A.3.2 Course Offerings and Graduation Requirements

Maricopa Institute of Technology (MIT) will offer a rigorous academic program to prepare students for college and career success. MIT students must earn 22 credits to graduate.

A. Description of Graduation Requirements MIT graduation requirements are aligned to, and surpass, Arizona minimum graduation and university admission requirements. All courses engage students in Science, Math, Technology, and Math related experiences.

Graduation and University Requirements

Curriculum Area	Maricopa Institute of Technology Graduation Requirements	Arizona Graduation Requirements	University Requirements
Language Arts	**4 credits** English 101, 102, 103, 104 (AP)	4 credits	4 credits
Mathematics	**4 credits**: Algebra 1, Geometry, Algebra 2, AP Statistics, AP Calculus AB, AP Calculus BC	4 credits	4 credits
Science	**4 credits**: Inquiry Physics, Pre-AP/ AP Biology (required), Pre-AP/AP Physics, Pre-AP/AP Chemistry	3 credits	3 credits .
Social Studies History (offered online)	**3 credits**: AP World History 1,2, AP U.S. History 1,2 & AP U.S. Government, AP Economics	3 credits	2 credits
Career and Technical Education/Fine Arts	**2 credits**: Engineering 1,2, Foundations of Technology, Computer Programming, Game Design, Graphic Arts	1 credit	1 Fine Arts Credit
World Language (offered online)	**2 credits**: Spanish, French, German, Latin, Mandarin Chinese, and Japanese	0	2 credits Two years of the same language
Culminating Project	Senior Year Project **.5 credit**	0	0
College and Career Preparation	**1 credit** **STEM** Labs/Senior Internship	0	
Required Courses	**20.5 credits**	15 credits	16 credits
Elective Courses	**1.5 credits**: Anatomy & Physiology Forensics, Advanced Math, AP Computer Programming, STEM Internships, Biotechnology, AP Environmental Science	7 credits	0
Total Required Credits	**22 credits**	**22 credits**	**16 credits**

Table A.3.2.1 Comparison of Graduation Requirements

B. Process and Criteria for awarding Course Credit

Maricopa Institute of Technology (MIT) will offer academic credit to students based on achievement of end of course exam of 70% or higher and attendance of 90% or higher in each class. A student who misses more than 10 percent of a class will not receive credit for the class. In special cases, students may earn credit through independent study, homebound/ hospitalized instruction, and accredited online courses. Participation in these special programs requires prior administrative approval.

Mastery and proficiency for a course is based on the following factors: grades on each standard through quizzes, tests, formative assessments on college and career standards, grades on classwork and performance based projects, online learning assessments, and homework. Homework will not be more that 10% of a grade for any class.
Semester grades are based on final grades for all of the factors listed above. Final grades are calculated by averaging the grade percentages for semester one and semester two.
MIT has established the following grading policy:

Grading System

A	Excellent performance	demonstrated mastery of course content	90-100%
B	Strong performance	demonstrated mastery of course content	80-89%
C	Satisfactory performance	demonstrated proficiency of course content	70-79%
P	Pass (pre-approval required)	demonstrated proficiency of course content	Above 70%
D & F	No Credit	has not demonstrated proficiency of course content	Below 70%
I	Incomplete/In progress	Student has not completed the course	No Grade

C. Consistency with Area II of the Academic Systems Plan

MIT teachers will use multiple sources of data as diagnostic tools to assess, identify, and apply instructional improvement. Teachers will respond to intervention by giving students specific feedback on each standard. Teachers will use the formative assessments to monitor student progress on standards. The formative assessments are used to drive instruction to help students achieve mastery of the standards; accelerate learning thru the development of integrated projects, or re-teach standards by adding online instruction. All teachers will implement response to intervention to determine the next lesson, establish a need for re-teaching content, record the use of a different or more productive instructional strategy, or the focus of one-on-one tutoring. Student summative data will be tracked and available for students and parents through the school's PEAK Learning Platform accessed through the school's website. Teachers will review student performance on benchmarks, end of quarter and semester exams and parents notified of student progress. Parents, teachers, administration, and students will conference when students are at risk of failing a class. An intervention plan for progress monitoring grades, achievement, or attendance will be implemented and documented action steps put in place. At the end of the course, teachers will review the final progress of all students. If the above listed criteria are not met for any students, teachers will submit those students' names and relevant documentation of interventions. If the student continues to have difficulty, the teacher and administration will meet to determine if a referral for Special Education Services or English Proficiency testing is needed. If the student does not meet the criteria for credit nor in need of special services, the student will not receive credit.

D. Description of Courses Offered for Grades 9-12

Subject	Freshman-9th Grade	Sophomore-10th Grade	Junior	Senior
English	English 101	English 102	English 103	English 104 AP English Lang/Comp
Science	Pre-AP Biology Inquiry Physics	Pre-AP/AP Biology Pre-AP Chemistry Pre-AP/AP Physics	Pre-AP/AP Chemistry Bio Tech 1 AP Physics	AP Chemistry Bio Tech 2 AP Environmental Science
Computer Science/ Technology	Foundations of Technology, Graphic Art	Foundations of Technology, Computer Programming, Game Design	Foundations of Technology, Computer Programming, Game Design, AP Computer Programming	Computer Programming, Game Design, AP Computer Programming

Engineering	Engineering 1 Engineering 2	Engineering 1 Engineering 2	Intro to Computers and Engineering Problem Solving	Civil & Environmental Engineering Design
Mathematics	Algebra 1 Algebra 2 Geometry Pre-Calculus	Algebra 2 Geometry Pre-Calculus AP Calculus AB	Algebra 2 Pre-Calculus, AP Statistics, AP Calculus (AB/BC), Multivariable Calculus & Differential Equations	Pre-Calculus AP Statistics AP Calculus (AB/BC), Multivariable Calculus & Differential Equations
Fine Arts/Electives (Online courses)	P.E. (Online) Health (online) Advisory—Character Counts	P.E. (online) Health (online) Advisory--Character Counts	Advisory-College & Career Prep, STEM Internships, Seminars	Advisory--College & Career Prep, STEM Internships, Seminars
Social Studies/ History (Online courses)		AP World History (online)	AP U. S. History (online) AP World History (online)	U.S. Government (online) AP Economics (online)
World Language (Courses offered Online)		Spanish, French, German, Latin, Mandarin Chinese, Japanese	Spanish, French, German, Latin, Mandarin Chinese, Japanese	Spanish, French, German, Latin, Mandarin Chinese, Japanese
STEM Research LAB Courses			Anatomy & Physiology, Forensics, Science Research	AP Physics, Biotechnology, Senior Research Project

Table A.3.2.2. Menu of course offerings.

English Language Arts Courses

The English Language Arts courses will align to Common Core Standards, International Standards, ACT and AP course requirements. All English courses are writing intensive and focus on STEM related experiences. The following English courses will be offered:

English 101 - 1 Credit (Pre-AP): Critical thinking and self-expression are emphasized in the study of vocabulary, grammar, usage, the fundamental elements of the expository (analytical) essay and narrative writing.

English 102 - 1 Credit (Pre-AP): Students will write clear, organized, vivid prose with specific textual references for evidence. Persuasive and analytical essays will be written with sophistication in sentence, paragraph, and essay form.

English 103 - 1 Credit: Students will study American Literature along with essays and primary source documents from American readings with an emphasis on environmental, legal, and informational texts. Students will write for a variety of purposes demonstrating the ability to analyze and interpret, rhetorical strategies and techniques, and showing the ability to evaluate and incorporate reference documents into research papers.

English 104 - 1 Credit (AP English Lang/Composition): The Advanced Placement English course description is used for this English course. Students will reflect on a range of advanced abstract concepts and complex issues through papers, research, and projects.

Science Courses

All Science Courses will be taught in a combined block with Technology.

Inquiry Physics- 1 Credit (Pre-AP): Inquiry Physics will provide maximum opportunity to sharpen the analytical and mathematical skills of talented, motivated students through the study of measurement, forces, energy, waves, optics, particles and electricity.

Biology- 1 Credit (Pre-AP): This year-long course will provide an opportunity for the student to develop an in-depth knowledge of biochemistry, cells, genetics, DNA, evolution, and ecology.

Biology- 1 Credit (AP): Advanced Placement Biology is a rigorous, college-paced course intended to provide students with the content knowledge and skills necessary for performing Biology-related research: Evolution, Cellular Processes: Energy and Communication, Genetics and Information Transfer, and Interactions. The AP Biology curriculum is dictated by the College Board's AP Biology Curriculum Framework.

Inquiry Physics-1 Credit (Pre-AP): This is a lab-oriented course that studies energy in its many forms. Topics include mechanics, electricity, waves, and light. Strong math skills are highly recommended.

Physics-1 Credit (AP): This course is for the Science, Technology, or Engineering students. Emphasis is placed on concepts in physics, research, experimentation, evaluation and problem solving. This course will prepare students for the AP Physics 1 exam.

Chemistry- 1 Credit (Pre-AP): Chemistry is a pre-college course that explores the world of elements, molecules and chemical reactions. This course is an algebra based lab science course that takes real-world data and applies mathematical concepts to discover patterns within the physical world. This course explores the concepts of nomenclature, the mole, stoichiometry, thermochemistry, atomic theory, bonding, gas laws, phases of matter at an atomic level, solubility, acids and bases, equilibrium and introduction to organic chemistry.

Chemistry- 1 Credit (AP)*:* The AP course has an emphasis on chemical calculations and the mathematical formulation of principles, and laboratory research. This course in an algebra based lab science.

Environmental Science- 1 Credit (AP)*:* Students will identify and analyze environmental problems and their effects and evaluate the effectiveness of proposed solutions. Concepts studied include ecosystem measurements, human populations, energy use, climate change, water and air pollution, soils, food, toxics, waste management and environmental job skills.

Anatomy & Physiology-1 credit: Topics include body organization; homeostasis, cytology; histology; and the integumentary, skeletal, muscular, nervous systems and special senses. Laboratory work includes dissection of preserved specimens, microscopic study, physiologic experiments, computer simulations, and multimedia presentations.

Forensics: Basic scene and techniques used in a forensic laboratory. The nature and significance of physical evidence and the underlying chemical and biological principles of the scientific techniques employed and analysis and the interpretation will be emphasized. Topics include hair, fiber and paint analysis, forensic toxicology and serology, blood spatter, fingerprinting and forensic DNA analysis techniques.

Biomedical Technology 1: A course designed to introduce students to the scientific concepts and laboratory research techniques currently used in the field of biotechnology. Students will develop laboratory skills, critical thinking, and communication skills currently used in the industry. Areas of study include: DNA and protein structure, function and analysis, bioethics and careers in biotechnology**.**

Biomedical Technology 2: Continuation of Biotechnology 1. Students will be introduced to the scientific concepts and advanced laboratory research techniques currently used in the field of biotechnology. Areas of study include plant biotechnology, synthesizing DNA and PCR, pharmaceutical biotechnology and DNA sequencing and Genomics.

Math

All math courses will be taught in a combined block with engineering courses. Each course has a strong emphasis on applied problems and integrates engineering curriculum throughout the content.

All mathematics courses are designed to prepare students for AP Calculus assessments.

Algebra I- 1 Credit: Working with and evaluating mathematical expressions. Topics include real numbers, simplifying real number expressions with and without variables, solving linear equations, polynomials, factoring, linear patterns, linear systems of equality and inequality, simple matrices, sequences, and radicals.

Geometry- 1 Credit: The course is primarily focused on logical and spatial reasoning. Students will use both inductive and deductive reasoning to communicate their thinking and written proofs as well as geometric constructions to validate their conclusions. Students will study the properties and applications of angles; parallel and perpendicular lines; triangles; similarity and congruence; right angle trigonometry; quadrilaterals; circles; coordinate geometry; three dimensional solids; the measures of length, area and volume; and geometric probability.

Algebra II - 1 Credit (Pre-AP): Advanced Algebra is the study of things that vary with relation to one another and can be described with mathematical statements. The course is focused on analyzing mathematical relations graphically, numerically, symbolically, and verbally. Students will analyze and identify the relationship among mathematical expression and justify their conclusions through graphs, tables, and symbolic manipulation. Students will study linear equations, systems of equations, inequalities, quadratic and polynomial equations, the expansion of the number system to include complex numbers, exponential functions, logarithmic equations, series, and statistical analysis of data.

Pre-Calculus- 1 Credit: The course covers basic properties of functions, graphs; with emphasis on linear, quadratic, trigonometric, exponential functions and their inverses. Emphasis will be on multi-step problem solving.

Statistics-1 Credit (AP): This course is designed to cover topics needed to successfully complete the Advanced Placement exam. It is an introduction to the major concepts and tools for collection, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: exploring data, sampling and experimentation, anticipating patterns, and statistical inference. By the end of this course students will have a working knowledge of the ideas and tools of practical statistics and will be able to make informed decisions based on data.

AP Calculus AB - 1 Credit (AP): Calculus of several variables. Vector algebra in 3-space, determinants, and matrices. Vector-valued functions of one variable, space motion. Scalar functions of several variables: partial differentiation, gradient, optimization techniques. Double integrals and line integrals in the plane; exact differentials and conservative fields; Green's theorem and applications, triple integrals, line and surface integrals in space.

AP Calculus BC - 1 Credit (AP): This course is designed to cover topics needed to successfully complete the Advanced Placement exam. Topics include infinite series, polar coordinates, parametric equations, conic sections with calculus, matrices and vectors. Calculus of several variables. Vector algebra, dot product, matrices, and determinant. Multiple integrals, change of variables, line integrals, surface integrals. Stokes' theorem in one, two, and three dimensions.

Computer Programming – 1 Credit (AP): The course emphasizes object-oriented programming methodology with a concentration on problem solving and algorithm development. Students will study data structures, design and abstraction.

Multivariable Calculus and Differential Equations – 1 Credit: This course is for student who have completed AP Calculus BC. The curriculum covers Calculus 3 and differential equations (DEQ). Students may get 4 credits for Multivariable Calculus and 3 credits for DEQ through dual enrollment.

Linear Algebra and Advanced Math Topics – 1 Credit: This college-level course includes the topics: intro to matrices, theories of systems of linear equations, determinants, vector spaces, linear transformations and eigenvalues. It emphasizes the development of computational skills and independent research.

Social Studies Courses

US History- 1 Credit: Students will examine the history and government of the United States from pre-colonial times to the present through eight units of study: Colonial Era to Revolution, Constitution to Mass Democracy, Manifest Destiny to Civil War, Reconstruction to Industrialization, Imperialism to the Twenties, Depression to the Early Cold War, Eisenhower to Carter, Reagan to present day. (*For students who elect AP U.S. History, they must complete additional assignments to prepare for the AP Exam).*

World History- 1 Credit (AP): This is a thematic and conceptual course that examines the history of the world from 1450 to the present with a focus on key historical eras, movements, figures, places, and events. Key topics include global expansion and encounter, the age of revolution, the development of national and regional identities, and international conflicts.

AP Economics- .5 Credit: Introduction to economic principles. Key topics of supply and demand; allocation of goods and services; monetary and fiscal policy, and the Federal Reserve System. Students analyze important roles in an open free market economy and how fundamental decisions about the four factors of production are made.

Foreign Language Courses- 1 Credit

Spanish, French, German, Latin, Mandarin Chinese, or Japanese 1: This course introduces students to the study of basic oral and written communication skills by using authentic materials (i.e. literature, newspapers, television etc.) Grammar will be integrated into the curriculum by studying a variety of themes. The students will develop reading, writing, listening, and speaking skills.

Spanish, French, German, Latin, Mandarin Chinese or Japanese 2: Students will continue to develop oral and written communication skills by using authentic materials. Grammar will to be integrated into the curriculum by studying a variety of themes. Students will continue developing reading, writing, listening, and speaking skills.

Spanish, French, German, Latin, Mandarin Chinese, or Japanese 3: Students will incorporate grammar and vocabulary into reading, writing and conversation in a more advanced level. Students will begin reading and writing for research projects.

Spanish, French or German, Latin, Mandarin Chinese, or Japanese 4: Fourth-year expands on their speaking, listening, reading, and writing skills. The Students will attain proficiency in written and spoken communication. Students will read and write to complete a research project. Students taking AP Spanish, AP French, AP German, AP Latin, AP Chinese, and AP Japanese Language and Culture will be prepared to pass the AP test.

STEM Labs, College and Career Preparation Courses, and Advisory

The first two years of a student's experience at Maricopa Institute of Technology, (MIT) students are immersed in an integrated Science, Technology, Engineering, and Math and Humanities sequence where the focus is on the student's development of conducting authentic research and working with primary source documents, developing scientific investigations, understanding and applying the engineering design process, developing digital literacy, Problem Based Learning, and critical thinking skills. Advisory program will be a support structure for students that focuses on setting and monitoring student goals and personalizing the student experience at MIT. During the final two years, students work in partnership with MIT faculty, college professors, industry experts, and community business leaders to support students' interests, STEM internships, or dual enrollment courses. Students will work with MIT faculty and other defined industry or business experts in a STEM Lab Concentration to conduct inquiry and research, explore questions and develop their ideas on a Senior Science Project. Student schedules are tailored for the completion of one hundred twenty-five (125) hours in a STEM internships, meeting college and career readiness standards and expectations, and the college application process requirements.

Electives: Physical Education, Health, Web Design, and other online courses are taken through FuelEd. All courses taken online are monitored by a teacher and have face to face interaction requirements. Options for STEM electives include additional science and math classes.

E. Consistency with the Program of Instruction and Business Plan

Course offerings are consistent with the Program of Instruction and alignment with the Business Plan as presented in the application package.

Arizona Department of Education. (2013). Class of 2013 graduation requirements. Retrieved from http://www.azed.gov/hsgraduation/

Arizona State University. (2012). Freshman admission requirements and timelines. Retrieved from: https://students.asu.edu/freshman/requirements