Washington Township Public Schools
COURSE OF STUDY – CURRICULUM GUIDE

Course: Materials Processing and Production Systems

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Description:

The Materials Processing and Production Systems course is an introductory hands-on course dealing with construction methods, materials, and safety regulations. Students learn craftsmanship through established industry standards including the latest technological techniques. All skills and techniques acquired within the Materials Processing and Production Systems course are considered by industry professionals to be the fundamental knowledge for students pursuing advanced woodworking course work. Computer and Internet skills will also be enhanced through research projects and various computer-based activities. The 21st century work force skills in presentation, communication, mathematics, science, leadership, collaboration, and problem solving are emphasized and assessed in Materials Processing and Production Systems course work.

Jack McGee: *Interim Superintendent for Curriculum & Instruction*
Gretchen Gerber: *Director of Elementary Education*
Cleve Bryan: *Interim Director of Secondary Education*

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DEMONSTRABLE PROFICIENCIES

COURSE TITLE: Materials Processing and Production Systems

I. CLASSWORK REQUIREMENTS

A. Keep an organized folder, complete with written notes, handouts, worksheets, assignments and examples of class work.
B. In order to use any machine all safety quizzes must be completed with a 100% or a retake will be given.
C. Students must be attentive and effectively following directions.
D. Students must exhibit responsibility by bringing a pencil to class every day.
E. Student resource materials should be legible, well organized, and attention to detail must be noted.
F. Short-term problem applications will be assigned when appropriate.
G. Follow all safety and clean-up rules.
H. Students will take periodic tests and quizzes including a midterm and final exam.
I. When needed, students will be required to bring in supplemental funds for hardware, clock parts, etc.

II. ATTITUDE & BEHAVIOR

The student will demonstrate proper behavior as outlined in the school handbook. In addition to the general rules, special attention must be paid to safety in the classroom, following directions, listening skills, respect for others and their property, responsibility and proper work habits. Since there is a large amount of expensive and dangerous machinery in the classroom, appropriate student conduct is necessary to provide a quality and safe work environment. Students are expected to use tools, machines and computers for their intended use.

III. COURSE OBJECTIVES/OVERVIEW

A. **COURSE CONTENT**

1. Information
   a. Basic knowledge of technological systems.
   b. Knowledge and safe use of all tools, equipment and machines.
   c. Construction applications through the creation of various projects.

B. SKILLS

1. Safety
2. Project Planning
3. Measurement
4. Use of Hand Tools
5. Use of Power Tools
6. Project Construction and Assembly
7. Project Finishing
8. Manufacturing

C. APPRECIATION OF CONCEPTS

a. An appreciation for organization and orderliness of one's materials to enhance the expediency of performing a task.
b. An ability to analyze and reproduce select information.
c. The ability to adjust quickly to equipment, program, and procedure changes.
d. Increased awareness of the amount of planning and design that goes into the development, construction of any project.
e. The importance of selecting a career that is associated to personal interests.

IV. ATTENDANCE

Attendance: Refer to Board of Education Policy

V. GRADING PROCEDURES

A. Total Points- All assignments, projects, tests and quizzes will be given specific points based on a level of work/time required. Students will earn points for fulfilling the requirement for each activity. A rubric will be provided prior to each assignment/activity so that each student will know their value. Student marking period grades will be based on the points earned divided by the total points Assigned. The percentage of points earned will be the student's marking period grade.

B. Grading Criteria-

1. Class Participation
2. Class Work and Home Work
3. Tests and Quizzes
4. Individual Project Work
5. Group Project Work (consist of the final performance of your group's ability to meet requirements)

Semester 1 Grade (S1) is calculated: (50% of Y1) MP1=20%, MP2= 20%, Mid-term(X1) exam= 10%

Semester 2 Grade (S2) is calculated: (50% of Y1) MP3= 20%, MP4= 20%, Final (X2) exam = 10%

Final Grade (Y1) is calculated: S1 + S2 = Y1

MAJOR UNITS OF STUDY

Course Title: Materials Processing and Production Systems

I. Introduction to Course/ Lab Safety and Room Procedures
II. Properties and Characteristics of Wood
III. Designing, Planning and Measurement
IV. Hand Tools
V. Joinery/Fasteners
VI. Portable Power Tools
VII. Stationary Power Tools
VIII. Finishing Techniques

UNIT OVERVIEW

Course Title: **Materials Processing and Production Systems**

Unit #: Unit 1 **Unit Title:** Introduction to Course/Lab Safety and Room Procedures

Unit Description and Objectives:
Students are given a tour of the facilities with an emphasis safety. They are introduced to the resources at hand for the process of design and woodworking. An overview of the course is presented with emphasis on learning activities and types of issues that will be explored. Students are also told what to do and where to go in the event of an emergency. Basic classroom expectations regarding behavior and work ethic are discussed.

Essential Questions and Enduring Understandings:

Essential Questions:	Enduring Understandings/Generalizations Students will understand that:	Guiding Questions
1. What is the purpose of a facilities safety and health program?	1. The importance of following proper safety protocol	1.2 How should you dress when operating machinery in a shop? 1.3 What is the purpose of a "power cut-off switch?"
2. What is the purpose of facilities evacuation and lockdown protocol?	2. The district has a safety and evacuation program in place to keep them safe in a variety of different life threatening situations	2.1 Where does our class go during a lockdown? 2.2 What is the evacuation route for a fire drill?

CURRICULUM UNIT PLAN

Course Title/Grade: Materials Processing and Production Systems/ 9-12

Unit Number/Title: **Unit I- Introduction to Course/Lab Safety and Room Procedures**

Conceptual Lens:

Appropriate Time Allocation (# of Days)**:** 1 Week

Primary Content Standards referenced With Cumulative Progress Indicators			
9.3.12.AR 4	9.3.ST-ET.4		
9.3.12.AR.B4			
9.3.IT-SUP.2-3			

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
A. Classroom expectations 1. Behavior 2. Grading procedure 3. Attendance 4. Lateness 5. Housekeeping B. Egress/Evacuation 1. Fire Drill 2. Evacuation 3. Lock-down 4. Intruder C. Tools of the Lab 1. Work Benches/Vises 2. Measuring Tools 3. Hand Tools 4. Power Tools 5. Cabinets & Storage D. Lab Layout	1. What the consequences of unexcused lateness are. 2. What the procedures are for making up work after being absent. 3. Where to go during a fire drill. 4. Where to go and what to do during any of the	1. Explain what will happen on their third unexcused lateness of less than two minutes; of between 2 and 5 minutes; more than 5 minutes. 2. Locate the designated area(s) for all	1. Students go outside to observe the location of their designated area for a fire drill. 2. Students and teacher discuss the different emergencies and what to do and where to go under various circumstances. 3. Teacher demonstrates location of all	Student Handbook Textbook Students will be given a copy of -Course Proficiencies -General Safety Rules -Rules and Regulations of class(to be signed	9.3.12.AR 4 9.3.12.AR.B4 9.3.IT-SUP.2-3 9.3.ST-ET.4	8.2.a.1-3 8.2.b.1-6 8.2.c.1-3	**Formative Assessment:** 1. Safety Quiz **Summative Assessment** Benchmark- 1st Marking Period

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
E. Introduction to Course	other emergencies. 5. Where the tools and storage cabinets are located. 6. The general layout of the lab as it relates to their assigned seat. 7. The procedures for maintaining a clean lab. 8. How activities are evaluated.	emergencies. 3. Locate tools and storage cabinets within the design lab. 4. Sit in their assigned seats. 5. Maintain their individual work area as well as the lab with regard to proper clean-up after each period as required. 6. State the various categories used in the grade breakdown.	storage areas and tool cabinets. 4. Teacher demonstrates clean-up procedures. 5. Teacher discusses grading and evaluative processes. 6. Teacher/student discussion of current and/or past issues and problems in the areas of woodworking and construction.	by student and parent)			Midterm Exam

Unit Modifications for Special Population Students:

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
• Assist students in getting organized. • Give short directions. • Use drill exercises. • Give prompt cues during student performance. • Let students with poor writing skills use a computer. • Break assignments into small segments and assign only one segment at a time. • Demonstrate skills and have students model them. • Give prompt feedback. • Use continuous assessment to mark students' daily progress. • Prepare materials at varying levels of ability.	• Provide ample opportunities for creative behavior. • Create assignments that call for original work, independent learning, critical thinking, problem solving, and experimentation. • Show appreciation for creative efforts • Respect unusual questions, ideas, and solutions. • Encourage students to test their ideas. • Provide opportunities and give credit for self-initiated learning. • Avoid overly detailed supervision and too much reliance on prescribed curricula. • Allow time for reflection. • Resist immediate and constant evaluation. • Avoid comparisons to other students.	• Use a slow, but natural rate of speech; speak clearly; use shorter sentences; repeat concepts in several ways. • When possible, use pictures, photos, and charts. • Corrections should be limited and appropriate. Do not correct grammar or usage errors in front of the class. • Give honest praise and positive feedback through your voice tones and visual articulation whenever possible. • Encourage students to use language to communicate, allowing them to use their native language to ask/answer questions when they are unable to do so in English. • Integrate students' cultural background into class discussions. • Use cooperative learning where students have opportunities to practice expressing ideas without risking language errors in front of the entire class.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here.	• Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

			Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	

UNIT OVERVIEW

Course Title: **Materials Processing and Production Systems**

Unit #: Unit 2 **Unit Title:** Properties and Characteristics of Wood

Unit Description and Objectives:
In this unit the student will learn the history, physical properties and appropriate use of various materials.

Essential Questions and Enduring Understandings:

Essential Questions:	**Enduring Understandings/Generalizations Students will understand that:**	**Guiding Questions**
1. Where does wood come from?	1. The basis for all woodworking materials found in nature	1.1 How are forest materials produced? 1.2 Why forest products are considered a sustainable industry? 1.3 Why specific forest products are more suited to ertain applications than others

CURRICULUM UNIT PLAN

Course Title/Grade: Materials Processing and Production Systems/ 9-12

Unit Number/Title: **Unit 2- Properties and Characteristics of Wood**

Conceptual Lens:

Appropriate Time Allocation (# of Days)**:** 2 Weeks

Primary Content Standards referenced With Cumulative Progress Indicators

9.3.12.D(1).2-4	9.3.12.E.26		
9.3.12.E.2	9.3.12.E.30		
9.3.12.E.15	9.3.12.E.32		

Topics/Concepts (Incl. time / # days per topic)	Critical Content (Students Will Know:)	Skill Objectives (Students Will Be Able To:)	Instructional/Learning Activities & Interdisciplinary Connections	Instructional Resources	Technology & 21st C Skills Integration (Specify)	NJSLS w/ CPI Reference	Evaluation/ Assessment:
A. Wood in Our Environment 1. Uses for Wood 2. Trees in Our Environment B. The Lumber Industry 1. Harvesting Trees 2. Processing logs into Lumber 3. Seasoning Lumber 4. Wood Defects 5. Lumber C. Grading a. Hardwood b. Softwood D. Woods; Kinds, Uses and Identification	1. Lumber and plywood grading systems 2. Hardwoods and Softwoods 3. Lumber Production 4. The Use of engineered lumber products 5. Characteristics used in lumber and plywood grading systems 6. Applications of various sheet goods	1. Identify different types of lumber 2. Explain the process of creating usable lumber from logs 3. Explain what engineered lumber are used for 4. Explain how cabinet grade plywood is produced and graded 5. Identify the difference between a	1. Lecture and class discussion 2. Various video clips of lumber mill creating sheet goods, veneers, and lumber from logs 3. In class exercises 4. Practical labs	-Textbook -Projector -Computer -Handouts -Examples of various types of wood, sheet goods, and veneers	9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32	5.1.12.A.3 5.1.12.B.1 5.1.12.B.2 5.1.12.C.1	**Formative Assessment:** 1. Worksheets 2. Classroom exercises 3. Home work 4. Quizzes 5. Lab work 6. Skill assessments Building models **Summative Assessment** -Benchmark TEST

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
1. Classification 2. Veneers 3. Plywood 4. Manufactured E. Panels a. Hardboard b. Particleboard c. MDF d. Fiberboard		hard and softwood tree					-Midterm EXAM -Final Exam

Unit Modifications for Special Population Students:

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
• Assist students in getting organized. • Give short directions. • Use drill exercises. • Give prompt cues during student performance. • Let students with poor writing skills use a computer. • Break assignments into small segments and assign only one segment at a time. • Demonstrate skills and have students model them. • Give prompt feedback. • Use continuous assessment to mark students' daily progress. • Prepare materials at varying levels of ability.	• Provide ample opportunities for creative behavior. • Create assignments that call for original work, independent learning, critical thinking, problem solving, and experimentation. • Show appreciation for creative efforts • Respect unusual questions, ideas, and solutions. • Encourage students to test their ideas. • Provide opportunities and give credit for self-initiated learning. • Avoid overly detailed supervision and too much reliance on prescribed curricula. • Allow time for reflection. • Resist immediate and constant evaluation. • Avoid comparisons to other students.	• Use a slow, but natural rate of speech; speak clearly; use shorter sentences; repeat concepts in several ways. • When possible, use pictures, photos, and charts. • Corrections should be limited and appropriate. Do not correct grammar or usage errors in front of the class. • Give honest praise and positive feedback through your voice tones and visual articulation whenever possible. • Encourage students to use language to communicate, allowing them to use their native language to ask/answer questions when they are unable to do so in English. • Integrate students' cultural background into class discussions. • Use cooperative learning where students have opportunities to practice expressing ideas without risking language errors in front of the entire class.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines	• Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

			offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	

UNIT OVERVIEW

Course Title: **Materials Processing and Production Systems**

Unit #: Unit 3 **Unit Title:** Designing, Planning and Measurement

Unit Description and Objectives:
Explanation and demonstration of various types of design practices will take place. Students will learn how to make a bill of materials, a plan of procedure and select appropriate materials for their project. Common measuring tools will also be identified. Students will become familiar with these tools as they progress through the course. Through practical experience students will realize the importance of being able to read and understand a ruler.

Essential Questions and Enduring Understandings:

Essential Questions:	**Enduring Understandings/Generalizations Students will understand that:**	**Guiding Questions**
1. Why is it important to design and plan out you work	1. Planning is an essential component to design, construction, materials usage, and efficiency	1.1 What is the first step in making a design 1.2 How can a proper design plan save you money in materials
2. What is the difference between a metric and standard ruler	2 The ability to read and understand a ruler is extremely important.	2.1 How to convert fractional inches to decimal inches. 2.2 How to reach a standard ruler

CURRICULUM UNIT PLAN

Course Title/Grade: Materials Processing and Production Systems/ 9-12

Unit Number/Title: **Unit 3-Designning, Planning and Measurement**

Conceptual Lens:

Appropriate Time Allocation (# of Days)**:** 4 Weeks

Primary Content Standards referenced With Cumulative Progress Indicators			
9.1.12.A.1-4	9.3.12.D(1).2-4	9.3.12.E.26	
9.1.12.B.1-3	9.3.12.E.2	9.3.12.E.30	
9.1.12.C.1	9.3.12.E.15	9.3.12.E.32	

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
A. Planning your project 1. Obtain working drawing a. Views b. Scale c. Lines 2. Lumber needs a. Board feet b. Square feet c. Lineal feet 3. Bill of materials 4. Cutting list 5. Plan of Procedure B. Measuring and layout tools 1. Rules a. Tape measure	1. The definition of a working drawing 2. How to read a ruler 3. Describe the concept of scale 4. Identify the basic measuring and layout tools 5. How to use a square 6. The basic steps in planning a project	1. Demonstrate the proper use of measuring and layout tools 2. Read and use working drawings 3. Name and describe 5 types of lines commonly used on working drawings 4. Calculate board feet, square feet, and lineal feet	1. Lecture and class discussion 2. Measure several pieces of wood and calculate the board feet of each piece. 3. In class exercises 4. Practical labs 5. Assigned homework- students must measure different item in their house. 6. Students will have to make a three view drawing of a given object	-Textbook -Projector -Computer -Handouts -Examples of various types of drawings -Example of one board foot of material -Orthographic paper -Ruler, square, tape measure	9.1.12.A.1-4 9.1.12.B.1-3 9.1.12.C.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32	8.2.12.C.1, 8.2.12.C.2, 8.2.12.C.3 8.2.12.C.4 8.2.12.C.5 8.2.12.C.6 8.2.12.C.7 8.2.12.C.8	**Formative Assessment:** 1. Reading a ruler 2. Using a ruler to measure a given object 3. Drawing exercises 4. Math worksheets a. Calculating board, square, and lineal feet. b. Ratio and scale **Summative Assessment**

Topics/Concepts (Incl. time / # days per topic)	Critical Content (Students Will Know:)	Skill Objectives (Students Will Be Able To:)	Instructional/Learning Activities & Interdisciplinary Connections	Instructional Resources	Technology & 21st C Skills Integration (Specify)	NJSLS w/ CPI Reference	Evaluation/ Assessment:
b. Folding rules c. Bench rule 2. Reading a customary ruler 3. Reading a metric ruler 4. Squares a. Framing square b. Try square c. Combination square	7. The difference between a board, square, and lineal foot 8. The difference between scale and ratio	5. Prepare a bill of materials 6. Make a stock cutting list 7. Prepare a plan of procedure for constructing a project 8. Measure to the nearest 1/16” 9. Measure to the nearest mm					-Benchmark TEST -Midterm EXAM -Final Exam

Unit Modifications for Special Population Students:

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
• Assist students in getting organized. • Give short directions. • Use drill exercises. • Give prompt cues during student performance. • Let students with poor writing skills use a computer. • Break assignments into small segments and assign only one segment at a time. • Demonstrate skills and have students model them. • Give prompt feedback. • Use continuous assessment to mark students' daily progress. • Prepare materials at varying levels of ability.	• Provide ample opportunities for creative behavior. • Create assignments that call for original work, independent learning, critical thinking, problem solving, and experimentation. • Show appreciation for creative efforts • Respect unusual questions, ideas, and solutions. • Encourage students to test their ideas. • Provide opportunities and give credit for self-initiated learning. • Avoid overly detailed supervision and too much reliance on prescribed curricula. • Allow time for reflection. • Resist immediate and constant evaluation. • Avoid comparisons to other students.	• Use a slow, but natural rate of speech; speak clearly; use shorter sentences; repeat concepts in several ways. • When possible, use pictures, photos, and charts. • Corrections should be limited and appropriate. Do not correct grammar or usage errors in front of the class. • Give honest praise and positive feedback through your voice tones and visual articulation whenever possible. • Encourage students to use language to communicate, allowing them to use their native language to ask/answer questions when they are unable to do so in English. • Integrate students' cultural background into class discussions. • Use cooperative learning where students have opportunities to practice expressing ideas without risking language errors in front of the entire class.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can	• Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

			access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	

UNIT OVERVIEW

Course Title: **Materials Processing and Production Systems**

Unit #: Unit 4 **Unit Title:** Hand Tools

Unit Description and Objectives:
All of the various hand tools used for successful completion of the course will be described and demonstrated. Implications of incorrect tool usage will also be included in the discussion. Safe and correct use of hand tools will be practiced on a daily basis through project work.

Essential Questions and Enduring Understandings:

Essential Questions:	**Enduring Understandings/Generalizations Students will understand that:**	**Guiding Questions**
1. How do you determine which tools are most appropriate for a particular task?	1. Tools have specific functions and methods for usage	1. 1What are some of the hand tools commonly used in processing and production? 1.2 How do you decide what tool to use for a particular project?
2. How should the various hand tools be handled so that they are used safely and effectively?	2. There are specific techniques for using each hand tool correctly and safely.	2.1 How do you safely use a back saw? 2.2 How do you safely carry a tool throughout the classroom?

CURRICULUM UNIT PLAN

Course Title/Grade: Materials Processing and Production Systems/ 9-12

Unit Number/Title: **Unit 4- Hand Tools**

Conceptual Lens:

Appropriate Time Allocation (# of Days)**:** 2 weeks

Primary Content Standards referenced With Cumulative Progress Indicators

9.1.12.F.1	9.3.12.E.15	9.3.12.E.32	
9.3.12.D(1).2-4	9.3.12.E.26		
9.3.12.E.2	9.3.12.E.30		

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
A. Hand Saws 1. Crosscut saw 2. Rip saw 3. Back saw 4. Coping saw 5. Hack saw B. Shaping tools 1. Planes a. Jack plane b. Block plane c. Router plane d. Rabbet plane 2. Files a. Half-round b. Square c. Round 3. Chisels C. Assembling tools 1. Hammers a. Claw hammer b. Ripping hammer c. Framing hammer 2. Nail sets 3. Screw drivers 4. Nail guns a. Brad nail gun b. Finish nail gun	1. Which hand tools are used for cutting 2. Which saw is used for cutting metal 3. Which saw is used for cutting across the grain 4. Which saw is used for cutting straight lines 5. The difference between a jack and block plane 6. What a router plane is used for. 7. When to use a half-round file 8. The best time to use a framing hammer. 9. What a nail set is used for. 10. When to use a finish nail gun as opposed to a brad nail gun.	1. Properly use each hand saw. 2. Correctly carry a hand saw. 3. Adjust the blade on a block plane. 4. Cut a square end on a piece of wood 5. Insert a screw using a screw driver 6. Make a rabbet joint with a chisel. 7. Remove a nail using a claw hammer.	1. Lecture and class discussions. 2. Demonstrations on how to properly use each tool. 3. Practical labs 4. Students will make a rabbet, miter, and dado joint using hand tools. 5. Selecting appropriate tool for the task at hand. 6. Reading assignments on hand tool usage and safety	-Textbook -Projector -Computer -Handouts -Examples of each type of hand tool -Examples of projects made by hand tools	9.1.12.F.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32	8.2.12.D.1 8.2.12.D.3 8.2.12.D.5	**Formative Assessment:** 1. Safety quiz on hand tool usage. 2. Performance test on hand tool selection and proper usage. 3. Identification Quiz **Summative Assessment** -Benchmark TEST -Midterm EXAM -Final Exam

Unit Modifications for Special Population Students:

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
• Assist students in getting organized. • Give short directions. • Use drill exercises. • Give prompt cues during student performance. • Let students with poor writing skills use a computer. • Break assignments into small segments and assign only one segment at a time. • Demonstrate skills and have students model them. • Give prompt feedback. • Use continuous assessment to mark students' daily progress. • Prepare materials at varying levels of ability.	• Provide ample opportunities for creative behavior. • Create assignments that call for original work, independent learning, critical thinking, problem solving, and experimentation. • Show appreciation for creative efforts • Respect unusual questions, ideas, and solutions. • Encourage students to test their ideas. • Provide opportunities and give credit for self-initiated learning. • Avoid overly detailed supervision and too much reliance on prescribed curricula. • Allow time for reflection. • Resist immediate and constant evaluation. • Avoid comparisons to other students.	• Use a slow, but natural rate of speech; speak clearly; use shorter sentences; repeat concepts in several ways. • When possible, use pictures, photos, and charts. • Corrections should be limited and appropriate. Do not correct grammar or usage errors in front of the class. • Give honest praise and positive feedback through your voice tones and visual articulation whenever possible. • Encourage students to use language to communicate, allowing them to use their native language to ask/answer questions when they are unable to do so in English. • Integrate students' cultural background into class discussions. • Use cooperative learning where students have opportunities to practice expressing ideas without risking language errors in front of the entire class.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines	• Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

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UNIT OVERVIEW

Course Title: **Materials Processing and Production Systems**

Unit #: Unit 5 **Unit Title:** Joinery/Fasteners

Unit Description and Objectives:
Wood products use a variety of joinery techniques and fastening methods in their assembly. This unit deals with the most commonly used wood joints used in construction.

Essential Questions and Enduring Understandings:

Essential Questions:	**Enduring Understandings/Generalizations Students will understand that:**	**Guiding Questions**
1. What types of wood joints can be used during construction?	1. A wood joint is a method of holding two pieces of wood together.	1.1 When is it appropriate to use nails in a wood joint? 1.2 When is it appropriate to use wood glue?
2. What are the advantages and disadvantages of the various types of wood joints?	2. The type of wood joint used depends on the type of project being built and the desired effect (esthetics, durability, etc).	2.1 Where would you find a miter joint being used? 2.2 Which type of wood joint is most durable? 2.3 What type of wood joint would be best when constructing a picture frame?

CURRICULUM UNIT PLAN

Course Title/Grade: Materials Processing and Production Systems
Unit Number/Title: **Unit 5- Joinery/Fasteners**

Conceptual Lens:

Appropriate Time Allocation (# of Days) 3 weeks

Primary Content Standards referenced With Cumulative Progress Indicators			
9.2.12.A. 1-6			
9.3.12.C. 1-10			

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
A. Wood Joints 1. Butt joints a. End butt joint b. Edge butt joint 2. Miter joints 3. Rabbet joint 4. Dado joint 5. Lap joint 6. Dovetail joint 7. Box joint B. Adhesives 1. Adhesive safety 2. Common adhesives. a. Rubber cement b. Contact cement c. Hot glue d. Polyurethane glue e. White glue f. Yellow glue 3. Adhesive application C. Mechanical Fasteners 1. Nails a. Driving nails b. Pulling nails 2. Screws a. Pocket hole joinery 3. Staples	1. What are joinery techniques. 2. What types of glue and adhesives are used in wood product construction. 3. What types of mechanical fasteners are used in wood product construction 4. Which glue is best used outdoors 5. Which type of wood joint is commonly used on drawers	1. Create a wood joint using hand tools 2. Properly glue two pieces of wood together 3. Make a small project using hand tools 4. Properly remove a nail 5. Make a pocket hole joint 6. Safely apply contact cement to any given surface	1. Lecture and class discussions 2. Demonstration of proper usage, applications, and capabilities of various fasteners. 3. Video of process adhesives and fasteners to connect project pieces 4. Select and utilize appropriate glues and adhesives depending upon application 5. Select and utilize necessary mechanical fasteners depending upon the application	-Textbook -Projector -Computer -Handouts -Examples of each type of wood joint -Examples of projects made with various types of wood joints -Different types of glue -Examples of various types of mechanical fasteners	9.2.12.A.1-6 9.3.12.C.1-10	8.2.12.D.1 8.2.12.D.3 8.2.12.D.5	**Formative Assessment:** **Assessment:** 1 Worksheets 1. Classroom exercises 2. Home work 3. Quizzes 4. Lab work 5. Skill assessments **Summative Assessment** **-**Benchmark TEST **-**Midterm EXAM **-** Final Exam

Unit Modifications for Special Population Students:

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
• Assist students in getting organized. • Give short directions. • Use drill exercises. • Give prompt cues during student performance. • Let students with poor writing skills use a computer. • Break assignments into small segments and assign only one segment at a time. • Demonstrate skills and have students model them. • Give prompt feedback. • Use continuous assessment to mark students' daily progress. • Prepare materials at varying levels of ability.	• Provide ample opportunities for creative behavior. • Create assignments that call for original work, independent learning, critical thinking, problem solving, and experimentation. • Show appreciation for creative efforts • Respect unusual questions, ideas, and solutions. • Encourage students to test their ideas. • Provide opportunities and give credit for self-initiated learning. • Avoid overly detailed supervision and too much reliance on prescribed curricula. • Allow time for reflection. • Resist immediate and constant evaluation. • Avoid comparisons to other students.	• Use a slow, but natural rate of speech; speak clearly; use shorter sentences; repeat concepts in several ways. • When possible, use pictures, photos, and charts. • Corrections should be limited and appropriate. Do not correct grammar or usage errors in front of the class. • Give honest praise and positive feedback through your voice tones and visual articulation whenever possible. • Encourage students to use language to communicate, allowing them to use their native language to ask/answer questions when they are unable to do so in English. • Integrate students' cultural background into class discussions. • Use cooperative learning where students have opportunities to practice expressing ideas without risking language errors in front of the entire class.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning	• Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

			Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	

UNIT OVERVIEW

Course Title: **Materials Processing and Production Systems**

Unit #: Unit 6 **Unit Title:** Portable Power Tools

Unit Description and Objectives: Describe and demonstrate safe portable power tool usage. Discuss the design, application, and incorrect use of the various portable power tools.

Essential Questions and Enduring Understandings:

Essential Questions:	**Enduring Understandings/Generalizations Students will understand that:**	**Guiding Questions**
1. What are the safety hazards when working with portable power tools?	1. There are safety hazards when using portable power tools.	1.1 Why are safety glasses required when working in the lab?
2. What benefits do portable power tools have over basic hand tools?	2. It is essential to use each portable power tool correctly in order to ensure effectiveness and safety.	3. Why should you depress the start button of the portable power tools before you plug them in?
3. What are the most commonly used portable power tools?	3. Each portable power tool is designed for a specific function.	3.1 When routing all four edges of a board, which ones are done first? 3.2 Why should you use foam rubber under your work piece when sanding?
4. How do you determine which portable power tool is the best one for a particular task?		4.1 What is the purpose of the holes in the disc of the random orbit sander? 4.2 What are the three methods of guiding router?

CURRICULUM UNIT PLAN

Course Title/Grade: Materials Processing and Production Systems

Unit Number/Title: **Unit 6- Portable Power Tools**

Conceptual Lens:

Appropriate Time Allocation (# of Days)**:** 7 Weeks

Primary Content Standards referenced With Cumulative Progress Indicators

9.1.12.F.1	9.3.12.E.15	9.3.12.E.32	
9.3.12.D(1).2-4	9.3.12.E.26		
9.3.12.E.2	9.3.12.E.30		

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
A. Orbital, random orbit sanders 1. Safety, use, care 2. Changing the paper 3. Sanding techniques 4. Types of abrasives 5. Proper wood clamping 6. Tool clean-up & storage B. Belt sanders 1. Safety, use, care 2. Changing cloth belt 3. Sanding techniques	1. Identify all power tools they have seen in class and explain their use 2. Identify the various parts of power tools necessary to make adjustments and settings 3. Understand the importance of keeping	1. Demonstrate safe operation, care, and storage of the power tools that were used in this course 2. Properly change the belt on the belt sander 3. Safely change a router bit 4. Properly clamp down your work piece when	1. Lecture and class discussions. 2. Demonstrations on how to safely use each tool. 3. Practical labs 4. Selecting appropriate tool for the task at hand.	-Textbook -Projector -Computer -Handouts -Examples of each type of portable power tool -Examples of router bits -Different types orbital sand paper and belt sanders	9.1.12.F.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32	8.2.12.D.1 8.2.12.D.3 8.2.12.D.5	**Formative Assessment:** 1. Safety quiz on power tool usage. -Students must pass the safely quiz with a 100% before they are permitted to use the power tools. 2. Performance test on power tool selection

Topics/Concepts (Incl. time / # days per topic)	Critical Content (Students Will Know:)	Skill Objectives (Students Will Be Able To:)	Instructional/Learning Activities & Interdisciplinary Connections	Instructional Resources	Technology & 21st C Skills Integration (Specify)	NJSLS w/ CPI Reference	Evaluation/ Assessment:
4. Types of abrasives 5. Proper wood clamping 6. Tool clean-up & storage C. Electric drills 1. Safety, use, care 2. Changing drills 3. Drilling techniques 4. Proper wood clamping 5. Tool clean-up & storage D. Router 1. Safety, use, care 2. Cutter selection 3. Changing router bits 4. Tool set-up & adjustment 5. Routing techniques 6. Tool clean-up & storage E. Saber saw 1. Safety, use, care	the power tools clean 4. The difference between a wood and metal blade hen using the saber saw	using these tools 5. Safely change a drill bit 6. Safely change the blade on a saber saw					and proper usage. 3. Identification Quiz **Summative Assessment** -Benchmark TEST -Midterm EXAM -Final Exam

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
2. Saw blade selection 3. Changing saw blade 4. Tool set-up & adjustment 5. Techniques for sawing							

Unit Modifications for Special Population Students:

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
• Assist students in getting organized. • Give short directions. • Use drill exercises. • Give prompt cues during student performance. • Let students with poor writing skills use a computer. • Break assignments into small segments and assign only one segment at a time. • Demonstrate skills and have students model them. • Give prompt feedback. • Use continuous assessment to mark students' daily progress. • Prepare materials at varying levels of ability.	• Provide ample opportunities for creative behavior. • Create assignments that call for original work, independent learning, critical thinking, problem solving, and experimentation. • Show appreciation for creative efforts • Respect unusual questions, ideas, and solutions. • Encourage students to test their ideas. • Provide opportunities and give credit for self-initiated learning. • Avoid overly detailed supervision and too much reliance on prescribed curricula. • Allow time for reflection. • Resist immediate and constant evaluation. • Avoid comparisons to other students.	• Use a slow, but natural rate of speech; speak clearly; use shorter sentences; repeat concepts in several ways. • When possible, use pictures, photos, and charts. • Corrections should be limited and appropriate. Do not correct grammar or usage errors in front of the class. • Give honest praise and positive feedback through your voice tones and visual articulation whenever possible. • Encourage students to use language to communicate, allowing them to use their native language to ask/answer questions when they are unable to do so in English. • Integrate students' cultural background into class discussions. • Use cooperative learning where students have opportunities to practice expressing ideas without risking language errors in front of the entire class.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines	• Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

			offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	

UNIT OVERVIEW

Course Title: **Materials Processing and Production Systems**

Unit #: Unit 7 **Unit Title:** Stationary Power Tools

Unit Description and Objectives:
Describe and demonstrate safe machine uses. Discuss the correct and incorrect methods of operating each machine as it is demonstrated. Various applications of each machine will be included in the demonstrations.

Essential Questions and Enduring Understandings:

Essential Questions:	**Enduring Understandings/Generalizations Students will understand that:**	**Guiding Questions**
1. What are the safety hazards when working with stationary power tools?	1. There are safety hazards when using stationary power tools.	1. What safety procedures are most relevant when working with stationary power tools?
2. What benefits do stationary power tools have over basic hand tools or portable power tools?	2. It is essential to use each stationary power tool correctly in order to ensure effectiveness and safety.	2.What should you do when drilling a hole in round stock on a drill press?
3. What are the most commonly used stationary power tools?	3. Each stationary power tool is designed for a specific function.	3. What types of cuts can be performed on a table saw?
4. How do you determine which stationary power tool is the best one for a particular task?	4. Stationary power tools require much more maintenance than other types of tools in order to function optimally.	4. How would you clean up after using a table saw?

CURRICULUM UNIT PLAN

Course Title/Grade: Materials Processing and Production Systems/9-12

Unit Number/Title: **Unit 7- Stationary Power Tools**

Conceptual Lens:

Appropriate Time Allocation (# of Days)**:** 13 Weeks

Primary Content Standards referenced With Cumulative Progress Indicators			
9.1.12.F.1	9.3.12.E.15	9.3.12.E.32	
9.3.12.D(1).2-4	9.3.12.E.26		
9.3.12.E.2	9.3.12.E.30		

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
A. Table Saw 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Table saw blades a. Changing the blade b. Types of blades 3. Types of cuts a. Crosscutting b. Ripping c. Beveling d. Mitering e. Cutting a rabbet & dado B. Band saw 1. Safety a. Before turning on power	1. How to exhibit a positive attitude toward the safe use of each machine and its' capabilities 2. How to explain machine set-ups and simple adjustments necessary to utilize these machines with	1. Identify each machine in the lab and explain what processes can be performed on them. 2. Exhibit a positive attitude toward the safe use of each machine and its' capabilities. 3. Demonstrate their ability to manipulate	1. Lecture and class discussion definitions will be given for new terms and the students will begin to develop a vocabulary. 2. Questions and answers Reading assignments from the text. Demonstration of each power tool with an emphasis on safety.	-Textbook -Projector -Computer -Handouts -Examples of each type of machine -Examples of router bits -Examples of different types drum sand paper and belt sanders -Examples of blades and parting tools -Sample projects made using	9.1.12.F.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32	8.2.12.D.1 8.2.12.D.3 8.2.12.D.5	**Formative Assessment:** 1. Safety quiz on power tool usage. -Students must pass the safely quiz with a 100% before they are permitted to use the power tools. 2. Performance test on power tool selection and proper usage. 3. Identification Quiz

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
b. While cutting c. Finishing the job 2. Band saw blades a. Changing the blade b. Types of blades 3. Types of cuts a. Relief cuts b. Resawing c. Cutting curves C. Scroll Saw 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Scroll saw blades a. Changing the blade b. Types of blades 3. Types of cuts a. Internal & external cuts b. Stack cutting c. Inlay cutting	different types of materials 3. How to make adjustments necessary for safe operation of these machines 4. How to properly clean each machine after use and prepare each machine for later operations	these machines to accomplish tasks that would otherwise take greater time if hand tools were used. 4. Explain machine set-ups and simple adjustments necessary to utilize these machines with different types of materials. 5. Make adjustments necessary for safe operation of these machines. 6. Make adjustments necessary for safe	3. The demonstration may include such materials as wood, plastic, metal, paper, and other materials available in the shop. 4. Information sheets will be given to each student and safe techniques will be explained. 5. Students use each machine under the direction and observation of the teacher. 6. Students take a quiz on each machine.	these machine			**Summative Assessment** -Benchmark TEST -Midterm EXAM -Final Exam

Topics/Concepts (Incl. time / # days per topic)	Critical Content (Students Will Know:)	Skill Objectives (Students Will Be Able To:)	Instructional/Learning Activities & Interdisciplinary Connections	Instructional Resources	Technology & 21st C Skills Integration (Specify)	NJSLS w/ CPI Reference	Evaluation/ Assessment:
D. Miter Saw 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Miter saw blades a. Changing the blade b. Types of blades 3. Types of cuts a. Miter cut b. Bevel cut c. Straight cut 4. Clamping accessories E. Jointer 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Types of cuts a. Edge b. End grain c. Surface d. Rabbeting 3. Adjusting the jointer		operation of these machines. 7. Properly clean each machine after use and prepare each machine for later operations. 8. Identify the need for proper attitude and awareness while operating any power machine. **9.** Develop a self awareness while in the lab around machines in operation and wear safety					

Topics/Concepts (Incl. time / # days per topic)	Critical Content (Students Will Know:)	Skill Objectives (Students Will Be Able To:)	Instructional/Learning Activities & Interdisciplinary Connections	Instructional Resources	Technology & 21st C Skills Integration (Specify)	NJSLS w/ CPI Reference	Evaluation/ Assessment:
a. Fence b. Infeed table c. Outfeed table F. Planer 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Adjusting the planer a. Table height b. Feed rate G. Drill Press 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Types of bits a. Twist b. Forstner c. Brad point d. Paddle 3. Types of cutting a. Large holes b. Small holes c. Deep holes		glasses at all times whether working on a machine or just watching someone else.					

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
4. Types of material a. Flat stock b. Round stock c. Small stock H. Router Table 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Types of bits 3. Adjustments I. Belt Sander 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Types of abrasive paper a. Changing the belt J. Drum Sander 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Types of abrasive paper							

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
3. Changing the drums K. Lathe 1. Safety a. Before turning on power b. While cutting c. Finishing the job 2. Woodturning tools a. Gouge b. Skew c. Parting tool d. Round nose, spear point, & flat nose 3. Woods for woodturning a. Gluing stock 4. Types of turning a. Spindle turning b. Headstock turning c. Duplicating 5. Sanding 6. Finishing							

Unit Modifications for Special Population Students:

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
• Assist students in getting organized. • Give short directions. • Use drill exercises. • Give prompt cues during student performance. • Let students with poor writing skills use a computer. • Break assignments into small segments and assign only one segment at a time. • Demonstrate skills and have students model them. • Give prompt feedback. • Use continuous assessment to mark students' daily progress. • Prepare materials at varying levels of ability.	• Provide ample opportunities for creative behavior. • Create assignments that call for original work, independent learning, critical thinking, problem solving, and experimentation. • Show appreciation for creative efforts • Respect unusual questions, ideas, and solutions. • Encourage students to test their ideas. • Provide opportunities and give credit for self-initiated learning. • Avoid overly detailed supervision and too much reliance on prescribed curricula. • Allow time for reflection. • Resist immediate and constant evaluation. • Avoid comparisons to other students.	• Use a slow, but natural rate of speech; speak clearly; use shorter sentences; repeat concepts in several ways. • When possible, use pictures, photos, and charts. • Corrections should be limited and appropriate. Do not correct grammar or usage errors in front of the class. • Give honest praise and positive feedback through your voice tones and visual articulation whenever possible. • Encourage students to use language to communicate, allowing them to use their native language to ask/answer questions when they are unable to do so in English. • Integrate students' cultural background into class discussions. • Use cooperative learning where students have opportunities to practice expressing ideas without risking language errors in front of the entire class.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines	• Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

			offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	

UNIT OVERVIEW

Course Title: **Materials Processing and Production Systems**

Unit #: Unit 8 **Unit Title:** Finishing Techniques

Unit Description and Objectives: Describe the various types of finishes that can be used on wood projects. Demonstrate proper prepping and application techniques.

Essential Questions and Enduring Understandings:

Essential Questions:	**Enduring Understandings/Generalizations Students will understand that:**	**Guiding Questions**
1. What are the various types of finishing techniques that can be used on a wood product?	1. The type of finish on a wood product will determine its application and durability.	1. Which finish would you use to stain wood?
2. What are the correct procedures for applying the various types of finishes to wood products?	2. It is important to prep the wood project and apply the finish appropriately in order to ensure desired effect.	2. When applying polyurethane what type of brush should you use?

3. What are the safety procedures involved when working with wood finishes?	2. Proper ventilation is very important when applying finish to a product in order to ensure health and safety.	3. What is the proper way to dispose of used rags?

CURRICULUM UNIT PLAN

Course Title/Grade: Materials Processing and Production Systems/9-12

Unit Number/Title: **Unit 8- Finishing**

Conceptual Lens:

Appropriate Time Allocation (# of Days)**:** 5 Weeks

Primary Content Standards referenced With Cumulative Progress Indicators			
9.1.12.F.1	9.3.12.E.15	9.3.12.E.32	
9.3.12.D(1).2-4	9.3.12.E.26		
9.3.12.E.2	9.3.12.E.30		

Topics/Concepts (Incl. time / # days per topic)	**Critical Content (Students Will Know:)**	**Skill Objectives (Students Will Be Able To:)**	**Instructional/Learning Activities & Interdisciplinary Connections**	**Instructional Resources**	**Technology & 21st C Skills Integration (Specify)**	**NJSLS w/ CPI Reference**	**Evaluation/ Assessment:**
A. Supplies 1. Abrasives a. Sand paper b. Steel wool 2. Rags 3. Brushes a. Bristle brushes b. Foam brushes 4. Solvents and thinners B. Types of finishes 1. Penetrating oils a. Oil based b. Water based c. Food safe 2. Surface finish	1. What types of finishes would be used on an interior project. 2. What types of finishes would be used for a project exposed to the elements. 3. What are the types of solvents used in various finishes. 4. How to explain the	1. Prepare their project for their desired finish. 2. Follow all the safety guidelines when working with paints and stains. 3. Understand the dangers of improper ventilation. 4. Repair any damage or mill marks	1. Lecture and class discussions. 2. Demonstrations on how to properly apply finish to a project 3. Practical labs 4. Students will apply stain and Polyacrylic to their own project. 5. Selecting appropriate brushes for finish being applied 6. Reading assignments	-Textbook -Projector -Computer -Handouts -Examples of each type of finish -Examples of projects that have been stain and painted -Color samples of each stain -Different types of rags and brushes	9.1.12.F.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32	8.2.12.D.1 8.2.12.D.3 8.2.12.D.5	**Formative Assessment:** 1. Worksheets 2. Classroom exercises 3. Home work 4. Quizzes 5. Lab work 6. Skill assessment **Summative Assessment** -Benchmark TEST

Topics/Concepts (Incl. time / # days per topic)	Critical Content (Students Will Know:)	Skill Objectives (Students Will Be Able To:)	Instructional/Learning Activities & Interdisciplinary Connections	Instructional Resources	Technology & 21st C Skills Integration (Specify)	NJSLS w/ CPI Reference	Evaluation/ Assessment:
a. Polyacrylic b. Polyurethane 3. Paints C. Techniques 1. Applying stains & clear finishes 2. Applying paints & enamels 3. Safety a. Proper ventilation b. Safety glasses c. Proper clean-up	techniques for applying finish to a product. 5. The procedures for cleaning up after applying finish to a project.	prior to applying stain. 5. Properly clean the work area and clean their brush when finishing is complete.	finish application				-Midterm EXAM - Final EXAM

Unit Modifications for Special Population Students:

Struggling Learners	Gifted and Talented Students (Challenge Activities)	English Language Learners	Learners with an IEP	Learners with a 504
• Assist students in getting organized. • Give short directions. • Use drill exercises. • Give prompt cues during student performance. • Let students with poor writing skills use a computer. • Break assignments into small segments and assign only one segment at a time. • Demonstrate skills and have students model them. • Give prompt feedback. • Use continuous assessment to mark students' daily progress. • Prepare materials at varying levels of ability.	• Provide ample opportunities for creative behavior. • Create assignments that call for original work, independent learning, critical thinking, problem solving, and experimentation. • Show appreciation for creative efforts • Respect unusual questions, ideas, and solutions. • Encourage students to test their ideas. • Provide opportunities and give credit for self-initiated learning. • Avoid overly detailed supervision and too much reliance on prescribed curricula. • Allow time for reflection. • Resist immediate and constant evaluation. • Avoid comparisons to other students.	• Use a slow, but natural rate of speech; speak clearly; use shorter sentences; repeat concepts in several ways. • When possible, use pictures, photos, and charts. • Corrections should be limited and appropriate. Do not correct grammar or usage errors in front of the class. • Give honest praise and positive feedback through your voice tones and visual articulation whenever possible. • Encourage students to use language to communicate, allowing them to use their native language to ask/answer questions when they are unable to do so in English. • Integrate students' cultural background into class discussions. • Use cooperative learning where students have opportunities to practice expressing ideas without risking language errors in front of the entire class.	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can	• Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

			access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org	

Cross-Content Standards Analysis

Course Title: Materials Processing and Production Systems **Grade:** 9-12

Unit Title:	Visual and Performing Arts	Comp. Health & Physical Ed.	Language Arts Literacy	Mathematics	Science	Social Studies	World Languages	Tech Literacy	Career Education/ Consumer, Family, & Life Skills
Intro to Course and Room Procedures	1.1.2.D.1 1.1.2.D.2		NJSLS: Gr.11-12, RST 4 NJSLS: Gr.11-12, RST 3 NJSLS: Gr.11-12, WHST 10 NJSLS: Gr.11-12, WHST 1.c					8.2A3	9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32
Problem Solving Using the Design Loop	**1.1.2.D.1** **1.1.2.D.2**		CSS: Gr.11-12, RST 1 NJSLS: Gr.11-12, RST 3 NJSLS: Gr.11-12, RST 4 NJSLS: Gr.11-12, RST 8 NJSLS: Gr.11-12, WHST 1.a NJSLS: Gr.11-12	NJSLS: Gr.11-12 N-Q, 1-3	5.1.12.A.3 5.1.12.A.2 5.1.12.A.1 5.1.12.B.1 5.1.12.B.2 5.1.12.D.1	6.1.12.C.12.d 6.1.12.C.16.a 6.2.12.C.3.d 6.2.12.C.4.b 6.2.12.B.6.a 6.2.12.C.6.b 6.2.12.C.6.		8.1B12, 8.2B6,C1-3	9.1.12.A.1-4 9.1.12.B.1-3 9.1.12.C.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32
Designing, Drawing, and Planning Your Work	**1.1.2.D.1** **1.1.2.D.2**		CSS: Gr.11-12, RST 1 NJSLS: Gr.11-12, RST 3 NJSLS: Gr.11-12, RST 4 NJSLS: Gr.11-12, RST 8 NJSLS: Gr.11-12, WHST 1.a NJSLS: Gr.11-12	NJSLS: Gr.11-12 N-Q, 1-3	5.1.12.A.3 5.1.12.A.2 5.1.12.A.1 5.1.12.B.1 5.1.12.B.2 5.1.12.D.1	6.1.12.C.12.d 6.1.12.C.16.a 6.2.12.C.3.d 6.2.12.C.4.b 6.2.12.B.6.a 6.2.12.C.6.b 6.2.12.C.6.			9.1.12.A.1-4 9.1.12.B.1-3 9.1.12.C.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30

									9.3.12.E.32
Measuring			NJSLS: Gr.11-12, RST 3 NJSLS: Gr.11-12, RST 4 NJSLS: Gr.11-12, WHST 1.c	NJSLS: Gr.11-12 N-Q, 1-3	5.4C15.1.12.A.3 5.1.12.A.2 5.1.12.A.1 5.1.12.B.1 5.1.12.B.2 5.1.12.D.1	6.1.12.C.12.d 6.1.12.C.16.a 6.2.12.C.3.d 6.2.12.C.4.b 6.2.12.B.6.a 6.2.12.C.6.b 6.2.12.C.6.			
Hand Tools		2.1.2.D.1 2.1.4.D.1 2.1.6.D.1 2.2.6.B.1 2.2.6.B.2 2.5.P.A.1 2.5.P.A.2	NJSLS: Gr.11-12, RST 3 NJSLS: Gr.11-12, RST 4 NJSLS: Gr.11-12, WHST 1.a		5.1.12.A.1 5.1.12.B.1 5.1.12.B.2	6.1.12.C.12.d 6.1.12.C.16.a 6.2.12.C.3.d 6.2.12.C.4.b 6.2.12.B.6.a 6.2.12.C.6.b 6.2.12.C.6.d			9.1.12.F.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32
Portable Power Tools		2.1.2.D.1 2.1.4.D.1 2.1.6.D.1 2.2.6.B.1 2.2.6.B.2 2.5.P.A.1 2.5.P.A.2	NJSLS: Gr.11-12, RST 3 NJSLS: Gr.11-12, RST 4 NJSLS: Gr.11-12, WHST 1.a		5.1.12.A.1 5.1.12.B.1 5.1.12.B.2	6.1.12.C.12.d 6.1.12.C.16.a 6.2.12.C.3.d 6.2.12.C.4.b 6.2.12.B.6.a 6.2.12.C.6.b 6.2.12.C.6.d			9.1.12.F.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32
Machine Processes	1.1.2.D.1 1.1.2.D.2	**2.1.2.D.1** **2.1.4.D.1** **2.1.6.D.1** **2.2.6.B.1** **2.2.6.B.2** **2.5.P.A.1** **2.5.P.A.2**	NJSLS: Gr.11-12, RST 3 NJSLS: Gr.11-12, RST 4 NJSLS: Gr.11-12, WHST 1.a NJSLS: Gr.11-12, WHST 1.c NJSLS: Gr.11-12, WHST 6	NJSLS: Gr.11-12 N-Q, 1-3	5.1.12.A.1 5.1.12.B.1 5.1.12.B.2	6.1.12.C.12.d 6.1.12.C.16.a 6.2.12.C.3.d 6.2.12.C.4.b 6.2.12.B.6.a 6.2.12.C.6.b 6.2.12.C.6.d			9.1.12.F.1 9.3.12.D(1).2-4 9.3.12.E.2 9.3.12.E.15 9.3.12.E.26 9.3.12.E.30 9.3.12.E.32 9.3.12.E.32
Assembling With Fasteners	1.1.2.D.1 1.1.2.D.2	2.1.2.D.1 2.1.4.D.1 2.1.6.D.1 2.2.6.B.1 2.2.6.B.2 2.5.P.A.1 2.5.P.A.2	NJSLS: Gr.11-12, RST 3 NJSLS: Gr.11-12, RST 4 NJSLS: Gr.11-12, WHST 1.a NJSLS: Gr.11-12, WHST 1.c	N-Q, 1-3 NJSLS: Gr.11-12	5.1.12.A.3 5.1.12.A.2 5.1.12.A.1 5.1.12.B.1 5.1.12.B.2 5.1.12.D.1	6.1.12.C.12.d 6.1.12.C.16.a 6.2.12.C.3.d 6.2.12.C.4.b 6.2.12.B.6.a 6.2.12.C.6.b 6.2.12.C.6.d		8.1A1, 8.2C1-3	9.2.12.A.1-6 9.3.12.C.1-10

			NJSLS: Gr.11-12, WHST 6						

***All content areas may not be applicable in a particular course.**

Technology	1 (1, 2, 3, 4, 5, 6)	7 (1, 2, 3, 4, 5, 6)
Foundation	2 (1, 2, 3, 4, 5)	8 (4, 5)
Standards for Students (NETS)	3 (2, 4, 5)	9 (1, 2, 3, 4, 5, 6)
	4 (2, 4)	10 (4, 5, 6)
	5 (3, 4)	
	6 (4, 5)	

Washington Township Public Schools
Department of Student Personnel Services

CURRICULUM MODIFICATION

The regular curriculum is modified for Special Education students enrolled in both self-contained and resource center classes.

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- Variation of output: adapting how a student can respond to instruction
- Variation of size: adapting the number of items the student is expected to complete
- Modifying the content, process or product

Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here.

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