

# VoCATS Course Blueprint

## Trade and Industrial Education

### *7973 Drafting – Engineering III*

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

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*This blueprint has been reviewed by business and industry representatives for technical content and appropriateness for the industry. Contact [tshown@dpi.state.nc.us](mailto:tshown@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 should be used by teachers to plan the course of work for the year, prepare daily lesson plans, construct instructionally valid interim assessments. Statewide assessments are aligned directly with the course blueprint.

For additional information about this blueprint, contact program area staff. For additional information about VoCATS, contact program area staff or VoCATS, Career-Technical Education, 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](mailto:rwelfare@dpi.state.nc.us).

### Interpretation of Columns on VoCATS Course Blueprints

No.	Heading	Column information
1	Comp# Obj.#	Comp=Competency number (two digits); Obj.=Objective number (unique course identifier plus competency number and 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 analysis of students' previous knowledge on the topic.
4&5	<u>Course Weight</u>  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=Performance)
7	Integrated Skill Area	Shows links to other academic areas. Integrated skills codes: A=Arts; E=English Language Arts; CD=Career Development; CS=Information/Computer Skills; H=Healthful Living; 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 assessments..

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**TRADE AND INDUSTRIAL EDUCATION**  
**COURSE BLUEPRINT for: 7973 ENGINEERING III**  
 (Recommended hours of instruction: 135-180 hours)

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	Performance			
1	2	3	4	5	6	7	8
			<b>100%</b>				
	<b>Total Course Weight</b>		<b>49%</b>	<b>51%</b>			
<b>A</b>	<b>LEADERSHIP</b>						
<b>D501.</b>	<b>Demonstrate job-seeking and interview skills.</b>			<b>2%</b>	<b>C3P</b>	<b>C</b>	<b>Core</b>
<i>D501.01</i>	<i>Demonstrate job-seeking skills.</i>			1%	<i>C3P</i>	<i>C</i>	<i>Core</i>
<i>D501.02</i>	<i>Prepare and participate in a job interview.</i>			1%	<i>C3P</i>	<i>C</i>	<i>Core</i>
<b>B</b>	<b>THE ENGINEERING DESIGN PROCESS</b>				<b>C3P</b>		
<b>D502.</b>	<b>Apply the concepts and principles of the engineering design process.</b>		<b>5%</b>	<b>5%</b>			
<i>D502.01</i>	<i>Explain the linear design process.</i>		2%		<i>C2</i>		
<i>D502.02</i>	<i>Explain the concurrent engineering design process.</i>		3%		<i>C3</i>		
<i>D502.03</i>	<i>Apply design concepts and principles to solve problems</i>			5%	<i>C3P</i>		

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	Performance			
1	2	3	4	5	6	7	8
<b>C</b>	<b>CONSTRAINT-BASED / PARAMETRIC MODELING</b>						
<b>D503</b>	<b>Demonstrate the concepts and principles of constraint-based/ parametric solid modeling.</b>		<b>10%</b>	<b>10%</b>	<b>C3P</b>		
<i>D503.01</i>	<i>Explain the terminology related to constraint-based/parametric solid modeling.</i>		3%		C3		
<i>D503.02</i>	<i>Explain the concepts related to constraint-based/parametric solid modeling.</i>		7%		C3		
<i>D503.03</i>	<i>Create solid models using a constraint-based/parametric solid modeler.</i>			10%	C3P		
<b>D</b>	<b>THREADS AND FASTENERS</b>						
<b>D504</b>	<b>Construct various types of thread and fastener representations and their annotations.</b>		<b>10%</b>	<b>10%</b>	<b>C3P</b>		
<i>D504.01</i>	<i>Specify threads and fasteners on a technical drawing.</i>		10%		C2		
<i>D504.02</i>	<i>Construct an assembly drawing requiring the use of fasteners.</i>			10%	C3P		
<b>E</b>	<b>WORKING DRAWINGS</b>						
<b>D505</b>	<b>Demonstrate working drawing principles and techniques.</b>		<b>10%</b>	<b>10%</b>	<b>C3P</b>		
<i>D505.01</i>	<i>Explain the concepts and principles underlying the creation of detail drawings.</i>		3%		C2		
<i>D505.02</i>	<i>Explain the concepts and principles underlying the creation of assembly drawings.</i>		3%		C2		
<i>D505.03</i>	<i>Interpret information on a working drawing.</i>		4%		C3		
<i>D505.04</i>	<i>Construct working drawings.</i>			10%	C3P		
<b>F</b>	<b>BASIC GEOMETRIC DIMENSIONING AND TOLERANCING</b>						
<b>D506</b>	<b>Demonstrate basic geometric dimensioning and tolerancing techniques.</b>		<b>8%</b>	<b>8%</b>	<b>C3P</b>		
<i>D506.01</i>	<i>Explain geometric dimensioning tolerancing terms and techniques.</i>		8%		C3		
<i>D506.02</i>	<i>Construct a drawing with geometric dimensions and tolerances.</i>			8%	C3P		

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	Performance			
1	2	3	4	5	6	7	8
<b>G</b>	<b>PORTFOLIO DEVELOPMENT AND REPRESENTATION</b>						
<b>D507</b>	<b>Demonstrate portfolio development techniques.</b>		<b>6%</b>	<b>6%</b>	<b>C3P</b>		
<i>D507.01</i>	<i>Describe methods for creating an electronic portfolio.</i>		6%		C2		
<i>D507.02</i>	<i>Create an electronic portfolio of your engineering graphics work.</i>			6%	C3P		