VoCATS
Course Blueprints

Trade and Industrial Education

7641 Metals Manufacturing Technology I

Public Schools of North Carolina
State Board of Education • Department of Public Instruction
Curriculum and School Reform Services
Division of Secondary Education

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This blueprint has been reviewed by business and industry representatives for technical content and appropriateness for the industry. Contact TandIEducation@dpi.state.nc.us for more information.

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, Career-Technical Education, Division of Secondary Education, North Carolina Department of Public Instruction, 6359 Mail Service Center, Raleigh, North Carolina 27699-6359, VoCATS@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.
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 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..

Career-Technical 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 **7641 METALS MANUFACTURING TECHNOLOGY I**
[Recommended hours of instruction: 135 -180]

Comp# Obj.#	Unit Titles / Competency and Objective Statements (The student will be able to:)	Course Weight		Type Behavior	RBT	Integrated Skill Area	Core Supp
		Cognitive	Performance				
1	2	3	4	5A	5B	7	8
		100%					
	Total Course Weight	**52%**	**48%**				
A	**LEADERSHIP**	**3%**	**1%**				
1M01.00	**Apply business meeting procedures and analyze goals.**	**3%**	**1%**	**C3P**	**C3/D4**	**C/SS**	**Core**
1M01.01	*Understand basic business meeting procedures.*	*1%*		*C1*	*C2*	*C/SS*	*Core*
1M01.02	*Apply basic business meeting procedures.*		*1%*	*C3P*	*C3*	*C/SS*	*Core*
1M01.03	*Analyze personal and organizational goals.*	*2%*		*C3*	*B4*	*C/SS*	*Core*
B.	**INTRODUCTION TO MACHINING TECHNOLOGY**						
1M02.00	**Understand machining technology.**			**C2**	**B2**	**C**	**Supp**
1M02.01	*Remember the history of machine technology.*			*C2*	*A1*	*C*	*Supp*
1M02.02	*Understand machining processes, CNC equipment, and the role of the machinist.*			*C2*	*B2*	*C*	*Supp*
1M02.03	*Remember occupations in machining technology.*			*C2*	*A1*	*C*	*Supp*
C.	**SAFETY, MEASUREMENT, AND MATERIALS**	**12%**	**14%**				
1M03.00	**Apply shop safety procedures.**	**4%**	**8%**	**C3P**	**C3**	**C/H**	**Core**
1M03.01	*Summarize general safety rules and procedures for the machine shop.*	*4%*		*C1*	*C2*	*C/H*	*Core*
1M03.02	*Apply general safety rules and regulations in the shop environment.*		*8%*	*C3P*	*C3*	*H*	*Core*
1M04.00	**Apply measuring procedures and concepts of metal characteristics.**	**8%**	**6%**	**C3P**	**C3**	**C/M/S**	**Core**
1M04.01	*Remember measuring tools, their parts, and uses.*	*4%*		*C1*	*A1*	*C/M*	*Core*
1M04.02	*Understand the use of measuring tools.*	*2%*		*C2*	*C2*	*M*	*Core*
1M04.03	*Apply measuring procedures with various tools.*		*6%*	*C3P*	*C3*	*M*	*Core*
1M04.04	*Understand key characteristics of basic metals.*	*2%*		*C2*	*B2*	*S*	*Core*
D.	**BLUEPRINTS, LAYOUT, AND BENCHWORK**	**21%**	**9%**				
1M05.00	**Interpret information found on typical blueprints.**	**13%**		**C3**	**B2**	**A/C/M**	**Core**
1M05.01	*Remember different line types, symbols, and title block information.*	*5%*		*C1*	*A1*	*A/C*	*Core*
1M05.02	*Interpret drawings dimensioned in fractional and decimal inches.*	*8%*		*C3*	*B2*	*A/C/M*	*Core*

The Metals Manufacturing Technology blueprint is aligned with the National Skills Standards approved by the Metalworking Industry Skills Standards board and distributed by the National Institute for Metalworking Skills, Inc. The standards are available by calling The National Institute for Metalworking Skills at 703-352-4971 or by downloading them from the NIMS website at www.nims-skills.org.

1M06.00	**Apply layout procedures.**	**4%**	**7%**	**C3P**	**C3**	**A/C/M**	**Core**
1M06.01	*Remember layout tools and equipment.*	*2%*		*C1*	*A1*	*C*	*Core*
1M06.02	*Understand layout procedures.*	*2%*		*C2*	*C2*	*A/C/M*	*Core*
1M06.03	*Apply layout procedures.*		*7%*	*C3P*	*C3*	*A/C/M*	*Core*
1M07.00	**Apply procedures for using machine shop hand tools.**	**4%**	**2%**	**C3P**	**C3**	**C/S**	**Core**
1M07.01	*Remember machine shop hand tools.*	*2%*		*C1*	*A1*	*C*	*Core*
1M07.02	*Understand procedures for selecting, using, and maintaining hand tools.*	*2%*		*C2*	*C2*	*C/S*	*Core*
1M07.03	*Apply procedures for selecting, using, and maintaining hand tools.*		*2%*	*C3P*	*C3*	*C/S*	*Core*
E.	**MACHINE OPERATIONS**	**16%**	**24%**				
1M08.00	**Apply procedures for drilling operations.**	**2%**	**4%**	**C3P**	**C3**	**C/H/M/S**	**Core**
1M08.01	*Remember drilling machines and tools.*	*1%*		*C1*	*A1*	*C*	*Core*
1M08.02	*Understand procedures for drilling operations and safety.*	*1%*		*C2*	*C2*	*H/M/S*	*Core*
1M08.03	*Apply procedures for drilling operations.*		*4%*	*C3P*	*C3*	*M/S*	*Core*
1M09.00	**Apply procedures for offhand grinding.**	**1%**	**1%**	**C3P**	**C3**	**C/H/M/S**	**Core**
1M09.01	*Understand procedures for offhand grinding operations and safety.*	*1%*		*C2*	*C2*	*C/H*	*Core*
1M09.02	*Apply procedures for offhand grinding operations.*		*1%*	*C3P*	*C3*	*M/S*	*Core*
1M10.00	**Apply procedures for sawing, cutoff machines, and band machining operations.**	**2%**	**1%**	**C3P**	**C3**	**C/H/S**	**Core**
1M10.01	*Remember types of sawing, cutoff machines, and band machining equipment and components.*	*1%*		*C1*	*A1*	*C*	*Core*
1M10.02	*Understand procedures for sawing, cutoff machines, and band machining operations and safety.*	*1%*		*C2*	*C2*	*C/H/S*	*Core*
1M10.03	*Apply procedures for sawing, cutoff machines, and band machining operations.*		*1%*	*C3P*	*C3*	*S*	*Core*
1M11.00	**Apply procedures for turning operations.**	**9%**	**15%**	**C3P**	**C3**	**C/H/M/S**	**Core**
1M11.01	*Remember lathe parts and accessories.*	*3%*		*C1*	*A1*	*C*	*Core*
1M11.02	*Understand procedures for turning operations and safety.*	*6%*		*C2*	*C2*	*H/M/S*	*Core*
1M11.03	*Apply procedures for turning operations.*		*15%*	*C3P*	*C3*	*M/S*	*Core*
1M12.00	**Apply procedures for milling operations.**	**2%**	**3%**	**C3P**	**C3**	**C/H/M/S**	**Core**
1M12.01	*Remember mill parts and accessories.*	*1%*		*C1*	*A1*	*C*	*Core*
1M12.02	*Understand procedures for milling operations and safety.*	*1%*		*C2*	*C2*	*H/M/S*	*Core*
1M12.03	*Apply procedures for milling operations.*		*3%*	*C3P*	*C3*	*M/S*	*Core*