

Technology Education (TechEd)

All students must have 7.5 credits in Electives as required for graduation

M18 | Energy/Power/Transportation (Fall) 0.5sem

This course develops a depth of understanding about the wide array of energy sources and controls by engaging students in hands-on, project-based activities in mechanical power, fluid power, and electrical power. Students will construct and test a variety of transportation systems, participate in reverse engineering activities, and develop skill working with the tools, equipment, and measurement devices used by engineers and technologists.

M32 | Technology of Flight (Spring) 0.5sem

This course provides the student with a study of the core technologies used in the aviation and aerospace enterprise. Students will follow the engineering design process to design, build, and test a number of aircraft and rockets.

M13 | Technological Design 1 (Fall) 0.5sem

Students experience exciting activities in the areas of entertainment, recreation and information technologies. Students work in engineering teams to apply technology, science, and mathematics concepts and skills to solve design problems and create innovative solutions. Students will use criteria such as design effectiveness, public safety, and ethics to evaluate their designs. This course satisfies the Basic Technology graduation requirement.

M14 | Technological Design 2 (Spring) 0.5sem

This course provides the student with the opportunity to use the engineering design process to solve complex issues in the areas of medical and biotechnology fields. Working in teams, students will identify the problem, engineer a solution and report findings. The activities allow students to choose their place on an engineering team and contribute their talents to accomplish the ultimate goal. This course satisfies the Basic Technology graduation requirement.

Prerequisite(s): *Technological Design 1*

M10 | Digital Design (Graphics) (Spring) 0.5sem

This course develops skills and knowledge in the use of information and communication technology. Course topics include graphic arts design, screen printing, digital photography, corporate & desktop publishing, media production, computer graphics & imaging.

M16 | Introduction to Robotics (Fall) 0.5sem

The objective of this course is to use a hands-on approach to introduce the basic concepts in robotics, focusing on robots and illustrations of current state of the art research and applications. Course information will be tied to lab experiments; students will work in teams to build and test increasingly more complex VEX-based robots, culminating in and end of semester robot contest. This course introduces fundamental concepts in robotics. In this course, basic concepts will be discussed, including sensors, path planning, kinematics, feedback, stressing the importance of integrating sensors, effectors, and control.

M42 | Manufacturing & Construction Technology 0.5sem

This course focuses on hands-on, problem-based activities to introduce manufacturing and construction concepts related to the Standards for Technological Literacy. During each Learning Unit, students are asked to use a four-phase learning cycle to develop plausible solutions to related Primary Challenges. Designing a Custom Family Home for a Client is one example of a Primary Challenge experienced in this course.

M52 | Marine Technology (Spring) 0.5sem

This course provides the student with an in-depth study of the core technologies while investigating topics that include: Historical Perspective, Design, Hydrodynamics, Hydrostatics, Propulsion Systems, Materials, Electronics, Navigation Systems, and Careers. Students will experience the engineering design process as they design, construct, test, and analyze a propeller driven watercraft. Both computer simulations and hands-on experiences are an integral part of this course.

M77 | Intro to Construction Design & Management [FY] 0.5/sem

This course provides an overview of the design and construction process as well as an introduction to the many career options within the field of construction. Students will be introduced to core concepts in design and construction including construction methods and materials; fundamental elements of design; and innovative technologies including Green Construction and Design. Students will be introduced to design software as they complete basic design projects, such as a bridge design, floor plans and elevation plans. This course also includes career exploration activities and research regarding the construction industry.

Available at Arundel High School only.

M78 | Principles of Construction Design [FY] 0.5/sem

This course provides students with an in-depth understanding of the construction design process. Students will complete a series of increasingly complex construction design projects in which they incorporate all aspects of the construction process, including zoning and regulation requirements; construction methods and materials, energy conservation; surveying; and project planning. Students will use design software to generate site plans (topography) as well as detailed building plans. Portfolios are used to show the developmental stages of a design project. Students will work in teams to develop each aspect of a construction project including developing a proposal, site plans, and construction management documents. Available at Arundel High School only.

Prerequisite(s): *Introduction to Construction Design and Management*

M79 | Honors Advanced Design and 3-D Modeling [FY] 0.5/sem

Students will work in teams to fully develop designs and a construction management plan for a pre-determined site. In this year-long project, students begin with the legal description and topography of the site and create a proposal for development. The construction design project must meet the client's needs, budget, and the site characteristics. Students will generate a series of plans to be included with the proposal for submission to an industry review panel for approval. Upon completion of the course, students will demonstrate advanced design/drafting skills and be prepared for the AutoCAD certification exam. Available at Arundel High School only.

Prerequisite(s): *Introduction to Construction Design and Management and Principles of Construction Design*

M80 | Honors Advanced Construction Management [FY] 0.5/sem

This course builds on an understanding of the construction design process to advanced knowledge and skill in construction management. In this course, students will be required to work in teams to complete a project from existing plans. The year-long project will focus on building codes and standards; coordination of the construction process; estimating, planning, and scheduling; and site management. Students will complete a portfolio of their design and construction management projects for review by an industry panel. Available at Arundel High School only.

Prerequisite(s): *Introduction to Construction Design and Management and Principles of Construction Design*

M840| Engineering Design Concepts 0.5sem

Learn how professionals in engineering fields use a project-based approach to solve engineering challenges. We will discover, practice, and refine the use of all the steps in the Engineering Design Process. Students will design prototypes of devices, engage in hands-on exploratory labs that explore various manufacturing processes such as rapid prototyping. Students will gain confidence by solving problems in team structured environments. This course satisfies the Basic Technology graduation requirement.

M44| Practical Programming 0.5sem

Build and test working models of real-world robotic challenges with 'drag and drop' programming software. This course satisfies the Basic Technology graduation requirement.

M46| Renovation DIY – Home Improvement 0.5sem

Learn and practice DIY skills for carpentry, plumbing, and electrical in a hands-on environment which can enhance your understanding of how these skills are beneficial to home ownership. This course satisfies the Basic Technology graduation requirement.