

# Massachusetts Academy of Math and Science

*A Public High School at a Prestigious University*

*High expectations · Bright futures · Small classes · Active engagement*

## EXTRACURRICULAR ACTIVITIES, ATHLETICS, AND COMMUNITY SERVICE

As an Academy student, you are eligible to participate in a variety of extracurricular activities including:

- American Computer Science League
- Cafe Nights
- Biotechnology
- FIRST Robotics
- Yearbook
- Cyberpatriot
- Math Team
- Mock Trial
- Semiformal and Prom
- CAD
- Student Government
- WPI Concert Band

**Athletics:** Students may be eligible to participate on high school sports teams by applying for MIAA Rule 52 waivers with their sending schools.

**Community Service:** You will give back to the community by completing 50 hours of community service each year. Many students fulfill their community service during the summer.



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### NOTICE OF NONDISCRIMINATORY POLICY AS TO STUDENTS

*It is the policy of the Massachusetts Academy of Mathematics and Science that each qualified individual, regardless of race, color, sex, gender identity, religion, sexual orientation, national origin, age as defined by law, or handicap, shall have equal opportunity in education and services of the Massachusetts Academy of Mathematics and Science.*

massacademy.org

## A Public High School at a Prestigious University



The Massachusetts Academy of Math and Science was founded by the Massachusetts state legislature in 1992, as a public school of excellence for 100 academically accelerated 11th and 12th graders. It is a tuition-free, collaborative effort among the Commonwealth of Massachusetts, WPI, and state school districts. While it emphasizes math and science, its balanced curriculum offers equally rigorous preparation in the humanities and world languages. Juniors take a special program of challenging, interactive courses. Seniors attend classes at WPI, a premiere technological university—making the Academy the only public school in the state at which all students attend a private university full-time as high school seniors.

### THE RIGHT TIME AND PLACE TO PROPEL YOUR FUTURE

At the Academy, you'll find an active learning community that is serious yet informal, and demanding while supportive. It offers great opportunities for extraordinary students.

**Small Classes:** Receive personalized attention in a collaborative environment where class sizes rarely exceed 16 students.

**Challenging Curriculum:** Challenge yourself with demanding courses that exceed high school AP courses, and extended school days adding up to 1,100 hours of expert instruction.

**Active Engagement:** Become an active participant in learning through hands-on experimentation, open-ended problem solving, discussions, and group projects.

**Unique Opportunities:** Explore a range of career-building—and fun—opportunities, such as participating on the FIRST Robotics team, competing at the Massachusetts State Science Fair and Massachusetts Mock Trial Competitions, and participating in local internships.

**Hard Work That Pays Off:** Prepare for your future by taking college courses and studying real-world applications. Each year Mass Academy graduates are accepted at such prestigious schools as WPI, Tufts, Boston University, MIT, Yale, Cornell, Brown, and Johns Hopkins.

### ADMISSIONS PROCESS AND CRITERIA

Current high school sophomores who are residents of the Commonwealth of Massachusetts are welcome to apply for admission to the Academy's junior class. Deadlines and application information can be found at [massacademy.org](http://massacademy.org). The Academy accepts approximately 50 new students to the junior class each year, and admission is highly selective. Candidates are high honors students in their home schools, and many are in the top percentages of their classes. Applicants also have impressive lists of extracurricular activities and high standardized test scores. Interested students are encouraged to attend an information session and to schedule a shadow day between January and March. Visit [massacademy.org](http://massacademy.org) for more information.

### CLASS OF 2018 PROFILE:

- Enrollment: 46 (23 males, 23 females)
- 7 National Merit Finalists
- 16 National Merit Commendations
- Highest SAT scores in the state
- 12 Massachusetts State Science Fair Representatives (8 awards)
- 3 International Science and Engineering Fair Participants (2 awards)

### JUNIOR YEAR PROGRAM

As a junior, you will follow a rigorous and well-rounded course of study, guided by expert faculty and grounded in active engagement and exploration.

**Physics:** This course takes an algebra and calculus-based approach to investigate and model connections between concepts, equations, and graphs. Through classroom discussions and collaborative work, students learn about mechanics, gravitation, electricity, magnetism, waves, and harmonic oscillations. With guided supervision and good problem-solving skills, students also design and build their own labs. Students analyze their data using statistical methods and report their findings via magazine-formatted printouts, poster boards, and PowerPoint presentations.

**Mathematical Modeling:** This course goes beyond the traditional high school mathematics curriculum by engaging students in open-ended problem solving, computer simulations, and collaborative work. Students use a mathematical approach to model real-world situations through the application of algebra, geometry, trigonometry, and statistics.

**Humanities:** Students study the origins and development of Western Civilization, with a primary focus on literature and a secondary focus on history, philosophy, and the arts. They learn the methodology needed to demonstrate their understanding of literary and non-literary movements and influences via formal essays, discussions, group projects, and class presentations.

**Foreign Language (Immersion French or Spanish):** These technology-infused, immersion courses focus on acquiring language proficiency through the use of authentic materials, including literature, music, film, discussions, and games. Students understand grammar in meaningful contexts and engage in project-based learning as they produce podcasts, make movies, and build race cars. They are assessed on their individual progress via video, audio, and written portfolios.

**Computer Science:** This course develops students' computational thinking through understanding and developing algorithms and using problem solving skills. They study

### SENIOR YEAR PROGRAM

Seniors enroll as full-time students at WPI and take their classes on the WPI campus, located at 100 Institute Road, in Worcester, Mass. Their school year begins the fourth week of August and concludes with graduation from Mass Academy in early May. They follow a college schedule, meeting regularly with Mass Academy's college counselor and their individual faculty advisors, who monitor their academic progress and assist with their college application process. Mass Academy seniors must successfully complete three WPI courses in each of four seven-week terms, for a total of 12 courses. In every term, students are required to take one course in each of three major academic areas. They also must fulfill requirements for Physical Education and complete an Independent Study Project.

**Mathematics:** Students typically take the four-term Calculus sequence. More advanced students often take the Introduction to Analysis sequence.

**Science:** Seniors have the opportunity to choose among

web development, software design, discrete mathematics, and object-oriented programming. They also learn how to analyze software programs through the use of verification and validation techniques. They design and build their own websites, implement programs, and develop applications that benefit the community.

**STEM I and STEM II:** These sequential two-term courses focus on scientific research and engineering. In STEM I, students conduct independent research projects that incorporate reviewing literature, making conjectures, developing methodology, designing experiments, and communicating findings. Their final projects are presented at a school-wide science fair, with the possibility for advancement to regional, state, and international fairs. In STEM II, students work in small teams in order to engineer new products - usually assistive technology devices. They meet with clients, conduct patent searches, design and build prototypes, demonstrate their products to expert judges, and deliver the products to their clients.

**Science and Technical Writing:** In this course, students incorporate purpose, clarity, organization, mechanics, and audience appeal as they write about topics in science and technology. Assignments consist of research papers, short essays and technical reports. They participate actively, as both writers and self-editors, and their works are consistently revised and often submitted for publication in online and print journals.

**Physical Education:** In fulfillment of state-mandated requirements, students participate in Physical Education classes taught by WPI staff.

**Extracurricular Activities:** Juniors are expected to take part in extracurricular activities at either Mass Academy or their sending schools during at least two of the four academic terms. Mass Academy extracurricular offerings usually include photography, kickboxing, filmmaking, CyberPatriot, math team, Mock Trial, and FIRST Robotics. In addition, students may participate in WPI's music program and play on their sending schools' athletic teams.

single and sequential courses in Physics, Chemistry, Biology, Computer Science, and Engineering.

**Humanities:** Students are required take four Humanities courses. Two must be in English (i.e., Literature) or Writing. The others may be in the Social Sciences, Philosophy, Foreign Languages, or the Arts.

**Physical Education:** Seniors must enroll in either two one-term Physical Education courses at WPI or two independent classes in an area of physical activity (e.g., dance, gymnastics, karate) or participate in an organized sports programs for two of the four terms.

**Senior Independent Study Project (SISP):** Each senior must complete an Independent Study Project that involves approximately 100 hours pursuing a subject or area of interest that results in new learning beyond the traditional academic experience. The focus of past SISP projects has ranged from quilt-making and cooking, to EMT training, learning a new language or musical instrument, interning in a laboratory, and starting an online business or service.