

# SCHOOL IMPROVEMENT PLAN

## MASS ACADEMY OF MATH AND SCIENCE

### 2019-21

#### SCHOOL COUNCIL MEMBERS

MICHAEL BARNEY	DIRECTOR
ANGELA TARICCO	FACULTY
SHREYA BALAJI	CLASS OF 2020
NIKHIL KRISHNAN	CLASS OF 2020
ESTHER NG	CLASS OF 2020
NEHA PERUMAL	CLASS OF 2020
SREEANVITHA EMANI	CLASS OF 2021
CLARISE LIU	CLASS OF 2021
BAO HAN NGO	CLASS OF 2021
GARIMA PRABHAKAR	CLASS OF 2021
PETER NG	PARENT
CHELLA PALANIAPPAN	PARENT
IHAB YOUSSEF	PARENT
GLORIA MILLER	PARENT
AJAI THIRUMALAI	PARENT
BETH STOCHAJ	PARENT
JULIE YOUNG	PARENT



## **MISSION OF MASS ACADEMY**

The mission of the Massachusetts Academy of Math and Science is to prepare students to be leaders in global innovation by engaging them in rigorous, relevant, and integrated and collaborative learning experiences with a STEM focus, incorporating the liberal arts and authentic research, in a community committed to the following:

- Lifelong learning by providing the tools, skills, and strategies for students to engage actively in their own education
- Dynamic and evolving curricula which are project based, interactive, and technologically advanced
- Excellence and innovation in education, providing resources for schools and students in the Commonwealth of Massachusetts

### **Core Values**

- Collaboration
- Intellectual Curiosity
- Perseverance
- Student Centered Learning
- Project Based Learning
- A Supportive Community-Based Environment

### **Beliefs About Learning**

- All students have potential to achieve
- Students learn best when given the opportunity to teach others in a collaborative environment
- Students acquire a deeper knowledge through interactive project based learning experiences
- Optimal learning occurs in a safe, supportive community that maintains high expectations

## COLLEGE ACCEPTANCES

The colleges listed below are the acceptances for the classes of 2015 through 2019.

\*Bolded colleges indicate where students have matriculated

<p>Amherst College  <b>Arizona State University*</b>          Baylor University          Boston College  <b>Boston University*</b>  <b>Brandeis University*</b>  <b>Brown University*</b>          Bryant College          Bryn Mawr College  <b>Bucknell University*</b>          Caldwell University  <b>California Institute of Technology*</b>  <b>Carleton College*</b>  <b>Carnegie Mellon University*</b>          Case Western Reserve University          Champlain College          Clarkson University          Clemson University          Colby College          College of St. Rose  <b>College of the Holy Cross*</b>  <b>Columbia University*</b>          Cooper-Union</p>	<p><b>Cornell University*</b>  <b>Dartmouth College*</b>          Drexel University  <b>Duke University*</b>          Durham University England          Emmanuel College  <b>Emory University*</b>          Florida Institute of Technology  <b>Fordham University*</b>          George Mason University  <b>George Washington University*</b>          Georgetown University  <b>Georgia Institute of Technology*</b>  <b>Gordon College*</b>          Grove City College  <b>Harvard University*</b>  <b>Harvey Mudd College*</b>          Hofstra University          Ithaca College  <b>Johns Hopkins University*</b></p>	<p>Lehigh University  <b>MAKE School*</b>  <b>Massachusetts College of Pharmacy and Health Sciences*</b>  <b>Massachusetts Institute of Technology*</b>          Massachusetts Maritime Academy          McGill University          Middlebury College  <b>Mount Holyoke College*</b>          New Jersey Institute of Technology  <b>New York University*</b>  <b>Northeastern University*</b>  <b>Olin College*</b>          Penn State University  <b>Princeton University*</b>  <b>Purdue University*</b>          Quinnipiac University  <b>Rensselaer Polytechnic Institute*</b>  <b>Rice University*</b>          Rochester Institute of Technology</p>	<p>Roger Williams University          Rutgers University          Seattle University  <b>Simmons University*</b>          Smith College          Southern Methodist University          St. Andrew's College          Stanford University  <b>Stevens Institute of Technology*</b>  <b>Stonehill College*</b>          Stony Brook University          Swarthmore College          Texas A&amp;M University  <b>Truman State University*</b>  <b>Tufts University*</b>          United States Air Force Academy          University of Alabama  <b>University of California, Berkeley*</b>          University of California, Davis  <b>University of California, Los Angeles*</b>          U. of California, San Diego          U. of Chicago</p>	<p>U. of Colorado Boulder  <b>U. of Connecticut*</b>          U. of Hawaii  <b>U. of Illinois at Urbana-Champaign*</b>  <b>U. of Maine*</b>  <b>U. of Maryland, College Park*</b>  <b>U. of Massachusetts Amherst*</b>          U. of Massachusetts Boston  <b>U. of Massachusetts Dartmouth*</b>  <b>U. of Massachusetts Lowell*</b>          U. of Miami  <b>University of Michigan*</b>  <b>U. of North Carolina at Chapel Hill*</b>  <b>U. of Notre Dame*</b>  <b>U. of Pennsylvania*</b>  <b>U. of Pittsburgh*</b>          U. of Portland          U. of Rhode Island  <b>U. of Rochester*</b>  <b>U. of Texas at Austin*</b>  <b>U. of Texas at Dallas*</b></p>	<p>U. of Texas at Houston          University of the Pacific          U. of Toronto  <b>U. of Vermont*</b>          U. of Virginia          U. of Washington  <b>U. of Wisconsin-Madison*</b>          Vanderbilt University          Villanova University          Virginia Military Institute          Virginia Polytechnic Institute          Wake Forest University  <b>Washington U. in St. Louis*</b>          Webb Institute  <b>Wellesley College*</b>  <b>Wentworth Institute of Technology*</b>          Western New England University          Wheaton College          Williams College  <b>Worcester Polytechnic Institute*</b>          Xavier University  <b>Yale University*</b></p>
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## **STEM ACHIEVEMENTS AND AWARDS**

Mass Academy annually fulfills its maximum allotment of 12 projects per school per year at the Worcester Regional STEM Fair (15 in 2020), which is the gateway to Massachusetts State and International (ISEF) Fairs. This represents approximately 25% of all Mass Academy student projects. In addition, over the last five years, Mass Academy students have regularly represented the school and the Commonwealth at regional, state, and national competitions and conferences, including ISEF, JSHS, AJAS, NCSSS Research Conferences, Cyberpatriot, Congressional App Challenge, Intel STS, Regeneron, HiMCM, American Math Competitions, New England Math League Championship, and the Who Wants to be a Mathematician National Finals. Several individual students and student teams have earned patent awards and have patents pending for their projects.



**GOAL #1. Provide time and resources for curriculum development to ensure that the curriculum is a living and fluid document reflecting emerging topics and best educational practice research**

**CONNECTION TO CORE VALUES: Student Centered Learning, Project Based Learning**

<b>STEPS</b>	<b>RESPONSIBLE PARTIES</b>	<b>TIMELINES</b>	<b>MEASUREMENT</b>
<b>Write Mass Academy curriculum documents using modified UBD (Understanding By Design) framework</b>	<b>Faculty</b>	<b>Completion of first round of documents May 2020</b>	<b>Review by NEASC team, peer review</b>
<b>Professional development as appropriate to align curriculum to AP standards, state frameworks, and WPI courses where appropriate</b>	<b>Faculty</b>	<b>ongoing</b>	<b>WPI course data, AP data, SAT data, end of year survey data, grade analysis</b>

**GOAL #2**      **Ensure students have sufficient support services to meet their needs, especially focused on social and emotional well-being**

**CONNECTION TO CORE VALUES: PERSEVERENCE, SUPPORTIVE COMMUNITY BASED ENVIRONMENT**

<b>STEPS</b>	<b>RESPONSIBLE PARTIES</b>	<b>TIMELINES</b>	<b>MEASUREMENT</b>
<b>Create support groups at Mass Academy that mirror WPI RIO and Engineering Awareness</b>	<b>Director, counselor, additional (new) counseling support 8 hours/week</b>	<b>A,B term 2020, C , D term 2021</b>	<b>Survey participants on effectiveness of programs post program</b>
<b>Explore incorporating a cooperating practitioner program at Mass Academy through Fitchburg State University / Assumption College</b>	<b>Director, counselor, University partner</b>	<b>Renewable annual agreement</b>	

**GOAL #3      Expand the role of the Health and Wellness committee to review specific and sequential responses for students at risk in areas of academic, social, emotional, and personal health concerns**

**CONNECTION TO CORE VALUES: PERSEVERENCE**

<b>STEPS</b>	<b>RESPONSIBLE PARTIES</b>	<b>TIMELINES</b>	<b>MEASUREMENT</b>
<b>Develop a wellness survey to be incorporated into the EOY survey</b>	<b>Wellness Committee, School Council</b>	<b>October 2020</b>	<b>Use to identify school programmatic needs</b>
<b>Develop and expand group programmatic offerings</b>	<b>Director, counselor, additional (new) counseling support</b>	<b>Fall 2021</b>	<b>Based on results of May survey</b>



**GOAL #4** The mission of the Massachusetts Academy of Math and Science is to prepare students to be leaders in global innovation. In order to prepare them for global leadership, our school should develop a plan to explore an international experience opportunity for Mass Academy students modeled after the WPI experience at global project centers (in abbreviated form)

**CONNECTION TO CORE VALUES: COLLABORATION**

STEPS	RESPONSIBLE PARTIES	TIMELINES	MEASUREMENT
Create a working group to investigate global travel opportunities for students, with the focus on both cultural and project-based opportunities	Working group of students, parents and Director	Present a plan with possible travel sites by May 2022 Virtual opportunities for 2021-22	Present proposal for May/June 2021
Focus on feasibility of sites and overcoming financial barriers for students-			