

**Southern Regional High School
Manahawkin, New Jersey**

Course of Study

For

**Junk Yard Wars
8307**

Submitted By:
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Southern Regional High School District Course of Study

Department Applied Technology

Course Title: JUNK YARD WARS

Essential Questions of the Course:

1. How can a project be constructed from recycled materials?
2. How does the design on an object determine it's use?
3. How do the seven elements of technology aide and hinder project development?
4. How does human personality and knowledge work to create a team?
5. How will problems be handled when they arise?
6. What problem will we encounter?

Assessments:

- Individual student project
- Team projects
- Quizzes
- Tests
- Mid-term exam
- Final exam

Unit of Study

Unit Title: What is Junk Yard Wars and Who is This Strange Teacher?

Essential Questions of the Unit:

1. What is Junk Yard Wars?
2. What projects will we do?
3. Do we pick our own teams?
4. Do I have to work in a team?
5. Who are you, Mr. E?

Assessments:

Teacher observation

Content:

Introduce myself.

Describe Junk Yard Wars

Describe potential major projects:

- Garbage can push cart
- Chopper bicycle
- Catapults
- Cardboard canoe
- Human powered dragster

Skills:

The ability to listen and concentrate.

Purpose / Rationale of the Unit:

To introduce the students to the course and its instructor.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

B. Application of Productivity Tools – 12

(For descriptive narrative, see Appendix)

Time Frame of Unit: 2 days

Instructional Activities:

Lecture about course and the instructor.

Materials and Resources:

- Rules and regulations handout
- Skills survey
- Shop contract

Unit of Study

Unit Title: General Safety in the Shop

Essential Questions of the Unit:

1. What determines safe working practices?
2. What laws govern safety?
3. How can safe working procedures protect?
4. What do I do in case of an injury?
5. How is fire controlled?

Assessments:

1. Safety test with a minimum score of 90%.
2. Observation of working practices.

Content:

- NJ Law Title 18A and Title 16.
- OSHA – Occupational Safety and Health Act
- Right To Know
- Eye safety, eye protection systems
- Injury reporting procedure
- Shop safety procedures
- Fire prevention and fire control
 - Types of fire – A,B,C
 - Extinguishers – water, foam, dry chemical, blanket
 - Chemical cabinet use
 - Fire drill procedures

Skills:

1. Practice safe working procedures.
2. Follow fire drill procedures.
3. Monitor chemical storage procedures.
4. Keep the shop in a safe working condition

Purpose / Rationale of the Unit:

- Develop a general understanding of safety in the shop.
- Develop a foundation upon which further safety practice will be developed.
- To keep everyone in the shop safe.

New Jersey Core Curriculum Content Standards:

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

F. Safety – 1,3,4,5

(For descriptive narrative, see Appendix)

Time Frame of Unit: 5 days

Instructional Activities:

- Demo proper eye glass care.
- Demo wearing of safety glasses and shield.
- Fire safety handout.
- Show location of fire extinguishers.
- Walk through fire drill procedures.
- Review procedure for injury reporting.
- Give tour of the shop and shop layout.
- Review safety test.
- Test for minimum grade of 90%.

Materials and Resources:

- Fire extinguishers
- Fire blanket
- Safety glasses
- Safety shield
- First aid kit

Unit of Study

Unit Title: Elements of Technological Design

NOTE: This unit will be in continuous use during the year.

Essential Questions of the Unit:

1. What are the elements of design?
2. How do these elements direct design?
3. What is technology?
4. How does technology impact design?

Assessments:

1. sketches and drawings
2. projects
3. testing of projects

Content:

How to sketch

The difference between sketches and drawings

The 7 elements of design:

1. time
2. knowledge
3. material
4. economics
5. people
6. energy
7. manufacturing

Definition of technology

Examples of technological systems

1. Bio-technology
2. space technology
3. product technology
4. consumer technology
5. other

The problem Solving Circle

Skills:

1. Develop sketching techniques to communicate ideas.
2. Apply the elements of design into each assigned project.
3. Be able to solve problems

Purpose / Rationale of the Unit:

Students must understand that technology is more than the electronic media used in today's society. By understand what goes into the development of a product, the student should acquire an understanding of how such a product develops and advances.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

B. Application of Productivity Tools - 3,7,8,9,10,11,12

8.2 TECHNOLOGY EDUCATION

B. Design Process and Impact Assessment – 1,2,3

C. Systems in the Designed World – 2,3

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

B. Self-Management

D. Character Development and Ethics - 5

(For descriptive narrative, see Appendix)

Time Frame of Unit: 4 days

NOTE: this unit will be visited for the next 39 weeks.

Instructional Activities:

- Sketching demonstration
- Sketching project
- Discussion of technological systems

- Project – sketch the design(s) for each project and project sub-system as assigned during the year.

Materials and Resources:

- Handout on sketching and design elements.
- Project handouts as needed.
- Materials as required.

NOTE: The general nature of this class allows for the modification of projects on an “as required” basis. Project will be modified to meet all safety requirements. All safety issues are addressed prior to and during construction and testing.

Unit of Study

Unit Title: Material Handling

Essential Questions of the Unit:

1. How are materials selected for a project?
2. How are materials distinguished from each other?
3. How will a materials characteristic impact its use in a project?

Assessments:

1. Visual observations
2. Project use
3. Test

Content:

1. Metals

a. Classifications

- Ferrous
 - ** cast iron
 - ** wrought
 - ** steel
- non-ferrous
 - ** aluminum
 - ** magnesium
 - ** copper
 - ** titanium
 - ** brass
 - ** bronze
 - ** Tin
 - ** lead

b. Technical terminology

- alloys
- base metals
- cold finished (rolled) steel
- hot-rolled steel
- composites
- ferrous
- non-ferrous

2. Wood

- a. Characteristics
- b. Hard v. Soft
- c. Processed
- d. Production techniques
 - ** cutting
 - ** shaping
 - ** joining

3. Plastics

- a. Characteristics
- b. Production techniques
 - ** cutting
 - ** shaping
 - ** joining

Skills:

1. Students will be able to select the proper material for the assigned project and the develop design solution.
2. Students will be able to process the material selected.
3. Students will be able to join materials together with one or more of the accepted techniques.
4. Students will be able to measure the material.
5. Students will be able to identify the material being used.
6. Students will be able to handle the material in a safe manner.
7. Students will be able to store material in a proper manner.
8. Students will be able to transfer this knowledge to other applications, projects and environments.

Purpose / Rationale of the Unit:

All products are produced from materials. All materials have specific production techniques. Prior to project commencement, students must be able to identify the material which they need. Once obtained, the material must be processed to the desired shape.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

B. Application of Productivity Tools – 3,9,10,11

8.2 TECHNOLOGY EDUCATION

B. Design Process and Impact Assessment – 1,2,3,6

C. Systems in the Designed World – 2,39

9.1 CAREER AND TECHNICAL EDUCATION

B. Employability Skills – 3,4,5,5.1,5.4

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

A. Critical Thinking – 1,2

B. Self-Management

C. Interpersonal Communication - 2

D. Character Development and Ethics - 5

F. Safety - 5

(For descriptive narrative, see Appendix

Time Frame of Unit: 15 days

NOTE: This unit is visited for the remainder of the year.

Instructional Activities:

Lecture
Demonstrations
Hands-On exposure
Project use

Materials and Resources:

Project handouts as needed.
Materials as required.

Note: The general nature of this class allows for the modification of projects on a “as required” basis. Projects will be modified to meet all safety requirements. All safety issues are addressed prior to and during construction and testing.

Unit of Study

Unit Title: Garbage Can Push Cart

Essential Questions of the Unit:

1. How will the team work together?
2. How will materials be acquired?
3. How will the elements of design be incorporated into this project?
4. How will student skills be developed?

Assessments:

- Weekly project checks
- Dailey participation grades
- Race Day results

Content:

- Working with your team mates.
- Dealing with assembly problems.
- Procurement of materials for the project.
- Assembly of materials.

Skills:

- Teamwork
- Time management
- MIG welding
- Plasma cutting
- Metal fabrication
- Safe work practices
- Physical activity
- Problem solving
- Information gathering
- Material procurement
- Measurement
- Competitive skill development
- Power tool usage
- Design

Purpose / Rationale of the Unit:

Teamwork is an essential skill in the world of work. This project will introduce students to the concept of teamwork, time management and friendly competition. The project is used as a building block for the more advanced projects to be undertaken in the following months.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

B. Application of Productivity Tools – 2,3,5,7,9,10,11,12

8.2 TECHNOLOGY EDUCATION

B. Design Process and Impact Assessment – 1,2,3,5,6

C. Systems in the Designed World – 2,3

9.1 CAREER AND TECHNICAL EDUCATION

B. Employability Skills – 2,3,4,5

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

A. Critical Thinking – 1,2

B. Self-Management – 1,2,3

C. Interpersonal Communication – 1,2

D. Character Development and Ethics – 3,5

F. Safety – 1,4,5

(For descriptive narrative, see Appendix)

Time Frame of Unit: 8 weeks

Instructional Activities:

- Safe work practices with large items.
- Project shop work.
- Material handling problems.
- Advanced welding techniques.
- Disassembly of bicycle components.
- How to set-up and safety use the plasma cutter.
- How to set-up and safely operate the MIG system.
- How to set-up and safely operate the ARC welder.
- How to set-up and safely use the cold saw.
- How to safely set-up and operate the horizontal band saw.
- How to clean the shop.
- How to store materials.
- How to measure to 1/16".
- How to layout sheet metal and cold steel.
- How to use the grinders in a safe manner.
- How to use the tiger saw in a safe manner

NOTE : Many aspects of this project will need to be addressed during construction. It is difficult to state all the possible scenarios which may occur.

Materials and Resources:

Media center, digital cameras, metal, bicycles and various parts, computer with internet connection, paper, design folders, garbage cans (wax barrels from the summer), various nuts & bolts

Unit of Study

Unit Title: MIG Welding

Essential Questions of the Unit:

1. What is MIG welding?
2. How is the MIG system used?
3. Can MIG welding be used on all metal materials?
4. How can this welding system be used on the project at hand?

Assessments:

- **Visual observations**
- **Weld samples**
- **Project use**

Content:

1. Definition of MIG
2. Description of MIG system
 - a. gauges
 - b. hose
 - c. power cord
 - d. trigger
 - e. tip
 - f. wire
 - g. inert gas tank
3. How to set-up
4. Safety
 - a. helmet
 - b. gloves
 - c. jacket
 - d. conditions
5. MIG welding techniques
 - a. forehand
 - b. backhand
 - c. overhead
 - d. fill
6. Fixing a welded tip
7. Preparation of material for welding
8. Weld clean-up
 - a. wire brush
 - b. grinder
 1. safety
 2. use
 3. changing grinding wheel

Skills:

Students will be able to identify the parts of the system 75%.

Students will be able to adjust the working gas pressure to 35 PSI.

Students will be able to adjust MIG system correctly 80% of the time.

Students will be able to strike an arc using the MIG system.

Students will be able to produce a flat bead using the MIG system.

Students will be able to use a hand grinder in a safe manner 100% of the time.

Students will be able to clean-up a MIG weld.

Students will be able to adapt the MIG weld to the situation at hand on a project.

Students will be able to clean-up the system upon completion of work.

Purpose / Rationale of the Unit:

MIG welding is a technique for assembling two pieces of metal together. This system is widely used in the industrial setting as well as the home. MIG is easy for most students to operate with success. This system is the primary welding system used in the course.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

B. Application of Productivity Tools – 2,3,5,7,9,10,11,12

8.2 TECHNOLOGY EDUCATION

B. Design Process and Impact Assessment – 1,2,3,5,6

C. Systems in the Designed World – 2,3

9.1 CAREER AND TECHNICAL EDUCATION

B. Employability Skills – 2,3,4,5

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

A. Critical Thinking – 1,2

B. Self-Management – 1,2,3

C. Interpersonal Communication – 1,2

D. Character Development and Ethics – 3,5

F. Safety – 1,4,5

(For descriptive narrative, see Appendix)

Time Frame of Unit: 5 days

NOTE: This unit is visited for the next 39 weeks

Instructional Activities:

- Demonstration of the MIG welding system.
- Demonstration of welding techniques.
- Demonstration of the hand grinder.

Materials and Resources:

MIG welder, hand grinder, wire brush, scrap metal
Project handouts as needed.
Materials as required.

Note: The general nature of this class allows for the modification of projects on a “as required” basis. Projects will be modified to meet all safety requirements. All safety issues are addressed prior to and during construction and testing.

Unit of Study

Unit Title: ARC Welding

Essential Questions of the Unit:

1. What is ARC welding?
2. How is the ARC system used?
3. Can ARC welding be used on all metal materials?
4. How can this welding system be used on the project at hand?

Assessments:

- Visual observations
- Weld samples
- Project use

Content:

<ol style="list-style-type: none">1. Definition of ARC2. Description of ARC system<ol style="list-style-type: none">c. Groundd. Electrode holdere. Electrodesf. Amperage adjustmentg. Lead wires3. How to set-up4. Safety<ol style="list-style-type: none">a. helmetb. glovesc. jacketd. conditions	<ol style="list-style-type: none">5. ARC welding techniques<ol style="list-style-type: none">a. forehandb. backhandc. fill6. Preparation of material for welding<ol style="list-style-type: none">a. rustb. paintc. oilsd. grind angle7. Weld clean-up<ol style="list-style-type: none">a. wire brushb. grinder<ol style="list-style-type: none">4. safety5. use6. changing grinding wheel
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Skills:

- Students will be able to identify the parts of the system 75%.
- Students will be able to adjust ARC system correctly 80% of the time.
- Students will be able to strike an arc using the ARC system.
- Students will be able to produce a flat bead using the ARC system.
- Students will be able to use a hand grinder in a safe manner 100% of the time.
- Students will be able to clean-up an ARC weld.
- Students will be able to adapt the ARC weld to the situation at hand on a project.
- Students will be able to clean-up the system upon completion of work.

Purpose / Rationale of the Unit:

ARC welding is a technique for assembling two pieces of metal together. This system is widely used in the industrial setting as well as the home. The ARC welding system is used on many heavy weld applications due to its deep penetration abilities.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

B. Application of Productivity Tools – 3,7,9,10,11,12

8.2 TECHNOLOGY EDUCATION

B. Design Process and Impact Assessment – 1,3,5,6

C. Systems in the Designed World – 2,3

9.1 CAREER AND TECHNICAL EDUCATION

B. Employability Skills – 2,3,4,5,5.1,5.2,5.3,5.4

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

A. Critical Thinking – 1,2

B. Self-Management

C. Interpersonal Communication – 1,2

D. Character Development and Ethics - 5

F. Safety – 4,5

(For descriptive narrative, see Appendix

Time Frame of Unit: 5 days

NOTE: This unit is visited for the next 39 weeks

Instructional Activities:

- Demonstration of the ARC welding system.
- Demonstration of welding techniques.
- Re-visit the demonstration of the hand grinder.

Materials and Resources:

- ARC welder, hand grinder, wire brush, scrap metal
- Project handouts as needed.
- Materials as required.

Note: The general nature of this class allows for the modification of projects on a “as required” basis. Projects will be modified to meet all safety requirements. All safety issues are addressed prior to and during construction and testing.

Unit of Study

Unit Title: The Band Saw

Essential Questions of the Unit:

1. How can the band saw be used on a project?
2. How is the band saw set-up for use?
3. Which band saw should be used for the material process at hand?

Assessments:

- Visual observations
- Weld samples
- Project use

Content:

1. Vertical Band saw

- a. Safety
 - cut zone
 - relief cuts
 - feed rate
- b. parts of machine
- c. blade
- d. cutting techniques
- e. speed adjustment
- f. clean-up

2. Horizontal Band saw

- a. Parts of machine
 - frame
 - hydraulics
 - coolant system
 - control box
 - vise system
 - hand wheels
 - lift handle
 - blade
 - interlock switch
- b. safety
 - interlock switch
 - blade guards
 - feed rate
 - work zone

Skills:

- Students will pass a safety test on the band saw with a 90% or higher.
- Students will demonstrate the proper use of the vertical band saw.
- Students will demonstrate the proper use of the horizontal band saw.
- Students will be able to select the proper feed rate for the horizontal band saw 100% of the time.
- Students will be able to adjust coolant lines.
- Students will be able to handle material in a safe manner.

Purpose / Rationale of the Unit:

The cutting of material is a necessary component in the construction of any project. Both the horizontal and vertical band saws process metal to a given size and/or shape.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

B. Application of Productivity Tools -3,7,9,10,11,12

8.2 TECHNOLOGY EDUCATION

B. Design Process and Impact Assessment – 1,3,5,6

C. Systems in the Designed World – 2,3

9.1 CAREER AND TECHNICAL EDUCATION

B. Employability Skills – 2,3,4,5.1-4

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

A. Critical Thinking – 1m2

B. Self-Management

C. Interpersonal Communication – 1,2

D. Character Development and Ethics - 5

F. Safety - 5

(For descriptive narrative, see Appendix

Time Frame of Unit: 5 days

NOTE: This unit is visited for the next 39 weeks.

Instructional Activities:

- Demonstration of the vertical band saw.
- Demonstration of the horizontal band saw.
- Safety test.

Materials and Resources:

- Vertical band saw, horizontal band saw, scrap metal.
- Project handouts as needed
- Materials as required.

Note: The general nature of this class allows for the modification of projects on an “as required” basis. Projects will be modified to meet all safety requirements. All safety issues are addressed prior to and during construction and testing.

Unit of Study

Unit Title: Catapults

Essential Questions of the Unit:

1. What is a catapult?
2. What materials can we use?
3. Where can we get materials?
4. Which catapult will be the best?
5. How does the catapult selected operate?
6. What safety aspects are needed?

Assessments:

- Weekly project checks
- Teacher observation of work ethics/habits
- Finished project

Content:

- Design of the catapult
- Procurement of parts
- How to research the catapult
- Types of catapults
- Assembly problems

Skills:

- Teamwork
- Time management
- MIG welding
- Metal cutting
- Metal grinding
- Sheet metal fabrication
- Basic woodworking skills
- Power tool usage
- Safe work practices
- Painting
- Construction techniques
- Problem solving
- Design
- Material procurement
- Measurement

Purpose / Rationale of the Unit:

To promote teamwork, problem solving and positive competition while constructing a project which is interesting, fun and current with today's interest.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

- A. Basic Computer Tools and Skills – 1,3,9
- B. Application of Productivity Tools – 2,3,5,7,9,10,11,12

8.2 TECHNOLOGY EDUCATION

- B. Design Process and Impact Assessment – 1,3,5,6
- C. Systems in the Designed World – 2,3

9.1 CAREER AND TECHNICAL EDUCATION

- B. Employability Skills – 2,3,4,5,5.1-4

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

- A. Critical Thinking – 1,2
- B. Self-Management
- C. Interpersonal Communication – 1,2
- D. Character Development and Ethics - 5
- F. Safety – 4,5

(For descriptive narrative, see Appendix

Time Frame of Unit: 7 weeks

Instructional Activities:

- Discussion on types of catapults.
- Video from Pumkin' Chunkin.
- How to design an arm and sling assembly.
- The physics of a catapult.

Materials and Resources:

Wood, nails, nuts and bolts, rope, cloth.

Many items for this project will be located by the students. "Junk" and donations are encouraged. The exact materials required for each project is difficult to determine.

Unit of Study

Unit Title: Human Powered Dragster

Essential Questions of the Unit:

1. What is a human powered vehicle?
2. How can a humans power a vehicle to maximum speed?
3. How does power get from a person to the ground?
4. How can this project be built?

Assessments:

- Weekly project checks
- Written journals
- Timeline of construction
- Digital photos of build
- Ocean County College review of technical paper
- Race Day results

Content:

- What does Ocean County College expect?
- Design limitations as set forth by O.C.C.
- How to produce a technical report.
- How to design a vehicle to achieve maximum acceleration in 100 meters.
- Dealing with assembly problems.
- Procurement of materials for the project.
- How to meet the safety standards of O.C.C.
- Time management techniques.

Skills:

- Teamwork
- Time management
- MIG welding
- Plasma cutting
- Metal fabrication
- Safe work practices
- Physical activity
- Problem solving
- Information gathering
- Material procurement
- Measurement
- Competitive skill development
- Power tool usage
- Design

Purpose / Rationale of the Unit:

Teamwork is an essential skill in the world of work. This project/competition was designed by ocean County College to promote a team project on an engineering problem. The research phase of the problem introduces the real world aspect of research and design.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

- A. Basic Computer Tools and Skills – 1,3,9
- B. Application of Productivity Tools – 2,3,5,7,9,10,11,12

8.2 TECHNOLOGY EDUCATION

- B. Design Process and Impact Assessment – 1,3,5,6
- C. Systems in the Designed World – 2,3

9.1 CAREER AND TECHNICAL EDUCATION

- B. Employability Skills – 2,3,4,5,5.1-4

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

- A. Critical Thinking – 1,2
- B. Self-Management
- C. Interpersonal Communication – 1,2
- D. Character Development and Ethics - 5
- F. Safety – 4,5

(For descriptive narrative, see Appendix

Time Frame of Unit: 16 weeks

Instructional Activities:

- Project shop work.
- Material handling problems.
- Advanced welding techniques.
- How to tackle the research paper.

NOTE : Many aspects of this project will need to be addressed during construction. It is difficult to state all the possible scenarios which may occur.

Materials and Resources:

Media center, digital cameras, metal, bicycles and various parts, computer with internet connection, paper, design folders

Unit of Study

Unit Title: Bicycle Chopper

Essential Questions of the Unit:

1. What is a chopper?
2. What materials can we use?
3. Where can we get materials?
4. How can a bicycle chopper be built?
5. What safety aspects are needed?

Assessments:

- Weekly project checks
- Teacher observation of work ethics/habits
- Finished project

Content:

- Design of the chopper
- Angles and rake: how they affect steering
- Procurement of parts for the project
- How to cut and weld bicycle parts
- Rake and trail of a fork system
- How to adjust wheel bearings
- How to adjust head bearings
- How to change tires and tubes
- How to paint a frame
- How to smooth surfaces using Bondo
- Assembly problems

Skills:

- Teamwork
- Time management
- MIG welding
- Metal cutting
- Metal grinding
- Sheet metal fabrication
- Power tool usage
- Safe work practices
- Painting
- Physical activity: Bicycle riding
- Construction techniques
- Problem solving
- Design
- Material procurement
- Measurement

Purpose / Rationale of the Unit:

To promote teamwork, problem solving and positive competition while constructing a project which is interesting, fun and current with today's interest.

New Jersey Core Curriculum Content Standards:

8.1 COMPUTER AND INFORMATION LITERACY

- A. Basic Computer Tools and Skills – 1,3,9
- B. Application of Productivity Tools – 2,3,5,7,9,10,11,12

8.2 TECHNOLOGY EDUCATION

- B. Design Process and Impact Assessment – 1,3,5,6
- C. Systems in the Designed World – 2,3

9.1 CAREER AND TECHNICAL EDUCATION

- B. Employability Skills – 2,3,4,5,5.1-4

9.2 CONSUMER, FAMILY, AND LIFE SKILLS

- A. Critical Thinking – 1,2
- B. Self-Management
- C. Interpersonal Communication – 1,2
- D. Character Development and Ethics - 5
- F. Safety – 4,5

(For descriptive narrative, see Appendix

Time Frame of Unit: 14 weeks

Instructional Activities:

- Demonstrate on bicycle parts and disassembly.
- Demonstrate twisting of square steel rod.
- Demonstrate how to extend forks using fence posts.
- Demonstrate proper grinding techniques.
- How to apply primer and paint.
- How to reassemble a chopper.
- Instructional lessons on welding where required.
- Other activities will be instructed as needed.

Materials and Resources:

Many items for this project will be located by the students. “Junk” and donations are encouraged. The exact materials required for each project is difficult to determine.

New Jersey Core Curriculum Content Standards for Technological Literacy

INTRODUCTION

The Vision

Technology, any modification of the natural world designed by human beings to solve human problems, enhance human life, or extend human capability, was identified by the United States Department of Labor as an essential workplace competency in a 1992 report called the Secretary's Commission on Achieving Necessary Skills (SCANS). SCANS stated that students should be able to select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment. The Department of Education recognized its importance by including technology in the original cross-content workplace readiness standards. In keeping with today's technological society, technological literacy has been further emphasized by its inclusion as a separate standards area which focuses on both computer and information literacy and technology education.

Technology is evolving at an amazing rate, with both frequent advancements of existing technology and the creation of new technologies. All students must understand and be comfortable with the concepts and application of technology, not only in order to function in today's complex society, but also to become informed and productive adults of tomorrow.

Computer and Information Literacy

Computer and information literacy, which supports skills in information-gathering, information-organizing, and problem solving, has become critical for every student whether college- or workplace-bound. Colleges and employers are now demanding that students and employees possess a broad range of computer and information literacy proficiencies. More and more retail purchasing is being done on-line every year, and all but the most menial of positions now require a significant understanding of computer and information literacy. To ensure that students are computer literate, a separate standard that defines rigorous, in-depth learning has been included. The computer and information literacy standard is designed to be integrated and applied in all of the content areas of the Core Curriculum Content Standards.

Technology Education

The technology education standard was developed to ensure the literacy needed by all students to succeed in a highly technological world. Business and industry has clearly stated the need for technological skills in the workplace of the 21st Century.

This standard is based on the *Standards for Technological Literacy (STL): Content for the Study of Technology (ITEA, 2000)*, developed as part of the National Science Foundation (NSF)/National Aeronautics and Space Administration (NASA) funded by the *Technology for All Americans (TfAA)* project.

A study by DeKlerk has found that students form negative attitudes about the technological world if there are no formal technological experiences during the early school years. This finding is a great concern to New Jersey business and industry. Other cognitive research suggests that "design-based learning" is important. Early studies with design and technology curriculum indicate that students who learn important technological concepts develop positive attitudes about technology, math, science and learning in general. For these reasons, an introduction to technology education, including engineering and technological design, is an essential component of a thorough and efficient K-12 education.

Standards and Strands

There are two technological literacy standards, each of which has a number of lettered strands. The standards and strands include:

8.1 Computer and Information Literacy

A. Basic Computer Tools and Skills

- Keyboarding
- Word processing
- Internet usage
- Spreadsheets
- Database concepts and usage
- Publications and presentations

B. Application of Productivity Tools

- Social Aspects
- Information Access and Research
- Problem Solving

8.2 Technology Education

A. Nature and Impact of Technology

B. Design Process and Impact Assessment

C. Systems in the Designed World

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STANDARD 8.1 (COMPUTER AND INFORMATION LITERACY) ALL STUDENTS WILL USE COMPUTER APPLICATIONS TO GATHER AND ORGANIZE INFORMATION AND TO SOLVE PROBLEMS.

Descriptive Statement: Using computer applications and technology tools students will conduct research, solve problems, improve learning, achieve goals, and produce products and presentations in conjunction with standards in all content areas, including career education and consumer family, and life skills. They will also develop, locate, summarize, organize, synthesize, and evaluate information for lifelong learning.

Strands and Cumulative Progress Indicators

By the end of Grade 4, students will:

A. Basic Computer Skills and Tools

1. Use basic technology vocabulary.
2. Use basic features of an operating system (e.g., accessing programs, identifying and selecting a printer, finding help).
3. Input and access text and data, using appropriate keyboarding techniques or other input devices.
4. Produce a simple finished document using word processing software.
5. Produce and interpret a simple graph or chart by entering and editing data on a prepared spreadsheet template.
6. Create and present a multimedia presentation using appropriate software.
7. Create and maintain files and folders.
8. Use a graphic organizer.
9. Use basic computer icons.

B. Application of Productivity Tools

Social Aspects

1. Discuss the common uses of computer applications and identify their advantages and disadvantages.
2. Recognize and practice responsible social and ethical behaviors when using technology, and understand the consequences of inappropriate use including:
 - Internet access
 - Copyrighted materials

- On-line library resources
 - Personal security and safety issues
3. Practice appropriate Internet etiquette.
 4. Recognize the ethical and legal implications of plagiarism of copyrighted materials.

Information Access and Research

5. Recognize the need for accessing and using information.
6. Identify and use web browsers, search engines, and directories to obtain information to solve real world problems.
7. Locate specific information by searching a database.
8. Recognize accuracy and/or bias of information.

Problem Solving and Decision Making

9. Solve problems individually and/or collaboratively using computer applications.
10. Identify basic hardware problems and solve simple problems.

Building upon knowledge and skills gained in preceding grades, by the end of Grade 8, students will:

A. Basic Computer Skills and Tools

1. Use appropriate technology vocabulary.
2. Use common features of an operating system (e.g., creating and organizing files and folders).
3. Demonstrate effective input of text and data, using touch keyboarding with proper technique.
4. Input and access data and text efficiently and accurately through proficient use of other input devices, such as the mouse.
5. Create documents with advanced text-formatting and graphics using word processing.
6. Create a file containing customized information by merging documents.
7. Construct a simple spreadsheet, enter data, and interpret the information.
8. Design and produce a basic multimedia project.
9. Plan and create a simple database, define fields, input data, and produce a report using sort and query.
10. Use network resources for storing and retrieving data.
11. Choose appropriate electronic graphic organizers to create, construct, or design a document.

12. Create, organize and manipulate shortcuts.

B. Application of Productivity Tools

Social Aspects

1. Demonstrate an understanding of how changes in technology impact the workplace and society.
2. Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse.
3. Explain the purpose of an Acceptable Use Policy and the consequences of inappropriate use of technology.
4. Describe and practice safe Internet usage.
5. Describe and practice "etiquette" when using the Internet and electronic mail.

Information Access and Research

6. Choose appropriate tools and information resources to support research and solve real world problems, including but not limited to:
 - On-line resources and databases
 - Search engines and subject directories
7. Evaluate the accuracy, relevance, and appropriateness of print and non-print electronic information sources.

Problem Solving and Decision Making

8. Use computer applications to modify information independently and/or collaboratively to solve problems.
9. Identify basic hardware problems and demonstrate the ability to solve common problems.
10. Determine when technology tools are appropriate to solve a problem and make a decision.

Building upon knowledge and skills gained in preceding grades, by the end of Grade 12, students will:

A. Basic Computer Skills and Tools

1. Create a multi-page document with citations using word processing software in conjunction with other tools that demonstrates the ability to format, edit, and print.
2. Create documents including a resume and a business letter using professional format.
3. Construct a spreadsheet, enter data, use mathematical or logical functions to manipulate and process data, generate charts and graphs, and interpret the results.

4. Given a database, define fields, input data from multiple records, produce a report using sort and query, and interpret the data.
5. Produce a multimedia project using text, graphics, moving images, and sound.
6. Produce and edit page layouts in different formats using desktop publishing and graphics software.
7. Develop a document or file for inclusion into a website or web page.
8. Discuss and/or demonstrate the capability of emerging technologies and software in the creation of documents or files.
9. Merge information from one document to another.

B. Application of Productivity Tools

Social Aspects

1. Describe the potential and implications of contemporary and emerging computer applications for personal, social, lifelong learning, and workplace needs.
2. Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse.
3. Make informed choices among technology systems, resources, and services in a variety of contexts.
4. Use appropriate language when communicating with diverse audiences using computer and information literacy.

Information Access and Research

5. Select and use specialized databases for advanced research to solve real world problems.
6. Identify new technologies and other organizational tools to use in personal, home, and/or work environments for information retrieval, entry, and presentation.
7. Evaluate information sources for accuracy, relevance, and appropriateness.
8. Compose, send, and organize e-mail messages with and without attachments.

Problem-Solving and Decision Making

9. Create and manipulate information, independently and/or collaboratively, to solve problems and design and develop products.
10. Identify, diagnose, and suggest solutions for non-functioning technology systems.
11. Identify a problem in a content area and formulate a strategy to solve the problem using brainstorming, flowcharting, and appropriate resources.

12. Integrate new information into an existing knowledge base and communicate the results in a project or presentation.

STANDARD 8.2 (TECHNOLOGY EDUCATION) ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN, AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, SOCIETY, AND THE ENVIRONMENT.

Descriptive Statement: The following indicators are based on the Standards for Technological Literacy (STL, 2000) and support the National Academy of Engineering's (2002) call for students to gain technological literacy. Students will be expected to understand the various facets of technology and the design process. They will analyze and evaluate design options and then apply the design process to solve problems. A systems perspective is employed to emphasize the interconnectedness of all knowledge and the impact of technology and technological change. Students will be expected to use technology as it applies to physical systems, biological systems, and information and communication systems. The intent at the elementary and middle school levels is that all students develop technological literacy and are prepared for the option of further study in the field of technology education. At the elementary level, the foundation for technology education is found in the science standards, particularly standards 5.2 and 5.4.

Strands and Cumulative Progress Indicators

By the end of Grade 4, students will:

A. Nature and Impact of Technology

Refer to Science Standards 5.2 and 5.4.

B. Design Process and Impact Assessment

Refer to Science Standards 5.2 and 5.4.

C. Systems in the Designed World

Refer to Science Standards 5.2 and 5.4.

Building upon knowledge and skills gained in the preceding grades, by the end of Grade 8, students will:

A. Nature and Impact of Technology

1. Describe the nature of technology and the consequences of technological activity.
2. Describe how components of a technological product, system, or environment interact.
3. Describe how one technological innovation can be applied to solve another human problem that enhances human life or extends human capability.
4. Describe how technological activity has an affect on economic development, political actions, and cultural change.

5. Explain the cultural and societal effects resulting from the dramatic increases of knowledge and information available today.

B. Design Process and Impact Assessment

1. Demonstrate and explain how the design process is not linear.
2. Use hands on activities to analyze products and systems to determine how the design process was applied to create the solution.
3. Identify a technological problem and use the design process to create an appropriate solution.
4. Describe how variations in resources can affect solutions to a technological problem.
5. Select and safely use appropriate tools and materials in analyzing, designing, modeling or making a technological product, system or environment.

C. Systems in the Designed World

1. Explain technological advances in medical, agricultural, energy and power, information and communication, transportation, manufacturing, and construction technologies.
2. Explain reasons why human-designed systems, products, and environments need to be monitored, maintained, and improved to ensure safety, quality, cost efficiency, and sustainability.
3. Explain the functions and interdependence of subsystems such as waste disposal, water purification, electrical, structural, safety, climatic control, and communication.

Building upon knowledge and skills gained in preceding grades, by the end of Grade 12, students electing courses in technology education will:

A. Nature and Impact of Technology

1. Use appropriate data to discuss the full costs, benefits and trade-offs, and risks related to the use of technologies.
2. Explain how technological development is affected by competition through a variety of management activities associated with planning, organizing, and controlling the enterprise.
3. Provide various examples of how technological developments have shaped human history.

B. Design Process and Impact Assessment

1. Analyze a given technological product, system, or environment to understand how the engineering design process and design specification limitations influenced the final solution.
2. Evaluate the function, value, and appearance of technological products, systems, and environments from the perspective of the user and the producer.
3. Develop methods for creating possible solutions, modeling and testing solutions, and modifying proposed design in the solution of a technological problem using hands-on activities.

4. Use a computer assisted design (CAD) system in the development of an appropriate design solution.
5. Diagnose a malfunctioning product and system using appropriate critical thinking methods.
6. Create a technological product, system, or environment using given design specifications and constraints by applying design and engineering principles.

C. Systems in the Designed World

1. Explain the life cycle of a product from initial design to reuse, recycling, remanufacture, or final disposal, and its relationship to people, society, and the environment, including conservation and sustainability principles.
2. Analyze the factors that influence design of products, systems, and environments.
3. Compare and contrast the effectiveness of various products, systems, and environments associated with technological activities in energy, transportation, manufacturing, and information and communication.

New Jersey Core Curriculum Content Standards
for
Career Education and Consumer, Family, and Life Skills

INTRODUCTION

The Vision

Rapid societal changes, including innovations in technology, information exchange, and communications, have increased the demand for internationally competitive workers and for an educational system designed to meet that demand. Today's students will be employed through much of the twenty-first century and will, therefore, need increasingly advanced levels of knowledge and skills. To obtain and retain high-wage employment that provides job satisfaction, they will also need to continue to learn throughout their lives. The career education and consumer, family, and life skills standards identify key career development and life skills that students must accomplish in order to achieve continuing success in various life roles related to continuing education, career development, and personal growth.

Members of the business and industry communities have identified vital career and technical education skills. In 1992, the Secretary's Commission on Achieving Necessary Skills (SCANS) identified productive use of resources, interpersonal skills, information, systems, and technology as essential workplace competencies. The SCANS foundation skills include basic skills, personal qualities, and the ability to identify and solve real problems, reason effectively, and apply critical thinking skills.

To compete in this global, information-based economy, students must be able to identify and solve real problems, use appropriate tools, reason effectively, and apply critical thinking skills. The career and technical education and consumer, family, and life skills standards identify key career education and consumer, family, and life skills which can also enhance personal behavior and professional conduct in life and careers. In addition to the SCANS report, the National Career Development Guidelines and National Standards for School Counseling Programs were used as resources. Educators may find these national standards as well as the national standards documents in other areas very useful resources.

Career and Technical Education

The career and technical arts standards at the elementary and middle school levels are designed to prepare students for further study at the high school level in career and technical education, formerly known as practical arts. These courses typically include business education, family and consumer sciences, and other courses related to career education and consumer, family, and life skills. In early elementary grades, career and technical education is designed to be integrated with other core content. At the middle and junior high school levels, the standard may be integrated or taught through rotational programs as students work on interdisciplinary projects that develop employability and academic skills. At the high school level, career and technical education programs establish necessary pathways for entering the world of work as well as continuing education, such as college, post-secondary vocational-technical education, specialized certification and/or registered apprenticeships. They also support lifelong learning. These essential elements include preparation for post-secondary pursuits as well as providing an essential foundation in everyday living skills. In essence, career and technical education is the application of life, academic, and occupational skills demonstrated by student-centered experiences in courses related to the sixteen States' Career Clusters supported by state vocational technical directors

from across the country. Career and technical education provides a variety of learning experiences to meet the needs of students having multiple learning styles.

Students interested in more intensive study at the high school level in one of the career clusters may participate in a vocational-technical education program as defined in N.J.A.C. 6A:19, Vocational Technical Education Programs and Standards. The career clusters include: agriculture, food, and natural resources; architecture and construction; arts, audio/video technology and communications; business, management, and administration; education and training; finance; government and public administration; health science; hospitality and tourism; human services; information technology; law, public safety and security; manufacturing; marketing, sales and service; science, technology, engineering, and mathematics; and transportation, distribution, and logistics. A number of vocational student organizations have been created to enhance and support career development. They include:

- DECA/DEX/Distributive Education Clubs of America/Delta Epsilon Chi (marketing education);
- FBLA-PLB/Future Business Leaders of America-Hi Beta Lambda (business/technology education);
- FCCLA/ Family, Career, and Community Leaders of American (family and consumer sciences);
- FFA (agri-business education);
- HOSA /Health Occupations Students of America (trade and industrial education);
- TSA/Technology Student Association(technology education); and
- SKILLSUSA/VICA Vocational Trade and Industrial Student Organization.

Career and technical education programs enable students to:

- Describe and integrate basic skills, thinking skills, and personal qualities, as defined by the SCANS Report;
- Address self-knowledge, career planning, and employability skills utilizing technology, information, and other resources;
- Enhance academic achievement and motivation for learning;
- Explore career education and planning;
- Acquire necessary employability and interpersonal workplace skills; and
- Pursue specific courses and programs designed to lead to employment or post-secondary_options in occupations included within the sixteen States' Career Clusters.

Consumer, Family, and Life Skills

All students need to develop consumer, family, and life skills necessary to be a functioning member of society. All students will develop original thoughts and ideas, think creatively, develop habits of inquiry, and take intellectual and performance risks. They will recognize problems, devise a variety of ways to solve these problems, analyze the potential advantages and disadvantages of each alternative, and evaluate the effectiveness of the method ultimately selected. Students will work collaboratively with a variety of groups and demonstrate trustworthiness, responsibility, respect, fairness, caring, and citizenship. Students will apply the principles of resource management and skills that promote personal and professional well-being. They will also be expected to understand the components of financial education and make economic choices.

Standards and Strands

There are two career education and consumer, family, and life skills standards, each of which has a number of lettered strands. The standards and strands include:

9.1 Career and Technical Education

- A. Career Awareness and Planning
- B. Employability Skills

9.2 Consumer, Family, and Life Skills

- A. Critical Thinking
- B. Self-Management
- C. Interpersonal Communication
- D. Character Development and Ethics
- E. Consumer and Personal Finance
- F. Safety

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STANDARD 9.1: (CAREER AND TECHNICAL EDUCATION) ALL STUDENTS WILL DEVELOP CAREER AWARENESS AND PLANNING, EMPLOYABILITY SKILLS, AND FOUNDATIONAL KNOWLEDGE NECESSARY FOR SUCCESS IN THE WORKPLACE.

Descriptive Statement: All students will explore career opportunities and make informed choices based on aptitudes and interests. Students will identify and pursue career goals, apply communications skills in work-relevant situations, demonstrate the ability to combine ideas or information in new ways, make connections between unrelated ideas, organize and present information, and allocate financial and other resources efficiently and effectively. Students will identify and use various print and non-print resources in the home, school, and community to seek and plan for employment. They will be able to use the job application process, including resumes, forms, and interviews.

Career and technical education, formerly called practical arts, is the application of life, academic, and occupational skills demonstrated by student-centered experiences in courses related to the sixteen States' Career Clusters. The intent at the elementary and middle school levels is to prepare all students for the option of further study in career and technical education at the high school level. These courses typically include business education, family and consumer sciences, and other courses related to careers and life skills. Career and technical education programs establish necessary pathways for secondary vocational-technical education programs, entering the world of work, continuing education (such as college, post secondary vocational-technical education, specialized certification and/or registered apprenticeships), and lifelong learning.

Those students electing courses in career and technical education should demonstrate both teamwork and problem-solving skills through a structured learning experience. This could consist of an experiential, supervised educational activity designed to provide students with exposure to the requirements and responsibilities of specific job titles or job groupings, and to assist them in gaining employment skills and making career and educational choices. The experience may be either paid or unpaid, depending on the type of activities in which the student is involved. Examples include, but are not limited to: apprenticeships, community service, cooperative education, internships, job shadowing, school-based experiences, vocational student organizations, paid employment, and volunteer activities. Structured learning experiences must meet all state and federal child labor laws and regulations.

Strands and Cumulative Progress Indicators

By the end of Grade 4, students will:

A. Career Awareness and Planning

1. Describe various life roles and work-related activities in the home, community, and school.
2. Identify abilities and skills associated with various careers.
3. Identify reasons people work and how work habits impact the quality of one's work.

B. Employability Skills

1. Describe and demonstrate the importance of personal and interpersonal skills.
2. Identify positive work habits and attitudes necessary for home, community, and school.

3. Identify reasons for working as part of a team.

Building upon knowledge and skills gained in preceding grades, by the end of Grade 8, students will:

A. Career Awareness and Planning

1. Demonstrate the ability to distinguish between job, occupation, and career.
2. Outline the steps in the career planning process.
3. Apply research skills to career exploration.
4. Analyze personal interests, abilities, and skills through various measures including self assessments.
5. Explore careers using hands-on real life experiences within the sixteen States' Career Clusters.
6. Develop an individual career plan and include in a portfolio.
7. Plan and conduct a cooperative project that addresses one of the problems faced by the school and/or community.

B. Employability Skills

1. Research local and state employment opportunities.
2. Develop an employment package that includes a job application, letter of interest, and resume.
3. Demonstrate job-seeking skills.
4. Describe and demonstrate appropriate work habits and interpersonal skills needed to obtain and retain employment.
5. Compare and contrast possible choices based on identified/perceived strengths, goals, and interests.
6. Identify and develop skills that are transferable from one occupation to another.

Building upon knowledge and skills gained in preceding grades, by the end of Grade 12, students will:

A. Career Awareness/Preparation

1. Re-evaluate personal interests, abilities, and skills through various measures including self assessments.
2. Evaluate academic and career skills needed in various career clusters.
3. Analyze factors that can impact an individual's career.
4. Review and update their career plan and include the plan in a portfolio.
5. Research current advances in technology that apply to a selected occupational career cluster.

B. Employability Skills

1. Assess personal qualities that are needed to obtain and retain a job related to career clusters.

2. Communicate and comprehend written and verbal thoughts, ideas, directions, and information relative to educational and occupational settings.

3. Select and utilize appropriate technology in the design and implementation of teacher-approved projects relevant to occupations and/or higher educational settings.

4. Evaluate the following academic and career skills as they relate to home, school, community, and employment:

- Communication
- Punctuality
- Time management
- Organization
- Decision making
- Goal setting
- Resources allocation
- Fair and equitable competition
- Safety
- Employment application skills
- Teamwork

5. Demonstrate teamwork and leadership skills that include student participation in real world applications of career and technical education skills.

All students electing further study in career and technical education will also:

1. Participate in a structured learning experience that demonstrates interpersonal communication, teamwork, and leadership skills.
2. Participate in simulated industry assessments, when and where appropriate.
3. Prepare industry-specific technical reports/projects that incorporate graphic aids, when and where appropriate.
4. Demonstrate occupational health and safety skills related to industry-specific activities.

STANDARD 9.2 (CONSUMER, FAMILY, AND LIFE SKILLS) ALL STUDENTS WILL DEMONSTRATE CRITICAL LIFE SKILLS IN ORDER TO BE FUNCTIONAL MEMBERS OF SOCIETY.

Descriptive Statement: All students need to develop consumer, family, and life skills necessary to be functioning members of society. All students will develop original thoughts and ideas, think creatively, develop habits of inquiry, and take intellectual and performance risks. They will recognize problems, devise a variety of ways to solve these problems, analyze the potential advantages and disadvantages of

each alternative, and evaluate the effectiveness of the method ultimately selected. Students will understand the components of financial education and make economic choices. Students will demonstrate self-awareness and the ability to respond constructively to criticism and potential conflict. In addition, students will work collaboratively with a variety of groups and demonstrate the essential components of character development and ethics, including trustworthiness, responsibility, respect, fairness, caring, and citizenship. Students apply principles of resource management and skills that promote personal and professional well-being. Wellness, nutrition, child development, and human relationships are an important part of consumer, family, and life skills. However, wellness, nutrition, and human relationship cumulative progress indicators are not listed here as it would duplicate those in Comprehensive Health and Physical Education Standards.

Strands and Cumulative Progress Indicators

By the end of Grade 4, students will:

A. Critical Thinking

1. Recognize and define a problem.
2. Plan and follow steps to make choices and decisions.
3. Identify and access print and non-print resources that can be used to help solve problems.
4. Demonstrate brainstorming skills.

B. Self-Management

1. Demonstrate an understanding of the relationship between personal behavior and self-image.
2. Recognize and build upon personal strengths.
3. Accept criticism and respond constructively.
4. Recognize personal likes and dislikes.
5. Demonstrate steps to deal with stress and conflict.

C. Interpersonal Communication

1. Develop positive social skills to interact with others.
2. Select and use language appropriate to the situation.
3. Develop skills for accepting self and others through awareness of different cultures, lifestyles, and attitudes.
4. Practice steps for effective conflict resolution.
5. Work cooperatively with others to accomplish a task.

D. Character Development and Ethics

1. Demonstrate character traits that are important in day-to-day activities in the home, school, and community such as trust, responsibility, respect, fairness, caring, and citizenship.

2. Conduct a cooperative activity or project that addresses a character trait.
3. Identify ethical behaviors in the home, school, and community.
4. Explain a person's responsibility to obey the laws and rules.

E. Consumer and Personal Finance

1. Demonstrate a basic understanding of the value of money.
2. Identify various sources of money for personal spending.
3. Explore the relationship among wants, needs, and resources.
4. Understand that prices of goods and services can be compared to make decisions about purchases.
5. Explain how people can improve their ability to earn income by gaining new knowledge, skills, and experiences.
6. Describe how to earn and save money in order to purchase a desired item.

F. Safety

1. Identify common hazards associated with home, school, and community.
2. Explain how common hazards can be eliminated in the home, school, and community.
3. Describe and demonstrate the safe use of tools and equipment used at home and at school.

Building upon knowledge and skills gained in preceding grades, by the end of Grade 8, students will:

A. Critical Thinking

1. Communicate, analyze data, apply technology, and problem solve.
2. Describe how personal beliefs and attitudes affect decision-making.
3. Identify and assess problems that interfere with attaining goals.
4. Recognize bias, vested interest, stereotyping, and the manipulation and misuse of information.
5. Practice goal setting and decision-making in areas relative to life skills.

B. Self-Management

1. Develop and implement a personal growth plan that includes short- and long-term goals to enhance development.
2. Demonstrate responsibility for personal actions and contributions to group activities.
3. Explain the need for, and advantages of, lifelong learning.

C. Interpersonal Communication

1. Demonstrate respect and flexibility in interpersonal and group situations.

2. Organize thoughts to reflect logical thinking and speaking.
3. Work cooperatively with others to solve a problem.
4. Demonstrate appropriate social skills within group activities.
5. Practice the skills necessary to avoid physical and verbal confrontation in individual and group settings.
6. Participate as a member of a team and contribute to group effort.

D. Character Development and Ethics

1. Explain and demonstrate how character and behavior affects and influences the actions of others in the home, school, and community.
2. Describe and demonstrate appropriate character traits, social skills, and positive attitudes needed for the home, school, community, and workplace.
3. List problems and their causes, effects, and solutions that are faced in the home, school, and/or community.
4. Describe how personal ethics influence decision making.

E. Consumer and Personal Finance Skills

1. Identify and demonstrate personal finance skills in checkbook maintenance and investing.
2. Construct a simple personal savings/spending plan.
3. Understand that people make financial choices that have costs, benefits, and consequences.
4. Explain the difference in cost between cash and credit purchases.
5. Compare prices of similar items from different sellers.

F. Safety

1. Demonstrate appropriate safety procedures for hands-on experiences.
2. Demonstrate the use of recommended safety and protective devices.
3. Describe appropriate response procedures for emergency situations.

Building upon knowledge and skills gained in preceding grades, by the end of Grade 12, students will:

A. Critical Thinking

1. Apply communications and data analysis to the problem-solving and decision making processes in a variety of life situations.
2. Describe and apply constructive responses to criticism.
3. Apply the use of symbols, pictures, graphs, objects, and other visual information to a selected project in academic and/or occupational settings.

4. Recognize bias, vested interest, stereotyping, and the manipulation and misuse of information while formulating solutions to problems that interfere with attaining goals.

5. Apply knowledge and skills needed to use various means of transportation within a community.

B. Self-Management

1. Revise and update the personal growth plan to address multiple life roles.

2. Apply project planning and management skills in academic and/or occupational settings.

3. Compare and contrast methods for maximizing personal productivity.

C. Interpersonal Communication

1. Model interpersonal and effective conflict resolution skills.

2. Communicate effectively in a variety of settings with a diverse group of people.

D. Character Development and Ethics

1. Analyze how character influences work performance.

2. Identify and research privileges and duties of citizens in a democratic society.

3. Discuss consequences and sanctions when on-the-job rules and laws are not followed.

4. Compare and contrast a professional code of ethics or code of conduct from various work fields and discuss similarities and differences.

5. Apply a professional code of ethics to a workplace problem or issue.

E. Consumer and Personal Finance

1. Analyze factors that influence gross and net income.

2. Design, implement, and critique a personal financial plan.

3. Discuss how to obtain and maintain credit.

4. Prepare and use skills for budget preparation, making predictions about income and expenditures, income tax preparation, and adjusting spending or expectations based on analysis.

5. Use comparative shopping techniques for the acquisition of goods and services.

6. Analyze the impact of advertising, peer pressure, and living arrangements on personal purchasing decisions.

7. Evaluate the actions a consumer might take in response to excess debt and personal financial status.

8. Analyze the interrelationships between the economic system and consumer actions in a chosen career cluster.

F. Safety

1. Engage in an informed discussion about rules and laws designed to promote safety and health.

2. Describe and demonstrate basic first aid and safety procedures.
3. Analyze the occurrence of workplace hazards.
4. Practice the safe use of tools and equipment.
5. Implement safety procedures in the classroom and workplace, where appropriate.
6. Discuss motor vehicle safety, including but not limited to, New Jersey motor vehicle laws and regulations, methods of defensive driving, and the importance of personal responsibility on public roads/streets.