



*MST Academy*

**Mariner High School  
701 Chiquita Boulevard  
Cape Coral, Florida 33993  
239.772.3324**

**Erik Cioffi, Principal**



## MARINER HIGH SCHOOL

### *Mathematics, Science and Technology Academy*

National Consortium for Specialized Secondary Schools in Mathematics, Science and Technology (NCSSSMST)

## *Program Description*

The *Mathematics, Science and Technology Academy at Mariner High School* provides a rigorous academic program that promotes intellectual risk-taking, creative problem solving, ethical considerations, life-long educational exploration, and academic excellence in an evolving economic and scientific/technological community. Mariner High School's MST Program of Studies afforded it membership in the National Consortium for Specialized Secondary Schools in Mathematics, Science and Technology (NCSSSMST). The Program of Studies embraces the national standards set by College Board: Advanced Placement Program and the NCSSSMST as they align to Florida's Department of Education Sunshine State Standards. Additionally, the MST Program of Studies is designed to allow students to pursue an elective MAJOR course of study of their choice. Preparation for post-secondary study in a highly technological society is facilitated by dedicated faculty, internship opportunities, and partnerships with business, industry and field experts from colleges and universities. Our highly qualified faculty and staff are committed to implementing a framework for academic excellence and program sustainability. Student learning will be accomplished through educational innovation and collaborative experiences that emphasize the development of effective interpersonal, communication and leadership skills. Each student will participate in the NCSSSMST annual student conference, summer and school-year Academy Symposiums, Lunch Time Lecture Series, and independent research studies. Additionally, students will compete in academic competitions at the local, state, and national level. Competitions may include: Intel Science Talent Search, DuPont Challenge Science Essay Competition, American Society of Human Genetics (ASHG) Annual DNA Day High School Essay Contest, and/or Siemens' Mathematics, Technology, Engineering, and Science Competition.

The MST student qualities may include: the desire to be challenged, a genuine interest in MST, a high ability and aptitude, a high regard for ethical issues, interest in integration of humanities, respect for individual and cultural diversity, intellectual curiosity, self-motivation to pursue scientific research, and an aspiration to become a member of a community of learners, explorers, mentors, and leaders.

The MST graduates may seek post-secondary study in areas such as: Engineering (all fields), Scientific Research, Electronic Arts, Robotics, Modeling and Simulation, Cognitive Sciences/Human Factors/Psychology, Physics, Genetics and Medicine. Mariner High School's membership in the NCSSSMST may provide graduates the opportunity to continue their MST course of study by attending an NCSSSMST affiliated college or university if so desired.

The MST application process will adhere to the Student Assignment timeline for the 2008-2009 school year for incoming 9<sup>th</sup> graders. Applications will consist of an Information Sheet and a resume style presentation. The presentation will be scored using a rubric designed to assess applicant's qualities in the areas of: Academic Accomplishments, Educational/Career Goals, and Personal Interests and Strengths as Related to the MST Student Qualities.



## *IBET: The Freshman Experience*

The IBET Program is a 3 block bell-less period that integrates instructional objectives from Pre-AP Biology, Pre-AP English I, and Computer Applications in Science and Engineering. In the IBET Program, the course objectives for each content area are taught using a process-oriented approach to help students establish connections across disciplines while mastering course objectives. Student groups learn to conduct experiments, collect data, and prepare analytical publications. Separate grades are awarded for each course. Course rigor is consistent with College Board: Pre - Advanced Placement Program® expectations. Students will be expected to utilize this curriculum foundation to springboard into multiple College Board: Advanced Placement® courses as upperclassmen. Students in the IBET Program will learn how to:

- ◆ Develop an understanding of the language of science through technical writing and the creation of research abstracts.
- ◆ Identify and interpret primary source articles.
- ◆ Assess the validity of information.
- ◆ Develop scientific investigations.
- ◆ Collect, manage, analyze, and interpret data.
- ◆ Develop ethical habits of mind that are necessary for success in the future.
- ◆ Work in small groups where effective collaboration is essential.

## *Experimental Design and Analysis*

MST Academy students need strong experimental and analytical skills in order to be successful in competitions, internships and later coursework in high school and college. This summer symposium offering is designed to strengthen the skills needed to design and conduct valid experiments. Through a combination of lecture, hands-on practice, and individual experiments, students are expected to critically evaluate the parts of a well-designed investigation as well as examine data in detail.



## *NCSSSMST:*

*National Consortium for Specialized Secondary Schools of Mathematics, Science, and Technology*

NCSSSMST is the nation's foremost alliance of schools dedicated to transforming mathematics, science, and technology education by fostering collaboration and creating synergies among schools engaged in educational innovation. The goal of the Consortium is to foster, support, and advance the efforts of those specialized schools whose primary purpose is to attract and academically prepare students for leadership in mathematics, science, and technology. Mariner High School is a proud member of NCSSSMST.

## *Connecting to College Success*

The MST Academy Program of Studies offers academic courses that are interlaced with areas of study in:

- |                           |   |                         |
|---------------------------|---|-------------------------|
| * Genetics                | * 3D Modeling and Simulation            | * Scientific Research   |
| * Nanotechnology          | * Science and Public Policy             | * Emerging Technologies |
| * Automation and Robotics | * Alternative Energy Pursuits           | * Geosystems            |
| * Environmental Research  | * Prototyping and Engineering Materials |                         |

In addition, coursework in Advanced Placement courses is expected.

### College Board: Advanced Placement Program®

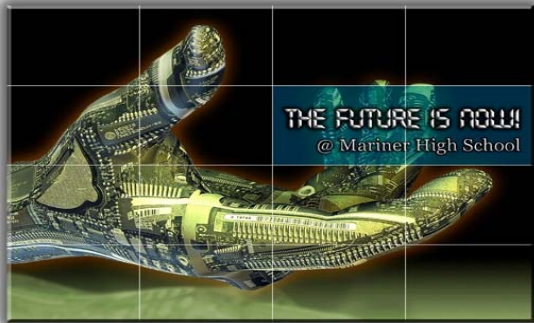
The Advanced Placement Program® is a cooperative educational endeavor between high schools, colleges and universities. Since its inception in 1955, the program has provided motivated high school students with the opportunity to take college-level courses in a high school setting. Students who participate in the AP Program not only gain college-level skills, but in many cases they also earn college credit while they are still in high school. Sixty-two percent of U.S. high schools currently participate in the AP Program. Most colleges and universities in the United States and Canada have an AP policy granting incoming students credit, placement or both for qualifying AP Exam grades. AP courses are taught by dedicated and enthusiastic high school teachers who follow course guidelines developed and published by the College Board. Each AP course has a corresponding exam that participating schools worldwide administer in May. AP Exams represent the culmination of AP courses and are thus an integral part of the AP Program. Students earning qualifying scores on AP exams are eligible to earn college credit. AP courses are weighted at 0.04/semester.

### Pre-AP Course Designation

Mariner High School is developing the foundation for students to enroll in the College Board: Advanced Placement Program by offering Pre-AP courses beginning in the freshman year of study. The purpose of the Pre-AP initiative is to engage high school students in rigorous academic experiences at a high-level of learning. The belief in the Pre-AP concept is that we can prepare every student for higher intellectual engagement by starting the development of skills and acquisition of knowledge as early as possible. Enrollment in Pre-AP courses will develop a foundation for students to enroll in AP courses throughout their high school career. The Pre-AP concept is a powerful opportunity to help all students acquire the knowledge, concepts, and skills needed to engage in a higher level of learning. Pre-AP courses are weighted at 0.02 /semester in accordance with honors course offerings.

## *Mariner High School Advanced Placement Courses*

9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
AP Human Geography	AP Physics	AP Calculus AB	AP Calculus BC
Pre-AP Geometry	AP Biology	AP Statistics	AP Statistics
Pre-AP Algebra I	AP Chemistry	AP Physics	AP Physics
Pre-AP Algebra II	AP World History	AP Biology	AP Biology
Pre-AP Biology	Pre-AP Calculus	AP Chemistry	AP Chemistry
Pre-AP English I	Pre-AP Algebra II	AP Environmental Science	AP Environmental Science
Pre-AP Studio Art:	Pre-AP Physics	AP English Language	AP English Literature
Photography/Digital	Pre-AP Chemistry	AP American History	AP European History
Arts	Pre-AP English II	AP Psychology	AP US Government
	Pre-AP Studio Art:	AP Studio Art	AP Micro Economics
	Photography/Digital	Pre-AP Physics	AP Macro Economics
	Arts	Pre-AP Chemistry	AP Spanish
	Pre-AP Computer Science	Pre-AP Computer Science	AP Computer Science
	Pre-AP Geometry	Pre-AP Algebra II	AP Studio Art
		AP Computer Science	Pre-AP Calculus
		Pre-AP Calculus	



MATHEMATICS, SCIENCE AND TECHNOLOGY ACADEMY

## *Student Resume Builders*

The goal of the MST Academy is to foster and support student interests in the areas of mathematics, science and technology through innovative coursework and experiences. At the completion of their senior year students will have completed:

- ◆ 10 Symposiums and Reaction Papers
- ◆ 16 Lunch Time Lectures and Reaction Papers
- ◆ Research Internship
- ◆ 4 Academic Contests and/or Competitions
- ◆ 4 Integrated Programs of Study:
  - ◇ IBET: Pre-AP Biology/Pre-AP English/Computer in Science and Engineering
  - ◇ Global Studies: AP World History/Pre-AP English II
  - ◇ American Studies: AP US History/AP English Language
  - ◇ Science and Governmental Policy:  
AP US Government/AP Microeconomics/AP Macroeconomics

Upon graduation, students also have the opportunity to be recognized as a:

- ◆ National Merit Scholar
- ◆ College Board Advanced Placement Scholar

## *Freshman Program of Study*

- ◆ Experimental Design and Analysis -summer experience
- ◆ IBET
- ◆ AP Human Geography
- ◆ Pre-AP Algebra II\*, Pre-AP Geometry\*, Pre-AP Algebra I
- ◆ MAJOR Elective
- ◆ MINOR Elective

(\*Preferred)

## *Mariner High School offers 41 MAJORS*

As part of new legislation, the high school diploma requirements have changed and will apply to students entering their first year in high school in the 2007-2008 academic school year and thereafter. Students are required to identify a major area of interest. A “major” is made up of four elective classes that are sequential. Students may select a major in the area of mathematics, science, technology or in another area of interest. A high school major isn’t the same as a college major. It can be changed annually during the registration process. A major gives students the chance to explore a subject of interest. Mariner High School currently offers 41 Majors.



**Affiliated Members**

**College or University**

352 Media Group  
Alcorn State University  
Andrews University  
Aurora University  
Babson College  
Brown University  
California Institute of Technology  
Carleton College  
Carnegie Mellon University  
Center For Gifted Studies- Western Kentucky University  
Clark University  
Clarkson University  
Colorado School of Mines  
Cooper Union for the Advancement of Science & Art  
Cornell University  
Drexel University  
Ferris State University  
Florida Institute of Technology  
George Mason University  
Georgetown University Department of Biology  
Georgia Institute of Technology  
Harvey Mudd College  
Illinois Institute of Technology  
Illinois Wesleyan University  
James Madison University  
U Penn Fisher Program in Management & Technology  
Kettering University  
Lake Forest College  
Lehigh University  
Long Island University/CW Post Campus  
Loyola University New Orleans  
Lynchburg College  
Massachusetts Institute of Technology  
Mercer University  
Michigan Technological University  
Mississippi Valley State University  
Morehouse College  
Morgan State University  
Neumont University  
New College of Florida  
New Jersey Institute of Technology  
New Mexico Tech  
North Carolina Central University  
North Carolina State University  
Northern Illinois University  
Northwestern University  
Oberlin College of Arts & Sciences  
Ohio Wesleyan University  
Oklahoma State University  
Olin College of Engineering  
Purdue University  
Rensselaer Polytechnic Institute  
Rice University  
Rochester Institute of Technology  
Rose-Hulman Institute of Technology  
Santa Clara University

Skidmore College  
Smith College  
State University of New York at Buffalo  
Stevens Institute of Technology  
Stony Brook University  
Tarleton State University  
Texas A & M University  
Texas Tech University  
The City College of The City University of New York  
The University of Alabama in Huntsville  
The University of British Columbia  
The University of Texas at San Antonio  
The University of Tulsa  
The University of Utah  
Tufts University  
University of Arkansas  
University of Maryland Baltimore County  
University of Miami - College of Engineering  
University of Michigan College of Literature,  
Science & Arts  
University of Missouri-Rolla  
University of North Carolina at Chapel Hill  
University of Oklahoma  
University of Rochester  
University of Texas at Austin  
University of the Sciences in Philadelphia  
University of Virginia  
US Coast Guard Academy  
VA Tech Institute for Connecting Science Research  
to the Classroom  
Villanova University  
Virginia Commonwealth University  
Virginia Tech, College of Engineering  
Wake Forest University  
Washington University in St. Louis  
Webb Institute  
Wittenberg University  
Worcester Polytechnic Institute  
Xavier University of Louisiana  
Yale University

**Corporation**

Alloy Education  
Carolina Biological Supply Co.  
The College Board  
Vernier Software & Technology

**Foundation**

America's Wetland  
Siemens Foundation

**Organization**

Biotechnology Institute  
Keystone Science School  
Knowledge Exchange Institute  
The Concord Consortium  
The Jackson Laboratory

# Mathematics, Science, and Technology Academy

## Mariner High School

701 Chiquita Boulevard • Cape Coral, Florida 33993

239.772.3324 • Fax 239.772.4880

National Consortium for Specialized Secondary Schools of Mathematics, Science, and Technology

### APPLICANT INFORMATION:

Student's Last Name \_\_\_\_\_ First Name \_\_\_\_\_ Middle Name \_\_\_\_\_

Lee County Student ID Number (or Social Security Number) \_\_\_\_\_ DOB (MM/DD/YY) \_\_\_\_\_

School In Which You Are Currently Enrolled \_\_\_\_\_ Home Telephone \_\_\_\_\_

Address of Student (Please give complete address) \_\_\_\_\_

Name of Parent/Guardian \_\_\_\_\_ Work Telephone \_\_\_\_\_

Parent/Guardian Email Address \_\_\_\_\_

Each applicant is required to submit a portfolio highlighting academic accomplishments, educational and career goals and personal interests (electronic portfolio preferred). In addition, your portfolio should include your strengths as they relate to the MST student qualities listed in the Applicant Fact Sheet. Please refer to the Applicant Fact Sheet for more information.

**This application must be submitted to Mariner High School. In addition, the regular school zone application must be completed and turned in to the Student Assignment Office. For more information regarding the application process, please visit our website: [www.MarinerMST.net](http://www.MarinerMST.net).**

Applicant Signature: \_\_\_\_\_

Parent/Guardian Signature: \_\_\_\_\_

**\*\* If you are new to the county or coming from a private school, please attach the following documentation:**

- copies of the end-of-year report cards for the last two years
- a copy of the first semester report card for the current school year
- a copy of the most recent national norm referenced test
- proof of your zone school application

For Office Use Only:

Date received : \_\_\_\_\_

Date Electronic Presentation Received: \_\_\_\_\_

Date Presentation Reviewed: \_\_\_\_\_

Letter Sent : \_\_\_\_\_

Mrs. Lisa Vazquez, Coordinator

[LisaMV@leeschools.net](mailto:LisaMV@leeschools.net)

[www.MarinerMST.net](http://www.MarinerMST.net)

Proudly affiliated with the National Consortium for Specialized Secondary Schools of Mathematics, Science and Technology



## *MST Academy*

### **APPLICANT FACT SHEET**

#### **Who is eligible to apply for the MST Academy at Mariner High School?**

The MST Academy application process is open to all west zone students who are currently in the eighth grade, will be first-time ninth graders in the fall of 2008, and are in compliance with the requirements of the Lee County School District's Student Assignment office.

#### **How do I apply for the MST Academy at Mariner High School?**

The MST Academy application consists of two parts: the Applicant Information form and an electronic (preferred) portfolio. The Application Information form (see previous page) can be downloaded from the MST Academy website [www.MarinerMST.net](http://www.MarinerMST.net).

#### **When will applications be accepted?**

Please refer to our website regarding deadlines for applications. If the application and presentation are being sent in the mail, please use the following address:

**Mariner High School  
MST Academy/Lisa Vazquez  
701 Chiquita Blvd.  
Cape Coral, FL 33993**

#### **What are the guidelines for the electronic portfolio?**

The student-generated electronic (preferred) portfolio should highlight the applicant's academic accomplishments, educational/career goals, personal interests, and personal strengths as they relate to the MST student qualities. The scoring rubric used to assess the applicant's portfolio is available online at [www.MarinerMST.net](http://www.MarinerMST.net). The electronic portfolio may be in the form of a PowerPoint presentation, video interview, etc.

#### **What are the MST student qualities?**

MST student qualities include, but are not limited to, the following: intellectual curiosity and self-motivation to pursue scientific research, genuine interest in MST, desire to be challenged, high ability and aptitude, respect for individual and cultural diversity, high regard for ethical issues, and the aspiration to become a member of a community of learners, explorers, mentors, and leaders.

#### **How will I be notified whether or not I was accepted?**

Notification will be sent by mail.

#### **Who do I contact for more information?**

Contact the Program Coordinator, Lisa Vazquez. Email: [LisaMV@leeschools.net](mailto:LisaMV@leeschools.net). Phone: 239.772.3324.



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*Where Opportunity Meets Success!*

