

2017-2018 Marlborough High School Program of Studies

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Principal's Message

The Program of Studies is published annually as a catalog of courses offered at Marlborough High School. It also contains detailed information and guidance to support you in choosing a course program that interests, challenges, and inspires you. Please take the time to read through the Program of Studies provided and consult with your teachers, your counselor, and your parents or guardians to make informed decisions as you progress toward meeting the graduation requirements of Marlborough High School.

Marlborough High School offers a wide variety of courses at a number of different academic levels to stimulate your curiosity, challenge your thinking, and promote your development as a 21st-century learner. The course offerings that follow are designed and articulated to provide you with the depth and breadth of a comprehensive academic program while supporting your growth and progress toward college and career readiness and our learning expectations. Choose courses that allow you to balance the rigor of a challenging academic course load with opportunities to immerse yourself in our school through our many clubs, activities, and athletics.

In the spring, students in grades 8, 9, 10, and 11 will be selecting courses for the 2017-18 school year. Course offerings and staffing for the courses will be developed based upon student requests. Since the scheduling process only occurs once per year, it is critical for you to choose your classes and level of difficulty wisely. After this period of selecting classes, changes to student schedules cannot be made except in rare circumstances. In addition, our scheduling process occurs concurrently with the school budgeting process. As a result, **some of the courses in this program may be modified or may not be offered as a result of student requests and/or budgetary constraints.** In situations like these, you will be able to enroll in classes required to meet graduation requirements. Making additional elective choices that can serve as alternates with your counselor will help expedite this process.

We look forward to working together with you as you plan for your future at Marlborough High School and beyond. As a fairly large school, we have numerous opportunities for you to explore. In addition to fulfilling MassCore requirements, we have numerous other offerings such as AP courses, dual-enrollment courses, STEM Early College High School classes, and Virtual High School classes. Take advantage of the opportunity to create a schedule that challenges you academically; broadens your horizons; stimulates your own curiosity, maturity, and growth; and provides you with the opportunity to be fully involved in Marlborough High School.

Sincerely,

Charles D. Caliri

MHS Principal

MISSION STATEMENT

Marlborough High School is a respectful and comprehensive 21st-century learning environment. We communicate effectively, think critically, collaborate productively, and solve problems efficiently. We provide equal access to educational rigor and commit to success for all students.

ACADEMIC EXPECTATIONS Students will:

- Communicate using verbal and written skills for a range of purposes.
- Gather, analyze, and evaluate information from a variety of sources.
- Collaborate to achieve a common goal.
- Apply knowledge to solve problems in conventional, creative, and innovative ways.
- Demonstrate media and technology literacies.

SOCIAL EXPECTATIONS Students will:

- Demonstrate respect for self, peers, staff, and environment.
- Be responsible for their own decisions and behavior.

CIVIC EXPECTATIONS Students will:

- Participate in school and community life.
- Understand local and global implications of civic actions.

Course Selection Information

COURSE SELECTION The course selection process begins with the distribution of this Program of Studies and the Course Selection Sheet during a class meeting. Students will meet with their current teachers to discuss next year's course recommendation. Course recommendations are based on a student's current achievement, performance on standardized assessments (where applicable), work habits, and readiness for next year's coursework. Students are then provided with a verification sheet listing all recommended courses. This form must be signed by a parent and the student, and then returned to the appropriate guidance counselor. The guidance counselor meets with each student to discuss teacher recommendations and review the student's future plans. Any conflict between a teacher's recommendation and a student's request will be resolved with a meeting between the student, parent, teacher and department coordinator. Schedules will be provided to students prior to leaving school in June. Any adjustments to student schedules must take place over the summer prior to the first day of school, via communication with the guidance counselor, coordinator or assistant principal. Counselors will be available prior to the start of school by appointment through the guidance secretary. Once school opens in August, it is expected that each student will continue with the schedule that has been developed during the course selection process from the previous spring/summer.

A quality education depends on a full 90-day (semester) or 180-day (full year) presence in a class. Although the school does its best to provide every student with every course he or she wishes to take, scheduling conflicts sometimes make this impossible and alternate course choices must be made. At times, course offerings may be closed due to budget constraints or period/section availability. Students should select a program that will enable them to reach personal goals that are consistent with their abilities and interests.

MASSACHUSETTS INTERSCHOLASTIC ATHLETIC ASSOCIATION (MIAA) COURSE REQUIREMENTS

The MIAA requires that all student-athletes must carry and pass the equivalent of four full-year core subject courses every year. A student must carry and pass four full-year courses (two semester courses do not equal a full-year course.)

COURSE LEVELS give all of our students the opportunity for academic success in an appropriately challenging, rigorous, and enriching environment. All of our courses are designed to prepare our students for success in both college and career paths. Although current grades are not the only indicator to be considered in placement decisions, current performance in a course or sequence of courses can serve as a reasonable indicator of future success. Therefore, teachers and students will discuss the most appropriately challenging level for the student. As a general guideline for course selection, students earning grades in the A and B range should consider continuing in the same level or potentially advancing a level, whereas students earning grades in the D range may not be able to continue in the same level unless recommended by the teacher. The following course-level descriptions are provided as a general guideline for students and parents to assist in this determination. More detailed information can be found within the specific course descriptions on the pages that follow.

Within each of our course-level descriptions, you will also find a brief explanation of the amount of homework that is expected or assigned each week in each of these classes. Homework is study and learning that takes place outside the classroom, but is not necessarily limited to the home. Since there is no relationship between the length of time necessary for completion of homework and the quality of learning which takes place as a result of the assignment, hours of required homework per week should be left up to the discretion of the teacher. There are, however, some general guidelines that parents, teachers and students can follow. Homework assignments are intended to expand classroom activities, not to replace them. (MPS Policy 7.700)

ADVANCED PLACEMENT (AP) At Marlborough High School we encourage all students to challenge themselves. This means that students must be able to provide evidence that they are capable of handling AP course work. The best indicators of this work are final course grades, assessment grades, and standardized test scores such as MCAS, PSAT and SAT scores. Students must demonstrate they have the work ethic to be successful with a demanding college curriculum. Students should plan on a minimum of three (3) hours of homework per week for an AP Course. AP courses are recommended for highly motivated students who have demonstrated exceptional academic achievement. Frameworks for each AP course are designed by the College Board. As such, the courses are designed to move at a faster pace, cover more breadth and depth than the Massachusetts Curriculum Frameworks, and require significant independent work, both inside and outside the classroom. Students who take AP courses are required to complete a great deal of preparation outside of the classroom. Students taking these courses are required to take the culminating assessment, the AP examination, at the end of the course. To enroll in an AP course, a student must complete the following five steps:

Attend a meeting of all potential AP students
 Meet with the teacher of the AP course
 Have parents sign the course verification sheet
 Meet with his/her guidance counselor
 Attend a meeting where the course expectations are delineated

HONORS (H) Honors courses are rigorous courses designed for students who can thrive in an independent learning environment. Students will work with advanced topics and progress at a rigorous pace in these accelerated courses. Students are expected and required to complete a great deal of preparation outside the classroom. Students should plan on three (3) hours of homework per week for an honors course.

COLLEGE PREP (CP) College Preparatory courses are designed for students planning to attend a four-year college program or to pursue post-secondary education opportunities after their high school graduation. College Prep-level courses develop subject-area skills that are the prerequisite for any future college work. In the ninth and tenth grades, the curriculum in these courses will also provide the comprehensive preparation every student needs to succeed in the state MCAS testing program. Students will work with challenging topics, and they will be expected and required to complete daily preparation outside the classroom for an average of two (2) hours per week for a CP Course.

UNEVELED ACADEMIC CLASSES (No Level Notation) Unleveled academic classes are designed for students looking to meet particular academic interests, specific needs, and their course distribution requirements. These courses will be varied among departments. Students will complete work specified in the course description and, depending on the type of course, may be expected and required to complete daily preparation outside the classroom. Students should plan on one to two (1-2) hours of outside work per week for an unleveled course. These courses are not weighted for class rank/GPA.

WEIGHTED GRADE POINT AVERAGE (GPA) GPA is calculated as a weighted average using a four-point system. A student's performance in a class is weighted based on the course level, according to the following chart:

Letter	Numeric Range	AP	Honors	CP
A+	97-100	5.3	4.8	4.3
A	93-96	5.0	4.5	4.0
A-	90-92	4.7	4.2	3.7
B+	87-89	4.3	3.8	3.3
B	83-86	4.0	3.5	3.0
B-	80-82	3.7	3.2	2.7
C+	77-79	3.3	2.8	2.3

C	73-76	3.0	2.5	2.0
C-	70-72	2.7	2.2	1.7
D+	67-69	2.3	1.8	1.3
D	63-66	2.0	1.5	1.0
D-	60-62	1.7	1.2	0.7
F	50-59	0.0	0.0	0.0

Any student who scores less than 50 for the final grade will not be eligible for summer school.

NC (No Credit) - Final Grade below 50 for *Final Grade* only.

LEVEL CHANGES/COURSE CHANGES Course changes after the first two weeks of the new school year or a new semester course will require written approval from an administrator. The drop/add form is available through the Guidance Department and it is the sole responsibility of the student to meet with the teacher, department coordinator, guidance counselor and assistant principal to complete the form. In order to facilitate a level change, a student must have sought out the teacher for extra help as needed to address the academic issues. The student, teacher, and parent should have communicated with an attempt to rectify the academic issue. Students will not be permitted to change levels based upon non-academic issues. Any student who withdraws from a course after the first quarter will receive a grade of Withdrawn Passing (WP) or Withdrawn Failing (WF).

MINIMUM GRADUATION REQUIREMENTS In addition to meeting the MHS course requirements listed below and satisfying the MassCore requirements articulated in the next section of this document, all students in the Commonwealth are required to meet certain performance criteria on the Massachusetts Comprehensive Assessment System (MCAS). To receive a high school diploma, students must earn scaled scores of at least 240 on the grade 10 English Language Arts (ELA) and Mathematics tests, or earn a scaled score between 220 and 238 on these tests and fulfill the requirements of an Educational Proficiency Plan (EPP). Students must also earn a scaled score of at least 220 on one of the Science, Technology, Engineering MCAS tests (i.e., Biology, Chemistry, Introductory Physics, or Technology-Engineering).

English	4 years
Mathematics	4 years
Science and/or Technology/Engineering	3 years
History/Social Science	3 years (must pass US History II)
World and Classical Languages	2 years (sequence in one selected language)
Wellness	4 half years (1 semester per year)
Information Technology (ECS/IT)	1 half year*
Arts	1 year** (2 semesters or full year)

*Students who pass an Information Technology (ECS/IT) competency exam may waive this class. Additionally, STEM students may waive this requirement as they will have the Information Technology (ECS/IT) curriculum integrated into their classes.

**Can be fulfilled through Music Department and Visual Arts Department courses, including Video Production and Textiles.

PROMOTION AND GRADUATION REQUIREMENTS In order to graduate, a student must accumulate a minimum of 94 credits (MPS Policy 7.950) in grades 9-12, must carry and pass the minimum number of credits per year as noted below, and must meet Program of Studies requirements as outlined, regarding CORE subjects and electives.

Full year course = 8 credits (F8) Semester (1/2 year) course = 2 credits (S2)
Full year course = 4 credits (F4) STEM Project Course = 1 credit (F1)

Seniors should carry 24 credits and must earn a minimum of 22 credits to meet graduation requirements.

MINIMUM CREDITS PER YEAR (MINIMUM EARNED CREDIT TOTALS FOR PROMOTION)

9th grade – 24 credits
10th grade – 24 credits (9th Grade promotion to 10th Grade – 20 credits accumulated*)
11th grade – 24 credits (10th Grade promotion to 11th Grade – 44 credits accumulated)
12th grade – 22 credits (11th Grade promotion to 12th Grade – 68 credits accumulated)
*Includes passing English and Mathematics starting with the Class of 2018.

TYPICAL FOUR YEAR SCHEDULE FOR COLLEGE-BOUND STUDENT AT MHS

9th Grade

English 9 (H or CP)
Algebra 1 (H or CP)
Biology (H or CP) or Exploring Engineering (H or CP) *
World History II (H or CP)
World Language (H or CP) - Spanish, French, Latin or Mandarin Chinese
Wellness 9 (semester) / Information Technology (semester)
**Electives – 4 credits – Visual Art, Media & Textiles, Business/Information Technology, Music, or doubling up on a specific content area

10th Grade

English 10 (H or CP)
Geometry (H or CP) or Algebra II (H or CP)
Chemistry (H or CP) *
US History I (AP, H or CP)
World Language (H or CP) - Spanish, French, Latin or Mandarin Chinese
Wellness 10 (semester course)
**Electives – 6 credits – Visual Art, Media & Textiles, Business/Information Technology, Music, or doubling up on a specific content area

11th Grade

Communication and Composition for Juniors (H or CP) or AP Language & Composition
Algebra II (H or CP) or Pre- Calculus (H or CP)
Physics (CP) *
US History II (AP, H or CP)
World Language (H or CP) - Spanish, French, Latin or Mandarin Chinese
Wellness Elective (semester)
**Electives – 6 credits – Visual Art, Media & Textiles, Business/Information Technology, Music, or doubling up on a specific content area

12th Grade

AP Literature & Composition, World Literature (H or CP) or Communication & Composition (H or CP)

Pre-Calculus (H or CP), Topic of Mathematics (H or CP) or AP Calculus AB or BC

Science - AP Biology, Chemistry or Physics, Earth Science (H or CP), Environmental Science (H or CP), Anatomy & Physiology (H or CP), Science Technology & Robotics (H or CP), Biotechnology (H or CP) or Architecture/ Tech Drawing (H or CP)*

History/Social Science - AP Psychology, Economics, American Government, Psychology (H or CP), Sociology (H or CP), Legal Issues (H or CP), Economics (H), Personal Finance (CP) *

World Language - (AP, H or CP) - Spanish, French, Latin or Mandarin Chinese

Wellness Elective (semester)

**Electives – 6 credits – Visual Art, Media & Textiles, Business Information Technology, Music, or doubling up on a specific content area

*The Science and Technology/Engineering Department and the History and Social Science Department have many options for courses. Junior and senior year offer more flexibility in their schedules.

**Information on department offerings are listed in each department section.

TYPICAL SCHEDULE FOR SCIENCE, TECHNOLOGY, ENGINEERING, & MATH (STEM) STUDENT AT MHS

9th Grade STEM

English 9

Algebra 1

Introduction to Physics

World History 2

Engineering

STEM Project-Based Learning Course

World Language

Wellness 9

**Additional Courses and Electives – Engineering/Technology, Visual Arts, Media & Textiles, Business Information Technology, Music, Health & Wellness, Chemistry, Computer Science

**Information on department offerings are listed in each department section

10th Grade STEM

English 10

Geometry

Biology

US History 1 (H) or US History 1 (AP)

STEM Project-Based Learning Course

World Language

Wellness 10

**Additional Courses and Electives – Engineering/Technology, Visual Arts, Media & Textiles, Business Information Technology, Music, Environmental Science, Chemistry, Computer Science

**Information on department offerings are listed in each department section

Grades 11 & 12 See early college and STEMbassador offerings in [STEM Early College program section](#)

TESTING All Massachusetts students will be required to pass the grade 9/10 Science and Technology/Engineering MCAS in order to graduate from high school, in addition to the grade 10 ELA and Mathematics tests.

Contact the Director of Guidance at 508-460-3500, Extension 7385, for further information about the MCAS, SAT, PSAT, or ACT.

Marlborough High School offers the following tests to its students:

Grade 9 MCAS Science and Technology/Engineering
Grade 10 MCAS (Required) ELA, Math, Science and Technology / Engineering, PSAT, Preliminary SAT, SAT (Optional), SAT Subject tests (Optional) ACT (Optional)

Grade 11 PSAT/NMSQT, Preliminary SAT/National Merit Scholarship Qualifying Test (required Junior year to be eligible for National Merit Scholarship Program), SAT(Optional), SAT Subject Tests (Optional), ACT (Optional),

Grade 12 SAT Reasoning Test (Optional), 14 SAT Subject Tests (Optional), ACT (Optional)

It is highly recommended that all students planning to attend a four-year college complete their SAT or ACT testing requirements before the end of their junior year. Students planning to apply to highly competitive private four-year colleges may also be required to take SAT subject tests. Students should refer to the college's handbook and consult with their guidance and/or College and Career Counselor for specific requirements.

EDUCATION PROFICIENCY PLAN Students who passed MCAS ELA and Math with a Needs Improvement score are required to complete an Education Proficiency Plan (EPP). The guidance counselor and assistant principal monitor the EPP to ensure that the student is taking appropriate course work to demonstrate they are working towards proficiency. The principal will determine whether a student should receive a diploma based on the successful completion of the EPP. An alert for the EPP will be used in the Student Information System to inform teachers.

GUIDANCE SERVICES Guidance services consist of the College and Career Readiness Program, coordination of state and national assessments, parent outreach, social-emotional student support, and other counseling and advising services that support the school mission statement and promote civic and social responsibility. The guidance curriculum is delivered in classes/presentations that focus on the following goals: to identify and define problems, gather and analyze information, draw and apply conclusions, and draw upon organizational skills, as well as write, speak, and read effectively as a secondary responsibility.

Grade 9 curriculum class topics include: adjustment as a ninth grader, graduation and credit requirements, cumulative record and transcript, GPA and class rank, Naviance and "Do What You Are" personality survey, goal-setting and time management skills, decision-making strategies, and expectations from student/counselor relationship.

Grade 10 curriculum class topics include: review of transcript and MHS graduation requirements, MCAS performance and Adams and Koplik scholarships, state college/university guidelines, standardized tests and personal timetable, update on strategy for attaining personal goals, career values and Career Pathways, Naviance update.

Grade 11 curriculum class topics include: review of graduation and post-secondary planning, PSAT, SAT, and ACT timetable, college fair and visit timetable for junior and senior year, recommendations, Naviance update.

Grade 12 curriculum class topics include: review of graduation and post-secondary planning, overview of department policy regarding college application process, transcript requests, financial aid applications, career internships, military and other post-secondary options, interview tips, financial planning, and Naviance graduation survey. Students should utilize Naviance frequently as well as work with their counselor to identify career goals as early as possible. Students should access the resources of their counselor to assist with all post-secondary planning. If a student's goal is immediate employment after graduation, counselors can assist in constructing an educational program that can meet this goal. In addition, the School-to-Career specialist can also assist students with skills to prepare to enter the workforce and assistance with finding internships and jobs.

SPECIAL EDUCATION SERVICES In accordance with state regulation, prior to a referral for special education, every effort must be made to meet students' needs within the general education setting. Some methods of achieving this are through consultations with teachers, the Student Support Team (SST) process and accessing the District Curriculum Accommodation Plan (DCAP) and the school Building Curriculum Accommodation Plan (BCAP). If concerns still exist, then a referral for evaluation may be deemed appropriate. Massachusetts Special Education Law and the federal Individuals with Disabilities Act (IDEA) require specially designed instruction or related services to all students who are found to be eligible. Students qualify for special education services after exploring three areas. First, a determination of a disability is made. Next, the team must determine if there is a lack of effective progress. Lastly, the team must determine if the lack of progress is due to the student's disability and if the student requires specially designed instruction in order to make effective progress in school or needs related services in order to access the general curriculum. If it is determined that a student is eligible for special education services, an Individual Education Program (IEP) is written. This IEP will either call for specially designed instruction or related services as deemed appropriate by the team. State and federal laws continue to call for the provision of services in the Least Restrictive Environment (LRE) to the greatest extent possible.

WORK INTERNSHIPS The Work Internship program is designed to provide the student with an opportunity to prepare for the future by gaining work-based experience in an area of particular interest. Internships are both paid and unpaid and will usually begin after school. Students may earn one credit for every 60 hours spent in the internship, with a maximum of 2 credits per year allowed. Interested students should contact their guidance counselor for further information. Staff support for this program is provided by the state-funded Connecting Activities grant through Metro Southwest Regional Employment Board.

COMMUNITY/SCHOOL SERVICE Community Service opportunities exist both within Marlborough High School and within the city. Interested students should seek details from their guidance counselor. No credits will be granted for such placements.

ALTERNATIVE HIGH SCHOOL The Marlborough Public Schools offers specialized programs at the Hildreth School as an alternative high school placement for students with particular educational needs. Parents should see an assistant principal for the details regarding this program.

What is MassCore?

MassCore is a state recommended, rigorous program of study that aligns high school coursework with college and workforce expectations.

The recommended program of studies includes:

How Many?	Which Subjects?
4 years	English
4 years	Math
3 years	lab-based Science
3 years	History/Social Science
2 years	the same foreign language
1 year	the Arts
5 additional “core” courses	career and technical education, or any other subject areas
As required by state law	Physical Education (M.G.L. c. 71,s. 3)
additional learning opportunities including	<ul style="list-style-type: none"> • AP classes • dual enrollment/ early college • senior project/capstone coursework • online courses for high school or college credit • service- or work-based learning

MassCore should be considered to be a critical component of a student’s overall high school experience and may also include employment, work-based or community service learning, athletics, volunteer or extra-curricular activities and additional learning opportunities that help prepare students for their future.

What is College and Career Ready?

Being college and career ready means that an individual has the knowledge and skills necessary for success in postsecondary education and economically viable career pathways in a 21st century economy. Academic preparation is a critical piece of those knowledge and skills.

What can we do?

START NOW

Sometimes knowing the options is all it takes. As early as middle school students should have a college and career plan and success in ninth grade is critical. Get all the supports your student needs to pass all their classes in ninth grade and have a plan for the rest of high school.

AIM HIGH

Taking challenging courses in high school is the single best predictor of how well students will do in college. Encourage students to take advanced placement, dual enrollment and online courses.

LOOK BEYOND

Good grades and “book smarts” aren’t enough. Students need your help to identify jobs, internships and volunteer opportunities that interest them so they can plan for a career and gain experience for their life. These opportunities will help build workplace and interpersonal skills while identifying and supporting their career path.

What else can parents & mentors do?

- Encourage your student to take challenging courses in high school including Honors, dual enrollment, early college and/or Advanced Placement (AP).
- Support your student in doing his or her homework and participating in other school-sponsored activities.
- Make it a point to communicate with your child's teachers and counselors about his or her progress in school.
- Partner with your student and the school to develop an education and career plan so that he or she is ready for what comes next after high school.

[Link to PDF of FAQs DESE Mass Core](#)

Massachusetts Universities and Colleges Course Requirements

The 16 required college preparatory courses are:

- English 4 years
- Mathematics 4 years (Algebra I & II, Geometry/Trigonometry, or comparable coursework)
- Sciences 3 years (drawn from Natural Science and/or Physical Science and/or Technology/ Engineering, including 3 courses with laboratory work) Technology/engineering courses must be designated as science courses (taken for science credit) by the high school.
- Social Sciences 2 years (1 year of U.S. history)
- Foreign Language 2 years (in a single language)
- Electives 2 years (choose from subjects listed above or from the Arts & Humanities and/or Computer Sciences)

Early College Pathways



Marlborough High School/Quinsigamond Community College – Early College Pathways Program

Marlborough High School (MHS), in partnership with Quinsigamond Community College (QCC), will offer the following early college pathways as an option for all interested students beginning junior year.

This is a free experience for MHS students. All expenses including tuition, fees, and course materials are covered through the Youth CareerConnect grant provided by the U.S. Department of Labor and our lead grantee, Jobs for the Future, Inc.

These concurrent enrollment courses are delivered by the faculty of Marlborough High School during the regular school day and count towards the Marlborough High School graduation requirements. The MHS faculty assigned to these courses will be recognized as adjunct professors. Students who complete a pathway will earn a minimum of 12 college credits in each field of study.

All of the offered pathways align with the MassTransfer program, which enables participating students to carry credits from QCC to articulated four-year institutions. As such, this experience would best meet the needs of any student looking to pursue a post-secondary degree in one of these areas or a related STEM field.

All college courses will be weighted the same as Advanced Placement coursework for GPA purposes.

The Accuplacer exam will be administered for applicable courses to ensure that all required prerequisites are met.

For more information on the MassTransfer program please visit,

[http://www.qcc.edu/services/f transfer/transfer-agreements/masstransfer](http://www.qcc.edu/services/f%20transfer/transfer-agreements/masstransfer)

For more information on the cost savings associated with the community college pathway please visit,

<http://www.usnews.com/education/blogs/student-loan-ranger/2011/05/18/starting-at-community-college-can-save-thousands>

Computer Science

QCC/MHS Courses	Prerequisites	Time Line	Credits
CIS 111 - Intro to Microcomputer Applications	N/A	Waiver Exam	N/A
ENG 101 - Composition I	ENG 101 Placement Score or ENG 096	Fall of Junior Year	3
ENG 102 - Composition II	ENG 101	Spring of Junior Year	3
MAT 123 - College Mathematics I: Pre-Calculus	MAT 123 Placement Score	Fall of Senior Year	3

	or MAT 100		
MAT 124 - College Mathematics II: Trigonometry	MAT 123	Spring of Senior Year	3

*** It is strongly recommended that students take both AP Computer Science offerings prior to graduation.**

*** Students who participate in AP Calculus AB/BC during senior year will not be required to take MAT 123 and MAT 124.**

*** Additional courses offered at MHS in the Computer Science pathway: PSY 101 and SOC 101**

*** For more information on the Computer Science Pathway including career opportunities please visit, <http://www.qcc.edu/academics/engineering-technology/computer-science-transfer>**

Engineering

QCC/MHS Courses	Prerequisites	Time Line	Credits
ENG 101 - Composition I	ENG 101 Placement Score or ENG 096	Fall of Junior Year	3
ENG 102 - Composition II	ENG 101	Spring of Junior Year	3
MAT 123 - College Mathematics I: Pre-Calculus	MAT 123 Placement Score or MAT 100	Fall of Senior Year	3
MAT 124 - College Mathematics II: Trigonometry	MAT 123	Spring of Senior Year	3

*** It is strongly recommended that students take additional MHS offerings in engineering prior to graduation.**

*** Students who participate in AP Calculus AB/BC during senior year will not be required to take MAT 123 and MAT 124.**

*** Additional courses offered at MHS in the Engineering pathway: PSY 101 or SOC 101 (only one social science elective will be accepted)**

*** For more information on the Engineering Pathway including career opportunities please visit, <http://www.qcc.edu/academics/engineering-technology/engineering>**

Healthcare/Nurse Education

QCC/MHS Courses	Prerequisites	Time Line	Credits
ENG 101 - Composition I	ENG 101 Placement Score or ENG 096	Fall of Junior Year	3
ENG 102 - Composition II	ENG 101	Spring of Junior Year	3
PSY 101 - Introduction to Psychology	ENG 096 Placement Score	Senior Year	3
SOC 101 - Introductory Sociology (Principles)	ENG 096 Placement Score	Senior Year	3

*** It is strongly recommended that students take Anatomy & Physiology and AP Biology prior to graduation.**

*** Students will be required to complete CPR and 1st-aid certifications during senior year.**

*** Students will be required to participate in the Test of Essential Academic Skills (TEAS) exam during senior year.**

*** For more information on the Healthcare/Nurse Education Pathway including career opportunities please visit,**

<http://www.qcc.edu/academics/healthcare/nurse-education>

*** For more information on the Test of Essential Academic Skills (TEAS) please visit,**

<http://www.qcc.edu/center-workforce-development-and-continuing-education/test-essential-academic-skills-teas>

General Studies – Biotechnology Pathway

QCC/MHS Courses	Prerequisites	Time Line	Credits
ENG 101 - Composition I	ENG 101 Placement Score or ENG 096	Fall of Junior Year	3
ENG 102 - Composition II	ENG 101	Spring of Junior Year	3
MAT 123 - College Mathematics I: Pre-Calculus	MAT 123 Placement Score or MAT 100	Fall of Senior Year	3

MAT 124 - College Mathematics II: Trigonometry	MAT 123	Spring of Senior Year	3
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*** It is strongly recommended that students consider taking Biotechnology and AP Biology prior to graduation.**

*** For more information on the Biotechnology Pathway including career opportunities please visit, <http://www.qcc.edu/academics/liberal-artssciencegeneral-studies/general-studies-biotechnology-option>**

Course Descriptions

CIS 111 Introduction to Microcomputer Applications

This course focuses on basic working knowledge and hands-on experiences in word processing, spreadsheet processing, database processing, and presentation software. Students acquire an overview of computer concepts, the most common business office operating systems, the Internet, and the World Wide Web.

ENG 101 Composition I

In Composition I, students write a minimum of four essays in multiple drafts in addition to shorter writing assignments, such as journals or discussion posts, with emphasis on audience awareness; critical thinking and reading; thesis development; organization; and grammatical correctness. Readings from various disciplines provide writing models and material for analysis of ideas. Students also evaluate, incorporate, and document sources from print, Internet, and library databases to support their writing.

ENG 102 Composition II

In Composition II, students produce a minimum of four essays of carefully crafted prose. Student writers practice integrating and citing readings from academic disciplines, including literature; their research-based documented essays are expected to reflect the ethical standards of formal argument.

MAT 123 College Mathematics I: Pre-Calculus

This course focuses on the knowledge and skills necessary for advanced mathematics. Students expand binomial expressions using the binomial theorem; solve non-linear, and rational inequalities and write their solutions using interval notation; determine and write linear equations in several forms; explain the concept of function; graph functions using symmetry test; recognize and graph functions, including constant, linear, quadratic, polynomial, rational, exponential, and logarithmic functions; use function transformation techniques; perform composition and arithmetic operations on functions; find and graph inverses of functions; use properties of logarithms; and solve logarithmic and exponential equations.

MAT 124 College Mathematics II: Trigonometry

Students solve right and oblique triangles and related applications; perform vector computations and use vector concepts to solve applications; determine the values of trigonometric ratios of angles and the values of inverse trigonometric ratios of real numbers; work with angles measured in degrees-minutes-seconds or radians; solve uniform circular motion problems; learn the traditional trigonometric identities and use them to prove other identities; perform transformations of basic trigonometric graphs; write equations to describe specific instances of harmonic motion; and solve trigonometric equations.

PSY 101 Introduction to Psychology

In this 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.

SOC 101 Introductory Sociology (Principles)

This 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 needs of its members. The course emphasizes making connections between students' personal lives and the social change occurring around them.

English

The English Department understands its responsibility with regard to the Marlborough High School Student Academic Expectations and is committed to engaging students in the examination of literary and informational texts in order to enhance their reading and writing skills. Students in all English courses will communicate effectively, think critically, collaborate productively, and solve problems efficiently. Honors classes move at a faster pace than College Prep courses and require more sophisticated analytical and composition skills. All English courses are aligned to the Massachusetts English Language Arts Curriculum Frameworks to prepare students for college and careers. All students must pass four years (16 credits) of English in order to graduate from Marlborough High School.

All freshmen and sophomores must take full-year, four credit courses in freshman English and sophomore English respectively. Beginning in 2016-2017, juniors must take either Communication and Composition or AP Language and Composition to satisfy their junior full-year English requirement.

Recommended course selections by grade level:

9th Grade CP Freshman English, Honors Freshman English

10th Grade CP Sophomore English, Honors Sophomore English

11th Grade AP Language and Composition, CP Communication and Composition, Honors Communication and Composition, QCC English Composition and Literature I & II, Creative Writing**, Cinematic Vision**

12th Grade CP Media Literacy and Popular Culture, Honors Media Literacy and Popular Culture, CP World Literature, Honors World Literature, AP Literature and Composition, Creative Writing**, Cinematic Vision**, Theater and Drama Production**

** 1 semester elective

Elective Courses (credits)

- Broadcast Journalism (2)
- Invoking the Muse: A Course in Creative Writing (2)
- Journalism (2)
- Rhetoric Revealed: A Course in Public Speaking (2)
- Newspaper Production (2)
- The Cinematic Vision: Assessing Literature on Film (2)
- Science Fiction Seminar (2)
- MCAS English Review (2)
- The Work of William Shakespeare (2)
- Theater and Drama Production (2)
- Writing Lab Consultant Training (2)

English electives cannot replace the yearly English course requirement.

Recommended supporting courses for a career path in writing, communications, and/or media production: American Legal Issues, Facing History and Ourselves, Latin I, Marketing, Photography, Graphic Design I

0001 HONORS FRESHMAN ENGLISH F4

0002 COLLEGE PREP FRESHMAN ENGLISH F4

Through the study of short stories, novels, non-fiction, poetry, and drama, students will increase their understanding of, and appreciation for, literature and reading. Students will improve their writing skills through a process approach to composition. Students will also be introduced to the basic elements of the research paper. Literacy skills will be emphasized to ensure students are prepared to take the MCAS in their sophomore year.

PREREQUISITE: Successful completion of Eighth Grade English

0011 HONORS SOPHOMORE ENGLISH F4

0012 COLLEGE PREP SOPHOMORE ENGLISH F4

This course will stress comprehension as well as basic inference and literary analysis. The course will also continue to improve student writing skills through a more advanced study of grammar and composition which will include the writing of a research paper. Students will also expand their understanding of, and appreciation for, reading and literature. Additional emphasis will be placed on vocabulary development, reading comprehension and the writing skills necessary for success on the MCAS and PSAT.

PREREQUISITE: Successful completion of Freshman English

0021 HONORS COMMUNICATION AND COMPOSITION FOR JUNIORS F4

0022 CP COMMUNICATION AND COMPOSITION FOR JUNIORS F4

This full year junior course centers on the fundamentals of rhetoric and composition. Various rhetorical techniques will be explored as well as numerous literary and nonfiction selections, with an emphasis on American texts. Additional emphasis will be placed on word choice/vocabulary development, reading comprehension and the writing skills necessary for future success in college and careers. The course is a productive means of helping students improve their abilities to think, read, and write on progressively more sophisticated levels. Students will be guided through the writing process, from planning and drafting to revision and publication- in both oral and written form. Curriculum will focus on and encourage students in all processes of composition – inventing, drafting, revising, and editing. This course is designed to expose students to the rigors and expectations of writing and communicating at the collegiate level.

PREREQUISITE: Successful completion of Sophomore English

0120 ADVANCED PLACEMENT LANGUAGE AND COMPOSITION FOR JUNIORS F4

Reading and writing are companion activities that involve students in the creation of thought and meaning – either as readers interpreting a text or as writers constructing one. Students will regularly analyze prose - both fiction and nonfiction - and demonstrate their understanding of rhetoric by writing essays using various rhetorical modes, applying close reading techniques, and displaying mastery of style and grammar. Students will take the AP Language and Composition exam in the spring.

PREREQUISITE: Successful completion of Sophomore English

0020 ADVANCED PLACEMENT ENGLISH LITERATURE AND COMPOSITION F4

This AP course will engage students in the careful reading and critical analysis of literature. Through the close reading of selected texts, students will deepen their understanding of the ways writers use language to provide both meaning and pleasure for their readers. As they read, students will consider a work's structure, style, and theme. Writing assignments will focus on the critical analysis of literature and will include expository, analytical, and argumentative essays. Students will take the AP English Literature and Composition exam in the spring.

PREREQUISITE: Successful completion of Junior English

0121 HONORS WORLD LITERATURE F4

0122 COLLEGE PREP WORLD LITERATURE F4

This course will introduce students to works of literature which encompass a world view not limited to British or American authors. Students will analyze and evaluate the literary works and will be expected to understand how the themes of such works reflect a global community. An eclectic array of texts read in this course range from the classics of Ancient Greece to more contemporary works. Additional emphasis will be placed on vocabulary development, reading comprehension and writing skills necessary for success on the SAT. Analytical writing in response to literature will also be emphasized throughout the course.

PREREQUISITE: Successful completion of Junior English

0131 HONORS MEDIA LITERACY AND POPULAR CULTURE F4

0132 COLLEGE PREP MEDIA LITERACY AND POPULAR CULTURE F4

Being an informed, engaged citizen in the 21st century requires us to critically assess all forms of media, including, but not limited to news articles, editorials, blogs, podcasts, film, television. Our world demands that we not simply receive information passively but that we actively interact with various media and participate in the creation of new knowledge. Through critical reading and writing, and by often contrasting visual and multimedia texts with their print counterparts, students will analyze the strategies creators of visual texts use to convey meaning. Students will also be encouraged to create texts in various media and genres.

In a course centered on media literacy, students will engage with texts that specifically deal with issues that are centered around popular culture. Students will use various critical lenses to assess the subjectivity and/or objectivity of the texts.

PREREQUISITE: Successful completion of Junior English

English Electives (9-12)

These courses do not replace the yearly English course requirement if taken for two consecutive semesters.

0199 JOURNALISM S2

This one-semester course will familiarize students with the history of the American media as well as the importance of the 1st Amendment while providing an opportunity for news writing which will include: features, sports, editorials, and human interest stories. Students will analyze a number of newspapers and discuss current events in assigned areas as they learn the basics of desktop publishing. This course does not replace the yearly English course requirement.

PREREQUISITE: After-school participation in school newspaper.

0299 NEWSPAPER PRODUCTION S2

Students enrolled in this course will produce the school newspaper and learn the basics of layout and design. This course continues students' study of Journalism and emphasizes the importance of credibility within the news media. After school participation may be necessary at times. This course may be repeated over consecutive semesters. This course does not replace the yearly English course requirement if taken for two consecutive semesters.

PREREQUISITE: Successful completion of Journalism and/or Instructor and Teacher Leader approval.

REQUIREMENT: After-school participation in school newspaper.

0291 HONORS BROADCAST JOURNALISM F4

0292 COLLEGE PREP BROADCAST JOURNALISM F4

Students enrolled in this team taught course will utilize research and reporting skills to disseminate relevant, credible information to the Marlborough Public School community. The news-based writing conducted in this course will

emphasize the importance of ethical responsibility in a democratic society, while advanced video production techniques will be applied to produce a bi-weekly news magazine program. The program students will produce will inform students, MPS staff, and parents of relevant information in and beyond the city of Marlborough. Extensive use of state-of-the-art technology will be emphasized in both the journalism and video production components of this course. This course does not replace the yearly English course requirement if taken for two consecutive semesters. **PREREQUISITES:** This course is only offered to juniors and seniors. Journalism, TV Production I, and Instructor/Coordinator approval.

OTD9 THEATER AND DRAMA PRODUCTION S2

The theater is a group art. Even the simplest production requires the intelligent collaboration of many people. Students will learn of and practice the role(s) of grouping, character development, movement, business, improvisation, facial expressions, lighting, sound, timing, scenery, props, costumes, make-up, acting, and directing. In addition, students will be required to write and critique scripts.

0209 SAT ENGLISH REVIEW S2

This course is designed for those students who wish to review material in preparation for standardized testing – specifically the SAT's. It is geared more for juniors and seniors. It will be taken in addition to a student's required English course.

OMC9 MCAS ENGLISH REVIEW S2

This recommended course is designed for those students who are in need of extra preparation for the yearly MCAS testing. It will be taken in addition to a student's required English course.

OSF9 SCIENCE FICTION SEMINAR S2

Participants in this discussion-based seminar will analyze a variety of both classic and contemporary science fiction. Students will collaboratively explore a writer's purpose for utilizing science and technology to communicate his/her message. Evaluation will be based on participation, a reader's response journal, research presentations, and other written assessments.

0201 HONORS INVOKING THE MUSE: A COURSE IN CREATIVE WRITING S2

0202 COLLEGE PREP INVOKING THE MUSE: A COURSE IN CREATIVE WRITING S2

Through the study of literature students will assess a writer's ability to express meaning and emotion. From this examination of literature students will identify their own means of expression and experience the creative process through the composition of poetry, short fiction, and screenplays. Students will be expected to apply the concepts presented in literary study within their own compositions of poetry and prose.

0211 HONORS RHETORIC REVEALED: A COURSE IN PUBLIC SPEAKING S2

0212 COLLEGE PREP RHETORIC REVEALED: A COURSE IN PUBLIC SPEAKING S2

This course is designed to introduce students to the art of argument and the principles of persuasion. Students will utilize both fiction and non-fiction to assess the deductive and inductive approaches to public speaking. The student will be exposed to the main types of speeches including informative, persuasive, and impromptu. Students will prepare for various forms of presentations ranging from political speeches to boardroom presentations. Students will be expected to prepare for these speeches by using appropriate research methods. Concepts included in the course are: parts and types of speeches, basic speech outlines, speech origination, types of delivery, use of presentational aids, and other strategies.

0221 HONORS THE WORK OF WILLIAM SHAKESPEARE S2

0222 COLLEGE PREP THE WORK OF WILLIAM SHAKESPEARE S2

The self-destruction of Hamlet, Othello, and Macbeth are only three possibilities for students to explore the universal theme of tragedy. In addition, Puck, Portia, and Prospero are three protagonists students may study in their examination of Shakespearean humor. This semester course will convey to students what separates Shakespearean tragedy from those of Greek and Roman lore. Beyond the exploration of tragedy, students will also examine the Bard's ability to create and develop storylines that amuse audiences through parody, satire, and even the supernatural. These dramas are as relevant to the modern American experience as they were in Shakespeare's Elizabethan England.

0231 HONORS THE CINEMATIC VISION: ASSESSING LITERATURE ON FILM S2

0232 COLLEGE PREP THE CINEMATIC VISION: ASSESSING LITERATURE ON FILM S2

With the continued popularity of adapting literature on film, this course challenges students to evaluate the authenticity and credibility of Hollywood's attempt to capture the essence of literary classics. From Beowulf to War of the Worlds, students will read various literary classics and assess a film's ability to provide a comprehensive portrayal of a novel's plot, characters, and thematic elements.

PRE-REQUISITE: This course is only offered to Juniors and Seniors.

0241 WRITING CENTER CONSULTANT TRAINING S2

The Writing Center is a place designed for students to come to get help with their writing, whether they need assistance with pre-writing, overall development, or proofreading and editing. In the Writing Center Consultant Class, you will be trained in different strategies for helping your peers with their papers. You will be asked to write many of your own papers and edit those of your peers. The goal of this class is for you to become a peer consultant in Marlborough High School's Writing Center.

PREREQUISITE: Teacher/Counselor Recommendation

Mathematics

The Marlborough High School Mathematics Department is determined to deliver extensive options for all students to be college ready when they leave high school. All of our courses serve to create critical thinkers and problem solvers who can communicate using verbal and written skills; gather, analyze, and evaluate information; collaborate to achieve a common goal; apply knowledge to solve problems; and demonstrate media and technology literacies.

The mathematics courses at Marlborough High School are aligned to the Common Core State Standards, which define the knowledge and skills that students should have to graduate from high school prepared for entry-level college courses or workforce training. These standards require students to think and reason mathematically about real-world situations; they emphasize mathematical modeling and the use of mathematics to analyze problems in order to understand them better and make better decisions.

All students are required to pass four years of math. In addition, all students are required to demonstrate proficiency on the Massachusetts Comprehensive Assessment System (MCAS) Exam, or fulfill the requirements of an Educational Proficiency Plan (EPP). All 9th graders will take (College Prep or Honors) Algebra 1, all 10th will take (College Prep or Honors) Geometry and all 11th graders will take Algebra 2. The College Prep sequence will prepare students for an advanced fourth-year course such as Pre-Calculus or AP Statistics; the Honors sequence will incorporate topics to prepare seniors for Intro to Calculus or AP Calculus AB or BC. Intro to Computer Science may be taken in any grade and AP Computer Science can be taken in 10th, 11th, or 12th grade, but do not count towards the four year mathematics requirement.

Students will typically follow one of the progressions shown in the table below. Course recommendations are generally based on the student's ability, study and work habits, and course prerequisites. The "lanes" in the table do not represent course levels, nor are students restricted to a particular "lane" once they have started. Please note that all course offerings do not appear in the table, and parents are encouraged to discuss their child's progress each year with his/her teacher.

Grade 9	Honors Algebra 1	CP Algebra 1	CP Algebra 1	Concepts in Algebra
Grade 10	Honors Geometry	CP Geometry	CP Int Geometry	CP Algebra 1
Grade 11	Honors Algebra 2	CP Algebra 2	CP Int Algebra 2	CP Geometry
Grade 12	AP Calculus	CP Pre-Calculus	CP Algebra 2 or CP Topics	CP Algebra 2

In addition to the courses listed in the table, students are encouraged to consider the following course offerings:

- CP Topics in Mathematics
- Honors Intro to Calculus
- AP Statistics
- Introduction to Computer Science and Programming (1/2 year)
- AP Computer Science/Introduction to Programming in Java

2001 HONORS ALGEBRA 1 F4

2002 COLLEGE PREP ALGEBRA 1 F4

Algebra 1 serves as the foundation for all subsequent mathematics courses. Linear, quadratic, and exponential expressions and functions will be studied using multiple representations. This course will deepen and extend students' understanding of these functions and their relationships. Other topics include: systems of equations, polynomial operations, absolute value functions, and statistics. All levels will use technology, such as graphing calculators, and online graphing tools throughout the course.

PREREQUISITE: 8th grade math

2041 HONORS GEOMETRY F4

2042 COLLEGE PREP GEOMETRY F4

These classes focus on the study of Euclidean Geometry with additional topics from coordinate geometry and trigonometry. Among the topics to be studied are points, lines, and planes; triangles, polygons, and circles; angles and parallel and perpendicular lines. Students will also study similarity and congruence, networks, surface area, and volume. These concepts will be used to model concrete situations throughout the course.

PREREQUISITE: Algebra I

2052 COLLEGE PREP INTERMEDIATE GEOMETRY F4

This is a basic course in geometry. This course will fulfill Common Core requirements, with additional supports. Among the topics to be discussed are angles and their measures, parallel and perpendicular lines, triangles, congruency, similarity and surface area and volume.

2061 HONORS ALGEBRA 2 F4

2062 COLLEGE PREP ALGEBRA 2 F4

This course will focus on concepts and applications of functions: linear, quadratic, power, logarithmic, and exponential. The complex number system, polynomial functions, and conic sections will be studied. Skills in developing the students' intuitions for graphing functions will be stressed.

PREREQUISITE: Algebra I + Geometry

2072 COLLEGE PREP INTERMEDIATE ALGEBRA 2 F4

This course will review linear equations and inequalities, then progress with quadratics, polynomials, and rational expressions. There will be a focus on functions, their graphs and problem situations that can be modeled using functions.

PREREQUISITE: Teacher recommendation.

2081 HONORS PRE-CALCULUS F4

2082 COLLEGE PREP PRE-CALCULUS F4

This course will focus on functions modeling change. The topics studied will be exponential, logarithmic, trigonometric, polynomial and rational functions. In addition transformations, compositions, inverses and combinations of functions will be studied.

PREREQUISITE: Algebra II

2090 ADVANCED PLACEMENT CALCULUS AB F4

2110 ADVANCED PLACEMENT CALCULUS BC F4

This course will cover the topics in differential and integral calculus as outlined in the AB/BC syllabus for the AP program. All students who take this class are expected to take the AP Calculus exam in the spring.

PREREQUISITE: Algebra II or Precalculus

2100 ADVANCED PLACEMENT STATISTICS F4

This course will introduce students to the major concepts and tools for exploring data: analyzing patterns, experiment design, probability, and drawing conclusions from data. Graphing calculators (TI-83 or TI-84 recommended) will be used extensively as a problem-solving and computing tool. This course will cover all topics as outlined in the syllabus for AP Statistics and is designed to cover a one-semester introductory non-calculus-based college course in statistics. All students who take this class are expected to take the AP Statistics exam in the spring.

PREREQUISITE: Algebra I

2121 HONORS INTRO TO CALCULUS F4

This course is for Seniors who have completed Algebra 2. This course will finish all Common Core topics from the Algebra 1, Geometry, and Algebra 2 trajectory including Trigonometry, Sequences and Series. Students will then begin to dive into the Calculus curriculum with topics of limits of functions and differentiation.

PREREQUISITE: Algebra II

2102 COLLEGE PREP TOPICS IN MATHEMATICS F4

The focus of this course will be to strengthen and enhance previously learned math skills. Students will explore topics from Algebra 1, Geometry, and Algebra 2 in a deeper way and expand on their conceptual understanding in preparation for college placement exams and college-level mathematics.

PREREQUISITE: Algebra II

2012 CONCEPTS IN ALGEBRA F4

The focus of this course will be to strengthen the 7th and 8th grade math skills that students did not succeed in and will be a bridge for them to succeed in Algebra 1. They will also learn some basic Geometry skills in order to prepare them for the 10th grade MCAS. This will be a small class environment for the students to get individualized instruction based on their mathematical needs.

2200 ADVANCED PLACEMENT COMPUTER SCIENCE/INTRODUCTION TO PROGRAMMING IN JAVA F4

This course will teach the fundamental ideas of object-oriented methodologies through the widely-used Java programming language. Topics include an introduction to Java syntax, class libraries, standard input and output, and graphical user interfaces. Students will also learn how to analyze software programs through test and verification. Students taking this course should be confident using the Windows operating system. All students who take this class are expected to take the AP Computer Science exam in the spring.

2209 INTRODUCTION TO COMPUTER SCIENCE AND PROGRAMMING S2

This semester-long course will provide students with a general orientation to computer science, including a basic understanding of how computer programs work and an introduction to the process of program development. Concepts such as procedural and object-oriented programming, input and output, user interfaces, program control and flow, and algorithm development will be introduced. Students will write computer programs to perform specific tasks and solve problems.

2210 AP COMPUTER SCIENCE PRINCIPLES F4

The course will introduce students to the creative aspects of programming, abstractions, algorithms, large data sets, the Internet, cybersecurity concerns, and computing impacts. AP Computer Science Principles will give students the opportunity to use technology to address real-world problems and build relevant solutions. Together, these aspects of the course make up a rigorous and rich curriculum that aims to broaden participation in computer science.

EL60 SEI COLLEGE PREP ALGEBRA I F4

This course is for EL students. The topics will include working with rational numbers, writing algebraic expressions, evaluating algebraic expressions and formulas, solving equations, writing and graphing linear equations, solving systems of equations, and problem solving. Focus will also be on the language of math and developing students in that area.

PREREQUISITE: A pretest indicating Math level and English language proficiency level 1 or 2.

EL61 SEI COLLEGE PREP GEOMETRY F4

This course is for EL students. This is a basic course in geometry designed for those students who have successfully completed SEI CP Algebra I (or equivalent). Among the topics to be discussed are angles and their measures, parallel and perpendicular lines, triangles, congruency, similarity, area, and surface area and volume.

PREREQUISITE: A pretest indicating Math level and English language proficiency level 1 or 2.

2201 MULTIVARIABLE CALCULUS F4

This course will run as an independent study for a senior student who has completed Calculus BC by his/her Junior year. Students will expand their knowledge of Calculus studying Differentiation and Integration of several variables, optimization, and vector fields.

PREREQUISITE: AP Calculus BC

2MC9 MCAS MATH REVIEW S2

This course is designed for those students who are in need of extra preparation for the yearly MCAS test. First semester is open to students in grades 10, 11, and 12. Second semester is open to students in grades 9, 10, and 11. This course is recommended for any student who did not pass the MCAS test in grade 10.

2309 SAT PREP FALL SEMESTER S2

2319 SAT PREP SPRING SEMESTER S2

This semester course is designed to prepare students for the SAT I exam. The first semester will be open to seniors and the 2nd semester will be open to juniors. The course will offer practice with SAT questions and test taking strategies. In the fall semester, once the test dates have gone by, the focus will shift to strategies for college placement math tests.

2101 HONORS DISCRETE MATHEMATICS F4

This course will focus on sequences, series, functions, statistics, and probability through the analysis of data. Matrices and graphing calculators (TI-83 plus recommended) will be utilized as a tool for problem solving. Students should be prepared for a rigorous study of mathematical topics.

PREREQUISITE: PreCalculus

History and Social Sciences

Mission Statement: The History and Social Science Department prepares students for intelligent participation in a free and open society. History and social science courses draw upon such disciplines as civics and government, economics, geography, history, psychology, and sociology, as well as the related disciplines of the humanities, mathematics, and natural sciences.

Recommended course selections by grade level (required courses are italicized):

9th Grade *World History II or Survey of World History II*

10th Grade *AP US History I; or Civic Literacy/US History I*; Facing History and Ourselves

11th Grade *AP US History II; or United States History II*; Facing History And Ourselves; Sociology; AP Psychology; American Legal Issues; AP Economics; Economics; Principles of Financial Literacy; AP Government & Politics

12th Grade Facing History And Ourselves; Sociology; AP Psychology; Psychology; American Legal Issues; AP Economics; Economics; Principles of Financial Literacy; AP Government & Politics

4020 ADVANCED PLACEMENT UNITED STATES HISTORY I F4

4030 ADVANCED PLACEMENT UNITED STATES HISTORY II F4

This is an accelerated course designed for the highly motivated, academically qualified college-bound student. Using a survey approach to American History, the course develops chronological perspective, thematic interpretation, domestic and foreign policy assessment of American history. Students are expected to carry a college-level workload. All students are required to take the AP exam at the end of AP US II. Students are required to complete the AP summer assignment in order to participate in the AP course in the fall. AP US I students receive honors credit, but their grades are calculated as AP for the purposes of GPA calculation.

This course sequence is open to students who have:

Received the recommendation of their current History and Social Science teacher.

All selections into AP United States History courses are provisional based upon successful completion of the fourth quarter, final exam (if taken) and final grade.

4111 HONORS WORLD HISTORY II F4

4112 COLLEGE PREP WORLD HISTORY II F4

Students study the rise of the nation state in Europe, the French Revolution, and the economic and political roots of the modern world. They study the origins and consequences of the Industrial Revolution, 19th century political reform in Western Europe, and imperialism in Africa, Asia, and South America. They will explain the causes and consequences of the great military and economic events of the past century, including WWI, the Great Depression, WWII, the Cold War, and the Russian and Chinese revolutions. Finally, students will study the rise of nationalism and the continuing persistence of political, ethnic and religious conflict in many parts of the world. This course is open to students in 9th grade.

4222 SURVEY OF WORLD HISTORY II F4

This is a full year course that introduces students to the themes that have shaped world history. The course provides students with fundamental knowledge in the areas of history, economics, geography, and government. Students will gain exposure to primary sources and will have the opportunity to develop critical thinking and communication skills. Students will examine the historical and intellectual events that are precursors and parallels to the development of the United States. This course provides a solid foundation for selected 9th graders prior to taking United States History I and II in 10th and 11th grades.

Prerequisite: 8th grade teacher recommendation

4021 HONORS CIVIC LITERACY/UNITED STATES HISTORY I F4

4022 COLLEGE PREP CIVIC LITERACY/UNITED STATES HISTORY I F4

Students will build upon their foundation of civic literacy. Students study the establishment of political parties, economic & social reforms, and westward expansion. Students will also learn about the growth of sectional conflict, how sectional conflict led to the Civil War, consequences of the Civil War, Reconstruction, and the growth of big business. Throughout the first semester, students examine the historical and intellectual origins of the United States. They learn about the important political and economic factors that contributed to the outbreak of the American Revolution as well as the consequences of the Revolution, including the writing and key ideas of the U.S. Constitution. Students also study the framework of American democracy and the basic concepts of American government such as popular sovereignty, federalism, separation of powers, and individual rights. Students study the three branches of government, key amendments to the US Constitution, and state/local government. In addition, students will examine specific elections both current and historical. This course is open to 10th grade students who have completed World History II.

4031 HONORS UNITED STATES HISTORY II F4

4032 COLLEGE PREP UNITED STATES HISTORY II F4

Students will analyze the causes and consequences of America's growing role in diplomatic relations. Students will study the goals and accomplishments of the Progressive movement and the New Deal. Students will also learn about the various factors that led to America's entry into World War II as well as the consequences of World War II on American life. Finally, students will study the causes and course of the Cold War, important economic and political changes during the Cold War, including the Civil Rights movement, and recent events and trends that have shaped modern-day America. This course is open to 11th grade students who have completed US History I.

ELECTIVES

4091 HONORS FACING HISTORY AND OURSELVES S2

4092 COLLEGE PREP FACING HISTORY AND OURSELVES S2

Students will examine racism, prejudice, and anti-Semitism and their causes in order to promote better awareness of modern social problems. Students will examine what makes some people choose to behave in such hateful ways and what could have been done to avoid the results of this behavior. By focusing on the Holocaust and other notable events, students will make the essential connection between history and the moral choices they confront in their own lives. Students will develop a greater awareness of themselves and their own diverse community. This course focuses on in class activities, class discussions, and interactive lessons.

OPEN TO ALL STUDENTS GRADES 9 - 12.

4041 HONORS AMERICAN LEGAL ISSUES S2

4042 COLLEGE PREP AMERICAN LEGAL ISSUES S2

The goal of American Legal Issues is to help students develop a respect for and knowledge of the American legal system. Through the application of in class activities focused on constitutional law, students learn the answers to problems faced by citizens every day in criminal and civil legal situations. The curriculum includes vocabulary building, case studies, small group exercises, and visual analysis activities. Students also analyze authentic and hypothetical cases and learn the use of legal forms common to police work, civil law and criminal court proceedings. This course is especially valuable to students pursuing a career in criminal justice.
OPEN TO ALL STUDENTS IN GRADES 11 AND 12.

4051 HONORS SOCIOLOGY S2

4052 COLLEGE PREP SOCIOLOGY S2

Students will examine social facts, which are observable, measurable conditions in people's lives, to learn about social behavior, social differences, and processes of socialization. Topics covered will include human development from birth to adulthood, the effect of social environment on the individual, and the relationship between the group and the individual. Contemporary social problems, such as minorities and discrimination, poverty, crime, and social disorganization will also be discussed. Students will test and evaluate their study of social theory. Class activities will include selected readings, construction of survey questionnaires, and research projects.
OPEN TO ALL STUDENTS IN GRADES 11 AND 12.

4060 ADVANCED PLACEMENT ECONOMICS F4

AP Economics is intended to prepare students for both the Macroeconomics and Microeconomics AP Examinations. Students will study microeconomics during the first semester: basic concepts, supply and demand, market structures and market failure. During the second semester, students will study macroeconomics: national income accounts, aggregate supply and demand, fiscal and monetary policy and international economics. Students should be prepared for extensive independent readings, problem solving and graphing, as well as participation in economic simulations. A strong background in algebra is recommended.
OPEN TO ALL STUDENTS IN GRADES 11 AND 12.

4061 HONORS PRINCIPLES OF ECONOMICS F4

This course prepares students for college-level courses in economics and business administration. First semester teaches thinking with an economic point of view, the mechanics of supply and demand, and macroeconomic topics. Second semester focuses on microeconomic topics such as market structures, labor markets, and market failure. Students will utilize graphs, data tables, and models to solve economic problems. Readings from a college textbook, outside readings of current event articles, simulations, and short papers are components of this course. Since this course includes calculations using various formulae, a strong background in algebra is essential.
OPEN TO ALL STUDENTS IN GRADES 11 AND 12.

4122 COLLEGE PREP PRINCIPLES OF PERSONAL FINANCE S2

This course is oriented towards financial literacy in today's economy. Students will become familiarized with the fundamental concepts of personal finance topics such as developing a financial plan, saving and investing, credit cards, loans, and retirement planning. Students will also explore economic concepts that include supply & demand, inflation, unemployment, gross domestic product, and market structures.
OPEN TO ALL STUDENTS IN GRADES 11 AND 12.

4070 ADVANCED PLACEMENT PSYCHOLOGY F4

AP Psychology is equivalent to a one-semester college course. It covers in detail the methods and approaches used in psychological studies, the major schools of psychology, the biological basis of behavior, cognitive processes, human personality, social psychology, abnormal psychology and learning and behavior analysis. Interactive learning activities are utilized as well as other innovative instructional methods. Students will be involved in data gathering,

writing and research activities. All students are required to take the AP exam at the end of the course. All students are required to complete the AP summer assignment in order to participate in the AP course in the fall.

OPEN TO ALL STUDENTS IN GRADES 11 AND 12.

4071 HONORS PSYCHOLOGY F4

4072 COLLEGE PREP PSYCHOLOGY F4

This course will involve the student in the scientific study of behaviors and mental processes of individuals within the sociocultural context; in the acquisition of study skills and in the understanding of and preparations for the variety of roles played by individuals. This is a yearlong introductory course that will include topics such as the methodology of psychological study, growth and development, neuroscience, sensation and emotion, personality, abnormal psychology, psychological disorders, and social psychology. Learning activities include films, lectures, demonstrations, research projects, discussions, and role playing.

OPEN TO ALL STUDENTS IN GRADES 11 AND 12.

4040 ADVANCED PLACEMENT AMERICAN GOVERNMENT & POLITICS F4

AP American Government and Politics is equal to a one-semester college course. Students will analyze and examine our basic governmental institutions and processes. The United States Constitution will be studied in detail as well as the Federalist Papers. There will be an underlying current events component and a major section incorporating political activism in local, state and national politics. Supreme Court cases in Civil Liberties and Civil Rights will also be examined. This course has a writing and research program and requires a research based project. Students will take the AP Government exam in the spring.

OPEN TO ALL STUDENTS IN GRADES 11 AND 12.

Science/Technology and Engineering

The Marlborough High School Science and Technology/Engineering Department's mission is to provide an opportunity for all students to pursue excellence in the study of science and technology/engineering, using the process of inquiry to learn the fundamental concepts of the biological sciences, physical sciences, Earth and space sciences, and technology/engineering.

All appropriate courses have been aligned to the Massachusetts Science and Technology/Engineering Curriculum Framework that will prepare students to successfully complete requirements and to pass the 9th/10th grade subject specific (Biology, Chemistry, Physics, Technology/Engineering) MCAS tests. Although there is no Earth and Space Science MCAS test offered by the Commonwealth of Massachusetts, the curriculum is aligned to the Massachusetts Science and Technology/Engineering Curriculum Framework.

Students wishing to complete the MCAS requirement during 9th grade are eligible to select from the following courses: Biology, Chemistry, Physics, and/or Exploring Engineering. Students planning to take the MCAS test during 10th grade are eligible to take the following sequential courses: Biology I in 9th grade and Biology II in 10th grade. If students choose not to follow the sequential courses, they could choose from, Biology, Chemistry, Physics, and/or Exploring Engineering.

Each year, most students enrolled in science/engineering courses will complete an Inquiry & Design Project. Teachers will provide course-specific details of the project and requirements.

The following courses are available in the Science department. Please note that courses denoted with an asterisk (*) have a prerequisite course associated with them and several courses also have a mathematics requirement.

9th Grade H/CP Biology

10th Grade H/CP Biology, H/CP Chemistry, H/CP Human Anatomy & Physiology I*, H/CP Environmental Science*, AP Environmental Science*, H/CP Earth & Space Science*, CP Physics, AP Physics I

11th Grade H/CP Biology, H/CP Chemistry, H/CP Human Anatomy & Physiology I*, H/CP Environmental Science*, AP Environmental Science*, AP Chemistry*, H/CP Earth & Space Science*, CP Physics, AP Physics I, H/CP Human Anatomy & Physiology 2*, H/CP Biotechnology*, AP Physics 2*, AP Physics C*

12th Grade H/CP Biology, H/CP Chemistry, H/CP Human Anatomy & Physiology I*, H/CP Environmental Science*, AP Environmental Science*, AP Chemistry*, H/CP Earth & Space Science*, CP Physics, AP Physics I, H/CP Human Anatomy & Physiology 2*, H/CP Biotechnology*, AP Physics 2*, AP Physics C*

Note that a student will have to consider taking more than one science and Technology/Engineering course per year in order to best prepare for a science/engineering major in college. In addition, it is recommended that any student seeking a career in any science take the applicable AP course.

The following courses are available in the Technology/Engineering department. Please note that courses denoted with an asterisk (*) have a prerequisite course associated with them.

9th Grade H/CP Exploring Engineering

10th Grade H/CP Exploring Engineering, H/CP Technical Drawing 1, H/CP Architecture and Design 1, Extreme Manufacturing Engineering*, Engineering Design and Manufacturing with Wood 1, Home Construction Technology Introduction to Electricity/Electronics, Introduction to Robotics

11th Grade H/CP Exploring Engineering, H/CP Technical Drawing 1, H/CP Architecture and Design 1, Extreme Manufacturing Engineering*, Engineering Design and Manufacturing with Wood 1, Home Construction Technology, Introduction to Electricity/Electronics, Introduction to Robotics, H/CP Science Technology and Robotics, H/CP Technical Drawing 2*, H/CP Architecture and Design 2*, Engineering Design and Manufacturing with Wood 2*

12th Grade H/CP Exploring Engineering, H/CP Technical Drawing 1, H/CP Architecture and Design 1, Extreme Manufacturing Engineering*, Engineering Design and Manufacturing with Wood 1, Home Construction Technology, Introduction to Electricity/Electronics, Introduction to Robotics, H/CP Science Technology and Robotics, H/CP Technical Drawing 2*, H/CP Architecture and Design 2*, Engineering Design and Manufacturing with Wood 2*, H/CP Technical Drawing 3*, H/CP Architecture and Design 3*, Engineering Design and Manufacturing with Wood 3*

Note that a student will have to consider taking more than one Technology/Engineering course per year in order to best prepare for an engineering major in college.

SCIENCE COURSES

3021 HONORS BIOLOGY F4

3022 COLLEGE PREP BIOLOGY F4

EL41 SEI COLLEGE PREP BIOLOGY F4

The student will be exposed to and participate in the specific topics of the chemistry of life, cell biology, genetics, anatomy and physiology, evolution, biodiversity, and ecology. Other topics, such as biotechnology, will be covered during the year. The format of the course will include lecture, laboratory, discussion, reading, writing, and others methodologies. Students will be expected to complete work outside of the class setting and have effective time management skills. Depth of understanding will be stressed in this course. This course will prepare students to successfully pass the Biology MCAS test.

OPEN TO STUDENTS IN GRADES 9 - 12.

EL40 FUNDAMENTALS OF BIOLOGY A F4

This course is designed for students with a English language proficiency score of a 1 and limited or interrupted prior schooling. It is designed to strengthen students' competence in science while taking into consideration the language of science and developing students in that area. Work will begin in preparing them for the state assessment (MCAS). EL students continue working on listening, speaking, reading, and writing as they learn English through content. The course allows for students' individualized prescriptions to accommodate student needs.

PREREQUISITE: An English language proficiency score of a 1 and limited or interrupted formal schooling.

EL40B FUNDAMENTALS OF BIOLOGY B F4

This course is designed to strengthen students' competence in science while taking into consideration the language of science and developing students in that area. This course will also further prepare them for the state assessment (MCAS). EL students continue working on listening, speaking, reading, and writing as they learn English through content. The course allows for students' individualized prescriptions to accommodate student needs.

PREREQUISITE: An English language proficiency score of a 1 or 2.

3112 BIOLOGY I F4

This is the first of two full year courses designed to integrate the study of biology with chemistry, earth science, and physics. Students will focus on the chemistry of life, the structure and function of cells including but not limited to photosynthesis, cellular respiration, protein synthesis, and cellular division and an in depth study of ecology. Students will be exposed to a lecture, laboratory, and discussion environment. Individual and group activities along with the use of computer technology will be core segments in this class. Students will increase their understanding of biology by using the scientific method to collect and analyze data. **OPEN TO STUDENTS IN GRADE 9 AND/OR TEACHER RECOMMENDATION.**

3122 BIOLOGY II F4

This is the second of two full year courses designed to integrate the study of biology with chemistry, earth science, and physics. Students will focus on genetics, biological evolution, biodiversity including viruses, bacteria, fungi, plants, and animals and human anatomy and physiology. Students will be exposed to a lecture, laboratory, and discussion environment. Individual and group activities along with the use of computer technology will be core segments in this class. Students will increase their understanding of biology by using the scientific method to collect and analyze data. This course along with Biology I will prepare students to successfully pass the Biology MCAS test. **PREREQUISITE:** Successful completion of Biology I 3112.

OPEN TO STUDENTS IN GRADE 10 AND/OR TEACHER RECOMMENDATION.

3020 ADVANCED PLACEMENT BIOLOGY F4

AP Biology is designed to the equivalent of a two semester college introductory biology course. The curriculum is centered on four Big Ideas and seven Science Practices that incorporate topics in Biology, Chemistry, Physics, and Algebra during extensive inquiry-based laboratory work. Big Idea 1: The process of evolution drives the diversity and unity of life. Big Idea 2: Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis. Big Idea 3: Living systems store, retrieve, transmit, and respond to information essential to life processes. Big Idea 4: Biological systems interact, and these systems and their interactions possess complex properties. Summer work is mandatory and will be assessed at the beginning of the school year. All students enrolled in the course are required to take the AP Biology examination in May.

PREREQUISITE: Successful completion of Biology 3021/3022, Chemistry 3031/3032 and teacher recommendation from a Biology teacher.

OPEN TO STUDENTS IN GRADES 10 – 12

3041 HONORS HUMAN ANATOMY & PHYSIOLOGY I F4

3042 COLLEGE PREP HUMAN ANATOMY & PHYSIOLOGY I F4

Students will be familiarized with the structures and functions of the human body. Students will be prepared for further specialized work in the fields of medicine, physical education, and other related areas as a result of electing this course. The course will include basic concepts of the organization and functions of the human body from the microscope to systematic units. Certain chemical and physical principles are studied as they relate to the living systems in order to provide a good understanding of specific functions. The relationship of structure and function is

emphasized in the study of the skeletal, digestive, muscular, nervous, and respiratory systems. If time allows, the circulatory system will also be covered. Laboratory experiments are stressed to coordinate with material covered in classroom lectures, discussions, and individual and group work. Laboratory work is designed to develop dissection skills and to provide a practical knowledge of various systems, especially the muscular system. All students will be expected to dissect a preserved adult cat. Students will be expected to complete independent readings appropriate to the course and report on said readings.

PREREQUISITE: Successful completion of Biology 3021/3022 and/or teacher recommendation.

OPEN TO STUDENTS IN GRADES 10 – 12

3051 HONORS HUMAN ANATOMY & PHYSIOLOGY II S2

3052 COLLEGE PREP HUMAN ANATOMY & PHYSIOLOGY II S2

This semester course gives students an opportunity to focus on body systems that are not covered during Human Anatomy & Physiology I. Students will be well prepared for any post-secondary education focused on science. The course will include basic concepts surrounding certain human body systems from the microscope to systematic level. Certain chemical principles are studied as they relate to the living systems in order to provide a good understanding of specific functions. This course will include a structural and physiological examination of the circulatory, excretory, endocrine, lymphatic, immune, special senses, and reproductive systems. Laboratory experiments are stressed to reinforce material covered in classroom lecture. Laboratory work is designed to enhance dissection skills from previous coursework and to provide a practical knowledge of the above systems, especially the lymphatic system. All students are required to dissect a preserved adult rat. Students will be expected to complete independent readings appropriate to the course and report on said readings.

PREREQUISITE: Successful completion of Human Anatomy & Physiology I 3041/3042. Completion of Chemistry is also recommended.

OPEN TO STUDENTS IN GRADES 10 – 12

3309 INFECTIOUS DISEASES S2

This is a half year course designed for those students interested in learning about infectious diseases. It is recommended for any student interested but especially those considering a career in the field of medicine and other related areas. Material will be covered through classroom lectures, discussions, individual and group work, and supplemented with case studies, documentaries and film. In this course, students will learn about the different types of infectious diseases, including specific types of bacteria and viruses, how they attack the body and methods of treatment. Students will study various types of disease transmission, how diseases can spread through a population, and methods to stop an outbreak. Current event topics such as infectious diseases in the news, antibiotic resistance, and vaccines will also be discussed.

PREREQUISITE: Completion of Biology 3021/3022/3112 and 3122.

OPEN TO STUDENTS IN GRADES 10-12

3061 HONORS ENVIRONMENTAL SCIENCE F4

3062 COLLEGE PREP ENVIRONMENTAL SCIENCE F4

This course provides students with the skills to make informed assessments about how their actions relate to the environment. An integrated approach to the basic concepts of biology, chemistry, physics, and earth science will be utilized to study and understand the environment. Topics will include the nature of ecosystems, biodiversity, water chemistry, water, land and air pollution, energy of the ecosystem, alternative forms of energy, recycling and the history of environmental views and actions. There will be emphasis on reading articles about the environment and analysis of 32 the articles, problem solving, testing and laboratory analysis, and communication skills. The Marlborough environment will be stressed.

OPEN TO STUDENTS IN GRADES 10 - 12

3063 COLLEGE PREP INTERMEDIATE ENVIRONMENTAL SCIENCE F4

This course provides students with the skills to make informed assessments about how their actions relate to the environment. An integrated, interactive project-based, approach to the basic concepts of biology, chemistry, physics, and earth science will be utilized to study and understand the environment. Topics will include the nature of ecosystems, biodiversity, water chemistry, water, land and air pollution, energy of the ecosystem, alternative forms of energy, waste management, recycling, and the history of environmental views and actions. There will be emphasis on everyday environmental problem solving, global environmental crisis laboratory testing and analysis, and communication skills. The Marlborough environment will be stressed, as well as the impact and importance of recycling in our community and its global impact. PREREQUISITE: Completion of Biology 3112 and Biology 3122. OPEN TO STUDENTS IN GRADES 11 - 12

3060 ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE F4

The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or preventing them. Environmental science is interdisciplinary; it embraces a wide variety of topics from different areas of study. The following themes provide a foundation for the structure of the AP Environmental Science course: science is a process, energy conversions underlie all ecological processes, the Earth itself is one interconnected system, humans alter natural systems, environmental problems have a cultural, social, and economic context, and human survival depends on developing practices that will achieve sustainable systems. Summer work is mandatory prior to the beginning of the school year. All students enrolled in the course are required to take the APES examination in May.

PREREQUISITE: Successful completion of Biology 3021/3022 and teacher recommendation. Completion of Chemistry is recommended.

OPEN TO STUDENTS IN GRADES 10 – 12

3071 HONORS BIOTECHNOLOGY F4

3072 COLLEGE PREP BIOTECHNOLOGY F4

This course will be a detailed and challenging investigation of the science and applications of Biotechnology. The student will be exposed to and participate in the specific topics of bioethics, cell biology, DNA structure and replication, protein synthesis, recombinant DNA, PCR, cloning, and forensics. Laboratory experiences will include sterile technique, DNA extractions, creating recombinant DNA, DNA and protein electrophoresis, cell transformation, and PCR.

PREREQUISITES: Successful completion of Biology 3021/3022 and Chemistry 3031/3032.

OPEN TO STUDENTS IN GRADES 10 – 12

3119 MCAS BIOLOGY REVIEW S2

This course is designed for those students who are in need of extra preparation for the yearly MCAS biology test. This course is recommended for any student in grades 10, 11, and 12 who did not pass the MCAS biology test in grade 9 or 10 as well as second semester grade 9 students that could benefit from the additional exam preparation.

OPEN TO STUDENTS IN GRADES 10 – 12

3031 HONORS CHEMISTRY F4

3032 COLLEGE PREP CHEMISTRY F4

This course is designed to teach students the facts, formulas, and chemical principles outlined in the Massachusetts Science and Technology/Engineering Curriculum Framework. In addition, understanding of basic chemical concepts and principles will be emphasized along with the development of critical thinking and problem solving skills. The laboratory component will allow students to experience and demonstrate concrete application of theoretical principles. Scientific topics include matter and energy, atomic and molecular structure, periodic trends, chemical bonding, and the study of several types of chemical reactions including acid/base reactions. Solutions, gas laws and the calculations associated with them will be studied. The stoichiometric relationships involved in chemical reactions

will be examined and applied requiring strong mathematical skills in both Honors and College Prep. This course will prepare students to successfully pass the Chemistry MCAS test.

PREREQUISITE: Successful completion of Algebra I.

OPEN TO STUDENTS IN GRADES 10 - 12

3030 ADVANCED PLACEMENT CHEMISTRY F4

AP Chemistry is designed to be equivalent of a first year college chemistry course. Throughout this course the theoretical aspects of chemistry will be emphasized while covering such topics as the structure of matter, kinetic theory of gases, chemical equilibrium, chemical kinetics, and the basic concepts of thermodynamics. Relationships between chemistry and environmental and societal issues will be drawn through investigations into chemical reactivity and an introduction to organic chemistry. The AP Chemistry program includes a strong laboratory component stressing observation, experimentation, analytical thinking, and communication. Strength in mathematical skills is essential in all aspects of this course. Students enrolled in the course are required to take the AP Chemistry examination in May. Summer work is mandatory prior to the beginning of the school year.

PREREQUISITE: Successful completion of Chemistry 3031/3032, Algebra I and teacher recommendation.

OPEN TO STUDENTS IN GRADES 10 – 12

3409 FOOD SCIENCE S2

Students will be familiarized with the basic chemical principles that can be applied to food and cooking. Students will be prepared for further specialized work in the fields of chemistry, biochemistry, nutrition, culinary arts, and other related fields. The course will explore properties in regards to food preparation, consumption, and nutrition with hands-on experiments and interactive learning. By the end of the course students will be able to communicate effectively using the terminology of Food Science, recognize various chemical changes and reactions that occur during cooking, and employ experimental techniques to understand the cooking process. Course topics will include food safety and regulations, food consumption, food flavors, and nutrition. Laboratory work will include both scientific experiments and food preparation and will stress skills of laboratory technique, scientific inquiry, and food safety.

PREREQUISITE: Completion of Biology 3021/3022/3112 and 3122.

OPEN TO STUDENTS IN GRADES 10-12

3011 HONORS EARTH AND SPACE SCIENCE F4

3012 COLLEGE PREP EARTH AND SPACE SCIENCE F4

This laboratory oriented course will enable students to develop a broad frame of reference into which the individual branches of Earth science can be integrated. Students will develop an understanding of the Earth's dynamic processes through geological and historical records of the Earth, as well as an understanding of the universe outside the realm of the solid earth. This course is an intensive study of the physical environment and is recommended for students interested in a career in environmental science or any field in natural resources. Students will investigate the various forces that change the Earth and its surface such as the creation and formation of minerals and rocks, weathering, running water, glaciations, volcanism, earthquakes, mountain building, ocean movements, land formations, and the effects of these processes. They will explore the theoretic origins of the universe, stellar life cycles, and earth's place in our solar system, as well as effects of that position. Resources, pollution, and man's role in environmental issues will also be explored.

OPEN TO STUDENTS IN GRADES 10 - 12

3109 ASTRONOMY S2

In this course, students will explore the many different aspects of our celestial skies, and how human kind has studied it throughout millennia. Using a combination of projects, lecture, group work, and student-led discussion, several topics will be addressed. Some topics include a history of the science of Astronomy, the electromagnetic spectrum, discussion of the "Big Bang" theory, exploration of the different types of galaxies, analysis of the life cycle of stars, an exploration of the sun-earth-moon relationship and its assorted phenomena (tides, eclipses, seasons), and an examination of the technology involved currently used to collect data about our universe.

OPEN TO STUDENTS IN GRADES 10-12.

3091 HONORS PHYSICS F4

3092 COLLEGE PREP PHYSICS F4

This course is designed for students to develop an understanding of the physical events occurring in the world around them and make them aware of the causes and predictability of these events. Students will study motion and its causes and effects in units focused on velocity, acceleration, force, work, power, and energy. The study of energy will expand into a unit on mechanical and electromagnetic waves. This will be followed by the study of static electricity, current electricity, and magnetism. Concepts will be explored through discussion of theory, laboratory experiments, inductive reasoning, demonstrations, and problem solving. Problem solving will require solid mathematical skills. This course will prepare students to successfully pass the Physics MCAS.

PREREQUISITE: Successful completion of Algebra I.

OPEN TO STUDENTS IN GRADES 11 - 12

3080 ADVANCED PLACEMENT PHYSICS 1 F4

AP Physics 1 is designed to be equivalent of a first semester college introductory physics course without calculus. To quote the College Board description: "In most colleges, this is a one-year terminal course with a laboratory component and is not the usual preparation for more advanced physics and engineering courses. However, the AP 1 course often provides a foundation in physics for students in the life sciences, pre-medicine, and some applied sciences, as well as other fields not directly related to science". This course will follow the AP Physics 1 curriculum. 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. The course stresses theory and application and will further develop the students' analytical and critical thinking skills. A laboratory component is included. All students enrolled in the course are required to take the AP Physics 1 examination in May.

PREREQUISITE: Successful completion of Physics or Introductory Physics, successful completion of Algebra 1 and Geometry, and teacher recommendation.

OPEN TO STUDENTS IN GRADES 11 - 12

3090 ADVANCED PLACEMENT PHYSICS 2 F4

AP Physics 2 is designed to be equivalent of a second semester college introductory physics course without calculus. This course will follow the AP Physics 2 curriculum. The course covers fluid mechanics; thermodynamics; electricity and magnetism; optics; and atomic and nuclear physics. The course stresses theory and application and will further develop the students' analytical and critical thinking skills. A laboratory component is included. Summer work is mandatory prior to the beginning of the school year. All students enrolled in the course are required to take the AP Physics 2 examination in May.

PREREQUISITE: Successful completion of AP Physics 1, a C or better in Algebra I and Geometry, and teacher recommendation.

OPEN TO STUDENTS IN GRADES 11 – 12

3089 ADVANCED PLACEMENT PHYSICS C F4

AP Physics C ordinarily forms the first part of the college sequence that serves as the foundation in physics for students majoring in the physical sciences or engineering. The sequence is parallel to or preceded by mathematics courses that include calculus. Methods of calculus are used wherever appropriate in formulating physical principles and in applying them to physical problems. Strong emphasis is placed on solving a variety of challenging problems, some requiring calculus. This course is the first part of a sequence which in college is sometimes a very intensive one-year course but often extends over one and one-half to two years, with a laboratory component. Summer work is mandatory prior to the beginning of the school year. Students are required to take the AP Exam for Mechanics in May.

PREREQUISITE: Successful completion of AP Physics 1 and teacher recommendation.

CO-REQUISITE: Calculus AB or BC

TECHNOLOGY/ENGINEERING COURSES

3201 HONORS SCIENCE TECHNOLOGY AND ROBOTICS F4

3202 COLLEGE PREP SCIENCE TECHNOLOGY AND ROBOTICS F4

Science Technology and Robotics is a course intended to expose students to practical, scientific, mechanical, and technological concepts. Using materials from the Lego Dacta building sets, the students build a wide variety of machines. The constructions start as simple demonstrations of the six basic machines, then progress to motorized machines, and finally to a wide assortment of computer controlled machines. Students write simple computer programs that use feedback from various sensors such as light, touch, temperature, and angle. Some of the projects that will be completed are: a greenhouse, an ice cream machine, and a washing machine. Students will work with Lego pneumatics kits and control lab kits to complete their constructions. Throughout the course, other topics such as CAD/CAM, automation, mechanical advantage (ideal and actual), design theory, problem solving, and discussions of evolving technologies will be discussed. A science project will also be assigned during the third or fourth quarter. The need for teamwork and effective communication of ideas will be stressed.

OPEN TO STUDENTS IN GRADES 11 - 12

3209 SCIENCE TECHNOLOGY AND ROBOTICS F4

Science Technology and Robotics is a course intended to expose students to practical, scientific and technological concepts. Using materials from the Lego Dacta building sets, the students build a wide variety of machines. The constructions start as simple demonstrations of the six basic machines, then progress to motorized machines, and finally to a wide assortment of computer controlled machines. Students write simple computer programs that use feedback from various sensors such as light, touch, temperature, and angle. Some of the projects that will be completed are: a greenhouse, an ice cream machine, and a washing machine. Students will work with Lego pneumatics kits and control lab kits to complete their constructions.

OPEN TO STUDENTS IN GRADES 11 - 12

3401 HONORS EXPLORING ENGINEERING F4

3402 COLLEGE PREP EXPLORING ENGINEERING F4

Students interested in high-tech careers and enjoy hands-on learning experiences should consider the field of Technology/Engineering. This course encourages students to pursue engineering questions and technological solutions that emphasize research and problem solving using mathematical and scientific concepts. Students achieve a more advanced level of skill in engineering design by learning how to conceptualize a problem, develop possible solutions, design and build prototypes or models, and make modifications if necessary. Students will explore engineering design, construction technologies, energy and power technologies including fluid systems, thermal systems, electrical systems, and communication and manufacturing technologies. This course will prepare students to successfully pass the Technology/Engineering MCAS test.

OPEN TO STUDENTS IN GRADES 9 - 10

3501 HONORS CAD ENGINEERING AND DESIGN I F4

3502 COLLEGE PREP CAD ENGINEERING AND DESIGN I F4

Students will learn and utilize a CAD drawing program and produce precise engineering drawings and designs. These drawings will be developed using various accepted engineering drawing practices and techniques. Students will use The Engineering Design Process while they are solving engineering problems and completing projects. Through lessons, research and problem solving, students will design and create engineering drawings and construct prototypes to prove their solutions. During these projects, students will utilize physics, math and English when calculating or reporting their data. A written technical report detailing conclusions may accompany many of the engineering projects. Prototypes and models will be built using various types of foam board, balsa wood, and other

wood types. Small hand tools and machines will be used during construction. Full size prototypes may also be built, safely using power tools, dimensional lumber and steel. Students will learn, understand and solve these engineering problems while keeping all their work in an engineering portfolio. This course also prepares students for subsequent technical drawing course, engineering courses and architectural courses offered by the department.

OPEN TO STUDENTS IN GRADES 9 - 12

3511 HONORS CAD ENGINEERING AND DESIGN II F4

3512 COLLEGE CAD PREP ENGINEERING AND DESIGN II F4

Students will build on the knowledge gained in Engineering Drawing I. They will expand on their CAD drawing techniques using the Creo 2.0 engineering drawing program. Students will use The Engineering Design Process while they are solving engineering problems and completing projects. Through lessons, research and problem solving, students will design and create engineering drawings and construct prototypes to prove their solutions. During these projects, students will utilize physics, math and English when calculating or reporting their data. A written technical report detailing conclusions may accompany many of the engineering projects. Prototypes and models will be built using a 3D printer. Small hand tools and machines will be used during construction. Full size prototypes may also be built, safely using power tools, dimensional lumber and steel. All of the student's work during the year will be kept in their Engineering Portfolio. All students planning to attend college and major in a particular science, math, architecture, or engineering will benefit from this course.

PREREQUISITE: Successful completion of CAD 3501/3502.

OPEN TO STUDENTS IN GRADES 10 - 12

3521 HONORS CAD ENGINEERING AND DESIGN III F4

3522 COLLEGE CAD PREP ENGINEERING AND DESIGN III F4

This is a project-oriented course that builds on the foundation of skills mastered in Engineering & Technical Drawing II. A much deeper in depth mastering of engineering practices and skills will be developed. Students will utilize the Creo 2.0 engineering drawing program and complete their projects using a 3D printer. Math and science will be a strong component of this course. Using physics and engineering principles, students will not only design, but also construct their solutions. There will be a heavy emphasis on the engineering design process. Students will solve engineering problems by designing and constructing various models to prove their solutions. Students should be independent thinkers as well as self-motivated. Individual and independent assignments will be given. Student will research and develop solution independently. Any students planning to major in engineering in college will benefit from this course.

PREREQUISITES: Successful completion of CAD 3501/3502 and CAD 3511/3512.

OPEN TO STUDENTS IN GRADES 11 - 12

3531 HONORS CAD ENGINEERING AND DESIGN IV F4

This is a project-oriented course that builds on the foundation of skills mastered in Engineering & Technical Drawing III. Students will utilize the Creo 2.0 engineering drawing program and complete their projects using a 3D printer. Math and science will be a strong component of this course. Using physics and engineering principles, students will not only design, but also construct their solutions. There will be a heavy emphasis on the engineering design process. THIS COURSE WILL REQUIRE STUDENTS TO COMPLETE A FULL YEAR PROJECT. The project will continue through the year, finishing with a technical report and solution prototypes completed. Students should be independent thinkers as well as self-motivated. Student will research and develop solution independently. Any students planning to major in engineering in college will benefit from this course.

PREREQUISITES: Successful completion of CAD 3501/3502, CAD 3511/3512, and CAD 3521/3522.

OPEN TO STUDENTS IN GRADES 12

3601 HONORS ARCHITECTURE AND DESIGN I F4

3602 COLLEGE PREP ARCHITECTURE AND DESIGN I F4

This class provides a base for any student interested in pursuing a career in architecture or engineering. Students will be introduced to the world of architecture by learning how to design, both visually and structurally. Each student will create an individual set of architectural plans. These plans will be a complete design of a single-family home. All designs will be created with a CAD drawing tool. While creating, students will also develop an appreciation of historical architects and architectural history. Once the student has completed his or her house plans they will construct a prototype model of their home. These models will be constructed from architectural foam board and will display their house design. This class is taught through class lectures and demonstrations as well as individual research. Students will use math, science and English skills to complete most assignments and projects. This is an excellent course for any future architect, engineer, mathematician, or scientist.

PREREQUISITE: Architecture & Design teacher recommendation.

OPEN TO STUDENTS IN GRADES 9 - 12

3611 HONORS ARCHITECTURE AND DESIGN II F4

3612 COLLEGE PREP ARCHITECTURE AND DESIGN II F4

Students will continue defining and mastering the skills they acquired in Architecture & Design I. Students will gain a greater depth of knowledge in structural engineering and well as design and construction. This course will require the students to design a structure. This structure will be designed through the development of a series of plans that include structural details. Students must know and use architectural and structural engineering principles, techniques and formulas. Students will again use a CAD program to develop drawings. Upon the completion of the design, students will construct two model prototypes. One model will display design and the other structural engineering. Students will learn through class lectures and demonstrations as well as individual research. This is an excellent class for any student that may choose a career in engineering or architecture.

PREREQUISITE: Successful completion of Architecture 3611/3612.

OPEN TO STUDENTS IN GRADES 10 - 12

3621 HONORS ARCHITECTURE AND DESIGN III F4

3622 COLLEGE PREP ARCHITECTURE AND DESIGN III F4

Architecture Design students will continue defining and mastering the skills they acquired in Architecture II. This is a course that is for the future architect. In depth structural analysis and design will be stressed. Engineering skills will be developed while using physics and math. The engineering design process will be utilized while solving various problems. Students will design a complete set of building plans for a structure other than a house. Like the previous architecture classes, students will use the Computer Aided Design (CAD) programs while drawing. The students will be required to research a part of architectural history and report on it using a power point program. Students may also be involved in engineering projects that pertain to architecture.

PREREQUISITES: Successful completion of Architecture 3601/3602 and 3611/3612.

OPEN TO STUDENTS IN GRADES 10 - 12

3631 HONORS ARCHITECTURE AND DESIGN IV F4

This is a project-oriented course that builds on the foundation of skills mastered in Architecture and Design III. Students use the Autosketch drawing program as well as learn the Creo 2.0 engineering drawing program and complete their projects using a 3D printer and other modeling materials. Physics and engineering principles will be used and students will not only design, but also construct their solutions. **THIS COURSE WILL REQUIRE STUDENTS TO COMPLETE A FULL YEAR PROJECT.** The project will continue through the year, finishing with a technical report and solution prototypes completed. Students should be independent thinkers as well as self-motivated. Student will research and develop solution independently. Any students planning to major in architecture in college will benefit from this course. PREREQUISITES: Successful completion of Architecture 3601/3602, 3611/3612, and 3621/3622.

OPEN TO STUDENTS IN GRADES 12

3879 EXTREME MANUFACTURING ENGINEERING S2

This Engineering Pathway course may be a STEM or general academic one semester offering. It is designed primarily for the 10th grade student, who has had a year of related coursework in STEM, Engineering Technology, or Technology Education. This class, using the 8 Step Engineering Design Process will research, design, prototype, and manufacture products while learning the Engineering topics of mechanisms, energy, statics (analysis of loads), materials, and kinematics (study of motion). They will learn how they relate to Manufacturing Engineering processes of assembly lines, “just in time” lean manufacturing, robotics and automation, computer modeling, and flexible manufacturing. Using a defined manufacturing process, students will build an extreme prototype such as a bridge prototype of a much larger scale than is currently made in Exploring Engineering. Students will have the opportunity to use wood, metal, or other materials commonly available. Field trips to local manufacturing facilities will be encouraged in order for students to gain first-hand insight of the proven methods found in industry. Examples of extreme prototypes may be a bridge, bicycle, glider, rocket, windmill, or trebuchet.
OPEN TO STUDENTS IN GRADES 10 - 12

3709 ENGINEERING DESIGN AND MANUFACTURING WITH WOOD I S2

This one semester course exposes students to the manufacturing processes using the engineering design process. Students will develop a new product through research and mock-up development. Students will produce a prototype product and in groups, develop manufacturing processes to mass-produce the product. Wood and/or metal will be the primary materials used in the manufacturing process. Emphasis will be placed on multi view drawings, scale and proportion, safe and proper tool usage, and manufacturing processes. This course will be beneficial for students considering engineering and technical drawing courses.
OPEN TO STUDENTS IN GRADES 10 - 12

3801 HONORS ENGINEERING DESIGN AND MANUFACTURING WITH WOOD II F4

3802 COLLEGE PREP ENGINEERING DESIGN AND MANUFACTURING WITH WOOD II F4

Students will research a project of their choice and with the instructor’s approval and direction, will develop a complete set of working shop drawings that will be used in the manufacture of a prototype. Use of proper scale and proportion will be stressed. Wood and/or metal will be used in the manufacturing process. CAD programs will be introduced. Students planning to attend college and major in engineering, math, or architecture will benefit from this course.

PREREQUISITE: Successful completion of Engineering Design and Manufacturing 3709.

OPEN TO STUDENTS IN GRADES 11 - 12

3811 HONORS ENGINEERING DESIGN AND MANUFACTURING WITH WOOD III F4

3812 COLLEGE PREP ENGINEERING DESIGN AND MANUFACTURING WITH WOOD III F4

Students will research a project of their choice and with the instructor’s approval and direction, will develop a complete set of working shop drawings that will be used in the manufacture of a prototype. Use of proper scale and proportion will be stressed. Hardwoods and/or exotic species will be used and more advanced joinery methods will be explored. Students planning to attend college and major in engineering, math, or architecture will benefit from this course.

PREREQUISITE :Successful completion of Engineering Design and Manufacturing 3709 and 3801/3802.

OPEN TO STUDENTS IN GRADES 11 AND 12

3809 HOME CONSTRUCTION TECHNOLOGY S2

A one semester course that has a focus on the study of commercial, residential, industrial and public works structures. Students will examine several types of construction and create scale versions for further study and testing. Creative design and coordination of construction technologies will be emphasized. Students will work in teams to solve design problems and construct products. Tools and machines will be used in the construction of various prototypes. OPEN TO STUDENTS IN GRADES 10 - 12

3839 INTRODUCTION TO ELECTRICITY/ELECTRONICS S2

This is a hands-on course covering electricity in everyday use. Major topics include residential wiring, basic electric repair, electric motors and magnetism. Instruction and use of the digital multi-meter will accompany hands-on circuit troubleshooting and wiring procedures. Soldering techniques and integrated circuits are included in the curriculum.
OPEN TO STUDENTS IN GRADES 10 - 12

3869 INTRODUCTION TO ROBOTICS S2

This course will present an overview of robotics in practice and research. A study of robotics is a combination of mechanical, electrical, and structural engineering, physics, mathematics, and computing. The student, working within a team, will be actively engaged with all of these disciplines in a problem-posing problem-solving environment. The essential characteristics of this course will center on robotic sensing, movement, and energy. The course will also expose the student to some of the contemporary happenings in robotics. It is recommended that students have completed either Exploring Engineering or Electricity/Electronics prior to enrolling in this course.
OPEN TO STUDENTS IN GRADES 10 - 12

World and Classical Languages

The World and Classical Languages Department of Marlborough High School seeks to broaden the student's learning horizon through a study of other languages and to foster a sense of world citizenship.

The study of Spanish, French and Mandarin Chinese emphasizes oral proficiency as well as reading, writing, aural comprehension and the study of culture. In Latin, the focus is on grammar, reading, etymology, mythology and Roman History.

The World and Classical Languages course sequence is described in order of vertical progression. A passing grade in the previous level of a language or proficiency interview/test for placement determines the year of a language into which a student will be placed.

While both Honors and College Prep students cover the same curriculum, there are important differences in expectations and outcomes that distinguish between the two credit options. In Honors classes performance requirements are more rigorous and the evaluation is at a more sophisticated level of mastery than College Prep courses, for both written and oral work. In some cases, College Prep and Honors students may be combined in a single class with accommodations made as appropriate to each level.

Please note that our Chinese, Spanish and French courses are not intended or necessarily recommended for native/heritage speakers. Students who already have a working knowledge of those languages are encouraged to enroll in an alternate language course.

Recommended course selections by grade level:

9th Grade Spanish I or II, Latin I or II, French I or II, Mandarin I or II, Latin as a Bridge (ELL), higher level with placement test.

10th Grade Spanish I, II, or III, Latin I, II or III, French I, II or III, Mandarin I, II or III, Latin as a Bridge (ELL), higher level with placement test.

11th Grade Spanish I, II, III or IV, Latin I, II, III or IV, French I, II, III or IV, Mandarin I, II, III or IV, Latin as a Bridge (ELL), higher level with placement test.

12th Grade Spanish I, II, III, IV, V, or AP, Latin I, II, III, IV, V, or AP, French I, II, III, IV, V, or AP, Mandarin I, II, III, IV, V, or AP, Latin as a Bridge (ELL).

**The graduation requirement is 2 sequential years of the same language.

1201 HONORS FRENCH I F4

1202 COLLEGE PREP FRENCH I F4

Students of French I level will be exposed to the four basic skills of language acquisition: listening, speaking, reading, and writing. Students will engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions as they come to understand and interpret both the spoken and written word on a variety of topics in the target language. This course will be taught by using a multi-media approach that will

ultimately appeal to visual, auditory, and kinesthetic learners, while meeting the individual needs of all students. The study of basic grammar and vocabulary will allow students to understand the nature of the language being studied by comparing and contrasting it with their own. The infusion of culture into the curriculum will also help students deepen their appreciation and respect for the perspectives, practices, and products of Francophones all over the world. This course is conducted in French as much as possible.

1211 HONORS FRENCH II F4

1212 COLLEGE PREP FRENCH II F4

After completing a review of the present tense of regular and irregular verbs, level I grammar, and vocabulary, students will be introduced to more complex grammatical concepts. They will continue to acquire new vocabulary, read and write on a more advanced level, and study the past, imperfect, future, and conditional verb tenses. In addition, level II students will continue to gain knowledge and understanding of other cultures, and hopefully begin to use the target language for personal enjoyment beyond the school setting. This course is conducted in French.

1221 HONORS FRENCH III F4

1222 COLLEGE PREP FRENCH III F4

The primary goal of French III is to improve the student's command of the spoken language through the oral and written work, along with supplementary materials. At this level the student should have mastered the basic structure of the French language. Some preliminary review work is done and new structural forms are studied in depth. Vocabulary enrichment is accomplished through the discussion of readings. The mastery of listening comprehension and speaking skills is emphasized through group discussions of selected topics. Written composition is required. The student will acquire knowledge of French and Francophone culture, customs and traditions. This course is conducted in French.

1021 HONORS FRENCH IV F4

1022 COLLEGE PREP FRENCH IV F4

Students will receive an accelerated grammar program that will enable them to increase their proficiency in all phases of language study. Short stories, poems and a survey of French literature may be provided as an integral part of the course. This class is conducted in French and student participation in the target language is required. Pre-AP work will be included in this class.

1031 HONORS FRENCH V F4

As an alternative to the AP French course, this class will offer students the opportunity to continue their study of the French language without the rigors of the AP exam. Students will continue their study of French grammar as well as French literature which will include short literary passages. There will also be emphasis on speaking of and listening to the language. This course is conducted in French.

1020 ADVANCED PLACEMENT FRENCH LANGUAGE F4

This is an accelerated course for the student who may be interested in pursuing study of the French language at the college level. This course is designed to cover all 4 skills of language learning as preparation for the AP French Language exam that will be taken in May. Students are required to take the French Language AP Exam in May. This course is conducted in French.

PREREQUISITE: Summer reading is a requirement.

1361 HONORS SPANISH I F4

1362 COLLEGE PREP SPANISH I F4

The first year of Spanish provides students with a building base for the language through four major skill set components: listening, reading, writing, and speaking. There are several media used to enhance the learning

experience such as interactive textbooks, websites, and videos that support grammar, vocabulary, and cultural knowledge. At the end of the first year, students will have gained knowledge of basic grammar and verb conjugations, as well as have learned a series of theme-based vocabulary to allow them to communicate at a beginner's level. The class is conducted in Spanish as much as possible.

1371 HONORS SPANISH II F4

1372 COLLEGE PREP SPANISH II F4

This is a Spanish course in which the student is obliged to speak, write, and read in Spanish. After review of verb tenses, grammar, and vocabulary, the student will be introduced to new material including the imperfect tense, and irregular forms of previously learned verb tenses and grammatical concepts. By the end of the course the student will be able to communicate at an appropriate level in speech, writing, and vocabulary use. Spanish/Hispanic culture is introduced through videos, culture readings, and other materials. The class is conducted in Spanish.

1381 HONORS SPANISH III F4

1382 COLLEGE PREP SPANISH III F4

Vocabulary enrichment is accomplished through the discussion of textbook readings and supplemental materials. The mastery of listening and speaking is emphasized through group discussions, dialogues, and oral presentations. Emphasis is placed on major grammatical structures including verb tenses in the preterite, imperfect, present perfect, pluperfect, present subjunctive, future, and conditional tenses as well as commands. Written compositions are required. Spanish/Hispanic culture is incorporated through videos, cultural readings, and supplemental materials. The class is conducted in Spanish.

1391 HONORS SPANISH IV F4

1392 COLLEGE PREP SPANISH IV F4

At this level, vocabulary and grammar will be largely expanded to help students conduct more advanced communication. Students will explore different genres of literature. Current events of the Hispanic world will be investigated through various forms of media and presented and discussed via written and verbal summaries. Daily participation in the target language is required. The class is conducted in Spanish.

1401 HONORS SPANISH V F4

1402 COLLEGE PREP SPANISH V F4

This is a continuance of the Spanish IV class. Classes are taught in Spanish and students are expected to be motivated and have a desire to speak in the target language. Advanced grammar, conversation, literature, art, and current events will be studied. Use of tapes and DVDs for listening and speaking will also be a part of this course. This class is conducted in Spanish.

1400 ADVANCED PLACEMENT SPANISH LANGUAGE F4 This is an accelerated course designed for the highly motivated, academically qualified student. This course is designed to cover grammar, literature, and interpersonal and presentational communication at an intermediate college level. Students are required to take the Spanish Language AP Exam in May. Students will be expected to carry a college level workload. This course is taught in Spanish.

PREREQUISITE: Summer reading is a requirement.

1503 LATIN AS A BRIDGE S2

This class will help to meet the needs of English Language Learners who have completed the ELL program but require more help with the acquisition of English vocabulary and grammar. It will focus on the commonalities between Latin, English, and the Romance languages and use these to reinforce the structure of English language, so

that the student will have more success on the English Language Arts portion of the MCAS and in English class. This is not the equivalent of a Latin I class.

1501 HONORS LATIN I F4

1502 COLLEGE PREP LATIN I F4

Latin I introduces the student to the language of ancient Rome via synthetic textbook readings. Beginning simply and increasing in grammatical difficulty, the readings follow the daily life of a Roman family. Latin grammar is presented against a background of Roman culture, civilization, and mythology, including the story of the Trojan War. Projects often include making a toga and presentations on gods and goddesses. Much emphasis is placed on building a strong English vocabulary based on Latin roots, as well as on improving the student's ability to manipulate English grammar effectively.

1511 HONORS LATIN II F4

1512 COLLEGE PREP LATIN II F4

Latin II is a natural progression of Latin skills, expanding the student's Latin vocabulary and exposure to more complex grammatical constructions. Translation skills continue to be stressed through readings about a Roman family. Roman history, culture and classical influences on Western Civilization are further studied. Medical terms, law terms, and commonly used Latin phrases are explored in an attempt to build an ever-increasing English vocabulary. Readings in English explore ancient heroes such as Perseus, Theseus, Hercules, Odysseus and Aeneas.

1521 HONORS LATIN III F4

1522 COLLEGE PREP LATIN III F4

This course represents a transition from grammar study and simple Latin reading passages to the study of Roman authors and reading of authentic Latin literature. The year begins with a review of basic grammar and continues the study of the Latin language and Roman culture. A unit on Roman city planning via the book *City* and a look at Roman Comedy through a reading of Plautus' "Twin Menaechmi" (in English) are included. As the year progresses, students will explore the works of authentic Latin authors such as Pliny and Martial.

1531 HONORS LATIN IV F4 51

1532 COLLEGE PREP LATIN IV F4

This course combines more complex grammar study and review via a workbook with the culture and history of the late Roman Republic and Augustan Rome. By the conclusion of this course, students will have studied the grammar necessary to read authentic Latin authors. Students will study the rhetorical speeches of Cicero and the works of the poets Catullus, Horace, and Ovid in both Latin and English. In addition, students will examine Roman history in more depth, with special emphasis on the Roman emperors of the first and second centuries A.D.

1533 HONORS LATIN V: SELECTED ROMAN AUTHORS PROSE/POETRY F4

This course is designed for the advanced Latin student who wants to continue a study of authentic Latin literature but does not necessarily want to enroll in the accelerated AP Latin course with its required AP Exam. The first semester will explore the times and works of prose authors such as Plautus, Cicero, Caesar, Livy, and Suetonius. The second semester will highlight the literary contributions of Roman poets such as Horace, Ovid, and Vergil. A solid foundation of Latin grammar through Latin IV is required for either of these semester courses, however, the works will be read through a literary as well as a grammatical lens.

1530 ADVANCED PLACEMENT LATIN: VERGIL AND CAESAR F4

This is an accelerated course designed for the highly motivated, academically qualified student. Students will read, in Latin, excerpts from Books 1, 2, 4, and 6 of Vergil's *Aeneid* and selections from Caesar's *Gallic Wars*, further developing their translation skills and knowledge of Latin vocabulary and grammar. Students will also analyze the

poetry of the Aeneid and continue their study of the mechanics of poetry, including poetic devices and meter. Students will also explore diverse literary themes, including leadership, Roman historical context, and war and empire. Students are required to take the AP Exam in May. Students will be expected to carry a college level workload.

PREREQUISITE: Summer reading is a requirement.

1541 HONORS MANDARIN CHINESE I F4

1542 COLLEGE PREP MANDARIN CHINESE I F4

This is an introductory course of Mandarin Chinese language and culture. The course centers on introducing the Mandarin sound system, Pinyin (a phonetic system using the Roman alphabet) and the rudiments of the Chinese writing system. Written applications will be introduced with pen and paper, brush and ink, and word processing. This course also focuses on improving four proficiencies (listening, speaking, reading and writing). Oral performances (dialogues, presentations, and phone-in assignments) are a regular part of the curriculum. Chinese culture will be introduced through interactive and hands-on activities. These will include activities on Chinese history, cooking and eating, holidays and festivals, calligraphy, music, movies, and crafts. The course will be conducted in Mandarin Chinese as much as possible.

1551 HONORS MANDARIN CHINESE II F4

1552 COLLEGE PREP MANDARIN CHINESE II F4

This course continues the sequence of Mandarin Chinese I. In this course, four proficiencies (listening, speaking, reading and writing) will be further expanded. Oral performances (dialogues, presentations, dramas, interviews and phone-in assignments) will be a regular part of the curriculum. Reading competency will be improved through reading the assigned textbook. Writing practice will be conducted using pen and paper, brush and ink, and word processing. Chinese culture will also be introduced through interactive and hands-on activities. These activities are about Chinese history and literature, cooking and eating, holidays and festivals, folktales, calligraphy, music, movies and crafts. The course will be conducted in Mandarin Chinese.

1561 HONORS MANDARIN CHINESE III F4

1562 COLLEGE PREP MANDARIN CHINESE III F4

In this third year course, students focus more on the development and integration of four language proficiencies (listening, speaking, reading and writing). At this level, vocabulary will be largely expanded to help students conduct more advanced communication. Students are encouraged to read the materials without Pinyin. Chinese culture will be introduced through interactive and hands-on activities. These activities are about Chinese history and literature, religion, art, cooking and eating, holidays and festivals, folktales, calligraphy, music, movies and crafts. The course will be conducted in Mandarin Chinese.

1571 HONORS MANDARIN CHINESE IV F4

1572 COLLEGE PREP MANDARIN CHINESE IV F4

This course continues the sequence of Mandarin Chinese III. The language curriculum focuses on expanding student proficiencies in listening, speaking, reading and writing. Skills in written applications continue to be developed using pen and paper, brush and ink, word processing and other electronic media. Oral proficiency will be improved through selfcreated dialogues, presentations, interviews and dramas. This course also focuses on improving reading competency by introducing students to literary Chinese, and the authentic texts from Chinese newspapers and formal documents. Further, in this course, students will compare and contrast Chinese culture with American culture through a variety of interactive language and cultural experiences. The course will be conducted in Mandarin Chinese.

1601 HONORS MANDARIN CHINESE V F4

This course continues the sequence of Mandarin Chinese IV. In this course, four language skills (listening, speaking, reading and writing) will be further improved. Oral performances (task-driven situational dialogues, presentations, interviews, and dramas) will continue to be a regular part of the curriculum. Reading competency will be improved through reading the assigned textbook and authentic literary Chinese texts on contemporary and historical topics. Writing composition is done by pen and paper as well as word processing. This course is taught in Mandarin Chinese only and all work should be completed in Chinese characters.

1600 ADVANCED PLACEMENT MANDARIN CHINESE F4

This is an accelerated course designed for the highly motivated, academically qualified students. This course is designed to prepare students to demonstrate their Chinese language skills in interpersonal, interpretive and presentational communication at an intermediate college level. Throughout the course, emphasis will be placed on amassing literary vocabulary and developing oral and writing competency. Students are required to take the Mandarin Chinese Language AP Exam in May. Students will be expected to carry a college level workload. This course is taught in Mandarin Chinese only.

PREREQUISITE: Summer work is a requirement

1539 GREEK AND ROMAN MYTHOLOGY SEMESTER ELECTIVE

This class is intended for 11th and 12th graders. The goal of this course is to use Greek and Roman mythology to encourage students to read, analyze texts, and think critically. Students will explore the themes in mythology and will have opportunities to discuss and write about these themes. By comparing and evaluating different myths and how they relate to the world, students will gain new understanding of mythology, the ancient world, and the comparisons that can be drawn to the modern world.

Business & Information Technology

The Marlborough High School Business and Information Technology department provides opportunities through both semester and full year courses with meaningful learning experiences that actively engage all students. We challenge students to be continuous learners of business, the economy, and information technology.

The following courses are available in the Business Information Technology department. Please note that courses denoted with an asterisk (*) have a prerequisite course associated with them.

Course selections by grade level:

9th Grade Accounting and Financial Literacy I, Entrepreneurship, Exploring Computer Science/Information Technology(ECS/IT), Entrepreneurship II*, Marketing*

10th Grade Accounting and Financial Literacy I, Honors Accounting II/ Computerized Accounting, Entrepreneurship, Marketing, Exploring Computer Science/Information Technology I, Information Technology II*, HTML and Coding*,Excel/Access*, Intro to E-Commerce*, Entrepreneurship II*, Sports & Entertainment Marketing*, International Business*

11th Grade Accounting and Financial Literacy I, Honors Accounting II/Computerized Accounting, Honors Accounting III, Entrepreneurship, Marketing, Exploring Computer Science/Information Technology I, Information Technology II*, HTML and Coding*, Excel/Access*, Intro to E-Commerce*,Entrepreneurship II*, Sports & Entertainment Marketing*, International Business*

12th Grade Accounting and Financial Literacy I, Honors Accounting II/Computerized Accounting, Honors Accounting III, Entrepreneurship, Marketing, Exploring Computer Science/Information Technology I, Information Technology II*, HTML and Coding*, Excel/Access*, Intro to E-Commerce*, Entrepreneurship II*, Sports & Entertainment Marketing* International Business*

Business & Information Technology Career Pathway

Business & Information Technology courses are not year/grade specific. These electives may be taken any year throughout your high school career as long as the prerequisite is met.

5011 HONORS ENTREPRENEURSHIP I S2

5012 COLLEGE PREP ENTREPRENEURSHIP I S2

The focus of this course is the “business of business.” The entrepreneurship course is designed to introduce students to what is needed to start a simple business. The controlling functions, accounting, finance, marketing, human resource management, - as well as legal and economic considerations – are all applied. Students will develop an understanding of what it means to be an entrepreneur and how they can use their unique skills and talents to start a small business venture. Topics covered include the characteristics of an entrepreneur, discovering entrepreneurial opportunities, and researching and analyzing domestic, global, and market trends.

OPEN TO STUDENTS IN GRADES 9, 10, 11 AND 12

5511 HONORS ENTREPRENEURSHIP II S2

5512 COLLEGE PREP ENTREPRENEURSHIP II S2

Opportunities in the areas of franchising, self-employment, buying an established business, and forms of business, and the ownership will be investigated. Topics of study will include the changing global marketplace, financing the business, elements of management, supervising employees, leadership styles, and government regulations.

*PREREQUISITE: ENTREPRENEURSHIP I

5411 HONORS MARKETING S2

5412 COLLEGE PREP MARKETING S2

Marketing is the process of developing, promoting, and distributing products to satisfy customers' needs and wants. Marketing helps connect businesses to their customers and provides the means for the exchange process to occur. An exchange takes place every time something is sold in the marketplace. This is a beginning course in marketing which stresses the marketing function's contribution to any organization. Topics include buyer behavior, products, and channels of distribution, promotion, and pricing and social issues in marketing. If you are planning a career in business or thinking about starting your own business, this course will be most informative.

5059 INTRODUCTION TO E-COMMERCE S2

This course introduces the concepts, vocabulary, and procedures associated with E-Commerce and the Internet. The student gains an overview of all aspects of E-Commerce. Topics include development of the Internet and E-Commerce, options available for doing business on the Internet, the differences between E-commerce and traditional commerce, and the essentials of planning and starting an E-business including (marketing issues, payment options, security issues, and customer service).

***PREREQUISITE:** EXPLORING COMPUTER SCIENCE-INFORMATION TECHNOLOGY or have passed the MHS Information Technology I Waiver Test.

5519 SPORTS AND ENTERTAINMENT MARKETING S2

Sports and Entertainment Marketing is a unique and innovative course designed for students with an interest in the sports and entertainment industry. This course stresses the utilization of fundamental marketing concepts and will include an orientation to the sports and entertainment industry. Marketing strategies along with topics in sponsorship, pricing, marketing research, endorsements, and promotions will be part of this course. The course will develop critical thinking, decision making and communication skills through real world applications. Students will be prepared to handle specific tasks associated with either industry. This course offers students an edge if pursuing marketing or sports management degrees on the collegiate level. Guest speakers, case studies, field trips, videos and computer integrated activities will be incorporated into the class.

***PREREQUISITE:** Marketing

5219 INTERNATIONAL BUSINESS S2

International Business will introduce students to the major issues involved in a global economy. This course provides students with the knowledge and understanding of the legal and political factors that come into play when businesses choose to expand their operations into other countries. Students will study the global monetary system and the evolution of that system, the factors involved in currency, exchange rates and economic conditions. This course will develop critical thinking and decision making skills as students explore international trade, strategies used by businesses in an international market, and the cultural effects and ethics involved in cross border transactions. Building on concepts that were introduced in previous business classes, International Business broadens student understanding of how businesses operate and how they grow and thrive in the ever-changing world.

***PREREQUISITE:** Entrepreneurship or Marketing

5039 EXPLORING COMPUTER SCIENCE-INFORMATION TECHNOLOGY S2

Exploring Computer Science/Information Technology (ECS-IT) is designed to introduce students to the field of computer science through an exploration of engaging and accessible topics while using the tools of Information Technology to learn how to develop well formatted documents. The course is designed to focus on the conceptual ideas of computing to help students understand why certain tools or languages might be utilized to solve particular problems. Students will be proficient with using the computer as a personal productivity tool. Windows software, Microsoft Office Suite, online resources including Google applications and code writing web-based resources will be used for exploration and project development. An inquiry based, problem-solving approach will be merged with the technical requirements for properly formatted business style documents and used to prepare students for the digital world. In conjunction with the guidance department, career investigation with the online career planning tools such

as Naviance, are included in this course. **This course is required for graduation.** *Students who pass an Information Technology Waiver test may waive this graduation requirement.*

5319 INFORMATION TECHNOLOGY II (ADVANCED WORD, EXCEL/ACCESS, DESKTOP PUBLISHING, HTML & Coding, Cloud Computing) S2

This project-based class will provide students with appropriate skills for technology based communications. Microsoft Office Suite and image editing software will be used to prepare multimedia projects. Microsoft Excel and Access will be used to solve a variety of spreadsheet and database problems that are likely to be encountered in both the workplace and in the personal life of an individual. Students will use desktop publishing software along with peripheral devices to produce printed media. Students will discover the power of the Internet using critical thinking skills as they prepare online projects using collaborative technology tools. HTML/coding skills will introduce students to the development of websites and WYSIWYG software.

***PREREQUISITE:** EXPLORING COMPUTER SCIENCE-INFORMATION TECHNOLOGY or have passed the MHS Information Technology Waiver Test.

OPEN TO STUDENTS IN GRADE 9 10, 11 AND 12.

5171 HONORS EXCEL/ACCESS S2

This is a course for students who seek to gain comprehensive spreadsheet and database skills. A college text will be used to deliver instruction. The course emphasizes the use of Microsoft Excel and Access to solve a variety of spreadsheet and database problems that are likely to be encountered in both the workplace and in the personal life of an individual. Topics in Excel will include creating and modifying worksheets/charts, working with lists/reports and creating and modifying pivot tables. Students will work with reports, linked tables and queries in Access. Students who will be pursuing a business major in college are strongly advised to take this class.

***PREREQUISITE:** EXPLORING COMPUTER SCIENCE-INFORMATION TECHNOLOGY, STEM student or have passed the MHS Information Technology I Waiver Test.

OPEN TO STUDENTS IN GRADES 10, 11 AND 12.

5199 HTML/CSS AND CODING S2

The goal of this course is to introduce students to the language of the Internet called HTML. You do not need to be a computer programmer to develop a webpage with HTML but you should be comfortable with figuring out how things work. Students in this class will use HTML basic tags and CSS to create tables and hyperlinks to create a webpage. CSS (Cascading Style Sheets) is the standard used to specify the appearance of text and other elements in a web page. Students will use CSS to control the layout of text and graphics in a web page.

***PREREQUISITE:** EXPLORING COMPUTER SCIENCE-INFORMATION TECHNOLOGY, STEM student or have passed the MHS Information Technology I Waiver Test.

OPEN TO STUDENTS IN GRADES 10, 11 AND 12.

5041 HONORS ACCOUNTING AND FINANCIAL LITERACY I F4

5042 COLLEGE PREP ACCOUNTING AND FINANCIAL LITERACY I F4

Accounting is the language of business, and students need this introductory course in the principles of accounting to prepare for further education or for employment. Problems will be completed both manually and on the computer. After the accounting cycle is presented, students will be able to analyze financial transactions and record them in journals, post to the ledger, and prepare financial statements. Students will then make entries in the combination journal and subsidiary ledgers, prepare an eight-column worksheet along with adjusting and closing entries. In addition, payroll systems, special journals, sales tax, bad debts, depreciation, notes, accrued revenues and accrued expenses will be covered. Students will also complete business simulations and prepare short form individual federal and state tax returns. Additional projects will be provided for students taking Honors Accounting I.

OPEN TO STUDENTS IN GRADES 9-12.

5051 HONORS ACCOUNTING II/COMPUTERIZED ACCOUNTING F4

Students selecting this course will be reviewing the advanced accounting systems and concepts studied in Accounting I and then be introduced to departmental accounting, automated accounting, adjustments, corporation accounting, management accounting, cost accounting, partnerships and accounting for not-for-profit organizations. The student will also become familiar with Excel and a computerized accounting program. In addition to the daily classroom activities, accounting simulations and other related projects will be assigned.

***PREREQUISITE:** Accounting I with at least a B average or teacher recommendation.

OPEN TO STUDENTS IN GRADES 10-12.

5061 HONORS ACCOUNTING III S2

College accounting is a comprehensive, in-depth course in accounting for students who have had College Prep Accounting I and Honors Accounting II/Computerized Accounting. The principles and practices of a basic accounting system are presented as well as more complex applications. Major types of assets, as well as the category of current liabilities and payroll accounting are considered along with their effect on net income and their presentation in financial statements. Accounting concepts and practices of partnerships and corporations are presented with the analysis of financial statements. The field of management accounting focuses on the development of useful manufacturing cost information for product costing and management reporting purposes. This course is only offered first semester.

***PREREQUISITE:** Honors Accounting II/Computerized Accounting.

OPEN TO STUDENTS IN GRADES 11 AND 12.

Visual Arts, Media & Textiles

Our mission is to provide each student with a comprehensive and sequential program, led and taught by qualified art educators. Instruction includes production, analysis, history, and aesthetics of art and design. The program will encourage creativity and innovation, self-expression, critical thinking, and problem solving skills.

Art education is essential to the intellectual, social, and emotional development of each individual. The arts promote 21st century skills necessary to succeed in today's world, such as effective communication, visual literacy, collaboration, and global awareness.

Visual Arts include the traditional fine arts such as drawing, painting, printmaking, photography, and sculpture; media arts including film and video, graphic communications, animation, and emerging technologies; architectural, environmental, and industrial arts such as urban, interior, product, and landscape design; folk arts; and works of art such as ceramics, fibers, textiles and fashion design, jewelry, works in wood, paper, and other materials.

Recommended course selections by grade level:

9th Grade Art Foundations, Clothing & Textiles, Video Production I, the possibility of one additional semester course such as Drawing & Painting I, Ceramics I, Photography I, Graphic Design I

10th Grade Art Foundations, Drawing & Painting I & II, Illustration, Ceramics I & II, Photography I & II, Graphic Design I & II, Clothing & Textiles, Advanced Clothing & Textiles, Video Production I-III, 3D Design, Interior Design, Exploring Art History

11th Grade Art Foundations, Drawing & Painting I-III, Illustration, Ceramics I-III, Photography I & II, Graphic Design I & II, Clothing & Textiles, Advanced Clothing & Textiles, Tailoring, Video Production I-IV, 3D Design, Interior Design, Exploring Art History, Creative Photographic Techniques, Portfolio

12th Grade Art Foundations, Drawing & Painting I-III, Illustration, Ceramics I-III, Photography I & II, Graphic Design I & II, Clothing & Textiles, Advanced Clothing & Textiles, Tailoring, Video Production I-V, 3D Design, Interior Design, Exploring Art History, Creative Photographic Techniques, Portfolio, AP Studio Art

*Junior and senior year tend to offer more flexibility in the schedule and students may choose to enroll in multiple art courses if their schedule permits.

**Please be mindful of prerequisites that a course may have.

Possible Career Paths in the Visual Arts:

Advertising, Animation, Architecture, Archaeology, Art Education, Art Therapy, Ceramics, Cinematography, Costume Design, Fashion Design, Fashion Merchandising, Film/Video, Graphic Design, Illustration, Industrial Design, Interactive Game Design, Interior Design, Jewelry Design, Landscape Architecture, Museum Curator, Photography, Photojournalism, Technical Theater Design, Video Production Website Design.

Course Offerings:

6019 ART FOUNDATIONS S2

This course provides an introduction to art with emphasis on the elements and principles of design using a variety of materials. Students will explore drawing, painting, design, and other media including sculpture. This course is designed to teach students a variety of methods and techniques used in the visual arts, which provides an excellent foundation for other courses offered in the department.

OPEN TO ALL STUDENTS IN GRADES 9 - 12

*This course is a prerequisite for many other visual arts courses.

6029 EXPLORING ART HISTORY S2

4002 COLLEGE PREP EXPLORING ART HISTORY S2

4001 HONORS EXPLORING ART HISTORY S2

Exploring Art History will provide an introduction and overview of the history of visual art. The course will emphasize how art has been a reflection of culture and society through various historical periods. This is an interactive course. Students will view, discuss, and write about artwork, as well as engage in hands-on projects that reinforce main concepts and stylistic movements.

PREREQUISITE: Art Foundations or teacher approval

6119 DRAWING AND PAINTING I S2

This course will explore a variety of materials and techniques used to draw and paint. Emphasis will be placed on observational drawing skills, composition, and color. Projects will reinforce skills needed to improve technical and imaginative design. Students will work with a range of drawing pencils, colored pencils, ink, acrylics, and watercolor.

PREREQUISITE: Art Foundations

6129 DRAWING AND PAINTING II S2

This course continues to explore new techniques and materials including charcoal, pastels, and mixed media. Students will build upon their skills acquired in Drawing and Painting I, while gaining proficiency with new materials and creating more advanced compositions.

PREREQUISITE: Drawing and Painting I

6139 DRAWING AND PAINTING III S2

This course is designed for advanced art students who are looking for a more intensive art experience. Students will be given more freedom with material choices, leading towards a higher level of creative problem solving. Projects will focus on a more in-depth level of technical drawing as well as more developed expressive works of art.

PREREQUISITE: Drawing and Painting II and teacher approval

6189 PORTFOLIO Fall Semester S2

6289 PORTFOLIO F4

6281 HONORS PORTFOLIO F4

This course is recommended for the advanced art student. Students will further study drawing, painting, and design concepts in a variety of materials as they refine their skills in the visual arts. Course assignments will allow juniors and seniors to prepare a comprehensive portfolio for art school/college applications. Students who are not planning to pursue art careers are also encouraged to take this course. Summer work is required. Full year students will develop a body of work based on a theme of their choosing.

Open to students in grades 11-12.

PREREQUISITE: Drawing and Painting II or Illustration and/or teacher approval

6170 ADVANCED PLACEMENT STUDIO ART: DRAWING S2

This is an accelerated course designed for the highly motivated students to do college-level work. It is equivalent to a college freshman art foundation course. The Drawing Portfolio is designed to address a broad interpretation of drawing issues. For example, painting, printmaking, collage, some forms of design, abstract and observational works would qualify as addressing drawing issues. The Drawing Portfolio requires a minimum of 24 finished pieces. Students are expected to be motivated, complete homework assignments and work on projects beyond class time. Summer work is required.

Open to students in grades 11-12

PREREQUISITE: Drawing and Painting II or Illustration and/or teacher approval

6269 ILLUSTRATION S2

This course is designed to provide an informative introduction into the disciplines of illustration. Students will use traditional drawing and painting techniques as well as a variety of media and technology as they investigate the role of an artist as a storyteller, problem-solver, and reporter. Emphasis will be placed on effective use of the elements and principles of design. Projects will reinforce skill needed to improve technical and imaginative design.

PREREQUISITE: Drawing and Painting I

6259 PRINTMAKING S2

This course will introduce students to a wide variety of techniques with and without the use of a printing press. In this course students will create prints and apply their knowledge of the elements and principles of design while exploring various printing techniques and materials. Techniques may include etching, collograph, linoleum and block printing, monotype and silkscreen.

PREREQUISITE: Drawing and Painting I

6039 GRAPHIC DESIGN I S2

This course will provide students with an introduction to the field of graphic design. Students will develop creative problem solving skills through hands-on projects that are linked to the commercial applications and professional practices of graphic design, advertising, illustration, and visual storytelling. Projects will focus on the study of typography, logo design, digital imagery and manipulation, illustration, and basic layout techniques. Students will create work by hand, and computer application to design will gradually be introduced with the use of industry-standard Mac computers and Adobe design software.

PREREQUISITE: Art Foundations

6049 GRAPHIC DESIGN II S2

This course further explores the various modes of visual communication. Projects will concentrate on more advanced design and layout techniques, including posters and package design. There will be an increased focus on developing innovative and creative solutions to design problems, as well as using industry-standard technology to produce high quality design work. Students will build a design portfolio, explore career options, and learn more about the exciting fields of graphic design, illustration, and animation. This course is highly recommended for students interested in pursuing a career in any of those areas.

PREREQUISITE: Graphic Design I

9009 PHOTOGRAPHY I: DIGITAL AND DARKROOM S2

Students will study the foundations of fine art photography by developing technical knowledge and skills, both digitally and in the darkroom. They will learn how to operate the manual functions of SLR cameras to gain creative control of the images they capture. The elements and principles of design will help students gain a better understanding of composition and subject matter in their photographs. Current technology and traditional equipment will be used as students learn different aspects of fine art photography. Students will also gain experience with presentation techniques as they build a collection of work.

PREREQUISITE: Art Foundations

9019 PHOTOGRAPHY II S2

This course is designed for students who wish to expand their knowledge of photographic techniques, both digitally and in the darkroom. There will be an increased focus on personal expression and visual communication through photography. Further exploration of film photography and how to use the darkroom will help build creative problem solving skills and thoughtful decision making. Additional concepts will include studio lighting techniques, alternative processes, and digital manipulation of imagery to create meaningful works. Students will study the work of historical and contemporary photographers as inspiration and classroom critiques will assist the student in developing a portfolio of their best work.

PREREQUISITE: Photography I: Digital and Darkroom

9029 CREATIVE PHOTOGRAPHIC TECHNIQUES S2

This course is designed for the serious photography student who wishes to further explore photographic techniques as a means for personal expression. Topics may include liquid emulsions, brushwork, toning, solarizing, hand coloring, photo collage, kodaliths, high contrast prints, pinhole cameras, holga cameras, and combined techniques. Students will explore the creative possibilities of combining traditional methods with digital processes to create more advanced works.

PREREQUISITE: Photography II

9099 PROFESSIONAL PHOTOGRAPHY S2

This course is designed for the serious photography student to further explore the discipline of Photography as a career. Students will explore photojournalism, documentary photography, candid photography, portrait photography, and commercial photography as they relate to photographic careers. Students will develop a portfolio of images that use a variety of subject matter and techniques. Students will learn to develop a personal voice to further explore their artistic vision.

PREREQUISITE: Photography II

6160 ADVANCED PLACEMENT STUDIO ART: 2D DESIGN F4

This is an accelerated course designed for highly motivated students to do college-level work. It is equivalent to a college foundation course. Design involves purposeful decision-making about how to use the elements and principles of design in an integrative way, the 2D portfolio is intended to address a very broad interpretation of design issues. You are asked to demonstrate proficiency in 2D design using a variety of forms including: graphic design, photography, typography, digital imaging, collage, fabric design, weaving, illustration, painting, and printmaking. Summer work is required.

Open to students in grades 11 - 12.

PREREQUISITE: Two courses in Photography or Graphic Design, and teacher approval

6179 3D DESIGN S2

Students will design, plan, and create three-dimensional projects using a variety of media. This course will address sculptural issues in depth and space, while creating both functional and non-functional objects. Various elements and principles of design will be explored. Materials may include clay, fibers, cardboard, wood, plaster, wax, paper-mache, fabric, and metals.

6169 JEWELRY S2

Through demonstration and application students will develop jewelry making skills. Techniques will include texturing, piercing, appliqué, inlay, stone setting, and forging. Materials will include copper and brass as well as non-

traditional materials such as clay, plastic, and paper. Students must buy their own silver and stones. A variety of objects including: rings, belt buckles, pendants, pins, bracelets, and hair ornaments may be produced.

PREREQUISITE: Art Foundations

6199 CERAMICS I S2

Students will work with hand building techniques and time permitting, the potter's wheel. Objects made will be functional and sculptural. Students will learn pinch, coil, and slab techniques, the process of firing, and various glazing techniques.

6299 CERAMICS II S2

This course is designed for students to expand on skills learned in Ceramics I. Students will work on more advanced and independent project ideas and clay techniques. Students will utilize the elements and principles of design and 65 demonstrate good craftsmanship throughout the course. Research and homework will be given to supplement classroom instruction.

PREREQUISITE: Ceramics I

6399 CERAMICS III S2

This course is designed to allow the serious ceramics student to further develop hand-building and wheel-building techniques as they relate to sculptural form. More advanced techniques and approaches will be explored.

PREREQUISITE: Ceramics II and teacher approval

6190 ADVANCED PLACEMENT STUDIO ART 3D DESIGN F4

This is an accelerated course designed for highly motivated students to do college-level work. It is equivalent to a college foundation course. The 3D portfolio is intended to address a broad interpretation of sculptural issues in depth and space. They may include mass, volume, form, plane, light, and texture. Such elements and concepts may be articulated through additive, subtractive, architectural models, ceramics, and three-dimensional fiber arts or metal work, among others. Students will be required to complete a minimum of 16-20 finished pieces, complete homework and work beyond class time to complete assignments.

Open to students in Grades 11-12.

PREREQUISITE: Two courses in Ceramics or 3D Design, and teacher approval

7039 CLOTHING AND TEXTILES F4

In this project-based course, students will learn the basics of clothing construction using commercial patterns, appropriate tools and technology, machines available for home sewing and serger machines. Throughout the course, students will learn about fabric selection and care as well as the skills needed to produce, alter or repair fashion apparel and textile products. The information presented in this course is a valuable asset for all students, but students who are interested in careers in the fashion industry will find this course extremely helpful in their future studies.

7049 ADVANCED CLOTHING AND TEXTILES F4

This project-based course is designed for students who are already proficient in garment construction and wish to acquire more sophisticated construction techniques to create a superior garment. Emphasis will be placed on garment construction in addition to creating a portfolio of advanced techniques, which may be utilized in creating challenging projects of the student's choice. Students will also help in the creation of the annual fashion show of student work, which will be held in the spring.

PREREQUISITE: Clothing and Textiles

7059 TAILORING F4

This project-based course is an advanced course for students who have successfully completed Advanced Clothing and Textiles and wish to create haute couture, high fashion garments with finishing details found on high priced, ready-to-wear garments. In addition, students will explore the area of fiber studies as it relates to becoming a wise consumer. Students in this class will organize the annual fashion show of student work, which will be held in the spring.

PREREQUISITE: Advanced Clothing and Textiles or teacher approval

7179 CREATIVE HANDWORK S2

In this project-based course, students will explore different applications of fiber arts as they pertain to creating pieces with little or no sewing machine use. Students will create a portfolio of various skills, including but not limited to embroidery, needlepoint and crochet as well as other samples of handwork.

7189 INTERIOR DESIGN S2

In this course, students will integrate knowledge, skills and practices required for careers in housing, interiors and furnishings. Students will evaluate the needs of clients, goals and resources in designing plans for creating successful interiors and furnishings. Students will explore the history of furniture and design trends in decorating with the ultimate goals of designing and furnishing their own living space.

9039 VIDEO PRODUCTION I: FUNDAMENTALS S2

This course introduces the basic skills needed for effective video communication. Instruction includes pre-production, camera operation, picture composition, editing, audio recording and basic mixing, and continuity. Other topics include production crew positions, scripting/storyboarding, lighting, shot sequencing, and planning. Assignments emphasize field shooting techniques and editing. Students will work with professional quality equipment and digital editing software, and they will gain a deeper understanding of video communication.

9049 VIDEO PRODUCTION II: STUDIO & FIELD PRODUCTION S2

This course builds on the techniques introduced and practiced in Video Production I. Studio production is introduced and emphasis is placed on adapting field production skills to the studio environment. Students will learn the differences between field and studio work, as well as how to combine them into effective video communication projects. Students will work with state-of-the-art studio technology. Teamwork and collaboration skills are emphasized.

PREREQUISITE: Video Production I

9069 VIDEO PRODUCTION III: VISUAL STORYTELLING S2

This course focuses on the development of creative shot sequencing and scene development. The WALLDO technique (wide, angle, low, linking, depth, opposite) is used to create dynamic scenes that visually communicate and captivate an audience. Students are also introduced to Hi-Definition field shooting and editing. Advanced editing techniques, 3D effects, and pacing are all highlighted. Emphasis is on self-expression, technical quality, and effective use of media as a tool for communication. Projects consist of field work, studio work, or a combination of both.

PREREQUISITE: Video Production II

9059 VIDEO PRODUCTION IV: PRODUCTION INDUSTRY S2

In this course, students will further develop the skills practiced in Video Production III. Emphasis will be placed on high quality work that can be used in the industry using Hi-Definition technology. Students will take a leadership role in the production of programming for the school and local community. At least 50% of student work will be produced for Panther Media (the school district) or WMCT (Marlborough Community Television). Students will also produce advanced individual or small group projects of personal interest. Emphasis will be placed on high

technical quality, professionalism, and the ability to create media that effectively communicates a message to an audience. After school hours may be required for certain projects.

PREREQUISITE: Video Production III and instructor approval

9079 VIDEO PRODUCTION V: INTERNSHIP S2

This course is designed for students who wish to progress beyond Video Production IV. Students will have the opportunity to intern in a professional setting and will gain direct industry experience. Our partnership with WMCT (Marlborough Community Television) is a preferred choice for internship placement. However, students may also work directly with Panther Media or find a professional setting on their own, with approval from the instructor. This course is designed for highly motivated students. After school hours will be required for the majority of project work.

PREREQUISITE: Video Production IV and/or instructor approval

Music

As one of the disciplines identified within the Massachusetts Common Core of Learning, the inclusion of the Fine and Performing Arts within the basic curriculum is essential.

Students at Marlborough High School have the opportunity to experience music through a comprehensive, sequential curriculum taught by music specialists. We believe that if they are to participate in a truly diverse, global society, students must receive a well-rounded education.

Suggested Courses for career path in Music:

9th Grade Mixed Chorus or Concert Band or Wind Ensemble or Jazz Ensemble or A Cappella or String Ensemble or Music Production or Piano/Guitar Workshop

10th Grade Fundamentals of Musicianship and Mixed Chorus or Concert Band or Wind Ensemble or Jazz Ensemble or A Cappella or String Ensemble or Music Production or Piano/Guitar Workshop

11th Grade Fundamentals of Musicianship or AP Music Theory and Mixed Chorus or Concert Band or Wind Ensemble or Jazz Ensemble or A Cappella or String Ensemble or Music Production or Piano/Guitar Workshop

12th Grade Fundamentals of Musicianship or AP Music Theory and Mixed Chorus or Concert Band or Wind Ensemble or Jazz Ensemble or A Cappella or String Ensemble or Music Production or Piano/Guitar Workshop

6409 CONCERT BAND F4

This course is open to any interested student who desires to become proficient on a brass, woodwind, or percussion instrument. All participants will be expected to perform with the band at all rehearsals after school, parades, concerts, festivals, and halftime shows for all home football games. The Concert Band studies music from many different historical periods and is dedicated to the development of individual instrumental technique and large ensemble skills. The important fundamentals of tone production, ensemble playing, musical interpretation and style, rhythm studies, scale and chord studies and basic musicianship are all important elements of the Concert Band curriculum. The final instrumentation and roster personnel are at the sole discretion of the ensemble director and music department coordinator.

OPEN TO STUDENTS IN GRADES 9 – 12.

6419 WIND ENSEMBLE F4

The members of the Wind Ensemble are selected by audition. The audition process will begin in May for selecting the instrumentation for the following year. The audition material for this select group may include some or all of the following: scales and arpeggios, chromatic scale over the working range of the instrument, any selection of music literature currently being studied, and sight reading. Students in this ensemble are expected to attend all rehearsals after school, parades, concerts, festivals, and halftime shows for all home football games. Performance repertoire will include masterworks for the wind band and advanced 20th century compositions. Emphasis is placed on independence of parts, technical proficiency, and musical interpretation. A minimum of one year's experience in Concert Band is strongly recommended. The final instrumentation and roster personnel are at the sole discretion of the ensemble director and music department coordinator.

OPEN TO STUDENTS IN GRADES 9 – 12 or by permission of the instructor.

PREREQUISITE: Audition required.

6519 MIXED CHORUS F4

This course is open to any interested student who desires to become a proficient singer in a group setting. Emphasis will be placed on breath support, diction, musical interpretation, harmonic blend, and sight-reading and other elements of proper vocal technique. Students will study two, three and four-part vocal music and will sing both with and without instrumental accompaniment. Participants will learn about music theory concepts, such as solfege and “movable do,” count singing, Kodaly hand symbols and will be introduced to the basics of Dalcroze Eurhythmics. Members will be exposed to styles of choral literature including but not limited to: classical, spirituals, folk, popular, and Broadway music. Attendance at all concerts, rehearsals, festivals, and community performances is expected. The final instrumentation and roster personnel are at the sole discretion of the ensemble director and music department coordinator.

OPEN TO STUDENTS IN GRADES 9 - 12.

6516 JAZZ ENSEMBLE F4 The members of this ensemble are selected by audition. The audition process will begin in May for selecting instrumentation for the following year. This group is designed for students with sufficient musical skill who would like to develop an understanding of and ability to perform music of various jazz style with specific instrumentation. The group will be limited to saxophones, trumpets, trombones, keyboard players, percussionists, bass, and guitar. Music selected will include rock, soul, jazz, swing, and standards. Students in this ensemble are expected to attend all rehearsals, concerts, festivals and community performances. The final instrumentation and roster personnel are at the sole discretion of the ensemble director and music department coordinator.

OPEN TO STUDENTS IN GRADES 11-12 or by permission of the instructor.

6636 MUSIC PRODUCTION I S2

This course is designed for the beginner, intermediate, or advanced student of music who is interested in learning the basics of a cappella studio recording in a collaborative setting. Members work together to arrange, record and produce music that will be released on iTunes and Loudr. Various pieces of software and hardware specific to recording technology will be introduced and utilized over the course of the semester. Students will alternate roles as recording engineer, producer, performer, observer, editor, and mixing engineer.

OPEN TO STUDENTS IN GRADES 9 - 12.

6309 MUSIC PRODUCTION II S2

This course is designed for the intermediate or advanced student of music who is interested in learning the basics of a cappella studio recording in a collaborative setting. Members work together to arrange, record and produce music that will be released on iTunes and Loudr. Various pieces of software and hardware specific to recording technology will be introduced and utilized over the course of the semester. Compositional techniques related to contemporary music will be studied and only original compositions will be recorded. Students will alternate roles as recording engineer, producer, performer, observer, editor, and mixing engineer.

PREREQUISITE: Music Production I or recommendation from the Music Production teacher.

6546 PIANO WORKSHOP S2 This course is designed for the beginning or the advanced student who desires to continue to improve on already acquired skills and abilities or wants to learn how to play the piano. Note and rhythm reading will be stressed for the beginner as well as piano touch, use of pedals, and correct performance of the music played. Music will be of all types (rock, classical) once the student has mastered the basic abilities needed to play the piano. The intermediate and advanced student will be able to choose some of the literature to be studied and will be required to work on specific aspects of technique such as touch types, evenness, strength, velocity, phrasing, style, and all aspects of interpretation. A major objective will be to bring the pieces studied to performance level.

OPEN TO STUDENTS IN GRADES 9 - 12.

6566 GUITAR WORKSHOP S2 This course is designed for students who wish to learn to play the guitar. Emphasis in the first half of the class will be note and chord reading and learning to play strum patterns. As the playing ability of the student progresses, dynamics, phrasing, and technical execution will be stressed. Several individual pieces of moderate length and difficulty will be learned and the styles will include rock and folk arrangements as well as some simple classical pieces.

OPEN TO STUDENTS IN GRADES 9 - 12.

6590 ADVANCED PLACEMENT MUSIC THEORY F4

This course is designed for the serious music student who wishes to complete music studies comparable to a first-year college course in music theory. The ultimate goal of an AP Music Theory course is to develop a student's ability to recognize, understand, and describe the basic materials and processes of music that are heard or presented in a score. Working towards this goal, music skills which include aural recognition, sight-singing, composition and analysis are developed through a series of exercises such as listening, performance, four-part writing, harmonization, music dictation, and music analysis. The development of aural skills is a primary objective. A software program accompanies the main text so that students may work independently for additional training and reinforcement. Students are required to take the AP Music Theory exam in May. Recommended for those intending to major in music in college. **PREREQUISITE:** Successful completion of summer theory assignment and basic performance skills in voice or on an instrument. Fundamentals of Musicianship course recommended.

OPEN TO STUDENTS IN GRADES 11 OR 12.

6739 FUNDAMENTALS OF MUSICIANSHIP S2

This course is designed for students interested in understanding the fundamental elements of music. Students will develop their written and aural skills through reading, listening to, analyzing and constructing musical examples. Emphasis will be placed on the ability to comprehend universal musical notation. Students interested in AP Music Theory should strongly consider this course first.

6626 STRING ENSEMBLE F4

This course is designed for the string student interested in continuing the developmental process on the instrument. The class will be in rehearsal form and will cover a variety of musical styles including: classical, popular, and contemporary music. Students will be expected to attend all concerts, rehearsals, festivals, and community performances. The final instrumentation and roster personnel are at the sole discretion of the ensemble director and music department coordinator. **PREREQUISITE:** Previous experience and lessons on a string instrument encouraged.

OPEN TO STUDENTS IN GRADES 9 – 12.

6646 A CAPPELLA CHOIR/SIGHT-SINGING F4

The members of this ensemble are selected by audition. The audition process will begin in May for selecting the instrumentation for the following year. The audition material for this select group may include some or all of the following: scales and arpeggios, tonal recall, a prepared classical solo, a prepared pop solo and sight reading. The course designed for the experienced singer who wishes to explore the madrigal literature of the 16th, 17th, and 18th centuries, as well as folk music, spirituals, vocal jazz and contemporary music. The music is performed with little or no instrumental accompaniment, thus developing the student's musical ear and strengthening harmonic singing. Emphasis will be placed on the development of sight-singing skills by using the "solfege" method of reading notes with the "movable do" system. Students will study two, three and four-part vocal music. Participants will learn about music theory concepts such as count singing, Kodaly hand symbols and Dalcroze Eurhythmics. Attendance at all concerts, rehearsals, festivals and community performances is expected. The final instrumentation and roster personnel are at the sole discretion of the ensemble director and music department coordinator.

OPEN TO STUDENTS IN GRADES 9 – 12.

PREREQUISITE: Audition required.

Wellness

The K-12 Wellness Department's vision is to empower our students to be knowledgeable, resourceful and respectful participants in the lifelong pursuit of healthy behaviors and lifestyles. Wellness refers to the dynamic process that connects all aspects of an individual's physical, mental/emotional, and social well-being. As such, the curriculum for each course is aligned with elements of the Massachusetts Comprehensive Health Frameworks as well as the SHAPE America National Physical Education Standards and National Health Education Standards.

To meet MHS Graduation requirements and the legal requirements articulated by the Commonwealth of Massachusetts (M.G.L. Ch. 71, Sect. 3), students are required to take a semester of Wellness each year at each grade level. The recommended course selections by grade level are as follows:

9th Grade Wellness 9

10th Grade Wellness 10

11th Grade Project Adventure, Fitness for Life, Reality Check, or Lifetime and Team Activities

12th Grade Project Adventure, Fitness for Life, Reality Check, or Lifetime and Team Activities

*A student may take an additional Wellness class as an elective, but has to fulfill his or her graduation requirement of taking a semester of Wellness each year in grades 9-12.

9509 WELLNESS 9 S2

Students in grade 9 will work on fostering the relationship of physical and personal wellness in order to pursue a balanced and healthy lifestyle. There is a strong focus on the six high-risk factors facing teenagers through the following curriculum units: Dimensions of Wellness, Fitness and Exercise, Disease Prevention, Mental Health/Stress Management, Yoga and Mindfulness, Anti-Bullying, Lifetime, Team, and Recreational Activities, Alcohol, Tobacco and Other Drugs, Sexuality/Reproduction, and other supplementary Physical Education, Health, and Wellness lessons.

9519 WELLNESS 10 S2

Students in grade 10 will focus on improving their personal fitness and nutrition through assessing their current fitness levels and eating habits in order to set goals for self-improvement. The following units will be covered: Physical Activity and Fitness, Nutrition and Disease Prevention, and Safety/Prevention (CPR and First Aid).

9529 PROJECT ADVENTURE S2

Students in grade 11 and/or 12 will participate in an adventure-based curriculum through the Project Adventure model. The major themes at the high school level are leadership, creativity, and risk-taking. The major units of study include: team building, problem solving, low elements, high elements, fitness testing, and other outdoor pursuits. The health concepts outlined in the National Health Education Standards are integrated into each unit of the course and include: interpersonal skills, decision-making, goal-setting, and practicing health-enhancing activities.

5939 FITNESS FOR LIFE S2

Students in grades 11 and/or 12 will be exposed to a wide variety of fitness activities and stress management skills to promote physical, mental, and spiritual wellness. Students will participate in the following fitness and wellness lessons covering: Pilates, yoga, group exercise classes (Insanity, P90X), functional training (using kettlebells, medicine balls, stability balls, jump ropes, warrior ropes, free weights, nautilus machines, and cardio machines), nutrition tips and plans, mindfulness and stress management skills and techniques.

5949 LIFETIME AND TEAM ACTIVITIES S2

Students in grade 11 and/or 12 will participate in a variety of lifetime and team activities that promote fitness and skills, help reduce stress, and improve overall wellness. The course is designed to enhance the students' knowledge and skills in a variety of activities for present and future participation. Students will increase their awareness of the benefits of physical activity and fitness through understanding how the body functions. By identifying and experiencing the relationship of exercise to overall health, applying important social skills and safety in physical activity, integrating learning movement with other modes of learning, and practicing strategies to respond to stress, students can enhance their overall health and wellness.

9559 ADAPTIVE PHYSICAL EDUCATION S2

Adapted physical education is offered for students with a disability. The instructor provides the learners with the skills necessary for lifetime activities, fitness, and recreational and sport experiences to enhance physical fitness and wellness.

9569 HEALTH ISSUES: REALITY CHECK S2

Students in grade 11 and/or 12 will be exposed to a range of current health, fitness, and wellness topics. The focus is on students making proud and safe decisions, avoiding peer pressure, and participating in healthy lifelong activities. The course will be representative to changing times, current events, and developing concerns relevant to adolescent development, wellness, lifelong fitness and physical activity, health, and safety. A parent/guardian permission slip will be required in the course due to the sensitivity of some of the subject matter.

STEM Program

SCIENCE, TECHNOLOGY, ENGINEERING, MATH (STEM) EARLY COLLEGE HIGH SCHOOL PROGRAM

Marlborough Public Schools' STEM Early College High School program is a member of the Pathways to Prosperity Network in affiliation with the Harvard Graduate School of Education. We are committed to strengthening the STEM pipeline by exposing all students to a rigorous 21st-century learning experience and providing them with the skills essential for college and career. Our specialized curriculum infuses the MA State Framework with the Engineering Design Process in all content areas through project- and problem-based learning.

Our students work with advanced classroom technology, tools, and resources. Students also have an opportunity to immerse themselves in early college coursework offered through our post-secondary partnerships. These pathways are aligned with the industry sectors of engineering & advanced manufacturing, computer science & information technology, and healthcare & life sciences.

All students are welcome to apply to the STEM Early College High School program up through junior year. There are no minimum grade requirements or entrance exams. The STEM ECHS is a full-year commitment. The goal of our acceptance criteria will be to mirror the most recent student population data for Marlborough Public Schools.

The STEM ECHS is an honors-level program with extensive student support features. Students are teamed in grades 9 and 10, and teachers receive common planning time to help personalize instruction.

STEMPBL9 STEM Project 9

STEMPBL10 STEM Project 10

The STEM Project course will develop students' critical thinking skills through project-based learning that focuses on rigorous science and engineering topics relevant to students' lives. This course will augment the authentic experiences included in all of the core content courses and introduce the Engineering Design Process as a means for students to research, collaborate, synthesize, and create solutions to 21st-century challenges.

The STEM Project course is co-taught across all STEM content courses and will be supplemented by the curricula developed in the other STEM content area courses. This course will appear on student schedules in place of the Extended Learning Block (ELB) period. In grades 9 & 10, all students in the STEM program will be required to work on project-based assignments during the ELB.

Benefits of the STEM Project course:

- Accurate tracking of student achievement in relation to curricular requirements
- Highlights PBL collaboration for college admissions
- Provides greater communication to parents regarding student progress and/or achievement, both in content courses as well as the STEM project
- Provides greater alignment of course expectations, grade weights, and student achievement across content area courses
- Defines and separates the project from content area curricula, thus providing a more precise communication of students' strengths and needs

- Demonstrates how content-area curricula relate to real-world problem-solving; projects require students to use inquiry, negotiation, decision-making, communication and technical skills to meet discrete design requirements in a specified period to create a project outcome/prototype that they can evaluate and re-design.

STEM ECHS 9th and 10th Grade Course Sequence

 Standard 9TH AND 10TH Grade Course Sequence	
Grade 9 Schedule	Grade 10 Schedule
Honors Algebra 1	Honors Geometry
Honors Intro to Physics	Honors Biology
Honors English 9	Honors English 10
Honors World History 2	Honors or AP US History 1
Engineering (CAD) & Architecture/ Electricity, Electronics, & Robotics	Elective
World/Classical Language	World/Classical Language
Wellness Requirement/ Art Foundations (STEAM course)	Wellness Requirement/Elective

 Standard 9TH AND 10TH Grade Course Sequence	
Grade 9 Schedule	Grade 10 Schedule
Honors Algebra 1	Honors Geometry
Honors Intro to Physics	Honors Biology
Honors English 9	Honors English 10
Honors World History 2	Honors or AP US History 1
Engineering (CAD) & Architecture/ Electricity, Electronics, & Robotics	Elective
World/Classical Language	World/Classical Language
Wellness Requirement/ Art Foundations (STEAM course)	Wellness Requirement/Elective

REQUIRED COURSES FOR STEM GRADE 9

STEMPHY9 HONORS INTRODUCTORY PHYSICS

This course is designed to study the fundamental laws of physics occurring in the world around them, stressing both conceptual and mathematical interpretations. Students will study motion and its causes and effects in units on velocity, acceleration, force, work, power, and energy. The study of energy will expand into a unit on mechanical and electromagnetic waves. This will be followed by the study of static electricity, current electricity, and magnetism. Skills will focus on laboratory procedure, manipulations, graphical interpretations, and project based learning. This course will prepare students to successfully pass the Physics MCAS test.

STEMTECH1 HONORS ENGINEERING (CAD)/ARCHITECTURE

During this one semester course, students will learn and utilize a CAD drawing program and produce precise engineering drawings and designs along with studying architectural modeling. During the first term, engineering drawings will be developed using various accepted engineering drawing practices and techniques. Students will use

the Engineering Design Process while they are solving engineering problems and completing projects. Through lessons, research, and problem solving, students will design and create engineering drawings and construct prototypes to prove their solutions. While working on these projects, students will utilize physics, math, and English when calculating or reporting their data. A written technical report detailing conclusions may accompany many of the engineering projects. Prototypes and models will be built using various types of foam board, balsa wood, and other wood types. Small hand tools and machines will be used during construction. Students will also be introduced to the 3D printing process and create their first 3D print. Students will learn, understand, and solve these engineering problems while keeping all their work in an engineering portfolio. During the second term, students will study architectural design and modeling. Students will study architectural form, function, and design while creating three-dimensional architectural models. This course also prepares students for subsequent technical drawing courses, engineering courses, and architectural courses offered by the department.

STEMTECH2 HONORS ELECTRICITY/ELECTRONICS/ROBOTICS

This semester course is designed to teach the basic principles of Electronics. During the course students will learn how to identify the different types of circuits, how to calculate and measure current, voltage, and resistance, and use Ohm's Law. They will then use this as a foundation to solve circuit problems and to build circuits using computer simulators and actual components. They will design and test circuits using the Engineering Design Process to solve problems. The course will also focus on the concept of magnetism. Students will experience these concepts in a project-based learning environment. Students will learn to use the Engineering Design Process to solve problems. Students will learn to use small hand tools, soldering irons, a variety of materials, and power tools. All projects are designed around safety. This course also provides students with exposure to concepts covered in our Exploring Computer Science curriculum.

STEMALG HONORS ALGEBRA 1

Algebra 1 serves as the foundation for all subsequent mathematics courses. Linear, quadratic, and exponential expressions and functions will be studied using multiple representations. This course will deepen and extend students' understanding of these functions and their relationships. Other topics include systems of equations, polynomial operations, absolute value functions, and statistics. Students will use technology, such as graphing calculators, spreadsheets, and online graphing tools throughout the course.

STEMHIST9 HONORS WORLD HISTORY 2

Students study the rise of the nation-state in Europe, the French Revolution, and the economic and political roots of the modern world. They study the origins and consequences of the Industrial Revolution, political reform in Western Europe, and imperialism in Africa, Asia, and South America. They will explain the causes and consequences of the great military and economic events of the past century, including WWI, the Great Depression, WWII, the Cold War, and the Russian and Chinese revolutions. Finally, students will study the rise of nationalism and the continuing persistence of political, ethnic and religious conflict in many parts of the world.

STEMENG9 HONORS FRESHMAN ENGLISH

In this course, students will engage in an in-depth study of short stories, poetry, novels, non-fiction works, and drama. The continued improvement of process writing will be emphasized. An introduction to the basic elements of the research paper will be included. Thinking, reading, and techniques of literary analysis will also be emphasized to develop the skills necessary for success on the MCAS and beyond.

REQUIRED STEM COURSES FOR GRADE 10

STEMBIO HONORS BIOLOGY

The student will be exposed to and participate in the specific topics of the chemistry of life, cell biology, genetics, anatomy and physiology, evolution, biodiversity, and ecology. Other topics, such as biotechnology, will be covered during the year. The format of the course will include lecture, laboratory component, discussion, reading, writing, and others methodologies. Students will be expected to complete work outside of the class setting and have effective time management skills. Depth of understanding will be stressed in this course. This course will prepare students to successfully pass the Biology MCAS test. OPEN TO STEM STUDENTS IN GRADES 10, 11, AND 12.

STEMGEO HONORS GEOMETRY

This is a discovery-based course that will focus on the study of plane geometry with additional topics from solid and coordinate geometry and trigonometry. Congruence and similarity of polygons, parallel lines, polygons, circles, surface areas, volumes and networks will be presented.

STEMENG10 HONORS SOPHOMORE ENGLISH

This course is a further extension of the accelerated English program; students will continue their in-depth study of reading, literature and writing skills, with continued focus on improvement of vocabulary and literary analysis skills. The course will also challenge students to improve their writing skills through a more advanced study of grammar and composition, which includes the writing of a research paper. Students will also expand their understanding of, and appreciation for, the analysis of literature and the recognition of the historical context of literary works. Additional emphasis will be placed on vocabulary development, reading comprehension and the writing skills necessary for success on the MCAS and PSAT.

STEMHIST10 HONORS UNITED STATES HISTORY 1

Students examine the historical and intellectual origins of the United States during the Revolutionary and Constitutional eras. They learn about the important political and economic factors that contributed to the outbreak of the Revolution, as well as the consequences of the Revolution, including the writing and key ideas of the U.S. Constitution. Students also study the basic framework of American democracy and the basic concepts of American government, such as popular sovereignty, federalism, separation of powers, and individual rights. Students study America's westward expansion, the establishment of political parties, and economic and social change. Finally, students will learn about the growth of sectional conflict, how sectional conflict led to the Civil War, and the consequences of the Civil War, including Reconstruction.

OR

STEMAPUSI ADVANCED PLACEMENT UNITED STATES HISTORY 1

This is an accelerated course designed for the highly motivated, academically qualified college-bound student. Using a survey approach to American History, the course develops chronological perspective, thematic interpretation, and domestic-foreign policy assessment of American history. Students are expected to carry a college-level workload. All students are required to take the AP exam at the end of AP US History II. Students are required to complete the AP summer assignment in order to participate in the AP course in the fall. AP US I students receive Honors credit, but their grades are calculated as AP for the purposes of GPA calculation. This course is open to students who have: 1. Maintained a grade of B or better in Honors World History II. 2. Received the recommendation of their current History and Social Science teacher. 3. Successfully completed the fourth quarter, and final exam (if taken).

OPTIONAL STEM ECHS COURSES GRADES 11 & 12

STEM101 STEMbassador STUDENT INTERN

This course will provide juniors and seniors who previously participated in the 9th- and/or 10th-grade STEM program with an opportunity to further their involvement in key areas of leadership, marketing, and development. STEMbassadors will be formally trained as peer mentors and receive mentee assignments. STEMbassadors will support STEM underclassmen with academic achievement in the form of tutoring in core content areas and project-based learning experiences. STEMbassadors will assist in the design, planning, and execution of key events such as project workdays and the STEM Expo. STEMbassadors will play an important role in showcasing the program to visiting teams from fellow school districts and professional organizations/businesses. Students may earn two elective credits each year for this experience.

STEM Early College Pathways Opportunities

The STEM program offers early college pathways, in partnership with Quinsigamond Community College (QCC), as an option for all interested students beginning junior year. Students do not need to participate in the STEM program prior to junior year to access these courses.

This is a free experience for MHS students. All expenses including tuition, fees, and course materials are covered under the Youth CareerConnect grant provided by the federal Department of Labor and our lead grantee, Jobs for the Future.

These dual enrollment courses are delivered by the faculty of Marlborough High School during the regular school day and count towards the Marlborough High School graduation requirements. Students who complete a pathway will also earn up to 12 college credits in each field of study. These pathways all fall under the MassTransfer program, which enables participating students to carry credits from QCC to articulated four-year institutions.

All college courses will be weighted the same as Advanced Placement coursework for GPA purposes.

For more information on MassTransfer please visit,

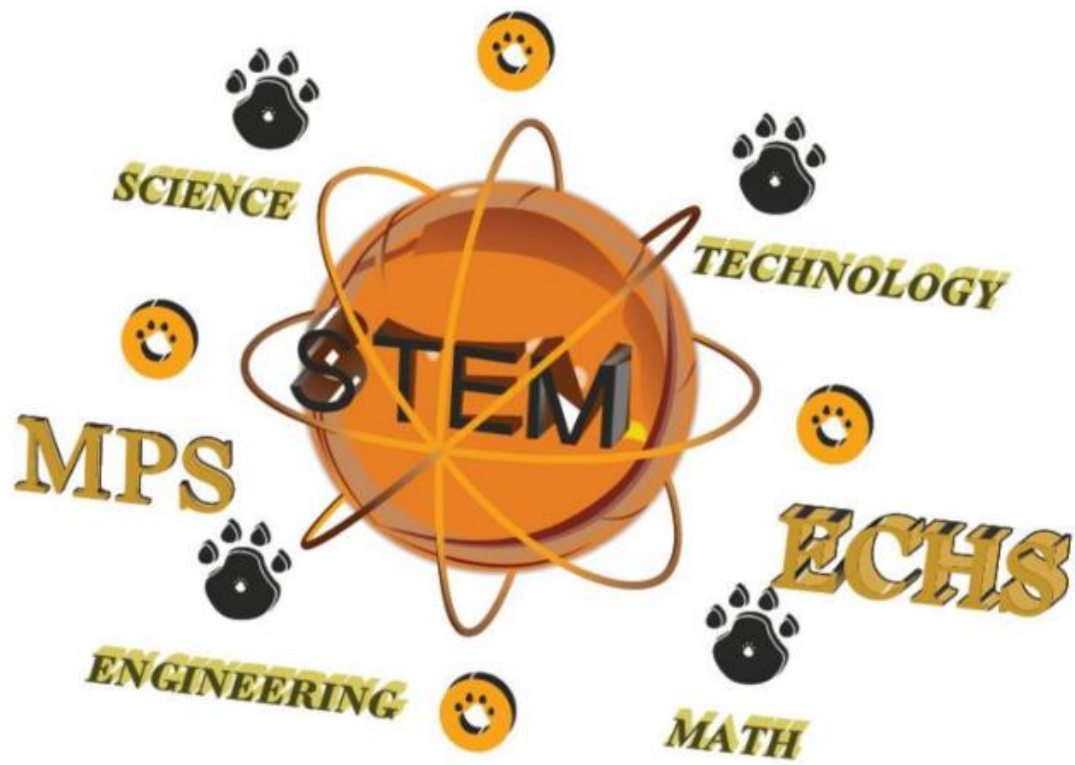
<http://www.qcc.mass.edu/transfer/TransferPathways.html#degree>

For more information on the cost savings associated with the community college pathway please

visit, <http://www.usnews.com/education/blogs/student-loan-ranger/2011/05/18/starting-at-community-college-can-save-thousands>

STEM Internship Program

The STEM Early College High School has partnered with [Partnerships for a Skilled Workforce, Inc.](#), to place all interested students into internship opportunities aligned with their college and career aspirations during junior or senior year.



English Learner Education

The English Learner Education (ELE) program at Marlborough High School allows students who are in the process of acquiring social and academic English to participate in a program model that supports both their English language development and content knowledge development. This model is called Sheltered English Instruction (SEI). Each year, English language proficiency is assessed and academic success is reviewed in order to recommend appropriate placement in English Language Development (ELD) and Sheltered Content Instruction (SCI) classes. ELD classes are taught by EL teachers, and content instruction is delivered by teachers who hold certification in the different content areas, the SEI Endorsement and, at times, co-taught with an EL teacher.

The World Class Instructional Design and Assessment (WIDA) English Language Development Standards serve as a basis for curriculum and instruction for EL students. English Language Development courses and electives are organized around four language domains identified in this document: listening, speaking, reading, and writing.

ENGLISH LANGUAGE DEVELOPMENT

0E12NA- ENGLISH LANGUAGE DEVELOPMENT (ELD) FOR NEW ARRIVALS S2

This course meets daily for 1 period and is designed for students with little or no English proficiency and limited or interrupted prior schooling. This course serves as an orientation program to familiarize students with all aspects of school, and developing good study habits and skills. EL students at this level follow a curriculum that includes listening, speaking, reading, and writing as outlined in the WIDA English Language Development Standards. Basic interpersonal communicative skills in English are emphasized, while simultaneously introducing cognitive academic language proficiency skills. This course satisfies an English graduation requirement.

0E121A- INTRODUCTORY ENGLISH LANGUAGE DEVELOPMENT 1 F8

This course meets daily for 2 periods and is designed for students with emerging English proficiency and limited or interrupted prior schooling. This course familiarizes students with all aspects of school, and developing good study habits and skills. EL students at this level follow a curriculum that includes listening, speaking, reading, and writing as outlined in the WIDA English Language Development Standards. Basic interpersonal communicative skills in English are emphasized, while simultaneously introducing cognitive academic language proficiency skills. This course satisfies an English graduation requirement.

PREREQUISITE: A score of a 1 on the WIDA Screening Test and limited or interrupted formal schooling.

0E12 ENGLISH LANGUAGE DEVELOPMENT 1 (LEVEL 1) F8

This course meets daily for two periods and is designed for students with little or no English proficiency. In addition to being an orientation program to familiarize students with all aspects of the school, EL students at this level follow a curriculum that includes listening, speaking, reading, and writing as outlined in the WIDA English Language Development Standards. Basic interpersonal communicative skills in English are emphasized, while simultaneously introducing cognitive academic language proficiency skills. This course satisfies an English graduation requirement.

PREREQUISITE: An English language proficiency score of a 1.

0E12B ENGLISH LANGUAGE DEVELOPMENT 2 (LEVEL 2) F8

This course meets daily for two periods and is designed for students with emerging English proficiency. EL students at this level follow a curriculum that includes listening, speaking, reading, and writing as outlined in the WIDA English Language Development Standards. Basic interpersonal communicative skills in English are emphasized,

while simultaneously introducing cognitive academic language proficiency skills. This course satisfies an English graduation requirement.

PREREQUISITE: An English language proficiency score of a 2 or completion of English Language Development 1.

0E22 ENGLISH LANGUAGE DEVELOPMENT 3 (LEVEL 3) F4

This course is a continuation in the series of English Language Development courses. EL students at this level follow a curriculum that includes listening, speaking, reading, and writing as outlined in the WIDA English Language Development Standards. Knowledge and control of basic grammatical structures in both speaking and writing are emphasized, while more complex grammatical structures are introduced. Students are expected to handle increasingly complex reading materials and academic tasks. Language analysis activities are practice experiences, which allow students to analyze, manipulate, and expand the vocabulary as well as the language structures used during the learning experiences of a lesson or instructional unit. Students will read works of greater length, discuss literary and factual works in English, learn library research, oral presentation, and writing process skills in addition to standard intermediate grammar and vocabulary acquisition. Further development of English proficiency for both interpersonal communication and academic use is emphasized.

PREREQUISITE: An English language proficiency score of a 3 or completion of English Language Development 2. .

0E32 ENGLISH LANGUAGE DEVELOPMENT 4/5 (LEVELS 4/5) F4

This course is designed for students who have mastered social language, but are focusing on complex academic language and are near exiting the ELL program. EL students at this level follow a curriculum that includes the standards as outlined in the WIDA English Language Development Standards. Critical thinking skills, process writing, interactive learning, and participation in oral discussions will be stressed. Students will continue to apply an understanding of writing process skills when writing essays and research papers. A survey of the forms of literature presented in mainstream college level courses is an integral part of the course. This includes mythology, the novel, short story, drama, poetry and non-fiction essays, biography, and autobiography. Reviews of grammatical skills, techniques of composition and vocabulary development are supplemented by instruction in the skills of expository and creative writing.

PREREQUISITE: An English language proficiency score of a 4 or 5 or completion of English Language Development Level 3

EL17 READING AND WRITING LAB S2

This a half-year course that meets 1 period a day and is designed for students with a proficiency level of 1 or 2 in reading and writing. In this course, EL students follow a curriculum specifically focused on the reading and writing language domains. There is an explicit focus on cognitive academic language proficiency skills. Students with limited or interrupted formal schooling should not take this course their first year.

PREREQUISITE: An English language proficiency score of a 1 or 2.

EL19 SPEAKING AND LISTENING LAB S2

This a half-year course that meets 1 period a day and is designed for students with a proficiency level of 1 or 2 in speaking and listening. In this course, EL students follow a curriculum specifically focused on the speaking and listening language domains. There is an explicit focus on interpersonal communicative skills in English. Students with limited or interrupted formal schooling should not take this course their first year.

PREREQUISITE: An English language proficiency score of a 1 or 2.

MATH FOR ENGLISH LEARNERS

0E29-01 NUMERACY FOR ENGLISH LANGUAGE LEARNERS F4

This course is intended for English Learners with limited formal schooling that require fundamental math instruction to develop their basic math skills and number fluency in English. Instructional target areas include addition, subtraction, multiplication, division and fractions.

PREREQUISITE: A pretest indicating Math level and WIDA English proficiency level 1 or level 2.

EL20 ELL PRE ALGEBRA F4

This course is designed to introduce algebraic concepts in a spiraling manner, while taking into consideration the language of math and developing students in that area. The emphasis will be on problem solving techniques while enhancing basic mathematical skills. The algebra topics will include operations and properties involving real numbers, variable expressions and patterns, laws of exponents, radicals, solving equations and inequalities. An introduction of two and three dimensional geometry will be presented that will include polygons, drawings, prisms, cylinders, pyramids, and cones. The concept of measurement will be discussed along with data analysis.

PREREQUISITE: A pretest indicating Math level and English language proficiency level 1 or 2.

EL60 SEI COLLEGE PREP ALGEBRA I F4

This course is for EL students. The topics will include working with rational numbers, writing algebraic expressions, evaluating algebraic expressions and formulas, solving equations, writing and graphing linear equations, solving systems of equations, and problem solving. Focus will also be on the language of math and developing students in that area.

PREREQUISITE: A pretest indicating Math level and English language proficiency level 1 or 2.

EL61 SEI COLLEGE PREP GEOMETRY F4

This course is for EL students. This is a basic course in geometry designed for those students who have successfully completed SEI CP Algebra I (or equivalent). Among the topics to be discussed are angles and their measures, parallel and perpendicular lines, triangles, congruency, similarity, area, and surface area and volume.

PREREQUISITE: A pretest indicating Math level and English language proficiency level 1 or 2.

HISTORY AND SOCIAL SCIENCES FOR ENGLISH LEARNERS

EL28 HISTORY FUNDAMENTALS F4

This course is intended for English Learners with limited formal schooling. Through sheltered English instruction techniques, students study the the economic and political roots of the modern world, while taking into consideration the language of social studies and developing students in that area. EL students continue working on listening, speaking, reading, and writing, as they learn English through content. Learning strategies are presented to the students with many of the lessons, to promote working independently.

PREREQUISITE: An English Language Proficiency score of a 1 and limited or interrupted formal schooling.

EL30 SEI COLLEGE PREP WORLD STUDIES II F4

Through sheltered English instruction techniques, students study the rise of the nation state in Europe, the French Revolution, and the economic and political roots of the modern world. They study the origins and consequences of the Industrial Revolution, 19th century political reform in Western Europe, and imperialism in Africa, Asia, and South America. They will explain the causes and consequences of the great military and economic events of the past century, including WWI, the Great Depression, WWII, the Cold War, and the Russian and Chinese revolutions. Finally, students will study the rise of nationalism and the continuing persistence of political, ethnic and religious conflict in many parts of the world.

PREREQUISITE: An English language proficiency level of a 1 or 2.

EL31 SEI COLLEGE PREP CIVIC LITERACY/UNITED STATES HISTORY I F4

Through sheltered English instruction techniques, students will build upon their foundation of civic literacy. Students study the establishment of political parties, economic & social reforms, and westward expansion. Students will also learn about the growth of sectional conflict, how sectional conflict led to the Civil War, consequences of the Civil War, Reconstruction, and the growth of big business. Throughout the first semester, students examine the historical and intellectual origins of the United States. They learn about the important political and economic factors that contributed to the outbreak of the Revolution as well as the consequences of the Revolution, including the writing and key ideas of the U.S. Constitution. Students also study the basic framework of American democracy and the basic concepts of American government such as popular sovereignty, federalism, separation of powers, and individual rights. Students study the three branches of government, key amendments to the US Constitution, and state/local government. In addition, students will examine specific elections both current and historical. In addition, Massachusetts history and American culture and civics are integrated into the curriculum.

PREREQUISITE: An English language proficiency level of a 1 or 2.

EL32 SEI COLLEGE PREP UNITED STATES HISTORY II F4

Through sheltered English instruction techniques, students will analyze the causes and consequences of America's growing role in diplomatic relations. Students will study the goals and accomplishments of the Progressive movement and the New Deal. Students will also learn about the various factors that led to America's entry into World War II as well as the consequences of World War II on American life. Finally, students will study the causes and course of the Cold War, important economic and political changes during the Cold War, including the Civil Rights movement, and recent events and trends that have shaped modern-day America.

PREREQUISITE: An English language proficiency level of a 1 or 2.

SCIENCE FOR ENGLISH LEARNERS

EL40 FUNDAMENTALS OF BIOLOGY A F4

This course is designed for students with a English language proficiency score of a 1 and limited or interrupted prior schooling. It is designed to strengthen students' competence in science while taking into consideration the language of science and developing students in that area. Work will begin in preparing them for the state assessment (MCAS). EL students continue working on listening, speaking, reading, and writing as they learn English through content. The course allows for students' individualized prescriptions to accommodate student needs.

PREREQUISITE: An English language proficiency score of a 1 and limited or interrupted formal schooling.

EL40B FUNDAMENTALS OF BIOLOGY B F4

This course is designed to strengthen students' competence in science while taking into consideration the language of science and developing students in that area. This course will also further prepare them for the state assessment (MCAS). EL students continue working on listening, speaking, reading, and writing as they learn English through content. The course allows for students' individualized prescriptions to accommodate student needs.

PREREQUISITE: An English language proficiency score of a 1 or 2.

EL41 SEI COLLEGE PREP BIOLOGY F4

The student will be exposed to and participate in the specific topics of the chemistry of life, cell biology, genetics, anatomy and physiology, evolution, biodiversity, and ecology. Other topics, such as biotechnology, will be covered during the year. The format of the course will include lecture, laboratory, discussion, reading, writing, and others methodologies. Students will be expected to complete work outside of the class setting and have effective time management skills. Depth of understanding will be stressed in this course. This course will prepare students to successfully pass the Biology MCAS test.

OPEN TO STUDENTS IN GRADES 9 - 12.

ENGLISH LANGUAGE ARTS FOR ENGLISH LEARNERS Sections below will be offered for EL students using a sheltered English approach. These courses are for EL students who have been pretested and are at the WIDA Level 3 English proficiency.

EL50 SEI FRESHMAN ENGLISH F4

Through the study of short stories, novels, non-fiction, poetry, and drama, students will increase their understanding of, and appreciation for, literature and reading. Students will improve their writing skills through a process approach to composition. Students will also be introduced to the basic elements of the research paper. Literacy skills will be emphasized to ensure students are prepared to take the MCAS in their sophomore year.

EL51 SEI SOPHOMORE ENGLISH F4

This course will stress comprehension as well as basic inference and literary analysis. The course will also continue to improve student writing skills through a more advanced study of grammar and composition which will include the writing of a research paper. Students will also expand their understanding of, and appreciation for, reading and literature. Additional emphasis will be placed on vocabulary development, reading comprehension and the writing skills necessary for success on the MCAS and PSAT.

EL52 SEI JUNIOR ENGLISH F4

The historical survey of American literature will include the genres of short story, novel, drama, poetry, and essay. These genres trace the development of the national consciousness through literary themes – from the Puritan Age to the Modern Age. The student should gain a sense of the historical context of literature and should recognize the influence of the writer's purpose. Research and writing will be emphasized through the completion of a research paper. Additional emphasis will be placed on vocabulary development, reading comprehension and the writing skills necessary for success on the SAT.

EL53 SEI SENIOR ENGLISH F4

This full year senior course centers on the fundamentals of rhetoric and composition. Various rhetorical techniques will be explored as well as numerous fiction and nonfiction selections. Additional emphasis will be placed on word choice/vocabulary development, reading comprehension and the writing skills necessary for future success in college and careers. The course is a productive means of helping students improve their abilities to think, read, and write on progressively more sophisticated levels. Students will be guided through the writing process, from planning and drafting to revision and publication- in both oral and written form. Curriculum will focus on and encourage students in all processes of composition – inventing, drafting, revising, and editing. This course is designed to expose students to the rigors and expectations of writing and communicating at the collegiate level.

0E39 INTRODUCTORY LITERACY F4

This course is designed for students who have had limited or interrupted schooling or who demonstrate low literacy skills in their native language. This course offers an introduction to the basics of English literacy and language communication in the areas of listening, speaking, reading, and writing and cultural awareness. Students will develop English language proficiency through activities which promote the use of authentic language and the development of content area knowledge.

PREREQUISITE: An English language proficiency core of a 1 and limited or interrupted formal schooling.

Virtual High School

The Virtual High School is a nation-wide cooperative project, originally funded by a Technology Challenge Grant from the US Department of Education. Marlborough High School is one of the five original Massachusetts high schools that joined together to access this federal funding. Through participation in the Virtual High School, students acquire the skills needed to succeed in an increasingly technological world.

Online learning in the VHS helps students master course content, as well as develop communication, collaboration, and creative problems solving skills. The majority of VHS courses are for one semester. There is a range of 150-200 course offerings. Courses are available in nearly all disciplines. The courses offered in Virtual High School are otherwise not available to students at Marlborough High School.

A complete catalog of courses and their prerequisites is available on the VHS website. The website address is <http://thevhscollaborative.org/> Students must have a teacher recommendation to participate in VHS. View the VHS Course Catalog at <https://my.vhslearning.org/PublicStudentCourseList.aspx>

VHS courses are honors or AP level. Students enrolled in VHS are highly motivated individuals and are able to work independently.

VHS1 First Semester VHS Course S2

VHS2 Second Semester VHS Course S2

VHS0 Advanced Placement Year Long VHS Course F4