

FREEHOLD REGIONAL HIGH SCHOOL DISTRICT

OFFICE OF CURRICULUM AND INSTRUCTION

TECHNOLOGY EDUCATION DEPARTMENT

CABINETMAKING AND FURNITURE DESIGN

Grade Level: 10-12

Credits: 5

BOARD OF EDUCATION ADOPTION DATE:

AUGUST 30, 2010

[SUPPORTING RESOURCES AVAILABLE IN DISTRICT RESOURCE SHARING](#)

APPENDIX A: ACCOMMODATIONS AND MODIFICATIONS

APPENDIX B: ASSESSMENT EVIDENCE

APPENDIX C: INTERDISCIPLINARY CONNECTIONS

FREEHOLD REGIONAL HIGH SCHOOL DISTRICT

Board of Education

Mr. Ronald G. Lawson, President
Mr. Heshy Moses, Vice President

Mr. William Bruno
Mr. Tom Caiazza
Mrs. Elizabeth Canario
Mr. Barry Hochberg
Mrs. Kathie Lavin
Mr. Christopher Placitella
Mrs. Jennifer Sutera

Dr. Suzanne Koegler, Acting Superintendent
Ms. Donna M. Evangelista, Assistant Superintendent for Curriculum and
Instruction

Curriculum Writing Committee

Mr. Todd Sutphen

Supervisors

Ms. Cathy Boenig
Ms. Kim Fox
Mr. Jose Francis
Mr. Patrick McEvoy
Dr. Meryl Norych
Mr. Timothy O'Boyle

Course Philosophy

The Cabinetmaking and Furniture Design curriculum is a secondary level course with a focus on the construction of an heirloom project using the latest technological techniques along with old world craftsmanship. Students build upon previously acquired skills and knowledge to design and construct their heirloom project utilizing advanced techniques and methodologies standard in the cabinetmaking industry. The hands-on practical experiences are emphasized throughout all units of study. The 21st century work force skills in presentation, communication, mathematics, science, leadership, collaboration, and problem solving are emphasized and assessed in the Cabinetmaking and Furniture Design course work.

Course Description

The Cabinetmaking and Furniture Design course provides the opportunity to study and investigate the principles of cabinetry and furniture design. Students learn craftsmanship through established industry standards including the latest technological techniques. Students implement lessons in advanced machine operations, joinery, cabinet construction, and finishing. Each student will complete selected exercises, construct an heirloom project, and study mass-production techniques. Students have the opportunity to utilize knowledge and skills learned in post-secondary/vocational education. All skills, techniques, consumer knowledge, environmentally sound practices, and safety regulations act as the foundational basis for post-secondary education and/or employment.

**Freehold Regional High School District
Curriculum Map**

Cabinetmaking and Furniture Design

Relevant Standards ¹	Enduring Understandings	Essential Questions	Assessments		
			Diagnostic (before)	Formative (during)	Summative (after)
9.4.12.B.40-46, 9.2.12.F.1 -5, 9.4.12.M.33-43, 9.4.12.M(6).1 – 5,	Following safety procedures and using personal protection equipment will reduce the risk of injury.	What are the safety concerns to be considered when working in a lab setting in school or on the job? What protection can be used in a laboratory environment? What should be part of an effective safety program? What characteristics are essential to a functional team? What are the benefits of working in a team environment as opposed to individually?	Pretest Student Survey Oral Questions/ Discussion Anticipatory Set Questions Signed Safety Contracts.	Journals Quizzes Written Assessments Oral Presentations Observations Participatory Rubrics Role Play Research Assignments Interviews	Projects Written safety test Performance test Mid Terms Final Exam
8.1.12.A.1, 8.2.12.A.1, 8.2.12.B.1-3, 8.2.12.C.2-3, 9.4.12.B(1).9, 9.4.12.B.18,20-23 9.4.12.B.72 – 75	Planning is an essential component to design, construction, material usage, and efficiency.	Why is planning an important aspect to project work? How does planning influence efficiency? Why is planning vital to material usage and construction? How is the design of a product influenced by planning? How do jigs and fixtures affect project planning and construction?	Discussion Anticipatory set questions	Bill of materials Plan of Procedure Sheet Goods Layout Observations Model demonstrated behavior	Performance test Final project Mid term exam
9.4.12.M(1).7, 9.4.12.M(2).3 – 4,	Architectural standards must be met for cabinets and furniture to be functional.	What are architectural standards? Why do cabinets and furniture need to meet standards? Why is cabinet hardware placed in specific locations?	Anticipatory set questions Prewritten Assessment Discussion questions	Quizzes Research	Final Project Final written test Final Exam Research project based on home measurements
9.4.12.M(2).9	There are many styles of furniture.	What are the different styles of furniture? What characterizes each style of furniture? How does the style of the furniture influence the construction techniques required? How does the choice of materials used for construction influence the style of furniture?	Anticipatory set questions Pre written assessment Discussion	Quizzes Research Project	Unit test Final project Final written test Final exam

Relevant Standards ¹	Enduring Understandings	Essential Questions	Assessments		
			Diagnostic (before)	Formative (during)	Summative (after)
8.2.12.F2	The basis for all woodworking materials are found in nature.	<p>What are forest materials?</p> <p>How forest materials are harvested and processed?</p> <p>What are the methods of drying lumber?</p> <p>What is the difference between nominal and actual size specifications?</p> <p>Why specific forest products are more suited to certain applications than others?</p>	<p>Pretest</p> <p>Discussion</p> <p>Anticipatory set questions</p> <p>Student Survey</p>	<p>Quizzes</p> <p>Research</p> <p>Project</p>	<p>Unit test</p> <p>Performance test</p> <p>Final Project</p> <p>Final Exam</p>
9.4.12.B(2).17, 9.4.B.59,61,64,75, 9.4.12.C.46, 9.4.12.M(3).3 – 9,	Tools and machinery have specific functions and methods for usage.	<p>What portable power tools and machines are used in general woodworking?</p> <p>What portable power tools and machines are used for cutting?</p> <p>What portable power tools and machines are used for drilling and boring?</p> <p>What portable power tools and machines are used for routing and shaping?</p> <p>What portable power tools and machines are used for planing and jointing?</p> <p>What portable power tools and machines are used for sanding?</p>	<p>Pre written assessment</p> <p>Anticipatory set questions</p> <p>Discussion</p>	<p>Performance test</p> <p>Safety assessment</p> <p>Model demonstrated task</p> <p>Observations</p>	<p>Performance test</p> <p>Final project</p> <p>Final written test</p> <p>Final exam</p>
9.4.12.B(2).17, 9.4.12.M(1).7, 9.4.12.M(2).3 – 4,	Wood products use a variety of joinery techniques and fastening methods in their assembly.	<p>What joinery techniques are used to create different geometric shapes?</p> <p>What joinery techniques are used to connect lumber products together?</p> <p>What types of mechanical fasteners are used in wood product construction based upon the application?</p> <p>What types of glues and adhesives are used in wood product construction for interior as well as exterior applications?</p>	<p>Pre written assessment</p> <p>Discussion</p> <p>Anticipatory set questions</p> <p>Discussion</p> <p>Student Survey</p>	<p>Quizzes</p> <p>Research</p> <p>Performance test</p> <p>Model Demonstrated behavior</p>	<p>Final Project</p> <p>Final Exam</p>
9.4.12.B(2).17, 9.4.12.M(1).7, 9.4.12.M(2).3 – 4,	Methods of construction and assembly determine the difference in strength and quality.	<p>What are the methods of construction and assembly for drawers?</p> <p>What are the methods of construction and assembly for cabinet and furniture carcasses?</p> <p>What are the methods of construction and assembly for cabinet doors?</p> <p>How are veneers and plastic laminates used in the construction of furniture and cabinetry?</p>	<p>Anticipatory set questions</p> <p>Pre written assessment</p> <p>Discussion</p>	<p>Model demonstrated behavior</p> <p>Quizzes</p> <p>Performance test</p>	<p>Final Exam</p> <p>Final Project</p>

Relevant Standards ¹	Enduring Understandings	Essential Questions	Assessments		
			Diagnostic (before)	Formative (during)	Summative (after)
9.4.12.B(2).17, 9.4.12.M(2).3 – 4,	The type of finish on a wood product will determine its durability and application.	<p>What types of finishes would be used for an interior type project?</p> <p>What type of finishes would be used for a project exposed to the weather outside?</p> <p>What are the types of solvents used in the various finishes?</p> <p>Explain the techniques for applying finish to a product.</p> <p>What are the procedures for cleaning up after applying finish to a project?</p>	<p>Anticipatory set questions</p> <p>Pre written assessment</p> <p>Discussion</p>	<p>Model demonstrated behavior</p> <p>Quizzes</p> <p>Performance test</p>	<p>Final Exam</p> <p>Final Project</p>

Freehold Regional High School District
Course Proficiencies and Pacing
Cabinetmaking and Furniture Design

Unit Title	Unit Understandings and Goals	Recommended Duration
Unit #1: Safety	Following safety procedures and using personal protection equipment will reduce the risk of injury. Students will be able to identify and implement proper safety in a work environment, including working as a team.	3 weeks
Unit #2: Planning	Planning is an essential component to design, construction, material usage, and efficiency. Students will be able to develop and follow a plan to design, construct, and finish their woodworking project.	2 weeks
Unit #3: Architectural Standards	Architectural standards must be met for cabinets and furniture to be functional. Students will be able to identify and utilize standard architectural design measurements to design their furniture project.	1 week
Unit #4: Furniture Styles	There are many styles of furniture. Students will be able to identify styles and periods of furniture design.	2 weeks
Unit #5: Materials	The basis for all woodworking materials are found in nature. Students will be able to identify and select appropriate materials for their desired product.	3 weeks
Unit #6: Hand tools	Tools and machinery have specific functions and methods for usage. Students will be able to properly select and utilize the appropriate hand tools for the necessary task.	4 weeks
Unit #7: Joinery/Fasteners	Wood products use a variety of joinery techniques and fastening methods in their assembly. Students will be able to identify and utilize a variety of joinery techniques using a variety of mechanical fasteners.	4 weeks
Unit #8: Power Tools/Machinery	Tools and machinery have specific functions and methods for usage. Students will be able to properly select and safely utilize the appropriate portable power tool or machine for the task at hand.	10 weeks
Unit #9: Assembly	Methods of construction and assembly determine the difference in strength, quality and appearance. Students will be able to properly assemble their pieces into a project using appropriate methodology.	2.5 weeks
Unit #10: Finishing	The type of finish on a wood product will determine its durability and application. Students will be able to properly select, apply, and cleanup stains and finishes required for enhancing and protecting their project according to its intended use.	2.5 weeks

Freehold Regional High School District
Cabinetmaking and Furniture Design
Unit #1: Safety, Class and Self Management, Class Orientation

Enduring Understanding: Following safety procedures and using personal protection equipment will reduce the risk of injury.

Essential Questions: What are the safety concerns to be considered when working in a lab setting in school or on the job?
 What protection can be used in a laboratory environment?
 What should be part of an effective safety program?
 What characteristics are essential to a functional team?
 What are the benefits of working in a team environment as opposed to individually?

Unit Goal: Students will be able to identify and implement proper safety in a work environment, including working as a team.

Duration of Unit: 3 weeks

NJCCCS: 9.4.12.B.40-46, 9.2.12.F.1 -5, 9.4.12.M.33-43, 9.4.12.M (6).1 – 5

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What are the governing bodies that set safety laws? What is personal protective equipment? What is chemical safety? What is fire safety?	Safe use of tools, equipment, and machinery. Implement safety procedures in the classroom. Safety Signage Maximizing Personal Productivity	Lecture PowerPoint presentation on classroom and occupational safety procedures, PPE, and hazardous signage. Research Chemical safety MSDS sheets Computer, projector and screen School emergency guidelines packet	Lecture and class discussion. PowerPoint presentation on classroom and occupational safety procedures, PPE, and hazardous signage OSHA virtual field trip Station work and practice of Safe use of tools, equipment, and machinery. Identify safety signage and the hazard the symbol is warning against. Model methods for maximizing personal productivity in a safe environment.	Safety Quiz Signed safety contracts. Student self-assessment of safety procedures Performance test to include safety scenarios and emergency situations Create safety posters to be hung around classroom
What are some key characteristics of teamwork? What are the advantages of working in groups?	Methods for maximizing personal productivity in a safe environment.	Lecture and group work	Small group project competition Model methods for maximizing personal productivity in a safe environment.	Informal, ongoing, observations of students following safety procedures

Suggestions on how to differentiate in this unit:

- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- A hands-on approach to assignments and projects is recommended as the most effective method of learning.
- Provide time for revision of work when students show need.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.

**Freehold Regional High School District
Cabinetmaking and Furniture design
Unit #2: Planning**

Enduring Understanding: Planning is an essential component to design, construction, material usage, and efficiency.

- Essential Questions:**
- Why is planning an important aspect to project work?
 - How does planning influence efficiency?
 - Why is planning vital to material usage and construction?
 - How is the design of a product influenced by planning?
 - How do jigs and fixtures affect project planning and construction?

Unit Goal: Students will be able to develop and follow a plan to design, construct, and finish their woodworking project

Duration of Unit: 2 weeks

NJCCCS: 8.1.12.A.1, 8.2.12.A.1, 8.2.12.B.1-3, 8.2.12.C.2-3, 9.4.12.B (1).9, 9.4.12.B.18, 20-23, 9.4.12.B.72 – 75

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
<p>How does the size of a project influence its design and construction?</p> <p>When planning the project, does the size influence the choice of materials being used?</p> <p>How does planning the steps necessary for completion of the project help maintain efficiency?</p> <p>How do jigs and fixtures affect project planning and construction?</p>	<p>Measurement of objects linearly, 2 dimensionally and 3 dimensionally</p> <p>Project completion planning steps</p> <p>Jigs and fixtures add repeatability to operations while increasing efficiency</p>	<p>Lecture</p> <p>Bill of materials sheet</p> <p>Plan of Procedure sheet(s)</p> <p>Sheet stock optimizing paper</p> <p>Calculator, ruler, measurement sheets</p> <p>Various jigs and fixtures</p> <p>Video clips</p> <p>Computer, projector, and screen</p>	<p>Lecture and class discussion</p> <p>Large group guided instruction on form usage</p> <p>Large group discussion following video clip of jigs and fixtures in use for repeated operations.</p> <p>Practice and station work for measuring of objects linearly, 2 dimensionally and 3 dimensionally</p> <p>Planning the steps for completion of the project</p> <p>Reading a working drawing to attain necessary information for forms and construction details</p> <p>Demonstrate jigs and fixtures</p>	<p>Student self assessment</p> <p>Unit test</p> <p>Performance test of material selection for desired purpose</p> <p>Use of jigs and fixtures to increase efficiency</p> <p>Plan of procedure, Bill of Material, and sheet stock optimization forms</p> <p>Final project</p>

Suggestions on how to differentiate in this unit:

- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- A hands-on approach to assignments and projects is recommended as the most effective method of learning
- Provide time for revision of work when students show need.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.

**Freehold Regional High School District
Cabinetmaking and Furniture design
Unit #3: Architectural Standards**

Enduring Understanding: Architectural standards must be met for cabinets and furniture to be functional.

Essential Questions: What are architectural standards?
Why do cabinets and furniture need to meet standards?
Why is cabinet hardware placed in specific locations?

Unit Goal: Students will be able to identify and utilize standard architectural design measurements to design their furniture project.

Duration of Unit: 1 week

NJCCCS: 9.4.12.M (1).7, 9.4.12.M (2).3 – 4,

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
<p>What do architectural standards mean to each individual?</p> <p>What is an architectural standard?</p> <p>What is the necessity of placing cabinet hardware in a specific location for human interaction?</p> <p>Why do cabinets and pieces of furniture need to meet a standard of size measurements?</p>	<p>Cabinet sizes, appliances, chair height, stool height</p> <p>Countertop height determined by function, kitchen, bathroom vanity, computer keyboard, desk, table, etc</p> <p>Hinge types and locations as related to architectural standards and design.</p> <p>Handle and knob locations</p> <p>ADA compliance</p>	<p>Lecture</p> <p>Various sample projects for demonstration of architectural standards</p> <p>Current textbook</p> <p>Streaming video clips</p> <p>Student measurement assignment sheet</p> <p>Digital photographs, computer, projector, and screen</p>	<p>Lecture and class discussion</p> <p>Reading assignment from current text</p> <p>Guided instruction specific to each individual project design</p> <p>Virtual fieldtrip to cabinet shop, architect's office</p> <p>Guest speaker</p>	<p>Student measurement of home kitchen table height, bathroom counter height, coffee table height, door knob location height, width of hallway measurement assignment</p> <p>Student self assessment</p> <p>Unit test</p> <p>Performance test of material and size selection for desired project</p> <p>Final project</p>

Suggestions on how to differentiate in this unit:

- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- A hands-on approach to assignments and projects is recommended as the most effective method of learning.
- Provide time for revision of work when students show need.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.

**Freehold Regional High School District
Cabinetmaking and Furniture Design
Unit #4: Furniture Styles**

Enduring Understanding: There are many styles of furniture.

Essential Questions: What are the different styles of furniture?
 What characterizes each style of furniture?
 How does the style of the furniture influence the construction techniques required?
 How does the choice of materials used influence the style of furniture?

Unit Goal: Students will be able to identify styles and periods of furniture design.

Duration of Unit: 2 weeks

NJCCCS: 9.4.12.M (2).9

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What are the characteristics that define each style of furniture? How do the methods of construction differ among the various furniture styles? How do the choices of materials determine the final appearance of the furniture style? How have the styles of furniture evolved over time?	Characteristics of Mission style furniture Characteristics of Shaker style furniture Characteristics of Colonial style furniture Characteristics of Art Deco style furniture Characteristics of Contemporary style furniture	Lecture Power point lesson Digital photo montage Computer, projector with screen	Lecture and class discussion Reading assignment from current text PowerPoint presentation on furniture styles and periods Digital photo montage presentation showing actual furniture pieces Analyze and identify characteristics of Mission style, Shaker, Colonial, Art Deco, and Contemporary furniture by authentic displays and samples.	Student self assessment Unit test Performance test of furniture style selection for desired appearance of individual project Final project Mid term exam Final Exam

Suggestions on how to differentiate in this unit:

- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- A hands-on approach to assignments and projects is recommended as the most effective method of learning.
- Provide time for revision of work when students show need.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.

**Freehold Regional High School District
Cabinetmaking and Furniture design
Unit #5: Materials**

Enduring Understanding: The basis for all woodworking materials can be found in nature.

- Essential Questions:**
- What are forest materials?
 - What are engineered lumber products?
 - What are the methods of drying lumber?
 - What is the difference between nominal and actual size specifications?
 - How are forests materials harvested and processed?
 - Why specific forest products are more suited to certain applications than others?

Unit Goal: Students will be able to identify and select appropriate materials for their desired product.

Duration of Unit: 3 weeks

NJCCCS: 8.2.12.F2

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What are engineered lumber products?	Applications of various sheet goods Lumber and plywood grading systems Engineered lumber products	Lecture Pieces of cabinet grade lumber, plywood, particleboard, Homasote, Masonite etc Streaming video clips, virtual fieldtrip Current textbook	Lecture and class discussion Demonstration Reading assignment from current textbook Virtual fieldtrip to lumber harvesting operation, lumber mill, forest research lab	Student self assessment Unit test Performance test of material selection for desired purpose Final project
How is lumber graded for a particular use? How do we identify different types of lumber? What are the methods of drying lumber? What is the difference between nominal and actual size specifications? What is the process of creating usable lumber from logs?	Identify process of lumber production Differentiate between hardwoods and softwoods Identify characteristics used in lumber and plywood grading systems Lumber drying methods – Kiln Dried and Air dried	Computer, projector with screen	Streaming video of process of creating sheet goods, veneers, and lumber from logs. Analyze the applications of various sheet goods Identify characteristics used in lumber and plywood grading systems Streaming video of the production of engineered lumber products Apply the usage of engineered lumber products to their projects	Mid term exam Final exam

Suggestions on how to differentiate in this unit:

- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- A hands-on approach to assignments and projects is recommended as the most effective method of learning.
- Provide time for revision of work when students show need.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.

**Freehold Regional High School District
Cabinetmaking and Furniture design
Unit #6: Hand Tools**

Enduring Understanding: Tools and machinery have specific functions and methods for usage.

- Essential Questions:**
- What hand tools are used in general woodworking?
 - What hand tools are used for cutting?
 - What hand tools are used for drilling and boring?
 - What hand tools are used for planning and jointing?
 - What hand tools are used for measuring and drawing?
 - What hand tools are used for sanding?

Unit Goal: Students will be able to properly select and utilize the appropriate hand tools for the necessary task.

Duration of Unit: 4 weeks

NJCCCS: 9.4.12.B (2).17, 9.4.B.59, 61, 64, 75, 9.4.12.C.46, 9.4.12.M (3).3 – 9

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
Which tools are used for layout and measurement work?	Safe use of tools Appropriate tool for task	Lecture Various tools and scrap lumber for demonstration of techniques Current textbook T square, Try square, speed square, framing square, bench ruler, tape measure, marking gauge, pencil, awl Computer, projector with screen	Lecture and class discussion Reading assignment on hand tool usage and safety Demonstration Virtual fieldtrip	Student self assessment Unit test Performance test of material selection for desired purpose
Which hand tools are used for planing the edges and ends of lumber?	Sharpening of single edge tools Safe use of tools Select appropriate tool for task at hand Adjust tool when necessary for higher quality work	Grinding wheel, sharpening stones, oil, rags Block plane, bench plane, jack plane, fore plane, jointer plane Lecture Scrap lumber for demonstration of techniques Current textbook Computer, projector with screen	Streaming video Practice safe use of tools Select appropriate tool for task at hand Adjust tool when necessary for higher quality work	Performance test on tool selection and proper usage Safety rules for hand tool usage in notebook Final project Mid term exam
Which hand tools are used for cutting lumber?	Safe use of tools Select appropriate tool for task at hand Adjust tool when necessary for higher quality work	Rip saw, cross cut saw, back saw, coping saw, key hole saw Lecture Scrap lumber for demonstration of techniques Current textbook Computer, projector with screen		

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
Which hand tools are used for drilling and boring holes in stock?	<p>Safe use of tools</p> <p>Select appropriate tool for task at hand</p> <p>Adjust tool when necessary for higher quality work</p>	<p>Auger bit and brace, hand drill and bits, Gimlets</p> <p>Lecture</p> <p>Scrap lumber for demonstration of techniques</p> <p>Current textbook</p> <p>Computer, projector with screen</p>		
Which hand tool is utilized for sanding the cut and planed pieces?	<p>Safe use of tools</p> <p>Select appropriate tool for task at hand</p> <p>Adjust tool when necessary for higher quality work</p>	<p>Sanding block, sandpaper</p> <p>Lecture</p> <p>Scrap lumber for demonstration of techniques</p> <p>Current textbook</p> <p>Computer, projector with screen</p>		
<p>Suggestions on how to differentiate in this unit:</p> <ul style="list-style-type: none"> • Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods. • A wide variety of assessments and strategies complement the individual learning experience. • A hands-on approach to assignments and projects is recommended as the most effective method of learning. • Provide time for revision of work when students show need. • Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit. 				

Freehold Regional High School District
Cabinetmaking and Furniture design
Unit #7: Joinery / Fasteners

Enduring Understanding: Wood products use a variety of joinery techniques and fastening methods in their assembly.

- Essential Questions:** What joinery techniques are used to create different geometric shapes?
 What joinery techniques are used to connect lumber products together?
 What types of mechanical fasteners are used in wood product construction based upon the application?
 What types of glues and adhesives are used in wood product construction for interior as well as exterior applications?

Unit Goal: Students will be able to identify and utilize a variety of joinery techniques using a variety of mechanical fasteners.

Duration of Unit: 4 weeks

NJCCCS: 9.4.12.B (2).17, 9.4.12.M (1).7, 9.4.12.M (2).3 – 4

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What are joinery techniques?	Utilize appropriate joinery depending upon the application.	Lecture Sample pieces for various geometric shapes Sample pieces of various joints butt joint, lap joint, dado joint, rabbet joint, miter joint, spline joint, compound miter joint, etc Current textbook Computer, projector, and screen	Lecture and class discussion Reading assignment Demonstration Virtual fieldtrip to cabinet shop to show application and creation of various joinery techniques Streaming video of process of creating and using glues, adhesives and mechanical fasteners to connect project pieces	Student self assessment Unit test Performance test of material selection for desired purpose Performance test of proper joinery technique
What types of glues and adhesives are used in wood product construction?	Select and utilize appropriate glues and adhesive depending upon application	Lecture Sample pieces of various adhesives wood glue, resorcinol glue, polyurethane adhesive, hide glue, contact cement Current textbook Computer, projector, and screen		Performance test of appropriate glue and adhesive selection Final project
What types of mechanical fasteners are used in wood product construction?	Select and utilize necessary mechanical fasteners depending upon the application	Lecture Examples of various mechanical fasteners nails, screws, lag bolts, carriage bolts, hex bolts, dowels, splines, biscuits Current textbook Computer, projector, and screen		Mid term exam Final exam

- Suggestions on how to differentiate in this unit:**
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
 - A wide variety of assessments and strategies complement the individual learning experience.
 - A hands-on approach to assignments and projects is recommended as the most effective method of learning.
 - Provide time for revision of work when students show need.
 - Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.

**Freehold Regional High School District
Cabinetmaking and Furniture design
Unit #8: Power Tools / Machinery**

Enduring Understanding: Tools and machinery have specific functions and methods for usage.

- Essential Questions:** What portable power tools and machines are used in general woodworking?
 What portable power tools and machines are used for cutting?
 What portable power tools and machines are used for drilling and boring?
 What portable power tools and machines are used for routing and shaping?
 What portable power tools and machines are used for planing and jointing?
 What portable power tools and machines are used for sanding?

Unit Goal: Students will be able to properly select and safely utilize the appropriate portable power tool or machine for the task at hand.

Duration of Unit: 10 weeks

NJCCCS: 9.4.12.B (2).17, 9.4.B.59, 61, 64, 75, 9.4.12.C.46, 9.4.12.M (3).3 – 9

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
Which portable power tools and machines are used for planing the edges, ends and faces of lumber?	Safe use of tools and machines Appropriate tool/ machine for task at hand Tools within unit: Jointer, surfacer, porta plane, jig saw, band saw, tablesaw, radial arm saw, miter saw Battery drill, corded drill, drill press, mortiser, routers, shaper, bits, cutters, and variety of sanders	Lecture Machinery and scrap wood to demonstrate techniques Portable power tools and scrap wood to demonstrate techniques Jointer, surfacer, porta plane Current textbook Computer, projector, and screen	Lecture and class discussion Demonstration Reading assignment on hand tool usage and safety Demonstration	Safety test Performance test of machine/tool selection for desired purpose Performance test of safe use and operation of tools and machinery
Which portable power tools and machines are used for cutting lumber?	Machinery purpose Adjust tool/machine when necessary for higher quality work	Lecture Machinery and scrap wood to demonstrate techniques Portable power tools and scrap wood to demonstrate techniques Jig saw, band saw, tablesaw, radial arm saw, miter saw Current textbook Computer, projector, and screen	Virtual fieldtrip Streaming video Student self assessment Practice safe use of tools Select appropriate tool/machine for task at hand	Final project Safety rules for portable power tool and machinery usage in notebook Final project
Which portable power tools and machines are used for drilling and boring holes in stock?		Lecture Machinery and scrap wood to demonstrate techniques Portable power tools and scrap wood to demonstrate techniques Battery drill, corded drill, drill press, mortiser and various drills, hole saws and bits Current textbook Computer, projector, and screen	Utilize machinery for intended purpose	Mid term exam Final Exam

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
Which portable power tools and machines are used for adding decorative shapes and curves to the edges and ends of stock?		Lecture Machinery and scrap wood to demonstrate techniques Portable power tools and scrap wood to demonstrate techniques Routers, shaper, bits and cutters Current textbook Computer, projector, and screen		
Which portable power tools and machines are utilized for sanding the cut and planed pieces?		Lecture Machinery and scrap wood to demonstrate techniques Portable power tools and scrap wood to demonstrate techniques ¼ sheet sander, random orbit sander, spindle sander, belt sander, disc sander, portable belt sander, abrasive papers, discs, drums and belts Current textbook Computer, projector, and screen		

Suggestions on how to differentiate in this unit:

- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- A hands-on approach to assignments and projects is recommended as the most effective method of learning.
- Provide time for revision of work when students show need.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.

Freehold Regional High School District
Cabinetmaking and Furniture design
Unit #9: Assembly

Enduring Understanding: Methods of construction and assembly determine the difference in strength, quality and appearance.

- Essential Questions:** What are the methods of construction and assembly for drawers?
 What are the methods of construction and assembly for cabinet and furniture carcasses?
 What are the methods of construction and assembly for cabinet doors?
 How are veneers and plastic laminates used in the construction of furniture and cabinetry?

Unit Goal: Students will be able to properly assemble their pieces into a project using appropriate methodology.

Duration of Unit: 2.5 weeks

NJCCCS: 9.4.12.B (2).17, 9.4.12.M (1).7, 9.4.12.M (2).3 – 4,

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What are the methods of construction and assembly for drawers?	Meta box drawer boxes Dovetail and Rabbet construction Box and drawer front attachment Drawer slide hardware mounting	Lecture/ Demonstration notes Student handout Project pieces prepared for assembly Dovetail jig for router, dovetail bit, dovetail saw and chisel Glue, brush, wet paper towel Bar or pipe clamps Battery drill and drill bits Drawer slide hardware Current textbook Computer, projector with screen	Lecture and class discussion Demonstration of methods of construction and assembly for drawers. Virtual fieldtrip to cabinet shop Streaming video clip Hands-on activities detailing step by step process for each method of construction. Including: dovetail, rabbet, box and drawer, drawer slides, edge banding, toe box and carcass, dowelled rail and stile, mortise and tennon, and variety of panels	Written unit test Mid term exam Performance test of material selection and use for desired purpose Student self assessment Final exam Final project
What are the methods of construction and assembly for cabinet and furniture carcasses?	European style: edge banding, toe box and carcass Face frame and carcass	Lecture/ Demonstration notes Student handout Kreg jig, pocket holes, battery drill, screws Project pieces prepared for assembly Battery drill, drill bits Glue, brush, wet paper towels, bar or pipe clamps Edge banding machine, router with flush trim bit Current textbook Computer, projector with screen		

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What are the methods of construction and assembly for cabinet doors?	Dowelled rail and stile Pocket screwed rail and stile Mortise and tennon techniques Glass panel, Flat panel, Raised panel, Arched top raised panel	Lecture/ Demonstration notes Student handout Tennoning jig for tablesaw Mortiser Project pieces prepared for assembly Dowel pins, battery drill, glue and brush, wet paper towels, bar clamps or pipe clamps Current textbook Computer, projector with screen		
How are veneers and plastic laminates used in the construction of furniture and cabinetry?	Natural wood veneer application Plastic laminate Edge banding	Lecture/ Demonstration notes Student handout Project pieces prepared for assembly Contact cement, j roller, trim router with flush bit, veneer roller, masking tape, dowells, hide glue, edgebander Current textbook Computer, projector with screen		

Suggestions on how to differentiate in this unit:

- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- A hands-on approach to assignments and projects is recommended as the most effective method of learning.
- Provide time for revision of work when students show need.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.

Freehold Regional High School District
Cabinetmaking and Furniture design
Unit #10: Finishing

Enduring Understanding: The type of finish on a wood product will determine its durability and application.

- Essential Questions:** What types of finishes would be used for an interior type project?
 What type of finishes would be used for a project exposed to the weather outside?
 What are the types of solvents used in the various finishes?
 Explain the techniques for applying finish to a product.
 What are the procedures for cleaning up after applying finish to a project?

Unit Goal: Students will be able to properly select, apply, and cleanup stains and finishes required enhancing and protecting their project according to its intended purpose and use.

Duration of Unit: 2.5 weeks

NJCCCS: 9.4.12.B (2).17, 9.4.12.M (2).3 – 4

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What types of finishes would be used for an interior type project? What type of finishes would be used for a project exposed to the weather outside? What are the types of solvents used in the various finishes? Explain the techniques for applying finish to a product. What are the procedures for cleaning up after applying finish to a project?	Application of stain, clear wood finish, polyurethane, varnish, French polish, primer, and paint. Application and cleanup of finishing materials.	Lecture Stain, rags, gloves Clear Finish, brush, lacquer thinner Paint, brush, Wax, applicator and buffing cloth Chemical safety handouts, finishing handouts including cleanup directions and application suggestions Current textbook Computer, projector with screen Streaming video clips MSDS safety sheets	Lecture and class discussion Reading assignment on finishes and finishing methodologies Question and answer session Demonstration of proper application of stain, clear wood finish, polyurethane, varnish, French polish, primer, and paint Selection of appropriate protective coating per the application Proper application and cleanup of finishing materials. Video clips	Student self assessment Unit test Performance test of material selection for desired purpose Final exam Final project

Suggestions on how to differentiate in this unit:

- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- A hands-on approach to assignments and projects is recommended as the most effective method of learning.
- Provide time for revision of work when students show need.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.