



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**

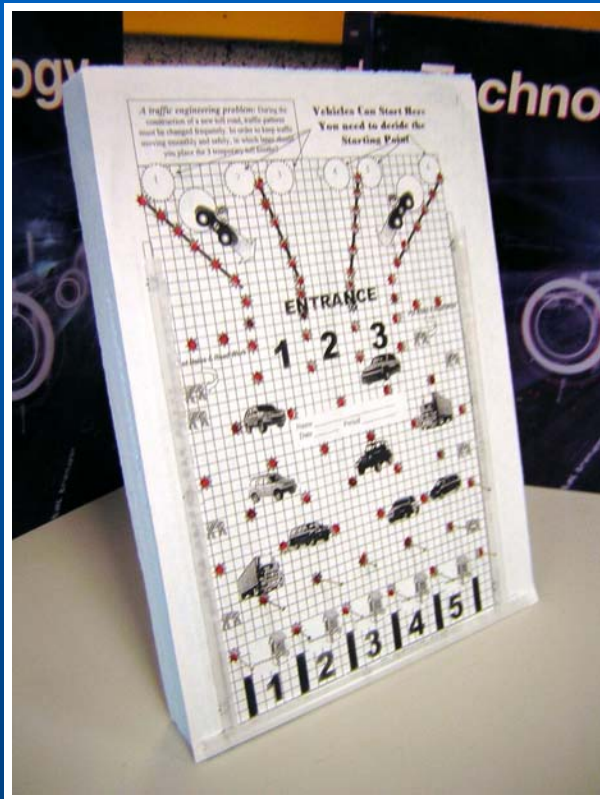
STEM Alignment

- **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

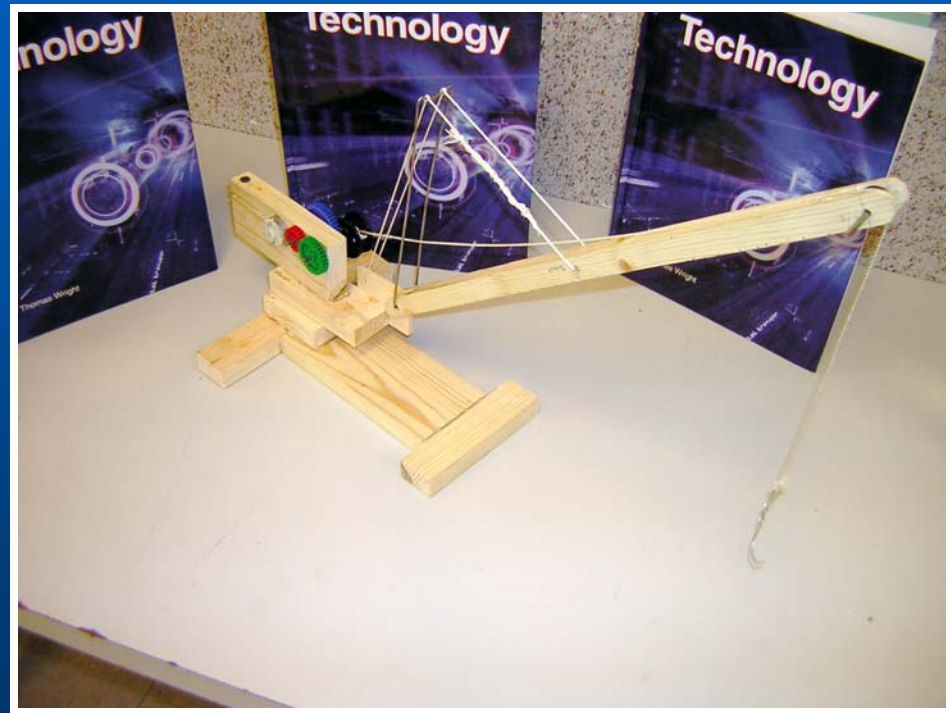
Unit I – The Nature of Technology

- **Systems Model**
- **Types of Technological Systems**
- **Core Technologies**
- **Sketching, Drawing & CAD**
- **Tool and Machine Use and Safety**
- **Engineering Design**

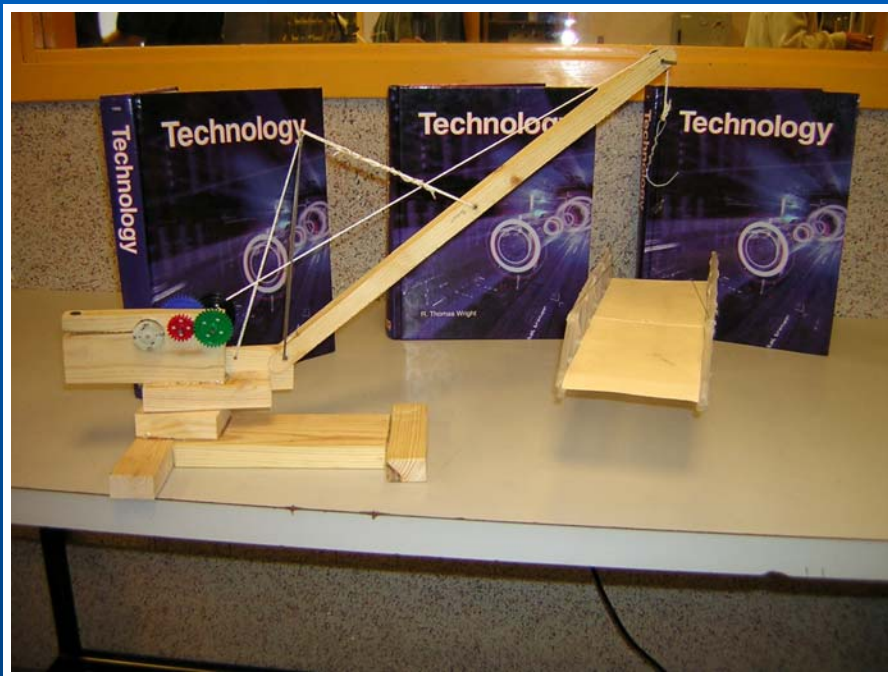


Unit II – Core Technologies and Abilities for a Technological World

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



Unit II – Core Technologies and Abilities for a Technological World



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

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



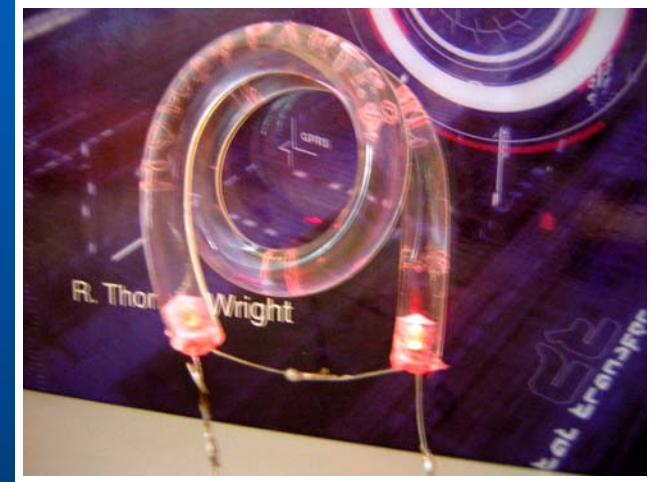
- Inputs to Technology Systems
- Problem Solving Process
- Power and Work Measurement

- Energy Sources and Usage
- Energy Conversion
- Energy Conservation



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.