

Doral Academy of Technology STEM Programs of Study

- Science, Technology, Engineering and Mathematics (STEM) elective program courses which consist of at least 4.5 credits in grades 6th -8th
- Students are encouraged to participate in Robotics, Future City or Introduction to Computer Science programs of study
- Career and Technical Education : Applied Engineering Technology

DORAL ACADEMY OF TECHNOLOGY STEM PROGRAM OUTLINE

Course	Course Overview	Grade level	Credits Earned	STEM Future Progression
Course Title: Robotics 1 Exploration of Production Technology 860004001	Student will learn to design, build and test robots using the LEGO®Mindstorms EV3® Technology. They will create Visual-Workflow computer programs to make robots navigate in their environment, overcoming more than 20 different challenges.	6 th grade only	1.0 credit annual course	Robotics 2 or Future City 1
Course Title: Video Game Programming Fundamentals Coding Fundamentals 900920001	Students will learn to make decisions regarding their future foundational knowledge and skills related to computer coding and software development. Hands on experiences with equipment, materials, and technology.	6 th grade only	.5 credit Semester Course	Robotics 2 or Future City 1
Course Title: Robotics 2 Exploration of Robotics Technology 860007001	Students will learn to design, build, and test robots using the VEX IQ Technology. They will use a Graphical C-Language to make robots react to changes in their environment and solve more than 20 different challenges involving color, sound detection and objects location.	7 th grade only	1.0 credit annual course	Future City 1, Introduction to Computer Science *NOTE: Robotics 3 is based on teacher recommendation only
Course Title: Robotics 3 Exploration of Robotics Technology and Career Planning 860007201	Students will learn the very foundations of applied electronics and C-Language programming to craft their own robots using ARDUINO Technology.	8 th grade only	1.0 credit annual course	Robotics Design Essentials/Level 3 High school or Intro to Computer Science or Game Simulation Foundations
Course Title: Future City 1 MJ Research 2 170001001	Students will learn basic research skills to succeed in the competitive Future City 2 Research Competition course. Students learn concepts encompassing engineering, the engineering design process, STEM related content, and scales.	7 th and 8 th grade	1.0 credit annual course	Robotics Design Essentials/Level 3 High school or Intro to Computer Science or Game Simulation Foundations
Course Title: Future City 2 MJ Research 3 170002001	Students will participate as a team in order to represent the school at the annual South Florida Regional Future City Competition held at the FIU School of Engineering. Students use SIMCity™ Software to design a city of the future. Course includes in depth look at engineering and ethical practices.	8 th grade	1.0 credit annual course	Robotics Design Essentials/Level 3 High school or Intro to Computer Science or Game Simulation Foundations
Course Title: Introduction to Computer Science Exploring Technology 860002012	Students will learn concepts, techniques, and processes associated with computer programming and software development.	8 th grade	1.0 credit annual course	Robotics Design Essentials/Level 3 High school or AP Computer Science Principles or Game Simulation Foundations

Students can participate in extracurricular activities associated with the STEM program such as: Girls Who Code, Video Game Design Club , Computer Science Club and Robotics Club

Doral Academy High School STEM Programs of Study

DORAL ACADEMY PREPARATORY STEM PROGRAM OUTLINE

- Science, Technology, Engineering and Mathematics (STEM) elective program courses which consist of at least 8 credits in grades 9th-12th
- Course are equivalent to a Performing Arts Credit for high school graduation
- Career and Technical Education : Applied Engineering Technology

Course	Course Overview	Grade level	Credits Earned	STEM Future Progression
Course Title: <i>Intro to Computer Science</i> Foundations of Programming/Level 3 900721001	Students will learn concepts, techniques, and processes associated with computer programming and software development.	9 th -12 th	1.0 credit annual course	AP Computer Science Principles or AP Computer Science A
Course Title: <i>AP Computer Science Principles</i> 020033501	Students will learn to create aspects of programming, abstractions, algorithms, large data sets, and computing impacts.	9 th -12 th	1.0 credit annual course	AP Computer Science A
Course Title: <i>AP Computer Science A</i> 020032001	Students will apply concepts of applications of computing within the context of programming methodology, algorithms, and data structures.	9 th -12 th	1.0 credit annual course	Can take Data Structures if completed both AP Computer Science courses.
Course Title: <i>Data Structures & Algorithms</i> Java Programming Essentials/Level 3 900724001	Students will apply concepts of applications of computing within the context of programming methodology, algorithms, and data structures.	11 th -12 th	1.0 credit annual course	Robotics Design Essentials/Level 3 High school or Game Simulation Foundations
Course Title: <i>Foundations of Robotics</i> 941011002	Foundations of Robotics brings an introduction to engineering concepts and robotic fundamentals to students. Students will learn basics of technical writing, note-keeping, programming in RobotC, and construction using VEX parts.	9 th -12 th	1.0 credit annual course	Robotics Design Essentials/Level 3 High school or Intro to Computer Science or Game Simulation Foundations
Course Title: <i>Robotic Design Essentials</i> 941012002	This course takes the knowledge gained from Foundations of Robotics, and applies it directly to competitive robotic challenges. Students are expected to already know the basics of mechanics, and some coding.	9 th -12 th	1.0 credit annual course	<i>Robotics Systems</i> *Teacher Recommendation required or AP Computer Science Principle or AP Computer Science A or Game Simulation Foundations
Course Title: <i>Robotic Systems</i> 941013002	This course takes the knowledge gained from Foundations of Robotics and Robotic Designs Essentials, and incorporates leadership and managerial skills to coordinate team efforts.	11 th -12 th	1.0 credit annual course	AP Computer Science Principle or AP Computer Science A or Game Simulation Foundations
Course Title: <i>Game & Simulation</i> Foundations 820811001	This course provides an introduction to game and simulation concepts and careers, the impact game and simulation has on society and industry, and basic game/simulation design concepts such as rule design, play mechanics, and media integration.	9 th -12 th	1.0 credit annual course	Game Simulation Design

Students can participate in extracurricular activities associated with the STEM program such as:
 Computer Science Club and Robotics Club