

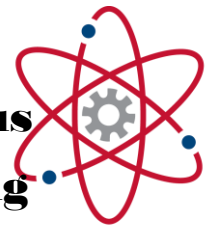


Muscle Shoals Course Syllabus

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Engineering



PROJECT LEAD THE WAY

PLTW

Course Fee \$30.00

Project Lead the Way (PLTW) is the nation's leading provider of science, technology, engineering, and math (STEM) programs. Introduction to Engineering Design (IED) and Principles of Engineering (POE) are PLTW Engineering Foundation Courses offered at

Muscle Shoals Career Academy to help the student develop skills necessary for success in our global economy. The student is immersed in using science, technology, engineering, and math to investigate topics such as ethics, sustainability, mechatronics, forces, structures, aerodynamics, digital electronics, circuit design, manufacturing, and the environment. This experience gives the student an opportunity to learn varied engineering disciplines as they become college and career ready.

Introduction to Engineering Design (IED)

The student digs deep into the engineering design process by applying math, science, and engineering standards to hands-on projects. The student will work both individually and in teams to design solutions to a variety of problems using the 3D modeling software, Autodesk Inventor and documentation in an engineering notebook.

Unit 1: Design Process

Unit 2: Technical Sketching and Drawing

Unit 3: Measurement and Statistics

Unit 4: Modeling Skills

Unit 5: Geometry of Design

Unit 6: Reverse Engineering

Unit 7: Documentation

Unit 8: Advanced Computer Modeling

Unit 9: Design Team

Unit 10: Design Challenges

Principles of Engineering (POE)

Through problems that engage and challenge, the student will explore a broad range of engineering topics including mechanisms, automation, strength of structures, and strength of materials. The student will develop skills in problem solving, robotics, programming, research, and design while acquiring strategies for design process documentation, collaboration, and presentation.

Unit 1 Energy and Power

Lesson 1.1 Mechanisms (VEX)

Lesson 1.2 Energy Sources

Lesson 1.3 Energy Applications

Lesson 1.4 Design Problem

Unit 2 Materials and Structures

Lesson 2.1 Statics

Lesson 2.2 Material Properties

Lesson 2.3 Material Testing

Lesson 2.4 Design Problem

Unit 3 Control Systems

Lesson 3.1 Machine Control (VEX)

Lesson 3.2 Fluid Power

Lesson 3.3 Design Problem

Unit 4 Statistics and Ballistics

Lesson 4.1 Statistics

Lesson 4.2 Kinematics

Student Expectations

- Bring pencil, highlighter, three-ring binder, loose-leaf paper, graph paper, planner, and a positive attitude.
- Arrive on time, ready to work, actively participate, and complete all required assignments.
- Become competent in the full scope of the course curriculum and assemble a professional portfolio.

Discipline Procedures

All rules, regulations, guidelines, and policies of the Muscle Shoals Board of Education, Muscle Shoals High School Handbook, and Muscle Shoals Career Academy Handbook will be followed.

Consequences: 1. Verbal Warning 2. Student Conference 3. Parent Conference 4. Office Referral

Certain violations will result in an immediate office referral

BE RESPECTFUL

BE RESOURCEFUL

BE RESPONSIBLE