Southern Regional School District
Manahawkin, New Jersey

COURSE OF STUDY

MIDDLE SCHOOL APPLIED TECHNOLOGY 8

NJ Core Curriculum Content Standards 2004
NJ Standards Clarification Project 2008

Submitted by:

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Southern Regional School District
Course of Study 2008
NJCCCS 2004
NJ Standards Clarification Project 2008

Department: **Applied Technology**

Unit: **Introduction to Applied Technology**

NJ Core Curriculum Content Standards: 3.1.H, 3.1.H.1, 3.2A, 3.2B, 3.2C, 3.2D, 3.3, 3.4, 3.5, 8.2B, 8.2C
ENDURING UNDERSTANDINGS: (NJ DOE Standards Clarification Project 1-08) A system has interrelated components designed to collectively achieve a desired goal. Technology evolves at an ever accelerating pace based on needs/wants of society and is influenced by cultural, political and environmental values and constraints.
ESSENTIAL QUESTIONS: (NJ DOE Standards Clarification Project 1-08) How can knowledge of a material's characteristics help us to create better projects? How can we ensure success when constructing a project? Why do we need to consider both speed and accuracy when constructing a project? Why are general workplace safety and machine safety important to manufacturing? How does technology impact the processing of materials and their conversion to finished product? How are technology and energy interrelated?
ASSESSMENTS: Students will be tested on species identification and classifications of wood, in regards to their applications in industry. Testing will include both written testing, as well as, use of actual tools and machinery. Students will complete a project in the shop that will be graded on a set of quality standards which include measuring, cutting, sanding and finishing. Students will design and build a CO^2 powered vehicle in order to help them comprehend the attributes of design within a specific set of constraints. Students will maintain a notebook.
MODIFICATIONS: The curriculum will be adapted to meet the inclusion needs of classified students as determined by the students' IEPs, 504s, prior knowledge assessment, and data provided from formative assessments.

Southern Regional School District
Course of Study 2008

Department: **Applied Technology**

Unit: **1** **Introduction to Materials**

NJ Core Curriculum Content Standards: 3.1.H, 3.1.H.1, 3.2A, 3.2B, 3.2C, 3.2D, 3.3, 3.4, 3.5, 8.2B, 8.2C
ENDURING UNDERSTANDINGS: (NJ DOE Standards Clarification Project 1-08) All technological activities use resources that include tools/machines, materials, information, energy, capital, time and people.
ESSENTIAL QUESTIONS: (NJ DOE Standards Clarification Project 1-08) How do we choose the best materials for a project, i.e. hardwood or softwood? Why are manufactured wood products important to our future?
ASSESSMENTS: Students will identify specific wood species. Students will give a brief report on a particular wood, describing why it is chosen for a particular application. Teacher made tests and quizzes. Oral presentations Project Research Written reports
MATERIALS AND RESOURCES: *Modern Woodworking*, Goodheart Wilcox, 2004

CONTENT:	**SKILLS:**
Common woodworking materials**:** A. Hardwoods 1. Oak 2. Cherry 3. Maple 4. Ash 5. Poplar B. Softwoods 1. Southern Yellow Pine 2. Cedar 3. Bass 4. Spruce 5. Douglas Fir C. Manufactured Lumber 1. Plywood 2. Wafer board 3. Particle board 4. OSB 5. Hard board D. Wood Technology 1. Forestry 2. Milling Process 3. Conservation **4.** Alternative Materials	Comparing and contrasting Understanding the connection between applied technology and a career path Take correct measurements to order wood products Identify lumber products Select best wood for desired product Note-taking Research

INSTRUCTIONAL ACTIVITIES:

1. Lecture/note taking.
2. Hands-on Demonstration – students will handle specific types of wood noting their individual properties.
3. Components of Research Report:
   A. Distinguish properties of wood use.
   B. Use research methods.
   C. Write or orally present a concise report.
   D. Note-taking.
   E. Have student create a dictionary of shop vocabulary words/terms.
   F. Oral presentation of research.
   G. Rubric

MODIFICATIONS:

The curriculum will be adapted to meet the inclusion needs of classified students as determined by the students' IEPs, 504s, prior knowledge assessment, and data provided from formative assessments.

TIME FRAME: Approximately 3 Days

Southern Regional School District
Course of Study 2008

Department: **Applied Technology**

Unit: **2** **Machine Safety**

NJ Core Curriculum Content Standards:
3.1.H, 3.1.H.1, 3.2A, 3.2B, 3.2C, 3.2D, 3.3, 3.4, 3.5, 8.2B, 8.2C

ENDURING UNDERSTANDINGS: (NJ DOE Standards Clarification Project 1-08)
A tool is only as good as the person using it. Technology is continually changing and involves the continual learning of new skills.

ESSENTIAL QUESTIONS: (NJ DOE Standards Clarification Project 1-08)
How can knowledge of safety practices be beneficial to woodworking experiences?
How do demonstrations and hands-on experiences reinforce machine safety?
Why are there different safety precautions for particular machines?

ASSESSMENTS:
Students will complete a written safety test on each stationary machine tool to be used.
Students will complete a hands-on practical test for each stationary machine prior to using them.
Students will be assessed on safe practices used in completion of tasks.

MATERIALS AND RESOURCES:
Modern Woodworking, Goodheart Wilcox, 2004

CONTENT:

1. Safety:
    - A. Shop procedures
    - B. General shop safety
    - C. Tool safety
        - Stationary equipment
        - Hand-held power tools
        - Hand tools
2. Board sizing – Process of taking rough-sawn material and turning it into dimensional lumber.
3. Stationary Equipment:
    - A. RAS
    - B. Jointer
    - C. Table Saw
    - D. Band Saw
    - E. Belt Sander
    - F. Spindle Sander
    - G. Drill Press
4. Hand-Held Tools:
    - A. Orbital Sander
    - B. Drill
    - C. Router

SKILLS:

1. Demonstrate safety procedures
2. Demonstrate workplace readiness
3. Demonstrate accurate measuring skills
4. Demonstrate order of operation knowledge
5. Identify equipment name

INSTRUCTIONAL ACTIVITIES:

Note-taking – using study guide

Demonstrations:

- Using actual equipment
- Hands-on demonstrations by students to prove he/she is ready to use machine

Questioning – to assess comprehension

Hands-on testing – student must prove he/she is ready to use machine

Vocabulary – machine parts and materials

MODIFICATIONS:

The curriculum will be adapted to meet the inclusion needs of classified students as determined by the students' IEPs, 504s, prior knowledge assessment, and data provided from formative assessments.

TIME FRAME: 3 Weeks

Southern Regional School District
Course of Study 2008

Department: Applied Technology

Unit: 3 Manufacturing a Wood Product

NJ Core Curriculum Content Standards:
3.1.H, 3.1.H.1, 3.2A, 3.2B, 3.2C, 3.2D, 3.3, 3.4, 3.5, 8.2B, 8.2C

ENDURING UNDERSTANDINGS: (NJ DOE Standards Clarification Project 1-08)
Technological outcomes have the potential for anticipated and unanticipated …. positive and negative results. The design process is fundamental to technology and engineering.

ESSENTIAL QUESTIONS: (NJ DOE Standards Clarification Project 1-08)
Why is accuracy important when constructing a project?
How can we avoid natural defects in lumber?
Why are jigs and fixtures important to manufacturing?
How do we perceive quality?

ASSESSMENTS:
Daily monitoring of students' progress.
Finished project will be graded on quality, accuracy and defect avoidance using a Rubric.

MATERIALS AND RESOURCES:
Modern Woodworking, Goodheart Wilcox, 2004

CONTENT:

1. Measuring
   - A. Units of a ruler
   - B. Estimating
   - C. Finding centers
2. Layout
   - A. Maximization of material
   - B. Defects
   - C. Sizing of a board
3. Manufacturing
   - A. Jigs/Fixtures
     - Accuracy
     - Speed
     - Safety
   - B. Patterns
     - Tracing
     - Cutting and sanding
4. Quality of Project
   - A. Define quality
   - B. Avoiding mistakes
   - C. Alignment of parts
   - D. Machine/Hand sanding
   - E. Applying a finish

SKILLS:

1. Demonstrate workplace readiness
2. Demonstrate safety procedures
3. Measuring skills
4. Demonstrate effective problem-solving skills

INSTRUCTIONAL ACTIVITIES:

1. Demonstration – Daily demonstration of work to be accomplished by student.
2. Observe safe operation of shop.
3. Discuss any problems or mistakes being made.
4. Review machine safety/sizing of board as project progresses.
5. Explain project grading procedure.
6. Involve students in shop cleaning and upkeep.
7. Encourage students to solve problems on their own.
8. Accurate measurement

MODIFICATIONS: The curriculum will be adapted to meet the inclusion needs of classified students as determined by the students' IEPs, 504s, prior knowledge assessment, and data provided from formative assessments.
TIME FRAME: 4 Weeks

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Unit: 4 Web-based Investigation

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3.1.H, 3.1.H.1, 3.2A, 3.2B, 3.2C, 3.2D, 3.3, 3.4, 3.5, 8.2B, 8.2C

ENDURING UNDERSTANDINGS: (NJ DOE Standards Clarification Project 1-08)
Technology literacy skills enable learners to adapt to a rapidly changing, man-made world by using problem solving to generate solutions from the conceptual stage to final product.

ESSENTIAL QUESTIONS: (NJ DOE Standards Clarification Project 1-08)
Why is the ability to gather, organize and present information important to a student?
How does plagiarism harm oneself and others?
How are reading skills/strategies related to ability to accurately answer questions?
How do we identify key essential information when reading text?

ASSESSMENTS:
Written research report with correct citations
Oral presentation

MATERIALS AND RESOURCES:
Modern Woodworking, Goodheart Wilcox, 2004
McCauley, Johanna, *Southern Regional M.S. Research Booklet*

CONTENT:

1. Topics of Research
   - A. Machinery
   - B. Materials
   - C. Manufacturing
2. Written Component
   Persuasive Essay
   - A. Introduction
   - B. Main body
   - C. Conclusion
   - D. Citing of web sources
3. Oral Presentation
   - A. Preparation
   - B. Organization
   - C. Time Management
   - D. Visual
4. Project Rubric
5. Use of Internet Search Engines

SKILLS:

1. Being organized
2. Writing clearly to persuade
3. Analyzing information
4. Demonstrating a positive work ethic
5. Orally presenting a topic
6. Using research skills
7. Reading for comprehension
8. Use Internet for research

INSTRUCTIONAL ACTIVITIES:
Demonstration – Teacher will model an example of an acceptable paper and present it to the class.
Rubric – Explain grading process
Assignment Sheet – What is expected of students
Monitor progress prior to due date
Research procedures

MODIFICATIONS:
The curriculum will be adapted to meet the inclusion needs of classified students as determined by the students' IEPs, 504s, prior knowledge assessment, and data provided from formative assessments.

TIME FRAME:

1 Day – Explanation of unit and expectations

2 Weeks – 2/3 oral reports per day at beginning of period