

**Career and Technical Education  
Adapted CTE Course Blueprint  
of  
Essential Standards**

**Business and Information Technology Education**

*BP40 Computer Science Principles*

Public Schools of North Carolina  
State Board of Education • Department of Public Instruction  
Academic Services and Instructional Support  
Division of Career and Technical Education  
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**Summer 2014**

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Special thanks to the following educators who developed this Adapted CTE Course Blueprint.

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**This Adapted CTE Course Blueprint has been reviewed by business and industry representatives for technical content and appropriateness for the industry.**

## Adapted CTE Course Blueprint of Essential Standards

Essential standards are big, powerful ideas that are necessary and essential for students to know to be successful in a course. Essential standards identify the appropriate verb and cognitive process intended for the student to accomplish. Essential standards provide value throughout a student's career, in other courses, and translate to the next level of education or world of work.

This document lays out the essential standards for a specific course leading to industry certification. The certifying organization provides MTA 98-374 Gaming Development Fundamentals, which is used to write the essential standards. The essential standards use Revised Bloom's Taxonomy (RBT) category verbs (remember, understand, apply, analyze, evaluate, create) that reflect the overall intended cognitive outcome of the indicators written by the certifying body. Each essential standard and indicator reflects the intended level of learning through two dimensions; The Knowledge Dimension is represented with letters A-C, and the Cognitive Process Dimension by numbers 1-6.

The Adapted CTE Course Blueprint includes units of instruction, essential standard(s) for each unit, and the specific indicators aligned with industry certification. Also included are the relative weights of the units and essential standards within the course. The industry certification reflected in this document is Microsoft MTA 98-374 Gaming Development Fundamentals.

This document will help teachers plan for curriculum delivery for the course, prepare daily lesson plans, and construct valid formative, benchmark, and summative assessments. Assessment for this course is written at the level of the **ESSENTIAL STANDARD** and assesses the intended outcome of the sum of its indicators.

For additional information about this blueprint, contact the Division of Career and Technical Education, North Carolina Department of Public Instruction, 6361 Mail Service Center, Raleigh, North Carolina 27699-6361.

Reference: Anderson, Lorin W. (Ed.), Krathwohl, David R. (Ed.), et al., *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*, Addison Wesley Longman, Inc., New York, 2001.

### Interpretation of Columns on the NCDPI Adapted CTE Course Blueprint

No.	1	2	3	4
Heading	Essential Std #	Unit Titles, Essential Standards, and Indicators	Course Weight	RBT Designation
<b>Column information</b>	Unique course identifier and essential standard number.	Statements of unit titles, essential standards per unit, and specific indicators per essential standard. If applicable, includes % for each indicator.	Shows the relative importance of each unit and essential standard. Course weight is used to help determine the percentage of total class time to be spent on each essential standard.	Classification of outcome behavior in essential standards and indicators in Dimensions according to the Revised Bloom's Taxonomy.  <b>Cognitive Process Dimension:</b> 1 Remember 2 Understand 3 Apply 4 Analyze 5 Evaluate 6 Create  <b>Knowledge Dimension:</b> A Factual Knowledge B Conceptual Knowledge C Procedural Knowledge

*Career and 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.*

*Career and Technical Student Organizations (CTSO) are an integral part of this curriculum. CTSOs are strategies used to teach course content, develop leadership, citizenship, responsibility, and proficiencies related to workplace needs.*

**Adapted CTE Course Blueprint of Essential Standards for  
BP40 COMPUTER SCIENCE PRINCIPLES**  
(Recommended hours of instruction: 135 - 180)

Essential Std #	Units, Essential Standards, and Indicators (The Learner will be able to:)	Course Weight	RBT Designation
1	2	3	4
	<b>Total Course Weight</b>	<b>100%</b>	
<b>A</b>	<b>BASIC COMPUTER SCIENCE PRINCIPLES</b>	<b>42%</b>	
<b>1.00</b>	<b>Understand the pervasiveness of the Internet in modern computing.</b>	<b>9%</b>	<b>C3</b>
	1.01 Understand the abstractions in the Internet and how the Internet functions.	3%	
	1.02 Understand how the characteristics of the Internet and the system built on it influence their use.	3%	
	1.03 Understand the connection between cybersecurity with the Internet and the systems built on it.	3%	
<b>2.00</b>	<b>Understand the impact of computing.</b>	<b>9%</b>	<b>B2</b>
	2.01 Understand how computing affects communication, interaction and cognition and how computing connects innovations with other fields.	3%	
	2.02 Understand the beneficial and harmful effects of computing.	3%	
	2.03 Understand the connection between computing within economic, social and cultural contexts.	3%	
<b>3.00</b>	<b>Apply techniques to create artifacts.</b>	<b>9%</b>	<b>C3</b>
	3.01 Apply computing tools and techniques to create and analyze artifacts.	3%	
	3.02 Apply computing tools and techniques for creative expression.	3%	
	3.03 Apply programming as a creative tool.	3%	
<b>4.00</b>	<b>Apply abstraction to focus on relevant concepts.</b>	<b>15%</b>	<b>C3</b>
	4.01 Understand the combination of abstractions used to represent data.	3%	
	4.02 Understand how binary sequences are used to represent digital data.	3%	
	4.03 Apply procedures to develop an abstraction.	3%	
	4.04 Apply multiple levels of abstraction in computation.	3%	
	4.05 Apply models and simulations to raise and answer questions.	3%	
<b>B</b>	<b>ADVANCED COMPUTER SCIENCE PRINCIPLES</b>	<b>58%</b>	
<b>5.00</b>	<b>Apply processes to data and information to create knowledge.</b>	<b>15%</b>	<b>C3</b>
	5.01 Apply processes to information to gain insight and knowledge.	3%	
	5.02 Understand how computer programs are used to process information.	3%	
	5.03 Apply computing to facilitate exploration and the discovery of connections in Information.	3%	
	5.04 Apply procedures to use large datasets to explore and discover information and knowledge.	3%	
	5.05 Understand the considerations involved in the computational manipulation of Information.	3%	
<b>6.00</b>	<b>Apply algorithms in computer science.</b>	<b>12%</b>	<b>C3</b>
	6.01 Apply procedures to develop an algorithm.	3%	
	6.02 Apply procedures to express an algorithm in a language.	3%	
	6.03 Apply procedures to connect problems and potential algorithmic solutions.	3%	
	6.04 Apply procedures to evaluate algorithms analytically and empirically.	3%	

<b>7.00</b>	<b>Apply programming in problem solving, human expression and knowledge creation.</b>	<b>31%</b>	<b>C3</b>
	7.01 Understand how programs implement algorithms	3%	
	7.02 Apply abstraction to manage complexity in programs	5%	
	7.03 Apply processes to evaluate a program for correctness	8%	
	7.04 Apply procedures to develop a correct program	8%	
	7.05 Apply mathematical and logical concepts in programming	7%	