Course: 7th GRADE TECHNOLOGY EDUCATION

Seventh Grade Units referenced to State Standards

UNIT: Affects of Technology:	A.8.4, 8.5, 8.6, 8.7, B.8.1, 8.2. 8.3, 8.4 C.8.2, 8.3, 8.4, D.8.8.1, 8.2, 8.4, 8.5
UNIT: Space & Flight:	A.4.4, 4.5, 4.8, A.8.2, 8.3, 8.7 B.8.2, 8.3, 8.4, 8.6, C.8.1, 8.3, 8.5, D.8.2, 8.5
UNIT: Energy:	A.8.2, 8.3, B.8.6, C.8.2, D.8.1,8.2, 8.5
UNIT: Electricity:	A.8.1, 8.2, 8.3, B..8.1, 8.2, 8.3, 8.4
UNIT: Manufacturing:	A.8.2, 8.3,B.8.1, 8.4, 8.5, 8.6, C.8.2, 8.3, 8.5, 8.6, D.8.3

UNIT: Affects of Technology
State Standards addressed: A.8.4, 8.5, 8.6, 8.7, B.8.1, 8.2. 8.3, 8.4, C.8.2, 8.3, 8.4, D.8.8.1, 8.2, 8.4, 8.5

CONTENT: TIME – 1 Week

1. Review - Understanding Technology
   - Human needs and wants
   - Problem solving
   - What is Technology
   - Technology vs. Technological product

2. Affects of Technology

   - Effects on humans, environment, society, economy
   - Ethics and decision making

POSSIBLE ACTIVITIES

Class discussion
Video
Collage

UNIT: Space and flight
State Standards Addressed: A.4.4, 4.5, 4.8, 8.2, 8.3, 8.7 B.8.2, 8.3, 8.4, 8.6, C.8.1, 8.3, 8.5, D.8.2, 8.5

CONTENT: TIME – 7 Week

1. Man in space
    - History
        a. Sputnik
        b. Race to the moon
        c. Conditions in space
        d. Travel consideration
        e. Living in space, Space stations

2. Design and Drafting
    - Problem solving steps
        a. Brainstorming ideas
        b. Rough sketches
        c. Technical Drawing

    - Drafting
        a. Tools and techniques
        b. Paper layout
        c. Scale drawings
        d. Multi view drawings
        e. Basic dimensions
        f. Measurement review

3. Safety Review
    - General safety rules
    - Machine safety
    - Hand tool safety

POSSIBLE ACTIVITIES

Video
Discussion
Build a rocket
Drafting a working drawing
Space portfolio
Build a space station
Work with NASA on experiments

UNIT: Manufacturing

State Standards Addressed: A.8.2, 8.3,B.8.1, 8.4, 8.5, 8.6, C.8.2, 8.3, 8.5, 8.6, D.8.3

CONTENT: TIME – 7 Week

1. Materials
    - Types of material
    - Selection of material
        a. Cost
        b. Availability
        c. Characteristics
2. Material Processing
    - Forming
    - Separating
        a. Shearing
        b. Sawing
        c. Induced fracture
    - Combining
        i. Screwing
        ii. Nailing
        iii. Gluing
    - Coating
        a. Staining
        b. Varnishing
3. Product Development
    - Research
        d. Needs vs. Wants
        e. Material selection
        f. Finances
            - Expenses
            - Returns
            - Profit margin
    - Product production
        a. Material flow
        b. Machine use and tool safety
    - Distribution
        a. Wholesale
        b. Retail
        c. Direct marketing

POSSIBLE ACTIVITIES
Demonstration
Discussion
Video
Research , develop and produce a product for sale

UNIT: Energy
State Standards Addressed: A.8.2, 8.3, B.8.6, C.8.2, D.8.1,8.2, 8.5

CONTENT: TIME – 7 Week

1. Sources of energy
    - Renewable
        a. Wind
        b. Solar
        c. Tidal
        d. Geothermal
        e. Hydroelectric
        f. Organic sources (wood, corn)

    - Non renewable
        a. Fossil fuel
        b. Nuclear

2. Energy conversion
    - Mechanical
    - Electrical
    - Thermal

3. Energy conservation

POSSIBLE ACTIVITIES
Demonstrations
Discussion
Videos
Use photocells to run motor
Home energy audit

UNIT: Electricity

State Standards Addressed: A.8.1, 8.2, 8.3, B..8.1, 8.2, 8.3, 8.4

CONTENT: TIME – 7 Week

1. Batteries
    - Types
        a. 6, 9,12 volt
        b. Uses of each type of battery
    - Thermal
    - Chemical

2. Parts/functions in an electrical system
    - Voltage
        a. AC - Alternating current
        b. DC - Direct current
    - Capacitors
    - Transistors
    - Diodes
    - Resisters
    - Amps
    - Ohms

3. Circuits
    - Series
    - Parallel
4. Reading electrical plans

5. Connecting wires
    - Splicing
    - Soldering

6. Trouble shooting

7. Effect of electronics on our lives

POSSIBLE ACTIVITIES
Class discussion
Videos
Build a dry cell battery
Splice wires
Solder wire
Build an electrical project.
Lab work on types of wiring

GOAL STATEMENTS: Referenced To State Standards

Upon completion of the 8th Grade Technology Education this course, students will be able to:

- Think about new technologies and discuss the positive and negative impacts to individuals, society and the ecosystem.
  Unit – Controlling Technology **Standard: A.4.9, A.8.1, A.8.2, A.8.3, A.8.5, C.4.2, C.8.4, D.4.1, D.4.5, D.8.1, D.8.3, D.8.4**

- Discuss how technologies have changed over the years and forecast where they may be in the future.
  Unit – Impacts of technology **Standard: A.4.1, A.4.4, A.8.1, A.8.2, A.8.5 A.8.7, B.8.1, B.8.4, C.8.2, C.8.5, D.8.4, D.8.5**

- Explain how there may be several solutions to a problem by using technological design, construction and testing techniques.
  Unit – Engineering **Standard: A.8.2, A.8.3, B.8.4, B.8.6, C.8.2, C.8.4, C.8.6.**

- Understand the basics of CAD/CAM programs and how robots are used in the manufacturing process.
  Unit – Robotics **Standard: A.8.2, A.8.3, B.8.3, B.8.7, C.8.5, C.8.6**

- Compare, contrast and analyze various energy transfer systems using inputs, processes and outputs.
  Unit – Hydraulics **Standard: A.8.2, A.8.3, B.8.1, B.8.2, B.8.3, B.8.4, D.8.2**

- Discuss and analyze various systems within a given area and explain how those systems are effected by: cost considerations, the environment, and human needs and wants.
  Unit – Building systems, Construction **Standard: A.4.8, A.8.2, A.8.3, B.8.5, B.8.6, C.8.2, C.8.5, C.8.6**

- Recognize the connections between technology and other disciplines and apply those relationships through technological process of design, processing and testing.
  Unit – Manufacturing **Standard: A.8.2, A.8.3, B.8.1, B.8.3, B.8.7, C.8.2**

- Use common tools to change the physical appearance of materials using different technologies to increase their value and usefulness.
  Unit – Material processing **Standard: A.4.2, A.4.4, A.8.1, A.8.2, A.8.3, A.8.7, B.4,6, B.4.7, B.8.1, B.8.4, B.8.6, B.8.7, C.4.3, C.8.6**