

# VoCATS Course Blueprint

## **Business and Information Technology Education**

### *BE 6422 Computer Programming II*

*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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*Special thanks to the following educators who developed  
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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 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, 6358 Mail Service Center, Raleigh, North Carolina 27699-5358, 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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**BUSINESS EDUCATION**  
**COURSE BLUEPRINT for 6422 Programming Level II**  
 (Recommended hours of instruction: 135-180)

Comp # Obj #	Unit Titles/Competency and Objective Statements (The Learner 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
	<b>Total Course Weight</b>		<b>100%</b>				
<b>A</b>	<b>Overview of Programming and Software Engineering</b>		<b>2%</b>	<b>3%</b>			
<b>001</b>	<b>Investigate careers in programming and software engineering</b>		<b>2%</b>	<b>1%</b>			
001.01	<i>Evaluate career paths in programming and software engineering.</i>		1%	0%	C3	CS/M/SC	CORE
001.02	<i>Evaluate career goals in programming and software engineering.</i>		0%	1%	C3	CS/M/SC	CORE
<b>002</b>	<b>Examine trends in programming and software engineering technologies</b>		<b>0%</b>	<b>2%</b>			
002.01	<i>Describe current trends in programming languages.</i>		1%	0%	C2	CS/M/SC	CORE
002.02	<i>Analyze current industry trends.</i>		0%	2%	C3P	CS/M/SC	CORE
<b>B</b>	<b>Concepts of Object-Oriented Programming</b>		<b>9%</b>	<b>6%</b>			
<b>003</b>	<b>Design class structures</b>		<b>4%</b>	<b>3%</b>			
003.01	<i>Create constructors.</i>		1%	1%	C3P	CS/M/SC	CORE
003.02	<i>Instantiate an object from a class.</i>		1%	0%	C3P	CS/M/SC	CORE
003.03	<i>Create class methods and properties.</i>		1%	1%	C3P	CS/M/SC	CORE
003.04	<i>Create private and public members.</i>		1%	1%	C3P	CS/M/SC	CORE
<b>004</b>	<b>Advanced OOP concepts</b>		<b>5%</b>	<b>3%</b>			
004.01	<i>Describe inheritance.</i>		1%	0%	C3	CS/M/SC	CORE
004.02	<i>Describe polymorphism.</i>		1%	1%	C3P	CS/M/SC	CORE
004.03	<i>Describe data encapsulation.</i>		1%	1%	C3P	CS/M/SC	CORE
004.04	<i>Identify abstract classes and interfaces.</i>		1%	1%	C1	CS/M/SC	CORE
004.05	<i>Describe overriding and overshadowing.</i>		1%	0%	C3P	CS/M/SC	CORE
<b>C</b>	<b>Advanced Programming Concepts</b>		<b>13%</b>	<b>17%</b>			
<b>005</b>	<b>Use advanced properties of arrays</b>		<b>5%</b>	<b>5%</b>			
005.01	<i>Construct dynamic arrays.</i>		1%	1%	C3P	CS/M/SC	CORE

Comp # Obj #	Unit Titles/Competency and Objective Statements (The Learner will be able to:)	Time Hours	Course Weight		Type Behavior	Integrated Skill Area	Core Supp
			Cognitive	Performance			
1	2		4	5	6	7	8
005.02	Construct two-dimensional arrays.		2%	2%	C3P	CS/M/SC	CORE
005.03	Sort and search arrays.		2%	2%	C3P	CS/M/SC	CORE
<b>006</b>	<b>Construct nested statements</b>		<b>2%</b>	<b>4%</b>			
006.01	Construct nested IF statements.		1%	2%	C3P	CS/M/SC	CORE
006.02	Construct nested looping statements.		1%	2%	C3P	CS/M/SC	CORE
<b>007</b>	<b>Create programs with multiple forms</b>		<b>2%</b>	<b>4%</b>			
007.01	Create SDI from applications.		1%	3%	C3P	CS/M/SC	CORE
007.02	Create MDI form applications.		1%	1%	C3P	CS/M/SC	CORE
<b>008</b>	<b>Apply error-handling logic</b>		<b>4%</b>	<b>4%</b>			
008.01	Describe techniques for eliminating run time errors.		2%	1%	C3P	CS/M/SC	CORE
008.02	Use try-catch blocks for error handling.		1%	1%	C3P	CS/M/SC	CORE
008.03	Use techniques for validation of user input.		1%	2%	C3P	CS/M/SC	CORE
<b>D</b>	<b>Data Storage and Access</b>		<b>3%</b>	<b>7%</b>			
<b>009</b>	<b>Demonstrate the use of file structures</b>		<b>2%</b>	<b>4%</b>			
009.01	Construct sequential-access files.		1%	2%	C3P	CS/M/SC	CORE
009.02	Construct random-access files.		1%	2%	C3P	CS/M/SC	CORE
<b>010</b>	<b>Demonstrate the use of databases</b>		<b>1%</b>	<b>3%</b>			
010.01	Connect to database tables.		1%	3%	C3P	CS/M/SC	CORE
<b>E</b>	<b>Program Development</b>		<b>3%</b>	<b>37%</b>			
<b>011</b>	<b>Develop projects using the Systems Development Life Cycle</b>		<b>3%</b>	<b>37%</b>			
011.01	Define the SDLC.		1%	0%	C1	CS/M/SC	CORE
011.02	Utilize the SDLC tools in projects.		2%	2%	C3P	CS/M/SC	CORE
011.03	Design a capstone project incorporating the SDLC.		0%	35%	C3P	CS/M/SC	CORE
<b>F</b>	<b>Supplemental</b>						
<b>012</b>	<b>Investigate the use of additional VB.Net controls (e.g. -treeview, listview, status bas, progress bar)</b>						
012.01	Construct and enhance programs using advanced controls.						