**WESTFIELD PUBLIC SCHOOLS**

Westfield, New Jersey

***Office of Instruction***

Course of Study

**WOODWORKING I - #9460**

School Westfield High School

Department Practical Arts

Length of Course Full Year

Credit. 5.0

Grade Level 9, 10, 11, 12

Date

**I. RATIONALE, DESCRIPTION AND PURPOSE**

Woodworking I is an introductory, hands-on course that provides students with opportunities to explore and develop competencies in the area of woodworking design, materials, processes, tools, machine operations, and safety. Students learn craftsmanship through established industry practices. The skills and techniques acquired include the fundamental knowledge needed for students pursuing advanced woodworking course work or to further explore as an interest or vocation in the future.

Through the course students develop and use practical skills, critical thinking, communication skills, problem solving, self-assessment, math, science, collaboration and individual learning strategies that aid them in other areas of study, future woodworking classes, and in everyday life. This course teaches students to develop safe workforce practices, to recognize those elements of work that produce quality finished projects students can take pride in constructing, to become better informed consumers regarding woodworking products, and to become aware of the world-wide environmental impact of utilizing renewable materials.

The skills and knowledge are introduced through the design and construction of individual projects. Students develop the skills and knowledge to be able to design, plan and produce finished projects that may have originated as an idea or need. Students utilize a variety of resources in the areas of project design and construction and fabrication methods and to develop the plans and procedures necessary for project completion.

**II. COURSE OBJECTIVES**

The Woodworking I curriculum is aligned with the New Jersey Current Core Curriculum Standards for 21st Century Life and Careers. Woodworking I curriculum offers inter-disciplinary integration with the Common Core Standards for English Language Arts and Literacy, Mathematics, and the New Jersey Core Curriculum Standards for Health, 21st Century Life & Careers – Career and Technical Education, College and Career Readiness Practices, Visual and Performing Arts and Technology.

Students:

1. Demonstrate a “Safety First” attitude and explain the importance of maintaining

a safe, clean working environment

*NJ Core Curriculum Standards for Health and Physical Education 2.1.12.,D.1*

*NJ Core Curriculum Standards for 21st Century Life and Careers -- Career and Technical*

*Education 9.3.ST., 9.3.MN.3, 9.3.MN-MIN.2, 9.3.MN-PRO.5*

1. Explain woodworking technology as it applies to the production, selection and

use of wood products

*NJ Core Curriculum Standards for 21st Century Life and Careers, Career and Technical*

*Education 9.3.MN-PPD.1 9.3,.MN-PPD.2 , 9.3.MN-LOG.2*

1. Demonstrate the correct use of tools and process to design and develop a set of

plans for project construction

*NJ Core Curriculum Standards for English Language Arts & Literacy in History, Social Studies,*

 *Science and Technical Subjects WHST.9-10.4 , NJSLSA,.W2 , CCRW.7*

*NJ Core Curriculum Standards for Visual and Performing Arts Standard 1.1 , 1.3*

*NJ Core Curriculum Standards for Technology 1.1 8.2.12.C.5 ,*

*NJ Core Curriculum Standards for College and Career Ready Practices CRP6 , CRP7*

*NJ Core Curriculum Standards for 21st Century Life and Careers -- Career and Technical*

 *Education 9.2.ST-ET.4 , 9.3.ST-SM.2 9.3.ST.1 , 9.3.MN.PPD.5 9.3.12.AC.1*

1. Utilize proper tools and processes to measure and layout sizes and shapes of

projects

*NJ Core Curriculum Standards for 21st Century Life and Careers -- Career and Technical*

*Education 9.3.MN HSE.1*

*NJ Core Curriculum Standards for Mathematics A-CED-A.1, G-CO.12 , G-MG-A.3 , SMP1, SMP6*

1. Understand machine and tool operations and utilize the most applicable tools to

 cut, shape and form project parts

*NJ Core Curriculum Standards for 21st Century Life and Careers -- Career and Technical*

 *Education 9.3.MN HSE.1, 9.3-MN-MIR.1 , 9.3.MN-MIN-2*

*NJ Core Curriculum Standards for College and Career Ready PracticesCRP11 -- Use*

*technology to enhance productivity*

1. Analyze and select the best methods for fabricating projects utilizing wood joints,

 adhesives and mechanical fasteners.

*NJ Core Curriculum Standards for English Language Arts & Literacy in History, Social Studies,*

*Science and Technical Subjects NJSLSA.R.4 RST.9-10.4 , NJSLSA.R4*

1. Select and apply the most suitable assembly technique for project fabrication

*NJ Core Curriculum Standards for English Language Arts & Literacy in History, Social Studies,*

*Science and Technical Subjects NJSLSA.R.4, RST.9-10.4 , NJSLSA.R4*

1. Select and use finishes and finishing techniques most appropriate for the project

*NJ Core Curriculum Standards for English Language Arts & Literacy in History, Social Studies,*

*Science and Technical Subjects NJSLSA.R.4, RST.9-10.4 , NJSLSA.R4*

1. Produce a finished project that demonstrates good craftsmanship techniques in a

timely manner

*NJ Core Curriculum Standards for English Language Arts NJSLSA..*

*NJ Core Curriculum Standards for Mathematics SMP6*

*NJ Core Curriculum Standards for Visual and Performing Arts Standard 1.1 , 1.3*

*NJ Core Curriculum Standards for College and Career Ready Practices CRP6 CRP7, CRP8, CRP11*

*NJ Core Curriculum Standards for 21st Century Life and Careers -- Career and Technical*

*Education 9.3.ST. 9.2.ST-ET.4 , 9.3-MN-PPD.1 , 9.3.MN.PP9.3.12.AC-DES.2,*

1. Utilize design and construction standards of the industry to evaluate project work

and to make corrections and improvements needed to produce quality work

*NJ Core Curriculum Standards for Visual and Performing Arts Standard 1.1 1.3 ,*

 *NJ Core Curriculum Standards for College and Career Ready Practices CRP6 , CRP8*

*NJ Core Curriculum Standards for 21st Century Life and Careers -- Career and Technical*

*Education 9.3.ST.1, 9.2.ST-ET.4 , 9.3-MN-PPD.1, 9.3.MN.PPD.5 , 9.3-MN-PPD.1,*

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1. Utilize special materials and processes during project construction

*NJ Core Curriculum Standards for English Language Arts & Literacy in History, Social Studies,*

*Science and Technical Subjects NJSLSA.R.4 , RST.9-10.4 ,*

1. Recognize tool and machine operations which may require adjustment or

maintenance and to be able to perform simple maintenance

*NJ Core Curriculum Standards for 21st Century Life and Careers -- Career and Technical*

*Education 9.3.MN-HSE., 9.3-MN-MIR.1 , 9.3-MN-MIR.3 , 99.3.MN-QA.5*

1. Identify careers and career training.

*NJ Core Curriculum Standards for 21st Century Life and Careers -- Career and Technical*

*Education 9.3.MN.*

**III. CONTENT, SCOPE AND SEQUENCE**

The Woodworking I class provides learning experiences that enable students to create, design and construct individual projects that meet a personal need. It is a hands-on, performance based class where students develop and demonstrate skill and knowledge acquisition through project design and construction. Students select projects based on individual need and ability level. Recognition of student performance and knowledge in past projects allow the flexibility to design projects which provide a challengeable yet attainable work level for each student.

Problem solving, critical thinking, self-evaluation, creativity, craftsmanship, and safety are emphasized. Students learn skills which serve them to become productive contributing members of the 21st century work force, to develop an appreciation for the art of woodworking as a hobby or to continue in the field of woodworking as a career.

1. Woodshop Safety - 2 weeks / Ongoing throughout the year

1. Safety as an attitude

2. Emergency procedures

3. Safety glasses – care & use, legal requirements

3. Common woodshop hazards

5. Dust control

1. Introduction to Wood Technology – 1 week
2. The Parts of a Tree
3. Understanding Wood Grain
4. Hardwoods vs. Softwoods
5. Wood & moisture
6. Warping in wood
7. Other defects in lumber
8. Parts of a board
9. Milled Lumber
10. Manufactured Lumber
11. Measuring – 1 week / Ongoing throughout the year
12. Customary measurement – the inch & foot vs. metric
13. Reading a rule
14. Reading fractions
15. Addition & division of fractions
16. Project Planning and Evaluation – 2 weeks
17. Required Project Learning Objectives
18. Selection of Projects
19. Reading & understanding project plans
20. Aesthetics of design
21. Construction Design
22. Recognizing craftsmanship / correcting mistakes
23. Layout – 1 week
24. Layout tools & procedures
25. Using layout tools for rough layout of project parts
26. Layout of curves & irregular shapes
27. Drawing Project Plans
28. Cutting and Shaping Lumber – 3 weeks
29. Selecting hand saws
30. Using hand saws, saw kerf, “waste side”
31. Adjusting & using hand planes
32. Creating a working edge
33. Squaring up a board
34. Creating a glue edge
35. Using files & rasps
36. Using chisels, gouges & carving tools
37. Using a brace & hand drill
38. Abrasives – 1 week
39. Types & grading of abrasives
40. Preparing surfaces for finishes
41. Sanding tips
42. Adhesives – 1 week
43. Types of adhesives
44. The gluing process
45. Clamps and Clamping – 1 week
46. Types of clamps
47. Using clamps
48. Special clamping situations
49. Mechanical Fasteners – 2 weeks
50. Types of screwdrivers
51. Screws for woodworking
52. Tools for drilling holes for screws
53. Installing wood screws, sizing holes
54. Installing screws in hard woods
55. Using plugs & buttons
56. Other types of fasteners
57. Drilling & boring holes for fasteners
58. Using Power Tools – 3 weeks / Ongoing throughout the year
59. Radial Arm Saw
60. Band Saw
61. Wood Jointer
62. Scroll Saw
63. Drill Press & Portable Hand Drill
64. Portable Belt Sander
65. Finish Sanders
66. Router
67. Planer
68. Miter Saw
69. Lathe
70. Stationary Sanders
71. Table Saw
72. Assembly Processes – 1 week
73. Assembling with glue
74. Using wood scrapers

1. Finishing Processes – 2 weeks
2. Sanding & preparing for finishing
3. Stains and staining techniques
4. Finishes & finishing techniques
5. Joinery – Wood Joints – 2 weeks
	1. rabbet, dado & groove joints
	2. miter joints
	3. half-lap joints
	4. dowel joints
	5. biscuit joints
	6. dovetail joints
6. Special Materials and Processes – 5 weeks
7. Bending wood
8. Whittling & Woodcarving
9. Doors
10. Drawers
11. Drawer Guides
12. Constructing a checkerboard
13. Hardware – 2 weeks
14. Types of hardware
15. Installing hardware -
16. Installing clock movements
17. Wiring a lamp
18. Tool and Machine Maintenance – 2 weeks
19. Recognizing the need for maintenance / poor tool performance
20. Sharpening processes
21. Maintaining portable power tools
22. Maintaining saw blades
23. Shop Tips & Techniques – 1 week
24. Drawing irregular curves – graphing
25. Drawing irregular curves - layout tools
26. Drawing an ellipse
27. Duplicating shapes / making duplicate parts
28. Lubricating wood screws
29. Removing broken screws
30. Careers and Career Training – 1 week
31. Careers in the woodworking industry
32. Career training

**IV. INSTRUCTIONAL TECHNIQUES**

The instructor may use any of the following methods and techniques to accomplish the objectives through differentiated instructional practices that address student’s readiness levels and learning styles. The needs of diverse learners are met through:

1. Demonstration
2. Teacher-directed whole group instruction
3. Modeling
4. Guided observation
5. Guided practice
6. Written handouts and information sheets
7. Independent study
8. Monitoring student progress
9. Research
10. Self-assessment
11. Peer instruction.

**V. EVALUATION**

Evaluation of student completion of course objectives may be based on any of the following methods:

1. Baseline and benchmark assessments
2. Written or oral assessments of student knowledge of safety, procedures and processes specific to student project work
3. Written or oral critiques of student projects
4. Rubrics designed to assess skills and knowledge learned through student projects
5. Teacher observation of:
6. Student participation
7. Comprehension of lesson information
8. Skills exhibited
9. Safe work practices
10. Self-critique and problem solving in student project work.

**VI. PROFESSIONAL DEVELOPMENT**

The following recommended activities help support this curriculum:

1. District in-service and professional development offerings.
2. Professional conferences and workshops that enhance instructional skills
3. Workshops and seminars relating to professional developments in the field
4. Review of books, journals and periodicals within the field
5. Collaboration with peers
6. Collaboration with colleagues and supervisors to discuss and reflect upon unit plans, homework and assessment.

**APPENDIX I**

**New Jersey Visual and Performing Arts**

**STANDARD 1.1 - The Creative Process:** All students will demonstrate an understanding of the elements and principles that govern the creation of works of art in dance, music, theatre, and visual art.

**STANDARD 1.2 - History of the Arts and Culture:** All students will understand the role, development, and influence of the arts throughout history and across cultures.

**STANDARD 1.3 - Performance:** All students will synthesize those skills, media, methods, and technologies appropriate to creating, performing, and/or presenting works of art in dance, music, theatre, and visual art.

**STANDARD 1.4 - Aesthetic Responses & Critique Methodologies:** All students will demonstrate and apply an understanding of arts philosophies, judgment, and analysis to works of art in dance, music, theatre, and visual art.

*The entire standards document may be viewed at* **<http://www.state.nj.us/education/cccs/>**

**APPENDIX II**

**New Jersey Comprehensive Health and Physical Education**

**STANDARD 2.1 -** Wellness: All students will acquire health promotion concepts and skills to support a healthy, active lifestyle

**STANDARD 2.2** - Integrated Skills: All students will develop and use personal and interpersonal skills to support a healthy, active lifestyle.

**STANDARD 2.3** - Drugs and Medicines: All students will acquire knowledge about alcohol, tobacco, other drugs, and medicines and apply these concepts to support a healthy, active lifestyle.

**STANDARD 2.4 -** Human Relationships and Sexuality: All students will acquire knowledge about the physical, emotional, and social aspects of human relationships and sexuality and apply these concepts to support a healthy, active lifestyle.

**STANDARD 2.5** - Motor Skill Development: All students will utilize safe, efficient, and effective movement to develop and maintain a healthy, active lifestyle.

**STANDARD 2.6** - Fitness: All students will apply health-related and skill-related fitness concepts and skills to develop and maintain a healthy, active lifestyle.

*The entire standards document may be viewed at* <http://www.state.nj.us/education/cccs/>

**APPENDIX III**

**New Jersey Standards for Language Arts Literacy**

**READING STANDARDS FOR INFORMATIONAL TEXT 9-12**

**Standard RI:** (Key Ideas and Details)

**RI1:** Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

**STANDARD RI:** (Craft and Structure)

**RI4:** Determine the meaning of words and phrases as they are used in a text; including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text.

**RI5:** Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.

**RI6:** Determine an author’s point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.

**STANDARD RI:** (Integration of Knowledge and Ideas)

**RI8:** Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy.

**SPEAKING AND LISTENING STANDARDS 9-12**

**Standard SL:** (Comprehension and Collaboration)

**SL1a-d:** Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 10-12 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.

1. Come to discussions prepared having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
2. Work with peers to promote civil, democratic discussions and decision making, set clear goals and deadlines, and establish individual roles as needed.
3. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.
4. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

**SL2:** Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

**SL3:** Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.

**Standard SL:** (Presentation of Knowledge and Ideas)

**SL4:** Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.

**SL5:** Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understandings of findings, reasoning, and evidence and to add interest.

**SL6:** Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate.

*The entire standards document may be viewed at* [*http://www.state.nj.us/education/cccs*](http://www.state.nj.us/education/cccs)

**APPENDIX IV**

**New Jersey Standards for Mathematics**

**STANDARD SMP1** - Make sense of problems and persevere in solving them.

**STANDARD SMP2** - Reason abstractly and quantitatively.

**STANDARD SMP3** - Construct viable arguments and critique the reasoning of others.

**STANDARD SMP5** - Use appropriate tools strategically.

**STANDARD SMP6** - Attend to precision.

**STANDARD SMP7** - Look for and make use of structure.

**STANDARD SMP8** - Look for and express regularity in repeated reasoning.

*The entire standards document may be viewed at <http://www.state.nj.us/education/cccs/>*

**APPENDIX V**

**New Jersey Student Learning Standards for Technology**

**STANDARD 8.1:** (Educational Technology)All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

*The entire standards document may be viewed at* [*http://www.state.nj.us/education/cccs*](http://www.state.nj.us/education/cccs)

**APPENDIX VI**

**New Jersey Student Learning Standards for**

**21st Century Life & Careers**

**STANDARD 9.1:** (21st-Century Life and Career Skills) all students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

**STANDARD 9.2:** (Personal Financial Literacy) all students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy*.*

**STANDARD 9.3:** (Career Awareness, Exploration, and Preparation) all students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

*The entire standards document may be viewed at* [*http://www.state.nj.us/education/cccs/*](http://www.state.nj.us/education/cccs/)

**APPENDIX VII**

**New Jersey Student Learning Standards for Science**

**LIFE SCIENCE HS-LS3** Heredity Inheritance and Variation Traits

**HS-LS3.A:** inheritance of traits

**HS-LS3.B:** variation of traits

**LIFE SCIENCE HS-LS4** Biological Evolution Unity & Diversity

**HS-LS4.A:** evidence of common ancestry and diversity

**HS-LS4.B:** natural selection

**HS-LS4.C:** adaptation

*The entire standards document may be viewed at* [*http://www.state.nj.us/education/cccs/2016/science/*](http://www.state.nj.us/education/cccs/2016/science/)

**APPENDIX VIII**

**New Jersey Core Curriculum Content Standards for World Languages**

**STANDARD 7.1:** (World Languages):all students will be able to use a world language in addition to English to engage in meaningful conversation, to understand and interpret spoken and written language, and to present information, concepts, and ideas, while also gaining an understanding of the perspectives of other cultures. Through language study, they will make connections with other content areas, compare the language and culture studied with their own, and participate in home and global communities

*The entire standards document may be viewed at* [*http://www.state.nj.us/education/aps/cccs/arts/*](http://www.state.nj.us/education/aps/cccs/arts/)