School District of Springfield Township

Springfield Township Middle School
Course Overview

Course Name: Technology Education **Grade Levels: 6-8**

Grade 6

Course Focus: Introduction to the Technology Center

- There are many opportunities for the 6th graders to learn more about the technology modules and engage in hands-on activities having to do with the technology modules.
- Students learn the various technologies in 6th grade to better prepare them for the choices they will have in 7th and 8th grade

Content/PA Standards

- Sketching…getting ideas on to the paper *(ST-3.6.7B)*
- Design process…building towers and sailboats *(ST-3.6.7C, 3.2.7D)*
- Creating a commercial…learning about television broadcasting *(ST-3.6.7B, 3.2.7D)*
- Electronics…simple components in electricity *(ST-3.6.7C)*
- Applied Physics…simple machines *(ST-3.6.7C)*

Skills

- Work in teams
- Apply hand/eye coordination
- Solve problems
- Think creatively
- Write scripts and design storyboards

Grades 7 and 8

Course Focus: Technology Module Selections

- Students work in the Technology Center. After choosing 4 modules in 7th grade and 2 more modules in 8th grade, the students are engaged in various activities that help introduce and explain the technology they are studying.
- Students learn the history and relevance of their modules

Module Content/PA Standards

- Aerospace *(ST-3.6.7C)*
  - Aviation
  - Space flight
  - Airplane construction
  - Rocket construction
- Applied Physics *(ST-3.6.7C)*
  - Physics and simple machines
  - Lasers
  - Mechanisms
- Research and Development *(ST-3.6.7B, 3.7.7A, 3.2.7D)*
  - Design Theory
  - Model car construction
  - Basic woodworking equipment
  - Exposure to aerodynamics and wind tunnel theory
- Engineering Structures *(ST-3.6.7C, 3.7.7A,D, 3.2.7D)*
  - Problem solving
  - Truss Theory
  - Structural Efficiency theory
  - Bridge construction
- Video Production *(ST-3.6.7B, 3.7.7E, 3.2.7D)*
  - Radio Communications
  - Audio equipment
  - On-air broadcasting
  - News broadcast
  - Script Writing
- Electronics *(ST-3.6.7C)*
  - Magnetism
  - Electron theory
  - Electrical circuits
  - Schematics

- Photography *(ST-3.6.7B, 3.2.7D)*
    - Digital camera operation
    - Composing pictures
    - Creative thinking
    - Enhancing and manipulating pictures
- Architecture and CAD *(ST-3.6.7B, 3.7.7D)*
    - Architectural plans
    - Basic construction
    - Solar considerations
    - Design productions
    - CAD techniques
- Power *(ST-3.6.7C, 3.2.7D)*
    - Traditional power sources
    - Alternative power sources
    - Maglev train construction
- Robotics *(ST-3.7.7D)*
    - History
    - Robot application
    - Mobile robots
    - Programming robots
    - Creating robots…Mindstorm and VEX kits

Skills

- Solve problems
- Think creatively
- Follow modules lesson plans and take responsibility
- Apply hand/eye coordination
- Work in teams

Grade 8 Culminating Project

Course Focus: ***"Houston, We Have a Problem"***

- Working in teams, students work on the project "Houston, We Have a Problem." Students work in teams of 5-7. In order to complete the culminating project, students will have to apply many of the concepts they learned about the technology center in 7th and 8th grade. Students find out firsthand how the technologies they learned about in the technology center work in real life.

Content

- Mars, ISS…International Space Station
- Safety Engineering
- Pneumatics
- Electronics
- Gravity
- Propulsion
- Graphic design
- Marketing
- Teamwork…group dynamics
- How technologies relate to one another
- Marketing

Skills

- Work in teams…respect team members
- Apply technology theory to real life experiences
- Research and apply new information
- Organize information and keep time schedules
- Predict and test prototypes
- Solve problems
- Brainstorm and think creatively
- Develop hand/eye coordination

PA Standards

- Problem solving *(3.2.7D, 3.7.7A)*
- CAD *(3.7.7D)*
- Mechanical Systems (electrical and pneumatic) *(3.6.7C, 3.2.7D)*
- Video Production-Marketing presentation of space vehicles *(3.6.7B, 3.2.7D)*

Prepared BT
Approved--chr