

VoCATS

Course Blueprints

Trade and Industrial Education

7662 Welding Technology II

*Public Schools of North Carolina
State Board of Education • Department of Public Instruction
Office of Instructional and Accountability Services
Division of Instructional Services*

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VoCATS Course Blueprint

A course blueprint is a document laying out the framework of the curriculum for a given course.

Shown on the blueprint are the units of instruction, the core competencies in each unit, and the specific objectives for each competency. The blueprint illustrates the recommended sequence of units and competencies and the cognitive and performance weight of the objective within the course.

The blueprint is intended to be used by teachers in planning the course of work for the year, preparing daily lesson plans, and constructing instructionally valid assessments.

For additional information about this blueprint, contact program area staff. For additional information about the VoCATS Competency Achievement Tracking System, contact program area staff or VoCATS, Workforce Development, Division of Instructional Services, North Carolina Department of Public Instruction, 301 North Wilmington Street, Raleigh, North Carolina 27601-2825, 919/807-3876, email: rwelfare@dpi.state.nc.us.

Interpretation of Columns on VoCATS Course Blueprints

No.	Heading	Column information
1	Comp# Obj.#	Comp=Competency number (three digits); Obj.=Objective number (competency number plus two-digit objective number).
2	Unit Titles/Competency and Objective Statements	Statements of unit titles, competencies per unit, and specific objectives per competency. Each competency statement or specific objective begins with an action verb and makes a complete sentence when combined with the stem "The learner will be able to. . ." (The stem appears once in Column 2.) Outcome behavior in each competency/objective statement is denoted by the verb plus its object.
3	Time Hrs	Space for teachers to calculate time to be spent on each objective based on the course blueprint, their individual school schedule, and the students' performance on preassessments.
4&5	Course Weight Cognitive Performance	Shows the relative importance of each objective, competency, and unit. Weight is broken down into two components: cognitive and performance. Add the cognitive and performance weights shown for an objective in columns 4 and 5 to determine its total course weight. Course weight is used to help determine the percentage of total class time that is spent on each objective. The VoCATS Annual Planning Calendar shows how to use the course weight to determine the approximate number of days to be devoted to each objective. The breakdown in columns 4 and 5 indicates the relative amount of class time that should be devoted to cognitive and performance activities as part of the instruction and assessment of each objective. Objectives with performance weight should include performance activities as part of instruction and/or assessment.
6	Type Behavior	Classification of outcome behavior in competency and objective statements. (C=Cognitive; P=Psychomotor; A=Affective)
7	Integrated Skill Area	Shows links to other academic areas. Integrated skills codes: A=Arts; C=Communications; CD=Career Development; CS=Information/Computer Skills; H=Health and Safety; M=Math; SC=Science; SS=Social Studies.
8	Core Supp	Designation of the competencies and objectives as Core or Supplemental. Competencies and objectives designated "Core" must be included in the Annual Planning Calendar and are assessed on the statewide pre- and postassessments..

Workforce Development Education conducts all activities and procedures without regard to race, color, creed, national origin, gender, or disability. The responsibility to adhere to safety standards and best professional practices is the duty of the practitioners, teachers, students, and/or others who apply the contents of this document.

TRADE AND INDUSTRIAL EDUCATION
COURSE BLUEPRINT for 7662 WELDING TECHNOLOGY II
 [Recommended hours of instruction: 270 - 360]

Comp # Obj #	Unit Titles/Competency and Objective Statements (The Student will be able to:)	Time Hours	Course Weight		Type Behavior	Integrated Skill Area	Core Supp
			Cognitive 4	Performance 5			
1	2		4	5	6	7	8
			100%				
	Total Course Weight		44%	56%			
A	LEADERSHIP		2%	1%			
W201.	Demonstrate communication, problem solving, and team building skills.		2%	1%	C3P	C/SS	Core
W201.0 1	Identify communication, problem solving, and team building techniques.		2%		C1	C/SS	Core
W201.0 2	Demonstrate communication, problem solving, and team building skills.			1%	C3P	C/SS	Core
B.	SAFETY PROCEDURES		8%				
W202.	Demonstrate safety procedures.		8%		C3P	C/H	Core
W202.0 1	Review welding related safety procedures.		8%		C1	H	Core
W202.0 2	Abide by site-specific safety rules and procedures.				C3P	C/H	Supp
C.	THERMAL CUTTING		3%	2%			
W203.	Demonstrate plasma arc cutting (PAC).		3%	2%	C3P	C/H/SC	Core
W203.0 1	Identify the parts and functions of PAC equipment.		1%		C1	C	Core
W203.0 2	Explain the setup and shutdown of PAC equipment.		1%		C2	C	Core
W203.0 3	Demonstrate the setup and shutdown of PAC equipment.			1%	C3P	SC	Core
W203.0 4	Describe plasma arc cutting principles, procedures, and safety.		1%		C1	C/H/SC	Core
W203.0 5	Perform plasma arc cutting.			1%	C3P	SC	Core
W204.	Use the air carbon arc cutting and gouging process.				C3P	C/SC	Supp

Comp # Obj #	Unit Titles/Competency and Objective Statements (The Student will be able to:)	Time Hours	Course Weight		Type Behavior	Integrated Skill Area	Core Supp
			Cognitive 4	Performance 5			
1	2		4	5	6	7	8
W204.0 1	Explain the setup and shutdown of air carbon arc cutting and gouging equipment.				C2	C/SC	Supp
W204.0 2	Demonstrate the setup and shutdown of air carbon arc cutting and gouging equipment.				C3P	SC	Supp
W204.0 3	Explain air carbon arc cutting, gouging, and washing procedures.				C2	C/SC	Supp
W204.0 4	Demonstrate air carbon arc cutting, gouging, and washing.				C3P	SC	Supp
D.	WELD FIT-UP AND QUALITY		4%	4%			
W205.	Fit-up plate joints.		2%	2%	C3P	C/SC	Core
W205.0 1	Describe job code specifications and weld fit up.		1%		C1	C	Core
W205.0 2	Explain distortion and how it is controlled.		1%		C2	SC	Core
W205.0 3	Use devices and tools to fit-up plate joints.			2%	C3P	SC	Core
W206.	Demonstrate weld testing.		2%	2%	C3P	SC	Core
W206.0 1	Describe weld discontinuities and their causes.		1%		C1	SC	Core
W206.0 2	Explain destructive and non-destructive examination practices.		1%		C2	SC	Core
W206.0 3	Demonstrate destructive and non-destructive examination practices and welder qualification tests.			2%	C3P	SC	Core
E.	PHYSICAL CHARACTERISTICS AND MECHANICAL PROPERTIES OF METALS		2%	1%			
W207.	Demonstrate methods of identifying metals and using various heating procedures.		2%	1%	C3P	SC	Core
W207.0 1	Identify the physical and mechanical properties of metals.		1%		C1	SC	Core
W207.0 2	Demonstrate methods of identifying ferrous and non-ferrous metals.			1%	C3P	SC	Core
W207.0 3	Explain preheat, interpass temperature, and postheat procedures.		1%		C2	SC	Core

Comp # Obj #	Unit Titles/Competency and Objective Statements (The Student will be able to:)	Time Hours	Course Weight		Type Behavior	Integrated Skill Area	Core Supp
			Cognitive 4	Performance 5			
1	2		4	5	6	7	8
F.	SHIELDED METAL ARC WELDING (SMAW)		6%	28%			
W208.	Weld V-groove joints.		6%	28%	C3P	SC	Core
W208.0 1	Describe procedures for welding V-groove joints with backing in all positions.		3%		C1	SC	Core
W208.0 2	Weld V-groove joints with backing in all positions using E-7018 electrodes.			10%	C3P	SC	Core
W208.0 3	Describe procedures for welding open root V-groove joints in all positions.		3%		C1	SC	Core
W208.0 4	Weld open root V-groove joints in all positions using E-6010 and E-7018 electrodes.			18%	C3P	SC	Core
G.	GAS METAL ARC WELDING (GMAW)		10%	19%			
W209.	Demonstrate GMAW.		10%	19%	C3P	C/H/SC	Core
W209.0 1	Identify the parts and functions of GMAW equipment.		2%		C1	C	Core
W209.0 2	Explain the setup and shutdown of GMAW equipment.		1%		C2	C/SC	Core
W209.0 3	Demonstrate the setup and shutdown of GMAW equipment.			3%	C3P	SC	Core
W209.0 4	Describe GMAW principles.		2%		C1	C/SC	Core
W209.0 5	Explain GMAW safety.		1%		C2	H	Core
W209.0 6	Explain GMAW filler metals and gasses.		2%		C2	C/SC	Core
W209.0 7	Describe procedures for welding multi-pass fillet welds on plate in all positions.		2%		C1	SC	Core
W209.0 8	Weld GMAW multi-pass fillet welds on plate in all positions.			16%	C3P	SC	Core
H.	FLUX CORED ARC WELDING (FCAW)		4%	1%			
W210.	Demonstrate FCAW.		4%	1%	C3P	C/SC	Core
W210.0 1	Explain the setup and shutdown of FCAW equipment.		1%		C2	C/SC	Core

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			Cognitive 4	Performance 5			
1	2		4	5	6	7	8
W210.0 2	Demonstrate the setup and shutdown of FCAW equipment.			1%	C3P	SC	Core
W210.0 3	Explain FCAW principles.		1%		C2	C/SC	Core
W210.0 4	Explain FCAW electrodes and shielding gasses.		1%		C2	C/SC	Core
W210.0 5	Describe procedures for welding fillet welds in all positions.		1%		C1	C/SC	Core
W210.0 6	Perform fillet welds in all positions.				C3P	SC	Supp
I.	GAS TUNGSTEN ARC WELDING (GTAW)		5%				
W211.	Demonstrate GTAW.		5%		C3P	C/H/SC	Core
W211.0 1	Explain the setup and shutdown of GTAW equipment.		2%		C2	C/SC	Core
W211.0 2	Demonstrate the setup and shutdown of GTAW equipment.				C3P	SC	Supp
W211.0 3	Describe GTAW principles.		1%		C1	C/SC	Core
W211.0 4	Explain GTAW safety.		1%		C2	H	Core
W211.0 5	Explain GTAW electrodes, filler metal, and shielding gasses.		1%		C2	C/SC	Core
W211.0 6	Perform fillet and groove welds in all positions.				C3P	SC	Supp