

# SENIOR YEARS

Woodwork Technology





## Fundamental Skills

### General Learning Outcome

GLO F1 **Technical Communication:** Communicate technical ideas and designs effectively and appropriately.



Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.F1.1 Use several presentation programs using existing formats to digitally communicate a technical idea.	IA10.F1.1 Design a simple presentation using a presentation program to communicate a technical idea.	IA11.F1.1 Apply an advanced presentation program effectively to communicate a technical idea visually.	IA12.F1.1 Apply an appropriate combination of digital, graphic, oral, and written techniques to effectively communicate a technical idea.
IA9.F1.2 Interpret a graphic presentation of a technical idea.	IA10.F1.2 Adapt a graphic presentation of a technical idea.	IA11.F1.2 Create a graphic presentation of a technical idea.	
IA9.F1.3 Recognize technical language and terms.	IA10.F1.3 Use technical language and terms in the correct context.	IA11.F1.3 Create a set of steps using correct technical writing techniques to effectively describe a technical process.	
IA9.F1.4 Effectively use technical reading skills to follow a set of instructional steps.	IA10.F1.4 Adapt a set of instructional steps using appropriate technical writing skills.		

## Fundamental Skills



### General Learning Outcome

GLO F2 **Problem Solving:** Apply effective decision-making, problem-solving, and design strategies to a project. (Refer to Appendix B for a sample design/problem-solving process.)

Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.F2.1 Demonstrate an understanding of the problem-solving process in designing and producing a product.	IA10.F2.1 Identify problems and apply appropriate problem-solving skills to solve them.	IA11.F2.1 Transfer problem-solving skills to real-life situations.	IA12.F2.1 Research and articulate a problem that can be solved through technological means.
IA9.F2.2 Identify criteria for making and evaluating choices.	IA10.F2.2 Apply a decision-making strategy to practical situations.	IA11.F2.2 Use a variety of critical thinking skills to evaluate situations and make decisions.	IA12.F2.2 Apply problem-solving and design skills to develop a technological solution to a problem.
IA9.F2.3 Demonstrate an understanding of the qualities of good design.	IA10.F2.3 Modify an existing design to meet specified criteria.	IA11.F2.3 Create a design to meet a set of specifications.	IA12.F2.3 Analyze critically and act logically to evaluate situations and make decisions.

## Fundamental Skills

### General Learning Outcome

GLO F3 **Information Management:** Effectively manage information.



Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.F3.1 Acquire and organize information using appropriate technology and information systems.	IA10.F3.1 Apply specialized information and skills in real-life situations.	IA11.F3.1 Transfer and apply specialized information and skills in a variety of situations.	IA12.F3.1 Acquire, analyze, and apply specialized information and skills from various disciplines in a variety of realistic circumstances.
IA9.F3.2 Demonstrate the appropriate use of information as directed.	IA10.F3.2 Access and use a range of relevant information, material, and human resources with limited direction.	IA11.F3.2 Acquire and use a range of relevant information, material, and human resources, and recognize when additional resources are required.	IA12.F3.2 Support and enhance basic information requirements by using a wide variety of information, material, and human resources.

## Personal Skills



### General Learning Outcome

GLO P1 **Time Management:** Demonstrate responsibility in time management, task completion, and in meeting project criteria. (Note: based on the Conference Board of Canada's Personal Management Skills)

Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.P1.1 Demonstrate responsibility in time management.	IA10.P1.1 Demonstrate responsibility in time management.	IA11.P1.1 Demonstrate responsibility in time management.	IA12.P1.1 Demonstrate responsibility in time management.
IA9.P1.2 Demonstrate responsibility in being accountable for one's actions.	IA10.P1.2 Demonstrate responsibility in being accountable for one's actions.	IA11.P1.2 Demonstrate responsibility in being accountable for one's actions.	IA12.P1.2 Demonstrate responsibility in being accountable for one's actions.
IA9.P1.3 Arrive at class prepared with materials and completed assignments.	IA10.P1.3 Arrive at class prepared with materials and completed assignments.	IA11.P1.3 Arrive at class prepared with materials and completed assignments.	IA12.P1.3 Arrive at class prepared with materials and completed assignments.
IA9.P1.4 Complete all assigned tasks within stated deadlines.	IA10.P1.4 Complete all assigned tasks within stated deadlines.	IA11.P1.4 Complete all assigned tasks within stated deadlines.	IA12.P1.4 Complete all assigned tasks within stated deadlines.
IA9.P1.5 Complete all projects according to specified criteria.	IA10.P1.5 Complete all projects according to specified criteria.	IA11.P1.5 Complete all projects according to specified criteria.	IA12.P1.5 Complete all projects according to specified criteria.

## Personal Skills

### General Learning Outcome

GLO P2 **Ethical Decision Making:** Make ethical decisions concerning the impact of one’s activities and the use of technology.



Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
<p>IA9.P2.1 Make personal judgments whether certain behaviours/actions are right or wrong.</p> <p>IA9.P2.2 Demonstrate an understanding of technological impact on the environment, society, lifestyles, etc.</p>	<p>IA10.P2.1 Assess how personal judgments affect peer members and/or community members.</p> <p>IA10.P2.2 Demonstrate an understanding of the impact of technological choices.</p>	<p>IA11.P2.1 Assess the implications of personal/group actions within the broader community.</p> <p>IA11.P2.2 Develop and implement risk management strategies for a variety of technological activities.</p>	<p>IA12.P2.1 Analyze the implications of personal/group actions within the global context.</p> <p>IA12.P2.2 State and support a personal code of ethics as required.</p> <p>IA12.P2.3 Demonstrate responsible leadership in managing current and future technologies on the environment and on society.</p>

## Personal Skills



### General Learning Outcome

GLO P3 **Career Planning:** Develop an action plan relating personal aptitudes and abilities to occupational opportunities.

Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.P3.1 Identify critical skills needed for employability in today's workplace.	IA10.P3.1 Evaluate employability profiles for a variety of workplaces and careers.	IA11.P3.1 Develop strategies to assess personal technological literacy and capability.	IA12.P3.1 Assess specific personal skills, interests, and abilities (career portfolio).
IA9.P3.2 Demonstrate an awareness of the technologies of specific occupations and workplaces.	IA10.P3.2 Outline skills required for a specific career path.	IA11.P3.2 Perform an assessment of personal strengths and weaknesses (career portfolio).	IA12.P3.2 Develop a plan for acquiring the technological capabilities required to achieve a career vision (career portfolio).



## Personal Skills

### General Learning Outcome

GLO P4 **Safe Practices:** Demonstrate safe practices with tools, machines, materials, and related processes. (Refer to: Keeping Your Facilities SAFE: A Support Document for Industrial Arts Teachers, Manitoba Education and Youth, 2003.)



Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.P4.1 Follow personal and environmental health and safety procedures.	IA10.P4.1 Recognize and follow personal and environmental health and safety procedures.	IA11.P4.1 Establish and follow personal and environmental health and safety procedures.	IA12.P4.1 Transfer and apply personal and environmental health and safety procedures to a variety of environments and situations.
IA9.P4.2 Identify immediate hazards and their impact on self, others, and the environment.	IA10.P4.2 Identify immediate and potential hazards and their impact on self, others, and the environment.	IA11.P4.2 Identify immediate and potential hazards and assess their impact on self, others, and the environment.	IA12.P4.2 Identify immediate and potential hazards and assess their impact on self, others, and the environment, and recommend safe procedures.
IA9.P4.3 Identify and follow appropriate emergency response procedures.	IA10.P4.3 Identify and follow appropriate emergency response procedures.	IA11.P4.3 Identify and follow appropriate emergency response procedures.	IA12.P4.3 Identify and follow appropriate emergency response procedures.

## Personal Skills



### General Learning Outcome

GLO P5 **Positive Attitude:** Demonstrate positive attitudes to learning in Industrial Arts facilities.

Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.P5.1 Listen, in order to understand and learn.	IA10.P5.1 Listen and respond, in order to understand and learn.	IA11.P5.1 Listen and respond, in order to understand, learn and teach.	IA12.P5.1 Listen and respond, in order to understand, learn, teach, and evaluate.
IA9.P5.2 Demonstrate a willingness to continuously learn.	IA10.P5.2 Assess personal learning needs (i.e., personal learning style).	IA11.P5.2 Identify learning sources and opportunities.	IA12.P5.2 Set learning goals and develop a personal learning plan.
IA9.P5.3 Actively participate in a positive manner.	IA10.P5.3 Actively participate in a positive manner.	IA11.P5.3 Actively participate in a positive manner.	IA12.P5.3 Actively participate in a positive manner.

## Personal Skills

### General Learning Outcome

GLO P6 **Teamwork:** Adapt strategies to work effectively, independently, or as a team member to complete a project.



Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.P6.1 Demonstrate an understanding of the role of members of a team.	IA10.P6.1 Contribute to a team to achieve its mandate.	IA11.P6.1 Identify the need to lead and/or support in a team situation, in order to achieve the team mandate.	IA12.P6.1 Understand and work with others on a "job" to achieve the best results.
IA9.P6.2 Acknowledge the opinions and contributions of all team members.	IA10.P6.2 Respect the opinions and contributions of all team members.	IA11.P6.2 Seek and appreciate the opinions and contributions of all team members.	IA12.P6.2 Lead and/or support as appropriate to motivate a team for high performance.
IA9.P6.3 List and define team objectives.	IA10.P6.3 Contribute to the development of team objectives and goals.		IA12.P6.3 Develop and/or refine a team approach based on needs and benefits.

## Production Skills



### General Learning Outcome

GLO WW1 **Wood, Products, and Processes:** Demonstrate an understanding of woodwork—woods, wood products, and processes.

Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.WW1.1 Identify common woods, their classification as hardwood or softwood, and their properties such as type, species, grain texture...	IA10.WW1.1 →	IA11.WW1.1 →	IA12.WW1.1 Select appropriate wood type, based on its properties for projects and applications.
IA9.WW1.2 Identify several common wood products such as plywoods, laminates, veneers, particleboard...	IA10.WW1.2 →	IA11.WW1.2 →	IA12.WW1.2 Select appropriate wood products based on project requirements.

## Production Skills

### General Learning Outcome

GLO WW2 **Measurement and Layout:** Use woodworking measurement and layout tools, correctly and efficiently.



Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.WW2.1 Recognize and apply common measurement standards used in woodworking including CSA, ANSI, ISO, metric, imperial, moisture content...	IA10.WW2.1 →	IA11.WW2.1 →	IA12.WW2.1 →
IA9.WW2.2 Identify and use several common measurement tools used in woodworking including rules, tapes, dividers, wood-moisture meters...	IA10.WW2.2 →	IA11.WW2.2 →	IA12.WW2.2 Identify and use most common measurement tools used in woodworking including rules, tapes, dividers, wood-moisture meters...
IA9.WW2.3 Identify and use several common layout tools used in woodwork including squares, levels, lasers, sliding bevels, marking gauges...	IA10.WW2.3 →	IA11.WW2.3 →	IA12.WW2.3 Apply appropriate layout techniques to the creation of a woodwork project.

## Production Skills



### General Learning Outcome

GLO WW3 **Separation:** Apply separation processes to wood.

Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.WW3.1 Identify several common wood-separation processes such as cutting, drilling, turning, routing, sanding...	IA10.WW3.1 →	IA11.WW3.1 →	IA12.WW3.1 Explain and demonstrate most common wood-separation processes.
IA9.WW3.2 Apply several hand tool wood-separation processes to a product.	IA10.WW3.2 →	IA11.WW3.2 →	IA12.WW3.2 Determine and apply the appropriate wood-separation processes required to safely create a wood product.

## Production Skills

### General Learning Outcome

GLO WW4 **Fastening:** Apply fastening processes and specialty hardware to wood, correctly and efficiently.



Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.WW4.1 Identify several common wood-fastening processes such as using: threaded fasteners, adhesives, nails, specialty fastening hardware...	IA10.WW4.1 →	IA11.WW4.1 →	IA12.WW4.1 Identify and describe the classification and types of several common wood-fastening processes.
IA9.WW4.2 Apply several fastening processes to a wood product.	IA10.WW4.2 →	IA11.WW4.2 →	IA12.WW4.2 Determine and apply the appropriate wood-fastening processes required to create a wood product.
IA9.WW4.3 Identify several common types of specialty hardware used in creating wood projects such as hinges, glides, pulls, shelf hardware, casters...	IA10.WW4.3 →	IA11.WW4.3 →	IA12.WW4.3 Determine and install the type of specialty hardware required for a project.

## Production Skills



### General Learning Outcome

GLO WW5 **Wood Joints:** Apply joints and joining techniques to wood.

Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.WW5.1 Identify several common wood joints such as butt, box, dado, dovetail, lap, mitre, mortise and tenon, rabbet, tongue and groove...	IA10.WW5.1 →	IA11.WW5.1 →	IA12.WW5.1 List the uses and properties of most wood joints.
IA9.WW5.2 Identify several common fastener forms used in wood joints such as corrugated fasteners, dowels, splines, braces, special connectors.	IA10.WW5.2 →	IA11.WW5.2 →	IA12.WW5.2 List the uses and properties of most wood-joining techniques.
IA9.WW5.3 Use several types of wood joints and wood-joining techniques in the fabrication of a wood product.	IA10.WW5.3 →	IA11.WW5.3 →	IA12.WW5.3 Determine and apply the appropriate wood joint and/or wood-joining technique to the fabrication of a wood product.



## Production Skills

### General Learning Outcome

GLO WW6 **Finishing:** Apply finishing processes to wood considering their environmental impact.



Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.WW6.1 Identify several common wood-finishing processes such as sanding, staining, painting, varnishing...	IA10.WW6.1 →	IA11.WW6.1 →	IA12.WW6.1 Identify and explain the properties of most common wood-finishing processes.
IA9.WW6.2 Explain the environmental impact of most common wood-finishing processes.	IA10.WW6.2 →	IA11.WW6.2 →	IA12.WW6.2 →
IA9.WW6.3 Apply several common wood-finishing processes to a product.	IA10.WW6.3 →	IA11.WW6.3 →	IA12.WW6.3 Determine and apply the appropriate finish to a wood product.

## Production Skills



### General Learning Outcome

GLO WW7 **Current Innovation:** Demonstrate an understanding of current innovation in woodwork processes, applications, and emerging new technologies.

Grade 9 Specific Learning Outcome(s)	Grade 10 Specific Learning Outcome(s)	Grade 11 Specific Learning Outcome(s)	Grade 12 Specific Learning Outcome(s)
IA9.WW7.1 Identify several current innovations in woodwork such as Computer Numerical Control, strand wood products, glulam products, computer log and lumber analysis, factory-made housing, structural insulated panels...	IA10.WW7.1 →	IA11.WW7.1 →	IA12.WW7.1 Research, explain, and demonstrate several current innovations in woodwork.