VoCATS
Course Blueprint

Business and Information Technology Education

BE 6421 Computer Programming I

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 dseehorn@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, 6358 Mail Service Center, Raleigh, North Carolina 27699-5358, 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 (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	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=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..

Business and Information Technology Education

COURSE BLUEPRINT for **6421 Programming I**

(Recommended hours of instruction: 135-180 of hours)

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
			100%				
	Total Course Weight						
A	**Overview Of Programming**						
001.	**Investigate history & evolution of programming**		**2%**	**2%**			
001.01	*Describe the evolution of computer hardware.*		*1%*	*0%*	*C2*	*CS/M/SC*	*CORE*
001.02	*Describe the evolution of programming languages.*		*1%*	*0%*	*C2*	*CS/M/SC*	*CORE*
001.03	*Explain modular design.*		*0%*	*1%*	*C3*	*CS/M/SC*	*CORE*
001.04	*Explain Binary Code.*		*0%*	*1%*	*C3*	*CS/M/SC*	*CORE*
002.	**Identify the concepts of object oriented programming**		**3%**	0%			
002.01	*Define encapsulation, polymorphism, inheritance.*		*1%*	*0%*	*C3P*	*CS/M/SC*	*CORE*
002.02	*Explain GUI.*		*1%*	*0%*	*C3P*	*CS/M/SC*	*CORE*
002.03	*Evaluate Windows Operating System and how it's used.*		*1%*	*0%*	*C3P*	*CS/M/SC*	*CORE*
003.	**Investigate opportunities & trends in Information Technology (IT)**		0%	**2%**			
003.01	*Explore legal, social and ethical issues pertaining to IT.*		*0%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
003.02	*Evaluate trends and careers in IT.*		*0%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
004.	**Explain solution development process**		**1%**	**2%**			
004.01	*Analyze the programming process.*		*0%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
004.02	*Use problem-solving tools to design programming solutions.*		*0%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
004.03	*Analyze the software life cycle.*		*1%*	*0%*	*C3P*	*CS/M/SC*	*CORE*
005.	**Recognize proper programming style**		**1%**	**3%**			
005.01	*Demonstrate proper naming conventions.*		*1%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
005.02	*Demonstrate proper program documentation (comments, indents).*		*0%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
B	**The Visual Basic.NET Programming Environment**		**10%**				

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1	2		4	5	6	7	8
006.	**Demonstrate the use of the Microsoft Development Environment (MDE)**		0%	**4%**			
006.01	*Demonstrate the use of VB.NET windows.*		*0%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
006.02	*Demonstrate the use of toolbars, toolboxes and menus.*		*0%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
006.03	*Demonstrate saving and running an application.*		*0%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
007.	**Demonstrate the use of debugging tools**		**1%**	**2%**			
007.01	*Identify the different types of programming errors.*		*1%*	*1%*	*C1*	*CS/M/SC*	*CORE*
007.02	*Apply the use of breakpoint & watch window.*		*0%*	*1%*	*C2*	*CS/M/SC*	*CORE*
008.	**Identify the help resources**		**1%**	**2%**			
008.01	*Demonstrate the use of the .Net help menu.*		*1%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
008.02	*Investigate Internet .Net help resources.*		*0%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
C	**The VB.NET Fundamental Programming Elements**		**43%**				
009	**Construct windows forms**		**5%**	**9%**			
009.01	*Demonstrate the use of VB.NET forms.*		*1%*	*3%*	*C3P*	*CS/M/SC*	*CORE*
009.02	*Apply controls associated with the VB form.*		*2%*	*4%*	*C3P*	*CS/M/SC*	*CORE*
009.03	*Utilize the properties associated with controls.*		*2%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
010.	**Demonstrate the coding Structure in VB.NET**		**3%**	**6%**			
010.01	*Demonstrate the use of event procedures.*		*1%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
010.02	*Apply elements of a variable.*		*1%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
010.03	*Compare data types.*		*1%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
011.	**Construct decision-making statements**		**4%**	**6%**			
011.01	*Demonstrate the use of flowcharts.*		*1%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
011.02	*Use operators and Boolean expressions.*		*1%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
011.03	*Construct and IF and If…Else statements.*		*1%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
011.04	*Construct select case statements.*		*1%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
012.	**Demonstrate looping code**		**3%**	**3%**			
012.01	*Construct Do While statements.*		*1%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
012.02	*Construct For Next statements.*		*1%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
012.03	*Describe the purpose of nested statements.*		*1%*	*1%*	*C2*	*CS/M/SC*	*CORE*

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013.	**Construct menus**		**2%**	**2%**			
013.01	*Analyze the elements of menu structures.*		*1%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
013.02	*Construct menu items.*		*1%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
D	**The VB.NET Advanced Programming Elements**						
014	**Demonstrate various graphics applications**		**3%**	**1%**			
014.01	*Describe coordinate systems.*		*1%*	*0%*	*C2*	*CS/M/SC*	*CORE*
014.02	*Construct picture boxes using images.*		*1%*	*1%*	*C3P*	*CS/M/SC*	*CORE*
014.03	*Use animation and graphic methods.*		*1%*	*0%*	*C3*	*CS/M/SC*	*CORE*
015	**Construct programmer defined modules**		**7%**	**10%**			
015.01	*Use built in functions.*		*2%*	*3%*	*C3P*	*CS/M/SC*	*CORE*
015.02	*Create sub and function procedures.*		*3%*	*4%*	*C3P*	*CS/M/SC*	*CORE*
015.03	*Use message and input boxes.*		*2%*	*3%*	*C3P*	*CS/M/SC*	*CORE*
016	**Demonstrate the use of arrays**		**4%**	**6%**			
016.01	*Describe arrays.*		*2%*	*2%*	*C2*	*CS/M/SC*	*CORE*
016.02	*Construct one dimensional arrays.*		*1%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
016.03	*Demonstrate the use of ListBox and ComboBox object.*		*1%*	*2%*	*C3P*	*CS/M/SC*	*CORE*
E.	**Supplemental**						
017	**Construct a solution with multiple forms**						
017.01	*Instantiate an instance of a form.*						*SUPP*
018	**Construct a form with dynamically allocated controls**						
018.01	*Allocate and add controls to a newly created form.*						*SUPP*