FREEHOLD REGIONAL HIGH SCHOOL DISTRICT

OFFICE OF CURRICULUM AND INSTRUCTION

TECHNOLOGY EDUCATION DEPARTMENT

ADVANCED CABINETMAKING

Grade Level: 9-12

Credits: 5

BOARD OF EDUCATION ADOPTION DATE:

AUGUST 25, 2008

FREEHOLD REGIONAL HIGH SCHOOL DISTRICT

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Course Description

Prerequisite: Cabinetmaking and Furniture Design

Advanced Cabinetmaking provides the student with the opportunity to study expanded techniques of cabinet work and furniture design. Major emphasis is placed on the design and construction of kitchen cabinets, vanities, and built-ins. During the first semester, students will participate in individual and group exercises and projects. The second semester will be primarily devoted to the development and execution of an elaborate production project.

The information presented can be used by all students regardless of whether they are academically or vocationally oriented. The vocationally oriented students will be provided with the opportunity to develop entry level skills whereas the academic student can further develop their consumer knowledge and avocational interests.

Freehold Regional High School District
Advanced Cabinetmaking: Alignment to New Jersey Core Curriculum Content Standards

Curriculum Unit	8.2 A 1	8.2 A 2	8.2 A 3	8.2 B 1	8.2 B 2	8.2 B 3	8.2 B 4	8.2 B 5	8.2 B 6	8.2 C 1	8.2 C 2	8.2 C 3
I. Introduction	X										X	X
II. Review		X	X	X	X	X	X	X	X			
III. Kitchen Cabinets, Vanities, Built-Ins			X	X	X	X		X	X	X	X	
IV. Advanced Machinery Operation			X	X	X	X		X	X	X	X	
V. Production	X	X	X							X	X	X
VI. Applying for a Job		X										X

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Students enrolled in this course will demonstrate mastery of the following proficiency requirements as outlined in the curriculum guide and receive a passing grade in accordance with Board of Education policies on grading and attendance:

1. Demonstrate an understanding of basic skills in reading and mathematics, particularly as they relate to advanced cabinetmaking terminology.
2. Know and apply appropriate shop safety rules and regulations prescribed by New Jersey state laws and Board of Education policy.
3. Demonstrate the safe operation and use of various machines, hand tools, and supplies as outlined in the curriculum guide.
4. Demonstrate desirable work habits and attitudes and the ability to work individually or in a group.
5. Perform and successfully complete teacher assigned shop experiments and/or exercises in class.
6. Demonstrate the ability to complete required projects from an organizes set of plans within a time frame established by the teacher.
7. Become familiar with career and leisure opportunities related to his Industrial Education course.
8. Demonstrate good design techniques and workmanship in advanced cabinetmaking experiments, exercises, and group and individual constructed projects.
9. Demonstrate an understanding of the manufacturing processes, characteristics, and uses for engineered wood products.
10. Develop knowledge and skills related to designing and constructing kitchen cabinets, vanities, and built-ins.
11. Demonstrate the ability to design and use jigs and fixtures for production of wooden parts or assembling items.
12. Develop and understanding of preventative maintenance and demonstrate the ability to perform routing maintenance on common woodworking machines.
13. Develop knowledge and skills in the use of computer and CAD drawing particularly for the designing and drawing of kitchen plans.
14. Develop desirable attitudes concerning our environment, in particular, the use and conservation of our natural resources.
15. Develop an understanding of our technological society and the necessity of researching new and advanced products, processes, and techniques.

To measure mastery in accordance with grading policy, attendance policy and other policies of the Board of Education, the teacher will select appropriate evaluative methods as listed below.

Laboratory work
Unit test
Projects
Final exam
Performance test
Reports
Homework
Midterm
Shop maintenance
Quizzes
Notebook

Course Content

I. Introduction
   A. Review course objectives
      1. Proficiencies
      2. Content areas
      3. Career guidance
   B. Shop orientation
      1. Rules and regulations
      2. Requirements
      3. Student evaluation
      4. Safety

II. Review content of Cabinetmaking
   A. Job opportunities
      1. Current status
      2. Future outlook
   B. Planning
      1. Design
      2. Drafting
      3. Project selection
      4. Shop mathematics
      5. Bill of materials
      6. Procedure list
   C. Computer Aided Drawing
      1. CAD Program
      2. 20/20 kitchen program
   D. Cabinet wood identification and selection
      1. Structure of wood
      2. Grade
      3. Materials testing
   E. Engineered wood products
      1. Manufacturing
      2. Use
      3. Grades
   F. Furniture construction
      1. Types
      2. Joinery
   G. Hand tools and processes
   H. Machine tools and processes
   I. Laminating
      1. Veneering
      2. Bent laminates
      3. Plastic laminates

III. Construction of kitchen cabinets, vanities, and built-ins
- A. Types of cabinets
  - 1. Special purpose wall cabinets
    - a. over refrigerator
    - b. lid and pan rack
    - c. over the range
    - d. mix center
    - e. recessed wall
    - f. over the sink
    - g. combination wall
    - h. wall vegetable bin
    - i. swing shelf cabinet
    - j. microwave cabinet
  - 2. Sink cabinets
    - a. recessed sink front
    - b. combination sink
    - c. diagonal corner sink
  - 3. Special purpose base cabinets
    - a. sliding shelf cabinets
    - b. wire vegetable bin
    - c. tray and bread
    - d. food preparation base
    - e. swinging bin
    - f. pop-up mixer
    - g. utensils
    - h. serving
    - i. platter
- B. Selection of cabinet style
  - 1. Needs
    - a. function of a work center
  - 2. Dimensions of appliances
  - 3. Dimensions of items to be stored
    - a. regularity of item's dimensions
  - 4. Style of furnishings in room
  - 5. Cost of materials
- C. Special shelf arrangements
  - 1. Divisions
  - 2. Adjustable
- D. Drawer dividers
- E. Materials Used
  - 1. Solid lumber
    - a. Hardwoods
      - 1. Frames
    - b. Softwoods
      - 1. Frames
      - 2. Shelves

2. Plywood
    a. Hardwood
        1. Doors
        2. Ends
        3. Shelves
    b. Fir plywood (if painted)
        1. Doors
        2. Ends
        3. Shelves
    c. Plastic laminate
        1. Cover counter top
        2. Cover wall between cabinets
        3. Cover entire surface of cabinets

F. Basics of cabinet building
    1. Joinery
        a. Butt
            1. Strengthening
                a. glue
                b. dowels
                c. nails
                d. corner irons
                e. mending plates
        b. Mortise-and-tenon
        c. Dado
        d. Dovetail
        e. Dovetail-dado
        f. Half-lap
        g. Rabbet
        h. Groove
    2. Construction
        a. Doors (sold panel or frame and panel)
            1. flush
            2. sliding
            3. lip
        b. Drawers (solid panel of frame and panel
            1. flush
            2. lip
            3. guides
                a. shop built
                b. commercial
        c. Frames
        d. Shelves
        e. Assembly

3. Finishing
    a. Spraying
        1. Lacquer
        2. Polyester materials
    b. Painting
    c. Applying plastic laminates

G. Designing built-ins
1. Function
    a. Examples
        1. bookcases
        2. china cabinets
        3. record storage
        4. display area
2. Factors effecting the design
    a. Furnishings
    b. Quantity of items
    c. Size of items
    d. Available space
3. Compare kitchen cabinets with built-ins
    a. Workmanship
    b. Joinery
        1. Structure
    c. Quality of materials
    d. Use of plastic laminates
        1. Type of pattern
        2. Quantity used

H. Designing vanities
1. Function
2. Design factors
    a. Available space
    b. Lavatory size
    c. Decor
3. Construction procedures

IV. Advanced machinery operations
A. All techniques studied previously
B. Production oriented techniques
1. Jigs
2. Fixtures
C. Maintenance of machinery
1. Lubrication
2. Replacing parts
3. Changing cutters
4. Sharpening cutters

D. Machinery included in unit
    1. Jointer
    2. Rotary jointer-surfacer
    3. Surfacer
    4. Circular saw
    5. Radial arm saw
    6. Motorized miter box
    7. Panel saw
    8. Band saw
    9. Jig saw
    10. Drill press
        a. Motorizing attachment
    11. Shaper
    12. Portable router
    13. Over arm router
    14. Wood lathe
        a. Lathe duplicator
    15. Pneumatic and electric fasteners
    16. Wood welder
    17. Laminating press
    18. Sanders
        a. Belt (portable and stationary)
        b. Pneumatic sanding drum
        c. Flap wheel
        d. Oscillating spindle
        e. Portable finishing
            1. Orbital
            2. Straight-line
            3. Random orbit
    19. Sabre saw
    20. Portable drill (electric, pneumatic, battery)
    21. Grinder
    22. Computerized machinery
        a. Computer wood lathe
        b. Computer router
    23. Steamer
    24. Sprayer/spray booth
    25. Testing apparatus
        a. Non-metallic tester
        b. Wood moisture tester

V. Production
    A. Introduction
        1. The importance of industry to our way of life
        2. The mass-produced product and what it means

3. Corporate structure
    a. Occupations
    b. The wholeness of industry and the interrelationship of its parts
    c. Establishing corporate structure

B. Production project
    1. Selecting the product
    2. Promotion and sales
    3. Designing and production
    4. Jigs and fixtures
    5. Determining sequences of operations
    6. Flow-charts
    7. Production line
    8. Assembly line

VI. Applying for a job
    A. Determining the job market
    B. Major interests
    C. Obtaining an appointment for an interview
    D. Employment agencies

Suggested Teaching Procedures

1. Information will be presented to he student through various methods to assure optimum learning achievement on all levels of student aptitude. This information can be presented through such methods as lectures, demonstrations, text assignments, individual student projects, and field trips.

2. Audio-visual aids will be employed where needed to reinforce and clarify the teacher presented concepts.

3. Appropriate career information will be presented at various times throughout the duration of the course.

4. Individual instruction will be provided where needed.

5. The importance of neatness and accuracy will be provided where needed.

6. Encourage the development of good work habits through emphasis on interpersonal relations, punctuality, attendance, and cooperation.

7. Encourage proper handling and maintenance of equipment and supplies.

8. Students will be encouraged to develop pride and craftsmanship in their work.

9. Students will be encourage to be self-critical of their work.

10. The relationship of classroom activities and outside work experience will be stressed.

11. Students will be required to keep a notebook containing the following sections: lecture and demonstration notes, reading and homework assignments, and project plans.

Time-Line Periods

I.	Introduction	3
II.	Review of content of Cabinetmaking	10
III.	Construction of Kitchen Cabinets, Vanities	80
IV.	Advanced machine operations	30
V.	Production	40
VI.	Applying for a Job	5

Suggested Textbooks

Boger, Louise Ade. The Complete Guide to Furniture Styles. NY Charles Scribner's Sons, 1969.

Frid, Tage. Joinery: Tools and Techniques. Conn. The Taunton Press, Inc., 1979.

Marlow, A. W. Fine Furniture for the Amateur Cabinetmaker. NY Bonanza, 1975.

Treves, Ralph. Early American Furniture You Can Build. NY Arco Publishing Co., 1975.

Supplementary Material

Computer Programs:

- Stationary Woodworking Equipment
- Woodshop Safety
- Power Tool Safety
- Shop Tools and Equipment
- Portable Woodworking Equipment

Circle Oaks Productions: Video Tapes

- The Safety Factor

Catskill Mountain Lumber Company: Video Tapes

- The Manufacture of Re-constituted Wood Products
- The Manufacture of Pine and Hardwood Lumber
- The Story of the Redwood Industry

Bergwall Productions Inc.: Sound Filmstrip Series

- Woodworking Machine Operations
- Woodworking Hand Tools Explained

2000 Company: Sound Filmstrips

- Introduction to Woodshop/Carpentry Safety
- Hand Held Power Tool Safety
- Radial Arm and Band Saw Safety
- Jointer Safety
- Shaper and Scroll Saw Safety
- Hand Tool Safety
- Power Equipment Safety (general)