Introduction to Engineering and Technology Concepts

Office of Career and Technology Education
Course Number: 55.1250.0
Course Purpose

- Graduation Credit
- Standard Level Students
- Supports Concepts of Physical Science (COPS)
- Supports Algebra I
- Introduce Basic Engineering Concepts
Student Audience

- Standard Level Students
- Grade 9-12
- Enrolled in COPS
- Enrolled in Algebra I
- Has not passed Algebra I HSA
STEM Alignment

- ITEA Standards for Technological Literacy
- MSDE Voluntary State Curriculum for Technology Education
- Science Indicators
- Algebra I Indicators
- 5E Lesson Format
Threaded Theme

- Baltimore County Amusement Park
- All activities and projects relate to theme

Projects include:
- Traffic Analysis
- Bridge
- Crane & Winch
- Water Tower
- Beach Cleaner Vehicle
- Lighted (LED) Sign
- Bio-Remediation
Unit I – The Nature of Technology

- Lab Procedures
- Introduction to Technology
- Measurement
- Systems Model
- Types of Technological Systems
- Core Technologies
Unit I – The Nature of Technology

- Systems Model
- Types of Technological Systems
- Core Technologies
- Sketching, Drawing & CAD
- Tool and Machine Use and Safety
- Engineering Design
Unit II – Core Technologies and Abilities for a Technological World

- Mechanical Technology
- Technology Systems and Processes
- Design and Production Plan

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Unit II – Core Technologies and Abilities for a Technological World

- Oral Presentation and Device Demonstration
- Design Communication
- Analyze Design Constraints and Criteria

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Unit III – Core Technologies and The Designed World

- Structural & Construction Technology
- The Construction Process
- Structure Types
- Transportation Technology
- Transportation Systems
Unit IV – Core Technologies and Engineering Design

- Inputs to Technology Systems
- Problem Solving Process
- Power and Work Measurement
- Energy Sources and Usage
- Energy Conversion
- Energy Conservation

Introduction to Engineering and Technology Concepts
Unit V – Communication and Information Technology

- Introduction to Communication Technology
- Types of Communication
- Printing Processes
- Properties of Light
- Photography
- Telecommunications/Physics
- Designing a Message (Audio Commercial)
- Computer Communication
Unit VI – Medical, Agricultural and Manufacturing Technology

- Agricultural Technology
- Biotechnology
  - Cell Immobilization for Bay Remediation
- Food Processing
- Medical Technology
Unit VI – Medical, Agricultural and Manufacturing Technology

- Manufacturing Technology
  - Pewter Casting
Safety Considerations

- Demonstrate all tools and machines.
- Keep a record of all safety tests.
- Supervise all lab activities.
- Provide craft sticks for spreading hot glue.
- Do not allow power tools for cutting small parts.