 10
It is the goal of the Physical Education / Health curriculum to develop resiliency in our students by having them assess their health beliefs, attitudes, and behaviors so that they can set achievable goals, monitor progress, and evaluate outcomes.

**Physical Education:** (2 terms)
**Course:** 621B  **Level:** 1  **Credits:** 2

This course is designed to develop an appreciation of the role physical fitness plays in achieving and maintaining a personal sense of well-being. Students will participate in individual and group challenges designed to foster an increased self-esteem and the ability to work together through group problem solving. Students will demonstrate the ability to trust peers and adults through Project Adventure activities. Students will continue to develop a mastery of the skills and techniques learned the previous year and recognize the need to remain physically fit and incorporate exercise into daily life.

**Health:** (1 term)
**Course:** 621BHE  **Level:** 1  **Credits:** 1

In this course students will demonstrate an understanding that good personal health requires a positive mental attitude, healthy eating habits, and daily physical activity. Students will learn to recognize the significance of healthy relationships with family members and friends and hone the skills needed to build such relationships. The need to develop roles and interactions between family members throughout the life cycle emphasizing growth and development, parenting and human sexuality will be discussed.

Students will acquire the knowledge and skills necessary to make effective personal decisions that promote the emotional, sexual and reproductive health. The benefits of abstinence and the alternative behaviors and methods for pregnancy prevention will be discussed. Students will gain an awareness and understanding of sexually transmitted infections, including HIV/AIDS, and how they are prevented.

**PHYSICAL EDUCATION (GRADE 11 & 12)**

It is the goal of the physical education curriculum to encourage the healthy social and emotional growth and development of the individual. We seek to develop a wide range of physical attributes, and provide situations demanding judgments in time and space and gradually in more complicated game situations.
ELECTIVES

STATEMENT OF PURPOSE

Assabet Valley Regional Technical High School seeks to provide students with the opportunity to engage in a broad variety of enriching educational opportunities. The elective courses described in the Program of Studies offer students the opportunity to develop and pursue their interests through the individual choice of a variety of learning experiences that augment the core academic and technical curricula.

In addition, some enriching electives may be required for students who, through testing, have demonstrated specific areas that need improvement. These required electives are specifically geared to enrich student learning in targeted areas.

Elective courses include a variety of choices in the following areas:

- Art
- Business
- English
- Marine Corps JROTC Leadership
- Mathematics
- Music
- Physical Education
- Health
- Pre-Engineering ~ Project Lead the Way
- Quinsigamond Community College
- Reading
- Science
- Social Studies
- Study Skills & Self-Directed Seminar
- Virtual High School On-Line Learning
- World Languages

Elective courses which may be required for specific students include:

- Writing Workshop I or II (English Elective)
- MCAS Preparation (English, Mathematics or Biology Elective)
- Title I Reading: Reading A, B or C (Reading Elective)
- Study Skills
- Title I Math Algebra or Title I Math Geometry (Math Elective)
ART DEPARTMENT ELECTIVES

CLASSIC FILM FORUM (GRADES 9 & 11)
Course: 764A Level: 1 Credits: 3

This course explores many genres of film with emphasis on various aspects of movies including topics such as style, acting, directing, music, sound, social commentary, and context as expressed through story content. Classic films as far back as the early 1900’s to the 1950’s will be studied.

Some categories of films viewed: Remakes, Art House, Foreign, Film Noir, Animation, Notable Directors, Science Fiction, Music as well as films that reflect the historic legacy of the film industry.

CONTEMPORARY FILM FORUM (GRADES 10 & 12)
Course: 764B Level: 1 Credits: 3

This course also explores many genres of film with an emphasis on various aspects of movies including topics such as technology, acting, directing, music, sound, social commentary, as expressed through story content. More contemporary films will be studied in this course that cover films from the 1970’s to current releases.

Some categories of films viewed: Sequel or Series films, Art House, Foreign, Film Noir, Animation, Notable Directors, Independent Film, and Academy Award nominees.

CERAMICS/ART TECHNIQUES (GRADES 9, 10, 11, 12)
Course: 751A & 751B Level: 1 Credits: 3

This course offers students two different opportunities for artistic expression.

The first part of the course is an opportunity to work with clay in a variety of applications.

Students will learn basic hand building techniques such as slab and coil methods and free standing sculpture. Students will learn about different types of glazing techniques, and learn how the firing process works. Students will engage in experiences that encompass art history, art appreciation, personal expression and cultural influences. Wheel throwing techniques are introduced and developed with an emphasis on craftsmanship. Contemporary and historic artists and artistic styles will be addressed through media and discussion.

The second part of this course is an exploration of basic methods used in creating two dimensional (2D) projects including drawing with various mediums, printmaking, collage, pen and ink and painting with acrylic and watercolor mediums. Students are encouraged to work independently and creatively within the confines of the assignment in order to resolve problems and challenge themselves artistically.
ART TECHNIQUES (GRADES 9, 10, 11, 12)
Course: 755A & 755B    Level: 1 Credit: 3

This hands-on course explores basic methods of three dimensional (3D) sculpture using varied materials such as clay, wax, plaster cardboard and wire. Students will construct objects with consideration of both their functional as well as their aesthetic purpose. Two dimensional (2D) projects include drawing with various mediums, printmaking, collage, pen and ink and painting with acrylic and watercolor mediums. Students are encouraged to work independently and creatively within the confines of the assignment in order to resolve problems and challenge themselves artistically.

ADVANCED CERAMICS AND SCULPTURE (GRADES 11, 12)
Course: 765A & 765B    Level: 1 Credit: 3

This hands-on course explores basic methods of three dimensional (3D) sculpture using varied materials such as clay, wax, plaster, cardboard and wire. Students will construct objects with consideration of both their functional as well as their aesthetic purpose. Students are encouraged to work independently and creatively within the confines of the assignment in order to resolve problems and challenge themselves artistically.

Prerequisite: Student must have earned a B- or better Ceramics / Art Techniques

ART TECHNIQUES ADVANCED (GRADES 11, 12)
Course: 756A & 756B    Level: 1 Credit: 3

This course is restricted to students that have successfully completed Art Techniques and have demonstrated an ability and commitment to accepting new challenges as it relates to the students art. Students may also take this course with the approval of the instructor after review of the student’s portfolio. Student work at this level requires an independent effort in order to successfully master technical as well as creative objectives.

Prerequisites Students must have earned a B- or better in Art Techniques / Ceramics

ART TECHNIQUES INDEPENDENT STUDY (Grades 11, 12)
Course: 758A & 758B    Level: 1 Credit: 3

This course is for students that have demonstrated a strong motivation and a desire to continue with artistic development. Students will work in a shared classroom space and are expected to work independently with guidance from the instructor. Assignments will be consistent with college portfolio requirements. Availability is limited to existing class size.
BUSINESS DEPARTMENT ELECTIVES

This year the Business Department has broadened the scope of their electives offered. Rather than offering business courses in particular topics, the Business Department will offer Career and College Readiness courses. The curriculum of these courses will focus on 21st Century Skills as well as personal growth and development which will prepare students for the rigors of college or career, and good neighbors and citizens. Students are not required to take all four of the courses offered; they are independent of each other. There are no prerequisites. Business Technology students are not eligible to take CCR-Management and Entrepreneurship.

LAW AND ORDER (GRADE 12)
Course: 805B Level: 1 Credits: 3

This course provides students with general knowledge of our justice system. Students will distinguish the difference between Criminal and Civil Law before exploring the Criminal Justice system in depth. Topics include crimes against property, crimes against persons, defenses, jury participation, criminal investigations, and proceedings before and at trial as well as sentencing and corrections. Current local and national court cases will be discussed. Students will participate in a mock trial and visit a local courtroom to observe a portion of an actual trial. Guest speakers from the field of law enforcement will be invited to talk about their careers and share their experiences. Law related films will be analyzed and discussed.

CCR – FOUNDATIONS of CAREER AND COLLEGE SUCCESS (GRADES 9, 11)
Course: 844A Level 1 Credits: 3

Students will begin to develop a career and or college plan through personal reflection, career exploration and demystifying the college experience. Research will be conducted using technology and basic Microsoft Word and Excel skills will be reviewed. Techniques, tips and skills for academic success such as time management, goal setting, critical thinking, and note taking will be addressed. Learn about workplace politics and personalities as well as what an employer will expect from you!

CCR – BUILD a BETTER YOU (GRADES 9, 10, 11, 12)
Course: 841A & 841B Level 1 Credits: 3

The primary focus of building a better you is to identify and develop students’ interpersonal skills. Students will learn about handling conflict, the importance of teamwork, embracing diversity, listening, and communication. Students will practice reading and writing in the workplace as well as personal betterments such as stress management, work–life balance, and physical health. Finally students will take charge of their financial health through personal money management and financial planning.
CCR – CAREER AND COLLEGE PLANNING (GRADE 11)
Course: 842A  Level 1  Credits: 3

Students will conduct a job search and research colleges. Cover letters, résumés, and college application essays are just a few of the documents we will create when we apply the process of writing to market ourselves. Interviews, portfolio development and personal appearance for the interview and the workplace are reviewed and practiced. Technology literacy is discussed and students learn about their digital footprint in conjunction with workplace ethics and professionalism.

CCR – MANAGEMENT AND ENTREPRENEURSHIP (GRADES 10, 11, 12)
Course: 843A & 844B  Level 1  Credit: 3

Regardless of whether you pursue a college degree or not, most students will eventually take their place in the world of work. Understanding how businesses work will make a student a more valued employee. In this course, students will learn what it takes to manage a business and the importance of marketing in society today. They will also identify key financial concepts and the legal and social responsibilities of a business. Whether a student will be a supervisor or entrepreneur, the concepts learned in this course will be beneficial to any student.

PERSONAL FINANCE (GRADE 12)
Course: 838B  Level: 1  Credits: 3

This course is designed to provide the student with the critical basic elements of personal finance so that they will be prepared to plan and make good financial choices on their own. This course is designed to provide the students with the critical basic elements of personal finance so that they will be prepared to plan and make good financial choices on their own. The course begins with a unit on budgeting and setting financial goals. Students will learn difference between saving and investing, and they learn the importance of credit. Our “where does all our money go” unit focuses on paycheck deductions such as taxes and insurance, and our “Where are you going to live” unit focuses on the advantages and disadvantages of buying and renting property. All of these topics are examined through the lens of a high school senior, as they prepare for their upcoming adult lives.

ENGLISH DEPARTMENT ELECTIVES

WRITING WORKSHOP I (GRADE 9)
Course: 170A  Level: 1  Credits: 3

For students whose placement examination scores reflect a need for proficiency development, this course is designed to increase written communication skills through various reading and writing assignments. Students will also evaluate and show central ideas of readings through these writing assignments. Emphasis will be on vocabulary, sentence, and topic development in paragraphs and essays.
**WRITING WORKSHOP II (GRADE 10)**

*Course: 171B Level: 1 Credits: 3*

This course is designed to extend and improve written communication skills learned in Writing Workshop I. Continued emphasis will be on vocabulary, sentence, and topic development in more advanced paragraphs and essays. Students will also evaluate and show central ideas of readings through these writing assignments. Admission to this course will be based on College Prep English 9 and Writing Workshop I grades and/or teacher recommendation.

**MCAS ENGLISH (GRADES 11, 12)**

*Course: 139A & 139B Level: 1 Credits: 3*

This course is designed for juniors or seniors. Focus will be on remediation of areas of difficulty students have experienced in the state testing program. Students will identify, defend and evaluate test taking strategies, examine vocabulary of the elements of fiction, nonfiction and poetry. Students will write and evaluate answers to open response questions using MCAS rubrics.

**NOVEL AND FILM (GRADES 10 & 12)**

*Course: 153B Level: 1 Credits: 3*

This elective is for sophomores and seniors who enjoy watching and discussing films and stories. The year is broken into four areas of focus: testimonial media, censorship, science fiction/horror, and the hero. Students will read full-length novels and/or novel excerpts and view a film adaptation. The purpose of the course is to afford students an opportunity to discover the texts behind great films as well as discover the literary merits of visual media. Discussion will center on decisions made by directors as well as various tenets of canonical literature (e.g. setting, character development, and plot). Some titles covered during the course include, *The Road, The Devil’s Arithmetic, Peter Pan, Fahrenheit 451, I am Legend, Jaws, Sherlock Holmes*, and *The Watchmen*.

**SPORTS LITERATURE (GRADE 10 & 12)**

*Course: 154B Level: 1 Credits: 3*

This elective is offered to sophomores and seniors who would like to combine their interest of reading with their interest of sports. Using a traditional literary approach, students will explore a variety of genres including but not limited to, poetry, novels, biographies, non-fiction, drama, short stories, and films. Works will include: *Basketball Junkie, Deadline, Peak, Fall River Dreams, Eight Men Out* and other selected novels. The course will also read excerpts from *The Best American Sports Writing* and *Beyond the Game*.
CREATIVE WRITING (GRADE 10 & 12)
(GRADES 10, 12)
Course: 155B  Level: 1  Credits: 3

This course is designed for students who wish to read and write short stories, works of creative nonfiction, poetry, and drama.

The first part of the course consists of reading various authors of prose and nonfiction, studying the techniques that apply to both genres and writing original pieces to share with the class. Class discussion will center on the published authors and their works and techniques as well as student work presented in the class.

The second part of the course asks that students read and write poetry and drama. This part of the curriculum consists of reading various poets and dramatists, studying the techniques that apply to both genres, and writing original pieces to share with the class. Class discussion will center on the published writers and their works and techniques as well as student work presented in the class. Students who enjoy writing will have ample opportunity to write and be read.

ENGLISH LANGUAGE LEARNER ACADEMIC SUPPORT (Grades 9, 10, 11, 12)
Course: 117A & 127B  Level: 1  Credits: 3

This course’s main objective is to support ELL student’s success at Assabet. It is designed to aid students in their development of English skills by offering a welcoming/safe environment for language practice, academic work completion, and sharing/discussion of school culture. There will be dissemination of school information and extracurricular activities and events. Instructor will facilitate academic work by supervising/working with small groups of students or with an individual student on assignments brought in from his/her content classes.

Small group setting. Native language usage and support when available.

MARINE CORPS JUNIOR RESERVE OFFICER TRAINING CORPS ELECTIVES

MCJROTC Leadership I
Course: 894A, 894B  Level 1  Credits 3

MCJROTC Leadership II
Course: 895A, 895B  Level 1  Credits 3

Leadership Education, more commonly referred to as Marine Corps Junior Reserve Officer Training Corps (MCJROTC), is a new course offered in the academic program. The program’s focus is reflected in its mission statement, “To motivate young people to be better citizens.” It prepares high school students for responsible leadership roles while making them aware of their rights, responsibilities, and privileges as American citizens. The program is a stimulus for
promoting graduation from high school, and it provides instruction and rewarding opportunities that will benefit the student, community, and nation.

Students who choose to enroll and take MJROTC Leadership classes are not obligated to join the Marine Corps or any other branch of the service. Students, however, must accept Marine Corps standards of discipline, appearance and training. This 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.

**MATH DEPARTMENT ELECTIVES**

**MCAS MATH (GRADE 11, 12)**
*Course: 242A & 242B Level: 1 Credits: 3*

This course is required for juniors or seniors who are preparing to retake the Mathematics portion of the state-mandated MCAS exam. Focus is on remediation of specific areas of difficulty that students experienced with the previous exam. This information will be determined through an analysis of the data provided by the State from the previous test. Problems from all 5 strands will be explored, along with testing strategies for multiple choice and open responses.

**Algebra I Concepts/Title I (Title I Mathematics)**
*Course: 240A Level: 1 Credits: 3*

Grade 9 Title I Math students will take Algebra I Concepts alongside their core Algebra I course for additional support. Students in this class will acquire the skills necessary to execute fundamental operations correctly, consistently and fluently, with understanding. One of our primary goals is to help students reduce their dependency on calculators. This course will review in depth previous mathematical skills that are necessary for the students to be successful in subsequent classes. Concepts will be approached in many different ways, from the concrete level to the pictorial level, to finally arrive at the abstract level. The two main objectives of this class are to provide support for students core Algebra I course and to develop a strong number sense that will be crucial in the students’ interpretation and estimation of mathematical problems.

**Integrated Algebra & Geometry/Title I (Title I Mathematics)**
*Course: 241B Level: 1 Credits: 3*

Grade 10 Title I Math students will take Integrated Algebra & Geometry alongside their core Geometry course for additional support. Students in this class will work to develop skills in the application of geometric concepts to solve problems involving planar and solid figures. Students in this course will be expected to integrate Algebraic and Geometric concepts. This course will also review previous mathematical skills that are necessary for the students to be successful in
subsequent classes. Concepts will be approached in many different ways, from the concrete level to the pictorial level, to finally arrive at the abstract level. The two main objectives of this class are to provide support for students core Algebra I course and to develop a strong number sense that will be crucial in the students’ interpretation and estimation of mathematical problems.

**MCAS MATH STRATEGIES (GRADE 10)**

*Course: 239A  Level: 1  Credits: 3*

This course is recommended for sophomores during their technical program week who are currently enrolled in Geometry and need to strengthen their math skills to prepare for MCAS. Students will review concepts already learned in Algebra I as well as provide additional learning time for those students who struggle with the new concepts in Geometry. Time will be spent reviewing previous MCAS material and writing open response and short answer type questions.

**COLLEGE MATH IV ELECTIVE (GRADE 12)**

*Course: 232B  Level: 1  Credits: 3*

This course is an integrated math course which can be taken as a math requirement or elective. Students may decide to take this course alongside another math course if they have not passed the math portion of the Accuplacer. The course was created by the Math Department at Quinsigamond Community College and offered to seniors who place into Developmental Math courses (MAT 090, 095, 099) once they take the Accuplacer. College Math IV combines the content of developmental courses MAT 095 (Beginning Algebra) and MAT 099 (Intermediate Algebra). The course is intended to accelerate student learning in Algebra where curricular gaps may exist. Part one of this course covers all basic operations of real numbers, linear and literal equations, graphing lines (using tables, x- and y-intercepts), the arithmetic of polynomial expressions including properties of exponents, solving and graphing linear inequalities, perimeters and areas of basic figures, scientific notation and intersystem metric conversions. Part two of this course covers major topics in the study of algebra. Students learn to factor polynomials (common factor, grouping, difference of squares and trinomials), perform arithmetic operations on rational expressions and complex fractions, and solve rational, quadratic and literal equations. The course also covers applications including the use of the Pythagorean Theorem, understanding the definition of radical expressions, simplifying radical expressions containing numerical and variable radicands, graphing linear equations using slope-intercept concepts, and solving systems of linear equations.

**MUSIC DEPARTMENT ELECTIVES**

**BAND (GRADES 9, 10, 11, 12)**

*Course: 703A & 703B  Level: 1  Credits: 3*

A course designed for instrumentalists wishing to continue instruction and performance in an ensemble setting. Band members will be given opportunities to perform at concerts and sporting events utilizing band literature from a variety of periods and styles. Attendance for winter and spring concerts and Pep Band participation for all home football games is expected. At least two after school rehearsals during the year are also required.
HONORS BAND (GRADES 9, 10, 11, 12)
Course: 703AH & 703BH  Level: 2  Credits: 3

Band members may seek permission from the Music Director to take band class at the Honors level. These members would be responsible for attending additional mandatory performances and practices such as, but not limited to: Exhibit night, public events, chorus accompaniment, etc. Musicianship (music theory, ear training, notation and reading improvisation) will be focused on in addition to performance. Students will be dismissed in time to take the late bus.

CHORUS (GRADES 9, 10, 11, 12)
Course: 705A & 705B  Level: 1  Credits: 3

This is a course for vocalists seeking instruction and participation in choral ensemble. Chorus members will be given opportunity to perform at concerts and school events throughout the year singing from a well-balanced variety of vocal styles. Attendance for Winter and Spring concerts is mandatory. At least two after school rehearsals during the year will also be required.

HONORS CHORUS (GRADES 9, 10, 11, 12)
Course: 705AH & 705BH  Level: 2  Credits: 3

Chorus members may seek permission from the Music Director to take chorus class at the Honors level. These members would be responsible for attending additional mandatory performances and afterschool practices, such as, but not limited to: Exhibit night, public events, etc. Musicianship (music theory, ear training, notation and reading) will be focused on in addition to performance. Students will be dismissed in time to take the late bus.

DJ SKILLS (Grades 9, 10, 11, 12)
Course: 704A & 704B  Level: 1  Credits: 3

Do you want to learn the art of being a DJ? Learn how to mix, scratch, loop, cue, and create sets to keep the party going in this hands-on course. Students will develop basic skills in using the turntable as an instrument for both live expression and performance and as a production tool. Traktor Kontrol S4 DJ MIDI controllers and Mac computers will be utilized in this course. Hands-on exercises will be emphasized. The course traces the historical development of the turntable from its origins in Jamaican music through its importance as a major expression of hip-hop culture, and to the turntable's prominence in contemporary music. Whether your goal is to entertain friends and family, or to start your journey to becoming the next Skrillex or DJ QBert, this course is for you. No prior experience required.

PHYSICAL EDUCATION DEPARTMENT ELECTIVES

PHYSICAL EDUCATION (GRADES 11, 12)
Course: 633A & 633B  Level: 1  Credits: 3

It is the goal of the physical education curriculum to encourage the healthy social and emotional growth and development of the individual. We seek to develop a wide range of physical attributes, and provide situations demanding judgments in time and space and gradually in more complicated game situations.
HEALTH: “THE REAL WORLD” (GRADE 11)
Course: 636A    Level: 1    Credits: 3
This course gives the students the opportunity to further develop their understanding of health related issues faced by many adolescents today. Students will work together to design the course outline by selecting their top choices from a list of topics including, but not limited to: Contraception, Sexually Transmitted Infections/Diseases, HIV/AIDS, Sexual Orientation, Relationships, Teen Pregnancy and Parenthood, Eating Disorders and Fitness.

HEALTH: “CONSUMER HEALTH” (GRADE 12)
Course: 636B    Level: 1    Credits: 3
This course gives students the choices, as well as rights, in the management of their future personal and health resources. Individuals will need to take responsibility for decisions regarding the purchases of goods and services. Students will acquire the knowledge and skills necessary to obtain and evaluate resources to maintain health and well-being for themselves and potentially their future family.

PRE-ENGINEERING ELECTIVES – PROJECT LEAD THE WAY
(Application required)

Project Lead the Way is a hands-on, project-based approach to learning that introduces students to the scope, rigors, and discipline of engineering prior to entering college. Students who demonstrate an interest in and the potential for an engineering career may be selected to participate in this program. All PLTW high school courses have several underlying content areas in common.

- Working as a contributing member of a team
- Leading a team
- Using appropriate written and/or visual mediums to communicate with a wide variety of audiences
- Public speaking
- Listening to the needs and ideas of others
- Understanding the potential impact their ideas and products may have on society
- Thinking
- Problem solving
- Managing time, resources and projects
- Researching
- Going beyond the classroom for answers
- Data collection and analysis
- Preparing for two-and four-year college programs
PRINCIPLES OF ENGINEERING (POE) (GRADES, 10, 11, 12)

Course: 851    Level: 3    Credits: 3

This course exposes students to major concepts they’ll encounter in a post-secondary engineering course of study, and helps them understand the field of engineering/engineering technology. Students explore technology systems and engineering processes to find out how math, science, and technology help people. Topics include mechanisms, energy, statics, materials, and kinematics. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, document their work and communicate solutions.

INTRODUCTION TO ENGINEERING DESIGN (IED) (GRADES 9, 10, 11, 12)

Course: 852    Level: 3    Credits: 3

Introduction to Engineering Design is a course that develops students’ problem solving skills, with emphasis on the development of three-dimensional solid models. Using computer modeling software, students learn design process. They solve design problems as they develop, create, and analyze product models. Techniques learned, and equipment used, is state-of-the-art and is currently being used by engineers throughout the United States.

DIGITAL ELECTRONICS (DE) (GRADE 11)

Course: 853    Level: 3    Credits: 3

Digital Electronics is a course in applied digital logic. This is a course in applied logic that encompasses the application of electronic circuits and devices. Computer simulation software is used to design and test digital circuitry prior to the actual construction of circuits and devices. The use of digital circuits is increasing so rapidly that it’s hard to imagine limits.

CIVIL ENGINEERING AND ARCHITECTURE (CEA) (GRADE 11)

Course: 854    Level: 3    Credits: 3

This course provides an overview of the fields of Civil Engineering and Architecture, while emphasizing the interrelationship and dependence of both fields on each other. Students use state of the art software to solve real world problems and communicate solutions to hands-on projects and activities. This course covers topics such as: The Roles of Civil Engineers and Architects, Project Planning, Site Planning, Building Design, Project Documentation and Presentation.

ENGINEERING DESIGN AND DEVELOPMENT (EDD) (GRADE 12)

Course: 855    Level: 3    Credits: 3

In this capstone course, students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process. Students perform research to choose, validate, and justify a technical problem. After carefully defining the problem, teams design, build, and test their solutions while working closely with industry
professionals who provide mentoring opportunities. Finally, student teams present and defend their original solution to an outside panel.

**AEROSPACE ENGINEERING (AE) (GRADE 12)**

*Course: 856  Level: 3  Credits: 3*

AE explores the evolution of flight, navigation and control, flight fundamentals, aerospace materials, propulsion, space travel and orbital mechanics. In addition, this course presents alternative applications for aerospace engineering concepts. Students analyze, design and build aerospace systems. They apply knowledge gained throughout the course in a final presentation about the future of the industry and their professional goals.

**READING DEPARTMENT ELECTIVES**

**READING A (GRADES 9, 10, 11, 12)**

*Course: 161  Level: 1  Credits: 3*

Reading A is a course designed for the student who requires instruction in decoding and encoding and also in comprehension and vocabulary. Students will improve literal, inferential and critical thinking skills through a variety of genre. Approaches include direct instruction, group work and computer assisted learning.

**READING B, C (GRADES 9, 10, 11, 12)**

*Course: 162 & 163  Level: 1  Credits: 3*

Reading B and C are courses designed for the student who has acquired decoding and encoding skills. Students will expand their vocabulary and improve literal, inferential and critical skills through reading a variety of genre. Approaches include direct instruction, group work and computer assisted learning.

**SCIENCE DEPARTMENT ELECTIVES**

**FORENSIC SCIENCE (GRADE 12)**

*Course: 343B  Level: 1  Credits: 3*

This course begins with the fundamentals of forensic science, which is the application of science to the law and encompasses various scientific disciplines. This class will familiarize students with the basic principles and uses in the American criminal justice system. Students will learn about the importance of crime scene investigation and the significance of the preservation of evidence. The course will review the applications and methodologies of the biological, physical, chemical, medical and behavioral sciences relevant to the questions of crime scene evidence and the law. The course will focus on the fundamental principles of criminalistics which include
chemical analyses of physical evidence (hair, fiber, glass, and paint), principles of serology, DNA fingerprinting, ballistics, fingerprint analysis, toxicology and forensic psychology. Labs will be performed on a regular basis. Students will be expected and required to participate in weekly labs, including a unit that will involve dissections upon performing autopsies.

**HONORS ANATOMY & PHYSIOLOGY LAB**

*Course: 344AH  Level: 2  Credits: 3*

This full year course can be taken as a science requirement or as an elective. The course will examine the structure and function of the human body. Essential principles of human anatomy and physiology are presented. This will include basic chemistry, organization and development, metabolism, and mechanisms for maintaining homeostasis. Students can also expect an intensive study of cells, tissues and organs, as well as overview of all the body systems. Students will be required to perform many hands-on observations including physical dissections of small mammals.

**Prerequisites** Students interested in Honors A&P must be in Health Tech

**MCAS BIOLOGY (GRADE 11, 12)**

*Course: 345A & 345B  Level: 1  Credits: 3*

This course is required for juniors or seniors who are preparing to retake the Science (Biology) portion of the state-mandated MCAS exam. Focus is on remediation of specific areas of difficulty that students experienced with the previous exam. This information will be determined through an analysis of the data provided by the State from the previous test. Problems from the six strands will be explored, along with testing strategies for multiple choice and open responses.

**SOCIAL STUDIES DEPARTMENT ELECTIVES**

**PSYCHOLOGY (GRADE 11 & 12)**

*Course: 455A & 455B  Level: 1  Credits: 3*

Psychology is a course which will help students gain a deeper understanding of personality and behavior as well as relationships with others. In this course students will take a topical approach to examine some of the facets of this vast field. Through a variety of articles, films, demonstrations, experiments, reflective writings, and class discussions, students will learn more about themselves and others. Some of the topics to be studied and discussed are famous psychologists, research methods, sensation and perception, states of consciousness, cognitive and learning, motivation and personality, developmental psychology, social psychology, mental health issues, and treatment of psychological disorders.
ADVANCED PLACEMENT PSYCHOLOGY (GRADE 11)
Course: 456A    Level: 3    Credits: 3.0

The AP Psychology course is designed to introduce students to the systematic and scientific study of the behavior and mental processes of human beings and other animals. This course provides a detailed and demanding overview of the field of psychology and requires from its students a high degree of commitment and the use of effective independent learning skills. Students will learn to assess, analyze and interpret psychological materials as they relate to a given topic. The course will challenge students to develop skills necessary to arrive at an informed judgment and to present reasons and evidence clearly and persuasively in essay format.

Course topics include the major subfields of the discipline, including personality, consciousness, biological psychology, lifespan development, learning, sensation, perception, emotion, motivation, cognition, experimental methods, memory, mental disorders, treatment methods, and social psychology. Students will also learn about the ethics and methods psychologists use in their science and practice.

This course prepares the students to take the Advanced Placement Psychology test. The AP exam is given in May as the culminating assessment for the course. All students enrolled in the course are required to take this exam. Students who earn a grade of 3 or higher are eligible for college credit at most colleges and universities in the United States. Additional time may be required beyond the regular school day.

Additional Course Requirement: Students enrolled in AP Psychology will complete assignments both during academic and technical weeks. At times, they also attend some required meetings after school and monthly Saturday classes.

Prerequisites Students must have earned a grade of B or higher in both Honors US History II and Honors English 10. In addition, a strong record of attendance and a teacher recommendation is required.

Students must also complete all assignments over the summer.

LEADERSHIP – LIFE DEVELOPMENT AND COMMUNITY RESPONSIBILITY (GRADE 12)
Course: 458B    Level: 1    Credits: 3

This course is designed to develop ethical decision-making, understanding core values, community engagement, and team building through interactive communication. There will be a strong emphasis placed on developing students as stakeholders. Team building activities and roundtable discussions will comprise major areas of focus.
21st CENTURY MONEY MATTERS (GRADE 12)
Course: 469B  Level: 1    Credits: 3

This elective course is designed to encourage students to be aware of the factors that shaped the economics of their world, country and life. Economic systems, which have developed over the years, will be covered as well as the modern day American banking system, causes of bubbles and recessions, and the inner workings of both small business and large corporations.

Students enrolled in this course will also participate in the Rockonomix program, a collaboration between Economics instructors at Assabet Valley and the University of West Georgia in which students will make a music video about the Economics topic of their choice. The best videos will be considered for submission to the national competition.

WAR IN FILM (GRADE 12)
Course: 463B  Level: 1    Credits: 3

This elective course is offered for students who enjoy the study of 19th, 20th and 21st century warfare. This course will take an in-depth look at warfare in its actual form as well as Hollywood’s adaptation on it. This is a class that will combine readings on specific wars and battles as well as the films based on such readings. Students will get an opportunity to discover that many film adaptations of many colossal events are either quite accurate or lacking in accuracy for the sake of box office sales.

The purpose is to examine the wars that have shaped our world and decide whether or not the film industry has depicted them appropriately. Students will be required to write papers based on their findings.

Some possible titles include: Glory, All Quiet on the Western Front, Lawrence of Arabia, Das Boot, Saving Private Ryan, Schindler’s List, Letters from Iwo Jima, Platoon, and Three Kings.

AMERICAN ARCHITECTURE (GRADE 12)
Course: 470B  Level: 1    Credits: 3

This course explores the development of the American continent: its architecture, landscape, transportation systems, and material production of the industrial revolution, ranging from the early-seventeenth century to the close of the twentieth century. Monumental and vernacular architecture and landscape are addressed, with an emphasis on the developing nation’s infrastructure, the social, political, and economic underpinnings of our culture as they affect the development of our built environment, settlement patterns, land use, and reference to historical architectural styles and building types.

American Architecture is open to all students but may be of particular interest to those students interested in any facet of engineering or for students who are in technical programs where building architecture and design are important.
OTHER ELECTIVES

SELF-DIRECTED SEMINAR (GRADES 11, 12)
Course: 871A, 871B, 872AF, 873AS, 873BF, 873BS  Level: 1  Credits: 1.5/3

This course by recommendation only allows junior and senior students the opportunity for a self-directed plan of study in our Learning Commons area. Students are expected to compile a learning portfolio and complete and share weekly work progress with the academic office. Self-Directed Seminars run in both half-year and full year elective formats.

STUDY SKILLS (GRADES 9, 10, 11, 12)
Course: 870AFr, 870A Jr, 870BSo, 870Sr  Level: 1  Credits: 3

This course will assist students in developing the skills required to achieve academic success. Students will identify individual learning style(s), learn and implement strategies to promote success and social awareness. Time management, organizational, peer relationship and attainable goal setting skills will provide support across academic and vocational environments.

Special consideration given to students on Individual Education Programs (IEP)

VIRTUAL HIGH SCHOOL (GRADES 9, 10, 11, 12)
Course: multiple  Level: 2  Credits: 3/6

This Program of Studies is expanded by over 200 elective courses available in an on-line learning format. Courses are full or half year, and are available at the College Preparatory, Honors and Advanced Placement levels. A complete listing of the current courses available through Virtual High School may be found in the Guidance Department. One period per day in the academic week is scheduled in the Library/Media Center for each student who takes a VHS course. Additional work outside of the academic week is required for success in these on-line course offerings.

VIRTUAL HIGH SCHOOL ON-LINE OFFERINGS (GRADES 9, 10, 11, 12)

VHS Mission Statement and Vision
The mission of Virtual High School is to develop and deliver standards-based, student-centered online courses to expand students' educational opportunities and 21st century skills and to offer professional development to teachers to expand the scope and depth of their instructional skills. The Virtual High School vision is to be the leader in online education by working collaboratively with high schools to offer the highest quality courses for students and teachers.

Assabet Valley Regional Technical High School supplements our physical course offerings with rigorous VHS Online Courses. Virtual High School’s Course Catalogue contains over 200 offerings. Aside from core subjects like Math, English, Science and History, VHS gives students a chance to study topics like Environmental Science, Drama, Video Game Design and Veterinary Medicine. These courses will enable students to freely share their thoughts with students and educators all over the world and increase their knowledge of collaborative On-line learning (e-
learning) that will be a critical component of their college life and future careers. Classes are taught by an On-line teacher are no larger than 25 students each. Students are able to access their courses 24/7 through any connection to the internet.

Assabet’s VHS Site Coordinator acts as a liaison to support students and online teachers for maximum success. All materials for the course are supplied by the online teacher and it is free to Assabet students. Students have the ability to take these classes as their regularly scheduled class, or for the ambitious, as a 7th class. All classes are reflected on the official transcript and classes are weighted according to academic level. See your guidance counselor to find out how to sign-up.

If you would like to explore the VHS site, please go to www.govhs.org and start your journey towards an adventure in online learning. Virtual High School- One Click. One World. Infinite Possibilities.

**WORLD LANGUAGE DEPARTMENT ELECTIVES**

**SPANISH I (GRADES 9, 10, 11, 12)**

*Course: 511A & 511B  Level: 1  Credits: 3*

This course is an introduction to the Spanish language and culture. Emphasis is placed on developing listening and pronunciation skills, beginning techniques in reading and writing, vocabulary acquisition, and communication in the present tense. Hispanic culture is also presented and explored. Students will be expected to create projects regarding the cultures of several Spanish-speaking countries.

**SPANISH II (GRADES 9, 10, 11, 12)**

*Course: 512A & 512B  Level: 1  Credits: 3*

This course is for students who have successfully completed level I Spanish. It is designed to increase students’ ability in the four components of learning a language: listening comprehension, speaking, reading, and writing. Students continue their study of basic language concepts with increased emphasis on the target language as means of communication. Students also increase their awareness of the many Hispanic cultures by creating a variety of projects and presentations.

**SPANISH III (GRADES 10, 11, 12)**

*Course: 515A & 515B  Level: 1  Credits: 3*

This course is for students who have successfully completed level II Spanish. It is intended to expand the use of all four language skills with more complex use of language and comprehension of more sophisticated topics. To achieve a higher level of proficiency, emphasis is placed on extensive grammar study and expansion of vocabulary through topical and text selections. Analysis continues of Hispanic culture and customs through the development of cultural projects and presentations.
WORLD LANGUAGE LAB (GRADES 9, 10, 11, 12)

Course: multiple  Level: 1  Credits: 3

The ability to speak a foreign language is becoming increasingly important in our global society. The World Language Lab will allow students additional opportunities to learn other languages besides our traditional Spanish offerings. Assabet Valley has added the Rosetta Stone Classroom Immersion online program to our World Languages department. The World Language Lab will be a teacher-facilitated language course where students who meet specific requirements may take any of the 30 languages offered by the Rosetta Stone online language immersion program.

Students who are recommended for the World Language Lab program will need to apply for one of the seats. All students will be expected to reach identified language and vocabulary benchmarks as well as participate in non-software program cultural reading and writing activities.

QUINSIGAMOND COMMUNITY COLLEGE

QCC INTRODUCTION TO PSYCHOLOGY (GRADE 12)

Course: 881BF  Level: 3  Credits: 3

In this half-year elective survey course, the student becomes aware of and appreciates the various influences upon behavior. The topics covered include, but are not limited to, the nervous system, sensation and perception, motivation, learning, emotion, and personality. Through an investigation of these areas, within a multiplicity of cultural contexts, the student understands the diversity of the human condition. This course is a dual enrollment course through QCC and is taught by a QCC instructor. The second part of this course will turn into the Self-Directed Seminar or a VHS elective.

QCC INTRODUCTORY SOCIOLOGY (GRADE 12)

Course: 884B  Level: 3  Credits: 3

This half-year elective course introduces basic theories and vocabulary of sociology including its historical origins and research process. It examines the major principles that govern the structure and function of society, its institutions, groups, and processes. Students learn people in society decide to meet the social, psychological, economic and everyday need of its members. The course emphasizes making connections between students’ personal lives and the social change occurring around them. This course is a dual enrollment course through QCC and is taught by a QCC instructor. The second part of this course will turn into the Self-Directed Seminar or a VHS elective.
VOCATIONAL TECHNICAL PROGRAMS
ADVANCED MANUFACTURING
Bryant Laflamme, Lead Teacher
blaflamme@assabet.org ext. 2437

Advanced Manufacturing - Exploratory Program

Advanced Manufacturing exploratory is geared towards exposing students to the many career opportunities and college options that are available from the skills that are gained in this program. The student is introduced to shop safety, manual machining, computer numerical controls for CNC manufacturing, computer aided design and manufacturing (CAD/CAM) as well as mechanical / robotic systems and 3D rapid prototyping technologies. Students will have hands-on training using industry software such as MasterCam (www.mastercam.com) and SolidWorks (www.solidworks.com) and produce projects using industry standard equipment.

Advanced Manufacturing - Grade 9

Grade 9 shop and related lab theory classes build solid fundamental practices essential to the duties of a machinist. Students continue to explore the career options in the manufacturing and engineering fields. Students learn industry based software and the use of basic hand tools, measuring tools and manual machine tools. Students begin with blueprint interpretation and design using SolidWorks software and shop projects. Students are trained on the five most commonly used machine tools: milling machines, lathes, saws, grinders and drilling machines. Instruction includes related lab theory, shop demonstrations, hands on practice, quizzes and tests to determine competency levels.

Shop safety, math, quality control and manufacturing processes are taught through related theory and shop projects. Students will manufacture hand tools that are commonly used in the trade, such as punches and a milling cutter holder. Students are also put to the task of engineering and manufacturing components to complete shop specific challenges and projects.

Advanced Manufacturing - Grade 10

Grade 10 students will build upon the foundation of freshman year and expand their knowledge of machine set-up, operation and engineering design and manufacturing. Related theory will also include metallurgy, work holding, blue print reading, tool geometry, shop math, tap and drill calculations, work ethic and Computer Numerical Control (CNC) fundamentals. Students will learn team work and engineering practices though selected challenges to construct group projects. As a sophomore, students will design using SolidWorks software and will work from their own blueprints to manufacture the components necessary to complete these challenges. Students will be given the opportunity to compete in nationally recognized competitions, such as SkillsUSA.
Students produce projects that will expose them to different types of materials such as plastics, polycarbonates, stainless steels, tool steels, aluminum, etc. Projects will progress toward being produced in CNC machines where students will be introduced to CNC programming and MasterCam software fundamentals. Instruction includes related lab theory, shop demonstrations, hands on practice, quizzes and tests to determine competency levels.

**Advanced Manufacturing - Grade 11**

Grade 11 will focus on developing CNC skills and expand their Computer Aided Design and Computer Aided Manufacturing (CADCAM) skills using MasterCam and SolidWorks software. Shop projects will also teach CNC operations & G-Code programming, CNC machine set-up procedures, inspection procedures, blueprint interpretation, geometric dimensioning and tolerancing (GD&T), advanced manual machining practices and set-ups for proficiency of job ready skills as a machinist. Modules on engineering of machine design, electro-mechanical and automated systems, will also be a component of related theory. Students are instructed and encouraged to collect and produce an electronic portfolio and research career and college options available upon graduation. Juniors will have the option to compete in SkillsUSA competitions.

Shop projects will provide hands-on practice and include engineering, designing, manufacturing and the assembly. Students will also build a steam engine and other projects to reinforce classroom theory lessons and acquire necessary trade skills. Instruction includes related lab theory, shop demonstrations, hands on practice, quizzes and tests to determine competency levels.

**Advanced Manufacturing - Grade 12**

Grade 12 shop and related lab theory work will emphasis proficient practices using MasterCam Milling, SolidWorks, CNC set-up & G-Code programming, geometric dimensioning and tolerancing (GD&T), inspection procedures, blueprint Interpretation as well as MasterCam Turning fundamentals. Senior project requirements will be reviewed and a study guide will be provided. Students are instructed and encouraged to collect and produce an electronic portfolio to submit with college applications or present during job interviews.

Shop projects will involve engineering, design, manufacturing and the assembly practices. Seniors will have the option to compete in SkillsUSA competitions. Seniors have an option of an approved independent study as a major project that is based from their personal interest and the project meets the criteria for advanced skills achievement. Students will use CNC Machining practices, proper inspection techniques and advanced manual machining practices. Instruction will include related lab theory, shop demonstrations, hands on practice, quizzes and tests to determine skill and theory proficiency.

This Technical Program offers the following certification opportunities for students:
• Career Safe Certification, recognized by the Occupational Safety and Health Administration (OSHA)
• Certified SolidWorks Associate
• Manufacturing Advancement Center Workforce Innovation Collaboration (MACWIC)
  o MACWIC Level 1
  o MACWIC Level 2

Career Opportunities upon completion of this Technical Program include but are not limited to:

• Machinist
• Quality control & Inspection
• CNC Operator
• Mold Maker
• CNC Programmer
• CNC Set-up technician
• Machine repair technician
• Research and Development
• Jig & Fixture Maker
• Tool and Die Maker
• Entrepreneur/Inventor

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

**College Opportunities**

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<tr>
<th>Two year Option</th>
<th>Four Year Option</th>
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<td>Manufacturing Technology</td>
<td>Mechanical Engineer</td>
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<td>Electromechanical Technology</td>
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<td>Robotics Engineer</td>
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<td>Industrial Design</td>
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**Apprenticeship: State Certificate**

Manufacturing Advancement Center Workforce Innovation Collaboration statewide apprentice agreement
Auto Collision Technology
Kenneth Stukonis, Lead Teacher
kstukonis@assabet.org ext. 1439

Auto Collision - Exploratory
This one week course provides the 9th grade student with basic awareness of the skills needed in the collision repair and refinishing field, as well as applications and use of tools necessary to complete collision repair procedures. The use of visual demonstrations as well as hands on experience provides students with an excellent introduction to a career in collision repair technology.

Auto Collision - Grade 9
Students entering the 9th grade collision repair program with a basic knowledge of the entry level skills that are required in the trade for an introductory position in an auto body repair facility. Personal and shop safety and hand tool usage, minor dent repair on fender bench systems, and use of spray guns for priming repaired surfaces are included in the grade 9 curriculum. Grade 9 related theory will introduce the students to the trade of auto collision. They will learn about safety in the shop and basic skills to be successful in the trade, and terminology that is common in the industry.

Auto Collision - Grade 10
The 10th grade collision repair program provides the student with the opportunity to acquire skills in the following areas: shop and personal safety procedures; MIG and oxyacetylene welding and cutting; care and use of power tools, hand tools, and shop equipment; analyzing, repair of collision damage and replacement of auto glass. Students gain experience working on customers’ automobiles in a shop environment that simulates a commercial auto body shop.

The theory related to the varied aspects of collision repair technology is covered in this course, particularly MIG and oxyacetylene welding, cutting and brazing, power and hand tool use, and spray equipment. Students also gain knowledge of the history of auto body and frame construction, analysis and repair of metal damage, including panel replacement, and spraying of both color and clear coats.

Auto Collision - Grade 11
The 11th grade curriculum provides the students with a more in depth knowledge of collision repair and automotive refinishing techniques using a state of the art Waterbase paint line. Students will analyze and repair areas of damage including frame and unibody repair utilizing the chief frame and laser beam alignment frame Collision Repair system. Students also work on plastic body repair projects, repair electric systems, provide front suspension service, and
refinish automotive exteriors, becoming proficient in the proper use and set up of the well-built downdraft spray booth well using a Sata fresh air respirator system.

This course also includes analysis and repair of different areas of collision damage repair of automotive air conditioning and electrical systems; and front suspension repair and service.

**Auto Collision - Grade 12**

The 12th grade program provides the student with complete coverage of advanced auto body repair, as well as the most advanced types of paints used and proper application methods. Other areas covered in this course include analysis and repair of major collision damage; MIG welding; determining when to repair or replace parts; estimating and preparing for job interviews.

Grade 12 related theory class provides students with advanced knowledge of auto collision repair for both minor and major damage. I-Car DVD classroom curriculum provides students with the most up to date information on paints used in the industry as well as methods of application and trouble-shooting paint problems. Analyzing major collision damage, MIG welding, analyzing when to repair or to replace parts, estimation preparation, and preparing for job interviews and career success are also included in grade 12 related theory classes.

This Technical Program is certified in the following areas:

- NATEF (National Automotive Technician’s Educational Foundation) Certified
  - Painting and Refinishing
  - Non –Structural Analysis and Damage Repair
  - Structural Analysis and Repair

This Technical Program offers the following certifications for students:

- I-Car Professional Development Program
- I-Car Pro Level One –Refinishing Certification
- I-Car Pro Level One – Non Structural Certification
- I-Car Introduction to Auto Collision Program
- SP2 Automotive Safety Certifications
- ASE (Automotive Service Excellence) Certification – One year trade credit towards two year requirement.

Career Opportunities upon completion of this Technical Program include but are not limited to:

- Paint Technician
- Auto Body Repair Technician
- Frame Repair Technician
- Parts Person
- Insurance Estimating
- Automotive Detailing
- Dealer Prep Person
- Commercial Coating Painter

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

- Collision Repair Technologies
Automotive Technology – Exploratory

This one week course provides the 9th grade exploratory student with an overview of the Automotive Technology program and an introduction into the automotive field and the careers available in the field.

Students will have the opportunity to lift, jack & properly support a vehicle, disassemble and reassemble an engine, disassemble and re-assemble an automobile brake system, perform basic electrical measurements, perform basic mechanical measurements, perform tubing cutting & flaring tasks, and perform tire changing & balancing services. Each day will include a thirty to forty five minute lesson on automotive related mathematics and general measurement practices, as well as automotive related science and historical information.

Automotive Technology – Grade 9

Students entering the 9th grade automotive shop/laboratory are provided with the basic knowledge and skills necessary for success in the Automotive industry. Students receive practical instruction in safety including general safety rules and specific rules for the automotive workshop and an introduction to tools including proper use, care and identification. Practical work will include, but not be limited to tasks using measuring tools service information systems, engine principles air/fuel ratio and basic internal combustion theory. Students will identify chemicals used in the automotive industry and learn the proper use, storage and HazMat procedures necessary in the trade. Engine Principles II - engine configurations and valve train design and the proper identification of engine types are inclusive in the grade 9 curriculum. Instruction will include an introduction to Braking Systems - hydraulic theory disc and drum systems, valves and bleeding procedures.

Related theory is an integral component of the grade 9 automotive technology program curriculum. Instruction will support topics listed above and instruction will include use of textbooks, automotive handouts, worksheets, powerpoint presentations and computer based instruction.
Automotive Technology – Grade 10

Grade 10 Automotive Technology students will learn about engine performance including horsepower, torque and efficiency and dynamometer use. Students will perform shop tasks including engine top end service on cylinder heads, valves, guides and seals, overhead camshafts and valve covers. The curriculum includes engine lower end service covering bearings oil pumps, cranks shafts, oil pans, seals and related procedures. Instruction will include engine cooling systems including water pumps, radiators, thermostats, fans, hoses, gauges & interior heating systems.

Student will receive an introduction to automotive electricity which includes electrical measurements, basic circuits, electro magnetism and testing; automotive batteries covering battery design & construction, rating systems, maintenance, testing and cautions and will perform shop tasks on battery maintenance and testing; automotive charging systems covering the design, operation diagnosis and repair of charging systems, and will perform shop tasks involving live charging systems and belt tensioning; automotive starting systems covering starter motors, drives, solenoids, ignition and neutral safety switches and will perform shop tasks involving all aspects of starting systems; fuel delivery systems covering fuel tanks, lines, filters, pumps, gauges and sending units, working with high pressure systems and perform shop tasks involving all aspects of fuel delivery systems; and an introduction to ignition systems covering basic ignition system design and operation and will perform shop tasks involving live ignition system testing & component ID.

Related theory is an integral component of the grade 10 automotive technology program curriculum. Instruction will support topics listed above and instruction will include use of textbooks, automotive handouts, worksheets, PowerPoint presentations and computer based instruction.

Grade 10 students will successfully complete certifications in Service Information Systems (AllData), Automotive Lubrication & Hazardous Waste Management.

Automotive Technology – Grade 11

Grade 11 Automotive Technology students be instructed in automotive electricity & electronics and review the basic principles, circuits, testing and introduction to sensors. Students will perform shop and lab tasks on the Atech simulators and live vehicles. Instruction will include automotive electricity & electronics covering advanced topics involving computerized circuits and sensors and in the use of Automotive Computer Scan Tools to read data and fault codes. Students will learn about all aspects of wheel and tire wear, construction, use and measurement including tire balance. Instruction in steering systems will include rack and pinion systems and power assists. Suspension training will include springs, shock absorbers, struts and suspension bushings. Students will perform four wheel alignments and instruction will include alignment geometry, adjustments, special tools, theory and application. Instruction in advanced ignition
systems will cover distributorless ignition system design, operation and diagnostics. Students will learn about advanced fuel delivery systems including fuel injection component ID, theory, operation & diagnostics. Differentials and Drive Lines instruction will include standard and limited slip assemblies, universal joints, CV joints and axles and standard transmissions covering power transmission, gears, synchronizers, linkages and clutch assemblies.

Related theory is an integral component of the grade 10 automotive technology program curriculum. Instruction will support topics listed above and instruction will include use of textbooks, automotive handouts, worksheets, PowerPoint presentations and computer based instruction.

Grade 11 students will successfully complete certifications in Identifix Service Information Systems, Delco Automotive Systems and Timken Bearing Training.

**Automotive Technology – Grade 12**

Grade 12 Automotive Technology students will receive training in automotive emissions systems including the characteristics of air pollution required to meet inspection standards. Students will perform shop tasks involving automotive emissions systems. The grade 12 curriculum includes advanced braking systems covering anti-lock brake systems theory, diagnosis and component identification; automotive safety systems involving removal and replacement of supplemental restraint system components including air bags, and automatic belt tensioners; introduction to basic automatic transmissions operation, fluids, torque converters and component identification; advanced automatic transmission including diagnosis, repair and rebuild, lock-up converters and electronic controls; turbochargers & superchargers including operation and applications for these systems; introduction to air conditioning systems covering theory and operation, component identification, cautions, laws and certification; air conditioning and climate control systems including electronically controlled heating and a/c systems theory, operation and component identification.

Related theory is an integral component of the grade 12 automotive technology program curriculum. Instruction will support topics listed above and instruction will include use of textbooks, automotive handouts, worksheets, PowerPoint presentations and computer based instruction.

Grade 12 students will successfully complete certifications in Delco Automotive Systems and Timken Bearing Training.

This Technical Program is certified in the following areas:

- The program is NATEF Master Certified covering all eight areas of ASE.
This Technical Program offers the following certifications for students:

- A/C Refrigerant Recycling
- Hazardous Waste/SP2
- AllData Service Information Systems
- Valvoline and Castrol Lubricants
- Snap-on Shop Key Service Management System
- Occupational Safety and Health Administration (OSHA) 10 Hour Certificate
- Basic Automotive Tire Service Certification Program
- A/C Delco Training
- Timken Bearing Training/Certification,
- Identafix

Career Opportunities upon completion of this Technical Program include but are not limited to:

- Automotive Technician
- Automotive Journalism
- Aircraft Technician
- Marine Technician
- Heavy Equipment Technician
- Transportation Service Management
- Transportation Service Advising
- Transportation Parts Supply
- Automotive Manufacturing
- Automotive Equipment Sales
- Military Service Technician

Upon completion of this Technical Program, students will be better prepared for post-secondary education in the follow courses of study:

- Automotive Technology
- Aircraft Technology
- Marine Technology
- Heavy Equipment Technology
- Transportation Service Management
- Transportation Service Advising
BIOTECHNOLOGY
Kimberly Stencel, Lead Teacher
kstencel@assabet.org ext. 1550

Biotechnology – Exploratory

This one week course provides the 9th grade student with an overview of the biotechnology program. The student is introduced to safety, biotechnology skills and equipment, and different types of careers available to biotechnology students. The topics and lab activities include micropipetting, gel electrophoresis, microscopy, and techniques in forensic science analysis. Written tests, class assignments, and lab activities are used to determine students’ potential success in the biotechnology industry.

Biotechnology - Grade 9

Students entering the 9th grade shop/laboratory are provided with the basic knowledge and skills necessary for success in the biotechnology industry. Students receive practical instruction on lab safety and how to maintain a clean, organized lab environment. Practical work will include use of microscopes, cell staining, agarose gel electrophoresis, spectrophotometry, proper growth of bacteria in sterile media, and preparation of solutions. The effect of pH, antibiotics, and disinfectants on bacterial cell growth will be investigated. Students are graded weekly on their lab notebooks, lab reports, class assignments, and quizzes.

Related theory instruction is an inclusive component of the shop/laboratory class. Grade 9 related theory includes basic technical instruction and studies including life skills, communicating for success, lab safety, biotechnology documentation, standard operating procedures, and maintaining a laboratory notebook. pH and development of an acid-base scale will also be explored. Capabilities of Microsoft Office and Google docs and their applications in biotechnology will be covered. Instruction includes demonstrations, hands on practice, writing and reading assignments, reports, quizzes and tests to determine competency levels.

Biotechnology Grade 10

This course is designed to further develop the basic skills and knowledge needed for success in the biotechnology field. Students will work with restriction enzymes, gel electrophoresis, polymerase chain reaction (PCR), and spectrophotometry techniques. The students will design an original research project to complete and present to peers and judges. Practical work will include the use of autoclaves and incubators. Students are graded with weekly reflections, lab notebooks, lab reports, class assignments, and quizzes.
Related theory instruction is an inclusive component of the grade 10 shop/laboratory class. Grade 10 theory is designed to further develop the comprehension of basic biotechnology theories and technical instruction. Students receive instruction in genetics, molecular biology, genomics, and bioethics. They will explore the theory behind DNA gel electrophoresis, and learn about protein synthesis and enzyme activity. Process control systems used in biotechnology will be studied. Instruction includes demonstrations, hands on practice, writing and reading assignments, reports, quizzes and tests to determine competency levels.

**Biotechnology Grade 11**

This course is designed to give students the opportunity to advance their knowledge and technical skills in the biotechnology program. Students receive advanced instruction in maintenance of animal cells and plant cells in culture, including media preparation and cell type identification. They will perform ELISA, analysis using polyacrylamide gel electrophoresis, as well as size exclusion chromatography. Lab activities demonstrating cell processes such as cell respiration, diffusion, and photosynthesis will also be explored. Practical work will include use of biological safety cabinets. The students will design an original research project to complete and present to peers and judges. Students are graded weekly on their lab notebooks, lab reports, classwork assignments, and quizzes.

Related theory instruction is an inclusive component of the grade 11 shop/laboratory class. Grade 11 theory is designed to give the students an opportunity to advance their knowledge and technical skill in the biotechnology program. Students will receive instruction in immunology, cell culture techniques, and molecular biology. They will learn about Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP), and the drug and facility approval process mandated by the FDA and other regulatory agencies. Instruction includes demonstrations, hands on practice, writing and reading assignments, reports, quizzes and tests to determine competency levels.

**Biotechnology Grade 12**

This course is designed to provide students with the opportunity to master their technical skills and comprehension level in the biotechnology program. Students will be able to isolate DNA from bacteria, yeast, and animal cells. Polymerase chain reactions (PCR) will be used to amplify DNA. Experiments involving genetic transformation of bacterial and animal cells will be conducted, as well as the use of fermentation flasks in biomanufacturing. Affinity chromatography will be used to purify yeast fermentation products. Large scale growth of cultures and cell production using batch records will be conducted. Analysis of the bacterial cell product by hydrophobic interaction chromatography and SDS-PAGE will be completed. The students will design an original research project to complete and present to peers and judges.

Related theory instruction is an inclusive component of the grade 12 shop/laboratory class. Grade 12 theory is designed to prepare students for the professional workplace. Students will receive instruction on the business of biotechnology, seeking employment, preparing for and selecting
college, resume writing, managing money and financial planning, management and entrepreneurship. Students will be familiar with many different aspects of the industry. Technical focus will be on the biochemistry of cell energy supply. The theory behind genetic engineering and PCR will be studied, as well as the applications of hybridoma cells and their use in biotechnology. Strategies for scaling up unit operations and production processes are presented.

This technical program offers the following certification(s) for students:

Career Safe Certification, recognized by the Occupational Safety and Health Administration (OSHA)

Career opportunities upon completion of the program include but are not limited to:

- Research Laboratory Assistant
- Purification Technician
- Fermentation Technician
- Media Prep Technician
- Documentation Specialist
- Quality Control Analyst
- Clinical Science Technician
- Regulatory Specialist
- Laboratory Animal Care Technician
- Veterinary Assistant

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

- Biotechnology
- Biology
- Biochemistry
- Chemical Engineering
- Biomedical engineering
- Microbiology
- Genetics
- Forensic Sciences
- Criminal Justice
- Animal/Veterinary Sciences
- Pharmacy
Business Technology
Donna Groccia, Lead Teacher
dgroccia@assabet.org 1233

Business Technology – Exploratory

This one week course focuses on skills used in the real world, regardless of whether or not they select the Business Technology program as their shop choice. Students learn the value of a dollar, work in teams, and independently; they learn the realities of budgeting; use Microsoft applications, including Excel, Word and PowerPoint; how marketing works and why companies consistently target young adults. They learn about checks, what an ABA number is; how to write checks, how to pay bills and use a check register and lastly, they learn, first hand, the importance of investing. Students work in teams to create a business concept which includes a logo, slogan, budget and advertisement. They create a PowerPoint to market their business idea to their classmates. They learn to understand cultural differences and the importance of diversity in the workplace.

Business Technology – Grade 9

The students that enter the Business Technology program their first year learn basic fundamental business components from which other principals are built. Curriculum their first year includes a basic overview of office safety and the proper methodologies for maintaining a clean, ergonomically correct work area and station. Students learn the importance of good, effective customer service and how more than 85% of positive customer service skills result in return clientele; record keeping skills, such as the seven rules of filing alphabetic data provide a solid foundation for curriculum to be taught in subsequent years. Also setting the foundation for subsequent years in the proper use of the 10-key adding machine. Grade 9 theories include basic technical instruction and studies including life skills, effective communication both in and out of the workplace, and how to exceed being just a contributor to society. Instruction is expedited via use of group assignments, demonstrations, individual hands-on practice, written work, open discussion, quizzes and tests to ascertain a certain level of learning.

Business Technology – Grade 10

The sophomore year in the Business Technology program of studies is designed to bring student learning and understanding of business culture to the next level. Students will begin studying basic accounting principles for a service based company, this includes, analyzing source documents, journalizing entries, use of a general ledger and preparation of a trial balance. Students also begin studying the importance of business ethics; they learn how to improve their personal effectiveness by prioritizing and managing their time more efficiently. Basic Microsoft
Word fundamentals also prepare students with a solid foundation in preparation for the Microsoft Word certification test to be executed when students meet a minimum grade requirement on the practice test. Students learn more intermediate and advanced Word functionality in final preparation for their certification exam. Students begin designing, creating and managing basic HTML web pages. Students study financial literacy, including managing your money properly and being self-sufficient as they become young adults. Intermediate PowerPoint is taught in preparation for certification in this software as well. Office Procedures I, office simulation, and records management also occurs during student’s sophomore year. Finally, students take their 10-hour OSHA certification test. Instruction will be taught in the form of group assignments, demonstrations, individual hands-on practice, written work, open discussion, quizzes and tests to ascertain a certain level of understanding

Business Technology – Grade 11

This course is designed to give students the opportunity to advance their knowledge and technical skills in the Business Technology program. An introduction to Excel is introduced where students begin to explore special functions and recognize the power of the software. Studies of intermediate Excel also prepare students for the certification test. Microsoft Access and Outlook are introduced. Students are taught additional knowledge for designing, building and managing web sites using Dreamweaver software. Office procedures II are taught, scaffolding on the basic fundamentals of Office Procedures I. Intermediate accounting, including preparation of the Income Statement, Statement of Changes in Owner’s Equity and Balance Sheet, preparation and execution of adjusting and closing entries, as well as preparing a post-close trial balance are all achieved during their junior year in Business Technology. Payroll accounting is introduced and all aspects of previously studied accounting principles are embedded in the payroll accounting curriculum. Students begin learning computerized accounting via the use of QuickBooks Pro software. Students will finally begin utilizing the entrepreneurship fundamentals previously learned to build a working business plan over the course of the entire year. Instruction is in the form of group assignments, demonstrations, individual hands-on practice, written work, open discussion, quizzes and tests to ascertain a certain level of understanding.

Business Technology – Grade 12

This course is designed to provide students with the opportunity to master their technical skills and comprehension level in Business Technology, the world of business, its culture and attributes. By their senior year students should be certified in Microsoft Word, Excel, PowerPoint and Outlook. Master users may reach their certification on the four aforementioned programs as well as Microsoft Access. Entrepreneurship is also explored, as are the foundations for beginning preparation of a self-contained business plan, fully executed by each individual student. International Marketing is introduced to prepare them for adulthood in a global marketplace. Career prep, in conjunction with Sr. Project, corporate ethics and advanced financial literacy determine their ideal career opportunity as they study advanced investment
opportunities. The theory of accounting is embraced to prepare students for college-level studies. Strategies will be utilized to foster independent and critical thinking as it pertains to problem resolution and forward thinking. Instruction will be in the form of group assignments, individual hands-on practice, reading and written work, quizzes and tests to ascertain a certain level of understanding has been achieved.

This Technical Program is certified in the following areas:

- Microsoft Office Authorized Testing Center

This Technical Program offers the following certifications for students:

- Career Safe Certification, recognized by the Occupational Safety and Health Administration (OSHA)
- Microsoft Office National Certification in:
  
  Word
  Excel
  Access
  PowerPoint
  Outlook
  Business Professionals of America National Leadership Academy Certificates
  Business Professionals of America Workplace Skills Assessment recognition at the state and national level in four categories: Finance, Administrative Support, Information Technology and Human Resources/Marketing/Management.

Career Opportunities upon completion of this Technical Program include but are not limited to:

- Finance – accounting clerical to certified public accountant
- Administrative Support – office assistant to administrative assistant
- Management – at all levels in a wide range of business
- The competencies provide the basic skills needed to begin a business career in any field or pursue an entrepreneurial enterprise

Upon completion of this Technical Program, students will be better prepared for post-secondary education in the follow courses of study:

- Administration
- Finance
- Management
- Marketing
COMPUTER PROGRAMMING AND WEB DEVELOPMENT

Steve Pleau, Lead Teacher
spleau@assabet.org ext. 1448

Grades are comprised of technical performance, productivity, and professional development. Instruction includes hands-on practice, individual and group projects, round table discussions, laboratories, case studies, audio-visual presentations/demonstrations, online/interactive self-paced training programs, individual instruction, individual computer based assignments, and lectures. Assessments include writing and reading assignments, projects, class participation, professional development, quizzes, presentations, peer assessments, case studies, and tests. Students are introduced to the latest in development tools and software currently utilized in the industry.

Computer Programming and Web Development - Exploratory

During one week exploratory program freshmen explorers develop a personal web page which they upload to our school web server. The content of the web page is generated by using Adobe Dreamweaver, Notepad++, and Photoshop. They are then introduced to the Alice programming language (object oriented, 3D, storytelling language) along with some basic hardware (including history), networking, and safety. The freshmen finish by applying any of the concepts learned during the week to produce and present a project of their choice.

Computer Programming and Web Development - Grade 9

Freshmen learn the fundamentals of HTML and Cascading Style Sheets (CSS) to build dynamic web sites which incorporate multimedia and Web 2.0 tools. They also learn about computer hardware components, their functions, technologies, and how they communicate with one another. Students may build upon the basic concepts of computer programming using the Alice programming language. They will learn program design and implementation, scenarios and storyboards, built-in functions and expressions, control structures, classes, objects, methods, and parameters. 3D Animation will be introduced at this level to coincide with and allow for enhanced Alice programming development. Project management theory is introduced and reinforced as students work on class projects.
Computer Programming and Web Development - Grade 10

Sophomores continue learning HTML development to build web forms and work on web page design. JavaScript is introduced for developing slideshows, validating form data, and incorporating variables and functions. PHP is introduced to prepare for web site database integration. External CSS files and JavaScript files are also introduced. Students complete an online 10-hour OSHA General Industry certificate program. They also continue their programming experience using the Python programming language with Parallax Scribbler robots for a visual, hands-on experience. 3D Animation may also be expanded upon during this school year. Project management is expanded upon and reinforced as students work on class projects.

Computer Programming and Web Development - Grade 11

Juniors begin a two-year Cisco Networking curriculum by taking the Discovery I course. This course introduces students to fundamental networking concepts and technologies while providing hands-on use of industry standard tools and hardware. Cisco networking is taught by an adjunct professor of New Hampshire Technical Institute and the students have the opportunity to purchase three college credits upon successful completion of the course. Project management is expanded upon further and reinforced as students work on class projects and possible real world client work. XML, PHP, and MySQL are utilized to complete the Web Development curriculum. An advanced programming language such as Java or C# may be introduced and/or Parrot AR Drone 2.0 and tablet programming utilized to complete the Programming curriculum. Students embark on a programming project learning four of the five software life cycle phases; requirements, design, development, and test; tracking their progress utilizing their project management techniques and tools. They are also required to produce a user guide for their programming project.

Computer Programming and Web Development - Grade 12

Seniors develop a CPWD capstone project of their choice specializing in Computer Programming or Web Development which they manage using project management tools. Students meet each week with their designated instructor for a one-on-one review. Students present their capstone project to a panel of IT professionals at the end of term 3. They complete their e-portfolio which includes their resume and several artifacts highlighting their IT skills gained throughout their high school career. They also take the second Cisco Networking course, Discovery 2 which provides an introduction to routing and remote access, addressing and network services. It familiarizes students with servers providing email services, web space, and Authenticated Access. They have the opportunity to earn an additional three college credits. Qualified seniors have the added opportunity for a Co-op position in lieu of a CPWD capstone project.

This Technical Program trains the student for the following certification exams:
• Career Safe Certification, recognized by the Occupational Safety and Health Administration (OSHA)
• Cisco CCENT Certification
• Adobe Certified Associate (ACA) – A global, validated, standards-based training and certification program for Dream Weaver, Flash, and/or Photoshop.

Career Opportunities upon completion of this Technical Program include but are not limited to:

• Entry-level Web Development
• Computer Programming Internships
• Assistant Network Administrator
• Computer Help Desk
• Computer Sales

• Entry-level Computer Programming
• Entry-level Game Programmer
• Assistant Systems Administrator
• Computer Maintenance Technician

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

• Web Development
• Networking
• Management Information Systems
• Engineering
• Computer Forensics

• Computer Science
• Game Design
• Information Technology
• 3D Animation
Cosmetology
Susan Viens, Lead Teacher
sviens@assabet.org ext. 1447

Cosmetology – Exploratory

This one week course provides students with an overview of the Cosmetology program. Students are introduced to safety, cosmetology skills and equipment, and different types of careers available to Cosmetology students. The skills discussed and equipment used involves manicures, roller placement, facials, and blow drying with an emphasis on client safety. Hands on work will demonstrate hand eye co-ordination and dexterity, and a composition describing their experience will determine students’ potential success in the Cosmetology profession.

Cosmetology - Grade 9

Students entering the 9th grade shop are provided with the basic knowledge and skills necessary for success in the cosmetology industry. Students receive practical instruction on safety and how to maintain a sanitized, well organized, professional clinic. Practical work includes the use of Blow dryers, rollers, curling irons, make-up, and facial cosmetics. Tasks will enable students to practice hand and eye co-ordination and dexterity. Related theory instruction is an inclusive component of the shop. Grade 9 theory includes Career opportunities, life skills, professional image, communicating for success, and infection control: principle and practices. Students also maintain a notebook. They are required to keep before and after pictures of hairstyles they have created to show the progression of their work through senior year.

Instruction includes demonstrations, hands on practice, writing and reading assignments, reports, quizzes and tests to determine competency levels.

Cosmetology - Grade 10

This course is designed to further develop the basic skills and knowledge needed for success in the Cosmetology field. The students will work on the fundamentals of Hair design. These tasks include wet hairstyling, shampooing, rinsing and conditioning, haircutting thermal styling, thermal hair straightening and the art of finger waving. Salon ecology which is also offered during the sophomore year covers valuable information with regards to effective sanitation and hygiene practice. The student is made aware of the diagnosis of minor scalp conditions which may occur while in the salon setting (i.e. pediculosis, head lice, psoriasis) Also included in this course are nail disorders and diseases and the functions of the skin. The related theory component during the sophomore year also includes bacteriology, decontamination, properties of the scalp, the skin and its diseases and disorders. The students refer to their textbook Milady.
Cosmetology - Grade 11

This course is designed to give students the opportunity to advance their knowledge and technical skills in the cosmetology program. The junior year in Cosmetology is designed to give the student a strong foundation in permanent waving, chemical relaxing, basic hair color theory, classification of color, facial waxing, and sculptured nails. This year focuses on hair analysis (i.e. texture, density, elasticity, and porosity). Students will gain knowledge in the fundamentals of proper formulation of temporary, semi-permanent and permanent hair color as well as rod selection and chemical choice for permanent waving. Students will rehearse the client consultation and learn to keep a log of services. The students work on clients from the community in an actual salon setting. In the junior year the students also study anatomy. This course focuses on the systems of the body that effect the cosmetologist role. Even students weak in science find this subject to be very beneficial in relating to the trade. Cells, integumentary, skeletal, muscular, nervous, circulatory, endocrine, excretory, respiratory digestive and reproductive systems are all reflected in the quality of the hair and nails. Instruction includes demonstrations, hands on practice, writing and reading assignments, reports, quizzes and tests to determine competency levels.

Cosmetology - Grade 12

This course is designed to provide students with the opportunity to master their technical skills and comprehension level in the Cosmetology program. Students will continue with chemical services. During this time advanced coloring techniques are taught and students practice problem solving techniques with corrective color. Students are also exposed to foiling and highlighting and become proficient working with ethnic hair. Salon marketing is offered also to students pursuing a career in Cosmetology. This course is designed to assist the student in developing an understanding how to build a profitable clientele. Salon displays, client record, business management, and prospecting clients are addressed. Students round out their career with goal setting, resume preparation and advertising. Upon fulfillment of 1000 hours requirement students are eligible for a co-op opportunity and are prepared to take their state board exam.

This Technical Program is certified in the following areas:

- Cosmetology State Board Licensure – Massachusetts

This Technical Program offers the following certifications for students:

- Cosmetology State Board Licensure – Massachusetts
- Hair Max – Universal Salon Software
- Occupational Safety and Health Administration (OSHA) 10 Hour Certificate
Career Opportunities upon completion of this Technical Program include but are not limited to:

- Cosmetologist
- Salon Owner
- Make-up Artist
- Platform Artist
- National Product Educator
- Color Technician
CULINARY ARTS / HOSPITALITY MANAGEMENT
Margo Wilson, Lead Teacher
mwilson@assabet.org  ext. 1440

Culinary Arts/ Hospitality Management - Exploratory

This one week course provides students with an overview of the Culinary Arts/ Hospitality Management program. The students are introduced to various types of foodservice operations, career opportunities in the culinary and foodservice industry, shop safety, culinary/hospitality terminology, and equipment identification as well as an introduction to bakeshop from breads to pies, kitchen knife skills to chicken broccoli Alfredo, and restaurant skills waiting on customers in a live restaurant setting. Students rotate through these three areas of the shop to gain an overall experience of the trade.

Culinary Arts/ Hospitality Management - Grade 9

Students entering the 9th grade are provided with the basic knowledge and skills necessary for success in the Culinary Arts/ Hospitality Management industry. Students receive practical instruction on shop safety, equipment identification, proper uniform and hygiene, weights and measurements, point of sales operation, work station set-up and breakdown, basic restaurant operations, and basic culinary and baking operations. Related theory instruction is an inclusive component of the shop class. Grade 9 theory includes basic technical instruction and studies including life skills, communicating for success, portfolio creation, introduction to culinary arts, introduction to baking and introduction to dining room operations. This is done through the history of culinary arts, baking and dining room. Culinary Arts/ Hospitality Management career opportunities are explored at this level and another large component of their ServSafe certification begins in grade 9. Instruction includes demonstrations, hands on practice, writing and reading assignments, reports, quizzes and tests to determine competency levels.

Culinary Arts/ Hospitality Management Grade 10

This course is designed to further develop the basic skills and knowledge needed for success in the Culinary Arts/Hospitality Management field. Students will further enhance their skills in operation of the dining room by exploring different methods of cooking, kitchen staples, soups & sauces as well as breakfast creation. In the dining room they will work on communication skills with customers, large volume of customers at one time as well as catering and events. Related theory instruction is an inclusive component of the grade 10 shop. Grade 10 theory is designed to further develop the comprehension of basic Culinary Arts/ Hospitality Management theories and technical instruction Students receive instruction in club management, meetings industry, gaming
and casino, cruise and transportation industry as well as the many styles of service. Instruction includes demonstrations, hands on practice, writing and reading assignments, reports, quizzes and tests to determine competency levels.

**Culinary Arts/ Hospitality Management Grade 11**

This course is designed to give students the opportunity to advance their knowledge and technical skills in the Culinary Arts/ Hospitality Management program. Students receive advanced instruction in cooking and baking techniques, operations, butchering, sous chef role, grade manger, expediter cashier operations, host/hostess, sanitation and basic management. Related theory instruction is an inclusive component of the grade 11 shop/laboratory class. Grade 11 theory is designed to give the students an opportunity to advance their knowledge and technical skill in the Culinary Arts/ Hospitality Management program. Students will receive advanced instruction in Career Safe Training, Hotel Operations offered through the American Hotel & Lodging Educational Foundation, ServSafe Sanitation Certification, as well as culinary arts and baking. Instruction includes demonstrations, hands on practice, writing and reading assignments, reports, quizzes and tests to determine competency levels.

**Culinary Arts/ Hospitality Management Grade 12**

This course is designed to provide students with the opportunity to master their technical skills and comprehension level in the Culinary Arts/ Hospitality Management program. Students will be able to operate a full service restaurant and bake shop from the beginning stages of development to the finishing stages of customer completion. Students will be able to develop theme restaurants and menu’s, inventory control, ordering process, demonstrate skills in preparing multi course meals and also oversee a staff of students. Related theory instruction is an inclusive component of the grade 12 shop/laboratory class. Grade 12 theory is designed to prepare students for the professional workplace. Students will receive instruction on the business of the Hospitality Industry, seeking employment, preparing for and selecting college, resume writing, managing money and financial planning, management and entrepreneurship. Students will be familiar with many different aspects of the industry. Technical focus will be on marketing and advertisement, inventory control, senior project, entrepreneurship. Instruction includes demonstrations, hands on practice, writing and reading assignments, reports, quizzes and tests to determine competency levels.

This Technical Program is certified in the following areas:

- Third Party Validation from the American Culinary Association
- ServSafe Certification from the National Restaurant Association
- Nutrition for Foodservice and Culinary Professionals
- Supervision in the Hospitality Industry
This Technical Program offers the following certifications for students:

- Occupational Safety and Health Administration (OSHA) 10 Hour Certificate
- ServSafe Certification (National Restaurant Association) valid for 5 years.
- Certificate of Completion for S.T.A.R.T. Program through American Hotel & Lodging Educational Foundation

Career Opportunities upon completion of this Technical Program include but are not limited to:

- Line Cooks
- Stewards
- Chefs
- Executive Chef
- Banquet Servers
- Front Desk Clerks
- Bussers
- Event Manager
- Cruise Ship Personnel
- Restaurant Servers
- Pastry Chefs
- Bakers
- General Manager
- Restaurant Manager
- Catering Manager
- Food and Beverage Manager
- Restaurant Equipment/Product Sales
- Food Product Sales
- Food Product Test Kitchen
- District Managers
- Franchise Restaurant/ Hotel Owner
- Bed and Breakfast Owner/Manager
- Hotel Director of Sales

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

- Degree programs in Culinary Arts and Hospitality Management
DESIGN AND VISUAL COMMUNICATIONS

Dennis Whitney, Lead Teacher
dwhitney@assabet.org ext. 1442

Design and Visual Communications - Exploratory

During the one-week exploratory course, students are introduced to an overview of visual design and participate in hands-on learning activities such as: Basic image editing, photo retouching, illustration and animation concepts. Video curriculum includes basic camera handling, controls and playback modes. The students will also storyboard, shoot and edit a video sequence that includes special effects.

Design and Visual Communications - Grade 9

Students entering 9th grade will build basic skills in Adobe® Creative Suite software. Students will learn video camera operation and editing using industry standard software and hardware. Assignments introduce foundation concepts of graphic design including: color, digital imaging, basic layout and digital illustration as well as foundation video concepts.

Design and Visual Communications - Grade 10

Students will continue to develop design and video skills using the Adobe® Creative Suite® for multi-media design and publishing. Curriculum integrates academic components such as Mathematics and English Language Arts. Research and presentation skills are developed through in-class presentations. Animation concepts and techniques are also developed, including: storyboarding, illustration, managing assets, time lines and creating animation movies and sequences based on storyboards. Students will also be introduced to audio concepts in animation.

Through application of the creative process, projects include page layout, conducting research and creating consumer product packaging and promotion. Students will also learn color theory, basic photography concepts and composition and archival procedures using Digital SLR cameras. Advertising and marketing concepts will be introduced and the class will create logo designs as part of a branding and identity process. Production techniques are applied to mechanical preparation for printing. Industrial design concepts will be introduced along with 3D rendering techniques. Typography topics include type classification and composition. Students also will gain an understanding of creating promotional messages across many media venues, based on a concrete and consistent creative product and message. Class critiques are part of the creative process.
Video work will include working with professional video editing software and state-of-the-art camera equipment to create motion graphics and shoot/produce video footage. They will work as part of video production team and apply video filming and editing techniques to produce a show or a show segment. Students will also gain an understanding of video compression formats and asset management. Students will have opportunities to volunteer for filming/editing sports and other school events.

**Design and Visual Communications - Grade 11**

Software skills will continue to be developed using Adobe® Creative Suite® for design, publishing and interactive/rich media. Students will build their first web site using Dreamweaver and Photoshop. The primary objective is to create a living portfolio document display that will be used to gain admission into a two or four year college. Students will be introduced to CSS and the benefit of creating a site based on cascading style sheet.

Students will become increasingly proficient in all Adobe products while continuing to create design work, including posters, flyers, business cards, and brochures. Photography curriculum will advance into lighting for portraiture using natural and supplemental light for portraiture. Students will design and create working fonts while researching the history of graphic design.

Video work will expand upon student-driven interests and school promotional program production deadlines. They will contribute to the scripting, hosting, filming and production of the Promotional Programming for Assabet Valley which broadcasts on several local cable stations. Students will gain more in-depth experience managing broadcasting projects and deadlines.

**Design and Visual Communications - Grade 12**

Students will strive to obtain software mastery-level skills based on the Adobe Certified Associate® certification process. Curriculum will emphasize personal responsibility, job search/application, college preparation/application and the development of an electronic portfolio. Photography is an integral part of many of the assignments. They will draw upon previous knowledge of composition, and using manual exposure settings of the camera to control light.

Students will participate in Senior Project preparation/presentation which focuses on portfolio, entrepreneurship and job readiness skills. Students will work on jobs for outside clients and gain confidence in meeting with and presenting to customers. Students are required to finish a self paced computer based learning module to enhance skills that will be demonstrated during Senior Project presentation.

Video work will expand upon student-driven interests and include programming production deadlines. Students will gain more in-depth experience managing broadcasting projects and deadlines. They will continue to contribute to the scripting, hosting, filming and production of the Promotional Programming for Assabet Valley.
This Technical Program’s curriculum prepares students to obtain the following Adobe Certified Associate certifications (ACA):

- Visual Communication with Adobe Photoshop CS6
- Rich Media Communication with Adobe Flash Professional CS6
- Web Communication with Adobe Dreamweaver CS6
- Print & Digital Media Publication with Adobe InDesign CS6
- Graphic Design & Illustration with Adobe Illustrator CS
- Career Safe Certification, recognized by the Safety and Health Administration (OSHA)

Career Opportunities upon completion of this Technical Program include but are not limited to:

- Graphic Design
- Advertising
- Interactive Marketing and Advertising
- Corporate Communications
- Marketing/social media
- Entrepreneurship
- Internet/email marketing
- Web Design/user Interactive design
- Cable Television
- Digital Video Editing
- Television
- Motion designer
- Video Producer
- Mobile designer
- Digital Marketing Strategist
- On-air talent

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

- Graphic Design
- Photography
- Animation, illustration, Business and Information Technology/Communications
- Web Development
- Students could also pursue Certificate programs in Advertising, Recording Arts, interactive design, digital filmmaking, and video production, audio and media technology, and web design.
Drafting and Design Technology – Exploratory

Assignments include drawing geometric figures, and various 2D representations of everyday objects using AutoCAD (2D). Students will also be instructed on hand sketching to produce a floor plan, and a two-point perspective drawing (architecture). Students will then produce a CAD and physical model from their sketches that they can take home with them. AutoCAD will also be used in a design assignment which will be printed (3D physical ABS plastic model) using our state-of-the-art 3D printer (UPrint). Another project features interactive software that gives the student immediate feedback on their designs so the student can interpret the information and make adjustments to suit their design goals. Team activities are used to promote skills necessary for working in a group.

All students are assessed on each assignment and results are compiled using the school-wide exploratory rubric (grading template). Students receive a copy of their grade at the end of the exploratory. Students will also learn the various career paths available to graduates of the program.

Drafting and Design Technology – Grade 9

Students entering the 9th grade shop/laboratory are provided with the basic knowledge and skills necessary for success in the Drafting profession. The Basic Level 100 course(s) will be in AutoCAD, pictorials and orthographic projection, Dimensioning and Tolerances, Sketching and Measurement (i.e., reverse engineering with scale, and vernier calipers), Working and Assembly drawings, blueprint reading and the Engineering Design Process. These courses are the fundamentals of the Drafting industry, and students will be instructed with the latest design tools available to the mechanical drafter/designer. Students will also be introduced to rapid prototyping. Students will also receive practical instruction on the use of industry CAD software (2D AutoCAD), presentation software (PowerPoint), and Microsoft Word. The freshman drafting curriculum includes activities from the Introduction to Engineering Design (IED) course that is part of Project Lead the Way (pre-engineering academic program) PLTW program. Students will become familiar with the Engineering Design Process by participating in various design projects. Instruction includes demonstrations, hands on application, math, reading/writing assignments, quizzes and tests to determine competency levels. Level 100 Architecture (20 hours) will also be included. All topics are covered in an easy to understand sequence, and
processed in a way that builds knowledge and confidence. Students are encouraged to attend after school help sessions if they are behind in their assignments or requested to do so by a teacher.

Drafting and Design Technology – Grade 10

This Level 200 course(s) in the first trimester is designed to further develop the skills and knowledge needed for success in the drafting field. The curriculum focuses on mechanical drafting which now moves into the intermediate level. Topics include section and auxiliary views, fastener terminology, measurement, tolerances, and rapid prototyping. Skills are reinforced using the application of software (2D AutoCAD, and 3D Inventor). Software instruction includes solid modeling, assembly modeling, and if time allows animation. The second trimester will begin the Level 200 architectural / Civil Drafting curriculum featuring AutoCAD (2D) and Revit (3D Architectural CAD). Topics include floor plans, home styles, roofs, site development, including: setbacks, easements, municipality bylaws, and topography considerations. The curriculum also includes Green Design and Leed terminology and their application. If time allows students will build architectural models of their design projects. Instruction includes demonstrations, hands on application, math, and reading/writing assignments, quizzes and tests to determine competency levels. Students are encouraged to attend after school help sessions if they are behind in their assignments or teacher requests it.

Drafting and Design Technology – Grade 11

This course is designed to give students the opportunity to advance their knowledge and technical skills in the drafting program. The curriculum features Level 200 & 300 mechanical drafting and solid modeling using SolidWorks and AutoCAD. Students will learn SolidWorks (3D CAD) while reinforcing earlier concepts i.e. manufacturing processes, fasteners, tolerances, working and assembly drawings. New related theory topics include geometric tolerancing, (GDT), sheet metal (bending and transitions), and mechanical components. The third trimester of the junior year will focus on advanced Solid modeling using Solidworks and review of AutoCAD. The primary focus in the Junior year is to prepare students for cooperative employment outside of the school. Students are encouraged to attend after school help sessions if they are behind in their assignments or teacher requests it.

Drafting and Design Technology – Grade 12

This course is designed to provide students with the opportunity to continue proficiency in their technical skills and comprehension level in the drafting program. The first trimester curriculum includes real-world applications of the Drafting career, i.e. facilities layout of rooms and programs at Assabet Valley for the purpose of re-purposing and or industry certification requirements. The second trimester will include several areas of review in preparation for the senior project assessment (written and performance) at the end of the term. The third trimester features live work, where students work on various projects requiring use of various software,
and a wide range of technical skills. Students are encouraged to attend after school help sessions if they are behind in their assignments or teacher requests it.

This Technical Program offers the following certifications for students:

- Career Safe Certification, recognized by the Occupational Safety and Health Administration (OSHA)
- Certified Solidworks Associate
- The Autodesk® Certified User exam - AutoCAD
- The Autodesk® Certified Associate exam - Inventor
- The option of taking the ADDA Drafter Certification Examination

Career opportunities upon completion of this Technical Program include but are not limited to:

- Detail Draftsperson
- Engineering Assistant
- CAD Detailer
- Technical Salesperson
- Mechanical Drafter
- Mechanical Designer
- Architectural Drafter
- Civil Drafter
- Electrical Drafter

Upon completion of this Technical Program, students will be better prepared for post-secondary education (college) in the following courses of study:

**Two year Option**

Manufacturing Technology
Electromechanical Technology
Industrial Engineering Technology
Mechanical Engineering Technology
Civil and Environmental Engineering Technology
Electronics Architectural and Building Engineering Technology
General Engineering Technology
Electrical Engineering Technology
Civil Mechanical Engineering Technology
Surveyor
Interior Design
Four Year Option

Mechanical Engineering
Electromechanical Engineering
Industrial Engineering
Manufacturing Engineering
Civil Engineer
Architect
Electrical Wiring
Bruce Long, Lead Teacher
blong@assabet.org ext. 1438

Electrical Wiring - Exploratory

This one week course provides incoming students with an overview of the electrical trade, including the variety of career paths available to them in the electrical field. Students are introduced to safety techniques and methods such as splicing and terminating low voltage conductors. Students can showcase their skills, and instructors can determine students’ potential success in the electrical trade.

Electrical Wiring is a project based curriculum which encourages initiative as well as teamwork. It is aligned with MA DESE Frameworks.

Electrical Wiring - Grade 9

Students entering Electrical Wiring as freshman are provided with the basic knowledge and skills necessary for success in the electrical field. Freshman students participate in and are certified in a ten hour OSHA training on general construction safety. The Electrical Wiring shop emphasizes personal, shop, and job site safety practices and procedures throughout the entire curriculum. Through practical, as well as related theory instruction, students will: draw, label and wire simple circuits, create wiring and schematic diagrams to be used in practical shop application, splice and terminate conductors using low voltage and line voltage cable, install and troubleshoot low voltage wiring, and construct circuits using various wiring methods including non-metallic sheathed and armored cable. Students will start and individual portfolio that will highlight their achievements each year. Students will be continually assessed to determine competency levels and knowledge retention.

Electrical Wiring - Grade 10

Sophomore Electrical Wiring students will further develop the skills and knowledge necessary for success in the electrical wiring field. Special focus is given to the use and understanding of the current Massachusetts Electrical Code, and the continuation of the safe use and maintenance of hand and power tools. Through continued daily related class work, students will: develop an understanding of electrical terminology and the communication of proper trade terms, focus on wiring methods including metal clad cable, flexible metal conduit, surface metal raceway, electrical metallic tubing, rigid conduit, and rigid non-metallic conduit. They will incorporate academic skills such as Mathematics, English Language Arts, Physics and Technology/Engineering to successfully solve problems related to the electrical trade.

Electrical Wiring instructors continually promote the knowledge and skills necessary to be a valued employee in any chosen field, including but not limited to: problem solving, goal setting,
time management, personal responsibility, communication and teamwork. Students will be continually assessed to determine competency levels and knowledge retention.

**Electrical Wiring - Grade 11**

Junior Electrical Wiring students will have the opportunity to advance their knowledge and technical skills. They will demonstrate their ability through the construction of a 100 amp residential service. Students will also: install wires for motors and motor controls, perform tasks associated with programmable logic controllers, expand their knowledge of alternating current and power distribution, wire heating and cooling systems, and install lighting fixtures, data systems, fiber optics and industrial sensors. All Electrical Wiring Juniors will have an opportunity to build their skills through the outside work program in which students work on real life projects within the community. Students will be continually assessed to determine competency levels and knowledge retention.

**Electrical Wiring - Grade 12**

Senior Electrical Wiring students will build upon their prior knowledge with progressively advanced concepts of wiring methods and theories. They will complete projects which include, but are not limited to: fire alarm systems, transformer installations, telecommunications, and lighting controls. Senior Electrical Wiring students will also be introduced to photovoltaics and back-up power systems through our on-site solar panel system. Skills will continue to be honed through the work extension program and Co-op placement. They will demonstrate the skills and knowledge necessary to be a quality entry level apprentice. Students will be continually assessed to determine competency levels and knowledge retention.

This Technical Program is certified in the following areas:

- Commonwealth of Massachusetts/Division of Professional Licensure/(Registered Journeyman Electrician – Apprenticeship Program – This program awards 1500 hours of work experience toward the 8000 hour requirement and 300 hours of related instruction towards the 600 hour requirement. Hours tracked by instructors based on actual student attendance with the Program)

This Technical Program offers the following certifications for students:

- OSHA 10-hour Construction Safety and Health training and certificate

Career Opportunities upon completion of this Technical Program include but are not limited to:

- Work as an Apprentice with Union and Merit shop employers at the trade as an electrician
- Safety Security and Fire Alarms Technician
- Data and Telecomm Technicians
- Energy Management HVAC Control Technicians
- Industrial Machine Tool Wiring Technicians

Upon completion of this Technical Program, students will be better prepared for post-secondary education in the follow courses of study:

- NJATC IBEW Electrical Apprenticeship Training Program Local 96 and 103
- Local 104 IBEW Apprentice Lineman Training
- NSTAR Local 369 two-year Associate Science Degree with a focus on Electric Power Utility
- Technology at Bunker Hill Community College
Health Technologies
Kathleen Regan, Lead Teacher
kregan@assabet.org ext. 1450

Health Technologies - Exploratory

9TH grade exploratory curriculum includes an introduction to Infection Control, Anatomy and Physiology, Vital Assessments, First Aid, Nutrition Military Time and a potential field trip to visit a variety of healthcare facilities. Throughout this week long course students will become familiarized with common medical terms and procedures used within this vocation.

Health Technologies - Grade 9

9TH grade curriculum includes introduction to health care careers which discusses the qualities of a healthcare worker, the education requirements, and the career options in the health field. Freshman course work also includes introductory instruction which will prepare students for the American Red Cross Nurse Aide program and the NHA Medical Assistant course. Incorporated into this curriculum is a basic skills training course in occupational safety and health, Youth @ Work Talking Safety, for which students will receive a certificate of completion. Curriculum for medical abbreviations, as well as the American Red Cross Babysitting course is also provided during the 9th grade curriculum. Students may visit an Assisted Living facility as part of their clinical experiences.

Health Technologies - Grade 10

10TH grade curriculum includes the introductory instruction for the Nurse Assistant program. This curriculum covers the 16 hours of classroom supervised practical training necessary to begin clinical rotations junior year as well as the Nutrition Assistant curriculum. A Habilitation Training Curriculum is delivered for the care of people with Alzheimer’s. All 10th graders after successfully completing the course work in American Heart Association Healthcare Provider CPR/AED and First Aid will receive certifications. 10th graders receive course work through the Dean Vaughn Total Retention System which is guaranteed to be the fastest and most effective method to teach the elements of medical terminology. Students will receive valuable hands on instruction at assisted living facilities, long-term care facilities and adult day care centers.
Health Technologies - Grade 11

11th grade curriculum includes instructional and clinical hours needed to prepare them for the American Red Cross Nurse Aide Exam. Upon completion students receive an additional 15 hours of instructions to receive third party validation in Home Health Aid III certification. Students receive course work in growth and development, Journey Across the Lifespan. Upon successful completion, this course can be articulated with Assabet Valley’s Licensed Practical Nurse program. Students use their expertise in a variety of community service projects such as, hosting American Red Cross blood drives, hearing and vision screenings and health fairs. Clinical experiences include long-term care facilities and acute care hospitals.

Health Technologies - Grade 12

12th grade curriculum includes a 90 hour course for EKG Technician Course as well as the completion of the Medical Assistant 120 hour curriculum. The Medical Assistant course prepares students for the administrative skills medical administrative assistants need to know. This program integrates all of the front office topics and skill competencies required for today’s industry standards. This program also covers material dealing with medical office, medical records, management skills, client service skills and responsibilities, client education and legal/ethical issues. The EKG Technician course is an intense course that includes instruction on the underlying concepts of the anatomy and physiology of the heart and the electrocardiogram itself. The hands-on lab area simulates a clinic with state of the art EKG equipment, computerized on several laptops. The students also have training on conducting stress testing while on a computerized treadmill as well as how to provide care for a patient having Holter Monitor Testing. At the completion of each of these courses 12th grade students will take a qualifying exam, which if they earn a 78% or higher will make them eligible to sit for the National Health careers Association (NHA) Certification exam in that subject.

Cooperative placement for those students who are eligible is also encouraged during senior year. All seniors are provided the opportunity to become recertified in American Heart Association Healthcare provider CPR with AED.

A senior requirement for graduation is that all seniors are expected to pass a rigorous critical thinking practical exam as well as a comprehensive written exam culminating all 4 years of instruction.

Students from our program may graduate with the following certification:

- American Red Cross Babysitting Certification
- Department of Public Health Nutrition Assistant certification
- Certificate of completion for “Caring for People with Alzheimer’s Disease”, Habilitation curriculum.
- American Heart Association CPR for the Healthcare Provider with Automated External Defibrillator
- American Heart Association Heartsaver First Aid Certification
- American Red Cross Nursing Assistant/Home Health Aide
- Certified EKG Technician from National Healthcare Association.
- Certified Medical Administrative Assistant

Career Opportunities upon completion of this Technical Program include but are not limited to:

- Certified Nurse Assistant
- Home Health Aid
- Unit Clerk (Hospital)
- Allied Health Aid
- EKG technician
- Medical Administrative Assistant

Upon completion of this Technical Program, students will be better prepared for post-secondary education in most healthcare fields including the following:

- Nursing
- Pre-med, pre-vet
- Athletic Training
- Para medicine
- Physical Therapy
- Respiratory Therapy
- Surgical Technical
- Occupational Therapy
- Certified Medical Assistant
- Radiology Tech
House Carpentry & Millwork
Wayne Coulson, Lead Teacher
wcoulson@assabet.org ext. 1449

House Carpentry - Exploratory

This one-week exploratory course provides students with a basic understanding of the carpentry field and the importance of shop safety. Students are introduced to a variety of hand and power tool operations and their applications. The students will apply this knowledge by constructing an assigned woodworking project and a model framing project.

House Carpentry - Grade 9

This course provides carpentry students with basic woodworking knowledge and the relevance of shop safety. Students are instructed on the proper use and maintenance of hand tools as well as the proper use and operations of portable and stationary power tools. General shop safety and individual power tool safety test are administered to all students in the program. Students are introduced to basic blueprint reading and interpreting measured drawings related to assigned projects. A series of woodworking project will be constructed using a variety of cabinet joinery methods, materials, metal fasteners and machine operations. Related theory is taught as an integral part of the shop cycle which provides students with the basic understanding of carpentry and woodworking terminology, tool identification and applications, woodworking joinery and machine operations. Reading, writing and math assignments related to carpentry theory are an integral part of this class. Students receive instruction on interpreting measured drawing and creating material stock bills related to assigned shop projects.

House Carpentry - Grade 10

This course builds on the skills students acquired in grade 9. During the first two terms, students receive additional training in both portable and stationary power tool operations and their respective safety rules are reviewed. Program topics include interpreting measured drawings, planning, layout and construction of assigned projects such as but not limited to a three drawer wall shelf, night stand with drawer, wall hung medicine cabinet with door and a variety of open bookcases. Students are also introduced to basic kitchen, base and wall, cabinet construction along with cabinet door and drawer components. The final term provides carpentry students with a basic knowledge of house construction components and building methods including layout work and framing floors, walls and roofs as well as exterior finishes such as siding, trim work and roofing. Construction projects range from garden sheds, gazebos, open pavilions and small garage or storage buildings. Students are instructed on job-site safety and proper use of ladders and basic scaffolding. Related theory is taught as an integral part of the shop cycle which
provides students with a more in depth understanding of cabinet making methods and terminology, machine operation and joinery, sketching and drawing projects to full scale. The final two terms provide carpentry students with related theory connected with house construction components and building methods including blueprint reading, foundations, floor, wall and roof framing as well as exterior finishes such as siding, trim work and roofing. Students are introduced to the proper methods of drafting a set of scaled drawings usually related to the construction project for that year. Reading, writing and math assignments related to carpentry theory are an integral part of this class.

**House Carpentry - Grade 11**

This course builds on the skills students acquired in grade 10. The curriculum is such that, students spend half of each term gaining technical knowledge and experience related to house construction and light commercial work at an off-campus project and the other half, perfecting their millwork and cabinet making skills. It is the goal of the Carpentry Department to secure a House Building Program and construct a single family home within the District’s sending communities each year. Along with other community service construction projects, this course provides carpentry students with advanced knowledge of construction practices and building methods as well as an introduction to estimating and state and local building codes. Projects include but not limited to construction of single or multi-family homes, remodeling projects of wood framed structures, light commercial remodeling projects and exterior wooden structures. During the student’s in-shop rotation, topics of study include correct use of advanced machinery, planning and construction of advanced cabinet, casework and millwork projects, and layout, drawing and material take-offs associated with assigned project. Related theory is taught as an integral part of this course.

**House Carpentry - Grade 12**

This course builds on the carpentry and construction skills students acquired in grade 11 and is structured to provide each student with the technical knowledge and experiences essential to secure employment as a carpenter and/or transition to a post-secondary educational institution. It is the goal of the Carpentry Department to secure a House Building Program and construct a single family home within the District’s sending communities each year. Along with other community service construction projects, this course provides carpentry students with a continued focus towards advanced knowledge of construction practices and building methods as well as preparing students to participate in the Co-op employment opportunities. Projects include but not limited to construction of single or multi-family homes, remodeling projects of wood framed structures, light commercial remodeling projects and exterior wooden structures. Related theory is taught as an integral part of this course.

This Technical Program offers the following certification for students:

- OSHA 10-hour Construction Safety and Health training and certificate
• 1 year credit towards 3 year-requirement needed to take construction supervisors

Career Opportunities upon completion of this Technical Program include but are not limited to:

• Home Builders
• Construction
• Remodeling Contractors
• Building Material Vendors
• Cabinet Making Shops
• Trade Show Exhibit Companies

Upon completion of this Technical Program, students will be better prepared for post-secondary Education and Training Programs such as:

• Architecture
• Civil Engineering
• Carpenters Union
• Apprenticeship Training Center
• Construction Management
HEATING/VENTILATION, AIR CONDITIONING AND REFRIGERATION

Mike Gilchrest, Lead Teacher
mgilchrest@assabet.org ext. 1452

HVAC/R - Exploratory

During this one week introduction the 9th grade students are provided with an overview of the HVAC/R program. Each student is introduced to general shop safety, equipment, tools and testing instruments used in the field. Each student will complete group shop projects consisting of small appliances and copper tubing. The small appliance project will consist of the students dismantling an appliance, removing individual components such as fan motors, pumps then researching and discussing each component. The copper tubing project will consist of the students making small projects using mechanical joints as well as using a torch for brazing copper fittings. A leak test is performed to assure a proper seal. At the conclusion of the exploratory the students are given an assessment in the form of an in shop competition that assesses their mechanical ability and their general knowledge of the program.

HVAC/R - Grade 9

Students entering the 9th grade HVAC/R program will be provided with the general knowledge and safety for success in this industry. Students will be introduced to the hand tools and specialty tools used in the HVAC/R profession and will learn how to work with copper tubing as it applies to the industry. This will consist of flaring, swaging, soldering and brazing projects to pass a leak test. Other shop projects will consist of working with small domestic appliances where the students will be introduced to refrigeration theory and basic electricity. Each student will dismantle domestic refrigerators, window air conditioning units, perform parts removal check lists and learn the function of each component.

Classroom instruction in HVAC/R theory will be given daily on shop related subjects.
HVAC/R - Grade 10

The goals for 10th grade students are to further the development of the student’s mechanical skills and enhance their technical knowledge of the industry. Students will continue with more advanced tubing, small refrigeration and air conditioning projects. Students will be introduced to the principles of thermodynamics, temperature pressure relationship, basic refrigeration cycle and basic electricity applied to refrigeration. This course will provide student the knowledge in refrigeration sealed systems. They will explore the major components of a refrigeration cycle such as the compressor, evaporator, condenser and metering device. Students will identify and learn the function of each component and how it applies to the refrigeration cycle. This course of study will focus on small hermetic refrigeration systems and their components. Each student will build small refrigeration projects throughout the year and advance to more complex systems. Other projects will introduce students to electricity and how it is applied to refrigeration. Students will wire projects that will have power supplies, controls and accessories found on small refrigeration systems. Related classroom instruction will be given throughout the year covering the subject matter outlined above. Students will be exposed to integration of math and English both in shop and related theory class.

HVAC/R - Grade 11

This course will introduce students to low voltage controls, gas and oil heat, air and hydronic heating systems, blue print reading and systems design. Students will gain knowledge of the safe and proper handling of refrigerants and will have the opportunity to test for the EPA Section 608 refrigerant recovery certification. Electrical code as it applies to the HVAC/R industry will be reviewed as preparation for future licensure and apply it to their current projects. At this level of the HVAC/R program students will work with architectural drawings of homes and design different types of heating and air conditioning systems. This will represent some of the engineering practices that go on in the HVAC/R industry. A focus on heating systems will be the main subject for this course. Forced hot air furnaces utilizing electric resistance heat will be covered, as well as furnaces burning natural gas, propane and oil. Different types of hydronic heating will be discussed, designed and installed in a shop setting. Natural gas and oil-fired boilers will be installed and tied into baseboard, fan coil heaters and hydronic air handling units. Students will be introduced to oil burner code and prepared for future licensure as an oil burner technician. The related theory classroom subjects will be aligned with the subject matter above.

HVAC/R - Grade 12

Curriculum will focus on residential and commercial air conditioning, air distribution and its application to air conditioning. Commercial heating and air conditioning will be explored and students will be introduced to water sourced heat pumps and cooling towers. Students will be introduced to chilled water systems and how they apply to commercial air conditioning systems. When students become familiar with these types of systems, the course will further examine
commercial building water loop systems and how they are sized. The students will review additional electrical code in more detail and apply it to their projects.

This course is designed to provide students with the opportunity to master their technical skills and comprehension level in the HVAC/R program. Related theory classroom subjects will be aligned with the subject matter above.

This Technical Program offers the following certification for students:

- OSHA 10-hour Construction Safety and Health training certification
- EPA 608-National Refrigeration repair requirement

Career Opportunities upon the completion of this technical program include but are not limited to:

- HVACR and Appliance repair Field Technician
- HVACR and Appliance Installation Technician
- Retail-Product or parts supply/distribution
- Customer Service-HVACR and Appliance repair
- Manufacturer Technical and Service support

Upon completion of this Technical Program, students will be better prepared for post-secondary education in the following course of study:

- HVACR and Major Appliance Repair
METAL FABRICATION
Neil Mansfield, Lead Teacher
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**Metal Fabrication - Exploratory**

This one-week course provides the 9th grade student with an overview of the metal fabrication program. The students are introduced to metal fabrication, welding, and safety. Students develop fundamental skills and how to safely make use of metal working equipment. In addition, by completing this one week course, students gain a clear understanding of several types of careers available to metal fabrication and welding students. The skills discussed include: brazing, oxy/fuel welding, basic metallurgy science, flat metal layout, problem solving, creative designs, metal shaping, safety, metal cutting, and the heating and bending of metals.

**Metal Fabrication - Grade 9**

Students entering the 9th grade shop are provided with basic knowledge and skills necessary for success in the metal fabrication and welding industries. Students receive hands-on instruction on developing a technical notebook, shop safety, career options, basic blueprint reading, shop math, welding, and both light and heavy gauge sheet metal fabrication with oxy/fuel cutting, heating, brazing and soldering. Electric arc welding is also taught at a basic level and students are introduced to fundamental material science such as metallurgy. Practical work will include basic forming and welding of sheet metal, for example, fittings of heating and ventilating duct work. Also included is instruction in hand-held plasma arc cutting and machine safety set up.

Related class-room theory is an integral part of the program. Grade 9 theoretical studies includes technical instructions such as blueprint reading, basic shop math, basic metallurgy, sheet metal heating and ventilations operating systems safety, the science behind welding, and metal identification. Students also research career options in the metal working industry and begin setting goals for their future. In addition, students are quizzed weekly, and are given group classroom projects and homework to determine competency levels.

**Metal Fabrication - Grade 10**

This course is designed to further develop the skill and knowledge needed for success in the metal fabrication and welding fields. Students will continue to build upon necessary metal working skills by applying independent thinking and problem-solving techniques in the day-to-day completion of their projects. These projects include: light and heavy gauge sheet metal layout and fabrication as well as structural steel welding using GMAW, GTAW, SMAW, PAC, CNC Plasma and oxy/fuel cutting processes. Students practice and prepare to take an American
Welding Society structural welding certification test, as well as structural sheet metal welding code tests.

Related theory instruction is an integral component of grade 10 instruction. This component is designed to further develop the comprehension of metal fabrication and welding theory. Specifically, students receive instruction that includes demonstrations, hands-on practice, writing and reading assignments, reports, quizzes, and tests to determine competency levels.

**Metal Fabrication - Grade 11**

This course is designed to give students the opportunity to advance their knowledge and technical skills in the metal fabrication and welding program. Students receive instruction in advanced sheet metal layout and fabrication projects in steel and stainless steel as well as ornamental iron work such as hand railings, gates, and metal art work using a computer software program. In addition, students are introduced to pipe layout and pipe welding to prepare for an AWS/ASME/API certification weld test for professional licensing in welding.

Related theory class room instruction includes: demonstrations, hands-on practice, writing and reading assignments, reports, quizzes, and tests to determine competency levels.

**Metal Fabrication - Grade 12**

This course is designed to provide students with the opportunity to master their technical skills that will prepare them for employment in today’s metal fabrication/welding work force. An important part of this mastery is providing students with instruction in advanced levels of GTAW, GMAW, and SMAW welding processes in both ferrous and nonferrous metals, as well as advanced levels of understanding in blueprint reading and shop layout math. Students will have working knowledge of pipe layout and pipe welding in preparation for passing pipe welding code licenses that include orbital welding stainless steel piping, advance level of GTAW tig welding, aluminum, stainless steel, bronze, copper and titanium.

Related theory instruction is an integral component of this course. Students will increase knowledge of science in metals, metal shop safety, welding of both ferrous and non-ferrous metals, the ability to design and lay out a sheet metal ventilation systems. In addition, they will have passed several national weld certifications professional licenses. Grade 12 theory is designed to prepare students for the professional workplace. Students will receive instruction on the business of metal fabrication and welding, seeking employment, preparing for and selecting colleges, resume writing, portfolio development, managing money, financial planning, and entrepreneurship. Students will be familiar with many different aspects of the industry. Technical focus will be on the metal fabrication of welding repairs, small business ownership, and production processes.

This Technical Program is certified in the following areas:
American Welding Society S.E.N.S.E. program, as well as the following national welding codes such as: D1.1 structural welding, D1.5 bridge welding, D1.3 Sheet metal welding, API 1104 pipe line welding.

This Professional Welding licenses are in the following areas:
- Structural Steel Welding
- High Pressure pipe welding
- Structural Bridge Welding
- Light Gauge Sheet Metal Welding
- Career Safe Certification, recognized by the Occupational Safety and Health Administration (OSHA)

Career Opportunities upon completion of this Technical Program include but are not limited to:
- Structural steel Ironworker
- Boilermaker
- Sheet metal worker
- Mobile welding business owner
- Machine shop specialty welder
- Pipe fitter/welder
- Ornamental Ironworker/Blacksmith
- Copper and Stainless steel specialty sheet metal worker
- Metal shop welder/fabricator
- Automatic plasma machine operator
- Heavy equipment repair welder
- Welding supply sales
- Metallurgist
- Mechanical and structural engineer
- Welding inspector
- Metal artists

Upon completion of this Technical Program, students will be better prepared for post-secondary education in the follow courses of study:
- Formal metal working apprenticeship programs structural, mechanical, and metallurgical engineering degree programs
- Hobart School of Welding Technologies
- Armed forces construction metal working specialties schools/required skills
- Art Colleges with a concentrations in architectural metal designs and metal art construction and sculpture
- Tradition metal working college studies
PAINTING AND DESIGN TECHNOLOGIES

John Hughes, Lead Teacher
jhughes@assabet.org ext. 1435

Painting & Design - Exploratory

This one week course provides the 9th grade student with an overview of the Painting and Design program. The students are introduced to shop safety procedures for using personal protective equipment (PPE), ladders, hand tools, and power tools. They participate in hands-on learning activities such as: interior painting, faux finishing, mural painting, sign making, and air brushing techniques. Those who complete these self-paced projects also learn basic wallpapering techniques and complete an introductory interior design project.

Painting & Design - Grade 9

Students are provided with thorough shop specific safety training including: an introduction to the OSHA Right to Know Law, personal protective equipment (PPE), hazard communication, and safety procedures for using shop equipment. They learn preparation and paint application procedures for various types of surfaces, and they learn application procedures for decorative finishes. Shop curriculum is project based. Students complete a theatrical set design project that introduces them to architectural prints and involves designing and creating props and backdrops for the school play from conception to completion. Related theory instruction is an inclusive component of the shop that includes basic technical instruction and studies including: life skills, communicating for success, standard operating procedures, and maintaining a shop notebook and portfolio.

Painting & Design - Grade 10

This course is designed to further develop the basic skills and knowledge needed for success in the Painting and Design field. Students learn the properties and functions of paints and coatings and how to operate spray system components. They acquire knowledge and skill to install wall coverings. Procedures for finishing and patching drywall are introduced. Students create a decorative faux-finish panel that will be entered into a state competition held by a national trade organization. They learn the common methods of glazing, wood-graining, marbling, sponging, rag rolling, and gilding on various surfaces. Students demonstrate procedures involved in computer-aided sign making and design using current industry standard software. As part of their safety training, students develop and shoot their own safety video. The design component of the program includes, print reading (identifying print terms, abbreviations, line types, symbols and notes), developing a vocabulary to describe the architectural style of houses, demonstrating the
use of the color wheel and colorants for mixing and matching coating materials, and projects that focus on the elements and principles of design. Related theory incorporates employability knowledge and skills needed to get and keep a job. Students create professional cover letters, resumes, and portfolios in a variety of formats and demonstrate good interviewing skills.

**Painting & Design - Grade 11**

This course is designed to give students the opportunity to advance their knowledge and technical skills in the Painting and Design program through real-world work experiences. Students earn the general procedures for estimating and planning a job: they receive advanced instruction in print reading; determine raw cost and overhead for pricing a job; and develop a detailed schedule to complete a job. They demonstrate an understanding of the progression of job levels and career opportunities within the painting trade by performing the foreman’s duties on a worksite (on a rotating basis) and by researching and visiting trade organizations. Students also work on simulated and live work sign projects. As part of the interior design component of the program, students plan and design living areas according to location, size, and arrangement. They prepare renderings, elevations, and sketches, using appropriate media. Related theory includes assignments that allow students to demonstrate leadership and teamwork skills such as the ability to set, reach, and evaluate goals. Students learn the importance of professionalism, including reliability, honesty, responsibility, and ethics. Knowledge and skills will be evaluated at various non-profit community worksites.

**Painting & Design - Grade 12**

This course is designed to provide students with the opportunity to master their technical skills and comprehension level in the Painting and Design program. Students work on community projects that require advanced skills such as power washing, airless spraying, plaster repair, drywall finishing, and decorative painting. Students learn advanced Faux finishing techniques, mural painting, and airbrush painting skills. They further their design abilities by identifying the distinguishing features of period furniture and becoming knowledgeable in materials and functional requirements of fabrics, window treatments, and home textiles. They gain confidence to transform space by creating interior design presentation boards that include product samples, technical drawings, renderings, and concept details describing a finished project.

This Technical Program offers the following certifications for students:

- OSHA 10-hour Construction Safety and Health training and certificate

Career opportunities can include, but are not limited to, the following areas:

- Interior / Exterior Painting
- Wallcovering Installation
- Decorative Faux Finishing
- Interior Design consulting
- Interior Decorating
- Sign Designer/Installer
- Drywall Finishing
- Theatrical Set Design and Layout
- Estimator
- Retail and Commercial Sales
- Trade Show and Display Design

Students will be better prepared for post-secondary education in the following fields:

- A two or four year Interior Design College
- Commercial and Sign Art
Plumbing - Exploratory

This one week course provides the 9th grade student with an overview of the plumbing program. The student is introduced to safety, plumbing skills and equipment, and different types of careers available to plumbing students. The objective of the plumbing exploratory program is designed to have the plumbing students obtain enough knowledge and skill to make any minor household plumbing repair in their residence. On the first day of the exploratory, the students will be introduced to residential and commercial faucet repair, troubleshooting common water closet problems as well as proper care and use of hand tools in the pipe trades. Students will then progress to the introduction to threaded steel pipe in which they are required to assemble a steel pipe frame. Fitting identification as well as trade related math is used to successfully complete this project. Different pipe assembly methods are then introduced. Copper tubing, plastic pipe, as well as cast iron projects are then assembled to required dimensions. Basic pipe trade related math as well as school wide and shop safety requirements are utilized during the implementation of these projects.

Exploratory students are introduced to trade related careers as well as an introduction to customer relations/ social skills. Assessments include assigning grades for pipe assembly projects, and observation of skill obtainment.

The provisions of 248 CMR 11.00 govern the requirements for providers of plumbing and gas fitting primary and continuing education. Assabet Valley Regional Technical School’s Plumbing Department provides delivery of this instruction to comply with the following mandates.

_Education Hours Requirements for Apprentice Plumbers who must follow the 550-clock hour program._

1. The course shall be segregated into five tiers.
2. Each Tier shall contain 110-clock hours.
3. Each Tier shall be consecutive and shall be designed to coincide with the years of experience of the apprentice student.
4. Each Tier shall be administered and designed in compliance with the standards issued by the Board.
5. Students shall be required to demonstrate proficiency and competency in each tier by passing an examination designed by the school and/or the instructor.
6. Each Tier shall include coverage in but shall not be limited to the following subject areas:
a. M.G.L. c. 142: Supervision of Plumbing;
b. The Board adopted most current edition of 248 CMR 3.00 through 11.00;
c. Occupational Safety and Health Administration (OSHA) Rules and Regulations including the Construction Outreach Training Program;
d. Material Safety Data Sheets (MSDS);
e. Dig Safe Systems in the Commonwealth of Massachusetts, M.G.L. c. 82 § 40.

Due to recent Regulation Changes for Apprentice Plumbers, Assabet Valley has taken a proactive approach to support students in the Plumbing program to attain licensure in the profession.

248 CMR 11.00: Education and Experience Standards and Requirements for Licensure

Regulation Changes for Apprentice Plumbers on 9/1/2008

- **Old** - The applicant shall furnish documentary proof of having successfully completed 300 clock hours of plumbing and gas fitting theory culminating in a school or instructor designed examination to ensure competency.
- **New** - The applicant shall furnish documentary proof of having successfully completed 550 clock hours of plumbing and gasfitting theory culminating in a school or instructor designed examination to ensure competency.
  - Education Hours Requirements for Apprentice Plumbers who must follow the 550-clock hour program.

1. The course shall be segregated into five Tiers.
2. Each Tier shall contain 110-clock hours.

Beginning with the **Class of 2018**, all plumbing students will be required to enroll in one period of related theory class during their academic cycle.

**Benefits for students:**
- Will save students approximately $1000 for Tier 3 curriculum as required for Professional Licensure (Estimate based on continuing education costs Statewide)
- Provides advanced knowledge that will increase employment opportunities

**Plumbing - Grade 9**

Grade 9 plumbing students receive instruction in pipe fitting and material identification, pipe assembly, as well as safe work practices. Steel pipe projects include measuring, cutting, reaming, and threading of steel pipe. Students are required to calculate different piping layouts utilizing plumbing related math which includes fitting deductions, 45 degree offsets, as well as transitioning between ruler fractions and decimals. Steel piping “frame” projects are then
required to be leak proof and aligned in accordance with acceptable trade standards. Steel pipe “flange” projects require the student to utilize alignment techniques and gain a higher proficiency in plumb, level, and square piping applications. 9th grade plumbing students also are introduced to copper tubing. Torch assembly and fire safety are taught as well. Copper pipe frames are assembled using proper soldering techniques, tested for leaks, and properly aligned. The instructor takes on the role of a plumbing inspector during these exercises to provide a real life and meaningful experience for the plumbing student. Students are given a project plan with desired measurements along with a grading rubric. Given measurements must have a degree of accuracy of \( \pm \frac{1}{16} \) of an inch.

Grade 9 related theory instruction consists of the history of the plumbing trade, materials, tools, and pipe joining methods, safety and installation practices, as well as valves and devices.

**Plumbing Grade 10**

Grade 10 plumbing students are introduced to piping projects in which they will utilize the skills obtained in earlier instruction. Grade 10 plumbing students start to install piping and materials for actual rough plumbing installations. Students will begin with the installation of hot water generating devices such as tankless heaters, various hot water heaters, and basic water distribution for plumbing fixtures. Students will use different acceptable materials such as copper, cpvc, as well as pex tubing. Knowledge of safe work practices are obtained as well as students beginning to utilize and reference plumbing code standards. Grade 10 students begin using power tools related to the plumbing trade. Students must successfully pass a written quiz as well as performance test for each power tool being used. Students are also introduced to maintenance and repair of residential and commercial plumbing installations.

Grade 10 related theory instruction consists of OSHA 10 hour Hazard Awareness Course for Construction, residential blueprint reading, trade related math, code definitions and terminology, potable water supply, as well as building waste and venting system

**Plumbing Grade 11**

Grade 11 plumbing students begin working on work extension projects on a rotating schedule. While in shop, students begin to install drainage, waste, and venting projects in conjunction with water supply and distribution. Advance pipe assembly techniques are introduced. Roll pipe grooving of steel and copper, copper pro-press, threading 2” – 4” schedule 40 steel pipe, cast iron using hub-less as well as hub and spigot piping is implemented in their projects. Students in the 10th grade are also introduced to pipe supports and hangers. Projects at this level require students to have a higher proficiency of plumbing code requirements. Students must reference state code requirements for each individual piping project. Pipe testing and safety per plumbing code is emphasized at this level. Students are also introduced in gas piping installations as well as hydronic heating systems.
Grade 11 related theory instruction consists of allowable materials for storm, sanitary, and venting systems. Plumbing traps, cleanouts, joints and connections, general provisions governing the conduct of plumbing and gas work performed in the commonwealth, potable water supply, math, as well as introduction to gas fitting. Students are introduced to service work by performing plumbing service work in the building under the supervision of the instructor.

**Plumbing Grade 12**

Grade 12 related theory instruction consists of blueprint reading, definitions, math, gas fitting, code relating to drainage waste and venting, as well as code related to water supply and distribution. Grade 12 students are introduced to fixture installations, storm drains and testing and safety.

This Technical Program is certified in the following areas:
- Massachusetts Board of Examiners of Plumbers and Gasfitters

This Technical Program offers the following certifications for students:
- OSHA 10-hour Construction Safety and Health training and certificate
- Tiers 1 and 2 of the educational requirements for licensure under the Massachusetts Plumbing Code
- C.S.S.T. certifications

Career Opportunities upon completion of this Technical Program include but are not limited to:
- Apprenticeship in the following fields:
  - Plumbing, gas fitting, sprinkler fitting, as well as oil burner technician.
  - Wholesale industry opportunities such as material handling, counter sales, inside as well as outside sales.
  - Plumbing supply sales

Upon completion of this Technical Program, students will be better prepared for post-secondary education in the follow courses of study:
- Tiers 1 and 2 of the educational requirements for licensure under the Massachusetts Plumbing Code. A total of 5 tiers are required to be eligible to take the journeyman exam. The remaining three tiers are offered through area adult education facilities.
SENIOR CAPSTONE GRADUATION REQUIREMENTS  
(3 CREDITS TOTAL) 
All seniors must pass the Senior Project and Senior Capstone Paper in order to qualify for a diploma from Assabet Valley Regional Technical High School. 

In order to meet the Senior Capstone Graduation Requirements, a student must have a grade of 65 or better on each of the 3 components.

SENIOR PROJECT (2 Credits)  
Statement of Purpose  
Students will exhibit mastery of related theory knowledge and practical application of competencies attained in their vocational/technical program. 

The Project  
The Senior Project is a process incorporating student research with the demonstration of attainment of Vocational/Technical Education Curriculum Framework-based knowledge. The project consists of two major components: 

I. **Written Competency Examination** (1 Credit)  
The student will complete a Vocational/Technical Education Curriculum Framework-based written exam for his/her technical program. 

II. **Practical Competency Examination** (1 Credit)  
Once the student has successfully completed the Written Competency Examination they must then complete a Practical Competency Examination which is a Vocational/Technical Education Curriculum Framework-based practical application exam for his/her technical program. 

Cooperative Employment Student Exemption  
To be eligible for this exemption, students must attain Cooperative Employment placement prior to the end of the term one marking period for their Senior Year and maintain employment through term 2. 

I. **Written Competency Requirement** (1 Credit)  
a. The student must submit journals of experiences in the workplace as required through the Cooperative Placement Office.  
b. The student must complete a 2 page minimum reflective essay on employability skills as they relate to the workplace; reflective of their work experience. 

II. **Practical Competency Requirement** (1 Credit)  
a. It is understood that prior to placement on Co-op that students have demonstrated proficiency in their technical program. Students must maintain a grade of “B” or better in their technical program while on Co-op.
Grading for this portion of the Senior Capstone requirement will be attained directly from Cooperative Placement activities.

SENIOR CAPSTONE PAPER (1 Credit)

Statement of Purpose
Students will demonstrate mastery of research techniques in a well-developed, mechanically sound research paper using proper MLA (Modern Language Association) documentation style.

1. Seniors will conduct a sustained research project that answers a question or solves a problem, writing a 3-page minimum research paper (5 page minimum for Honors English 12 and AP English Literature).
2. Students will gather relevant information from multiple authoritative print and digital sources, assess the strengths and limitations of the source, and use MLA format for citations.
3. Students will follow a specific timeline of tasks to complete the paper, including making a proposal, writing an outline, completing a rough draft, and turning in a final polished paper.
4. Topics are subject to English teacher approval.