Career and Technical Education
Adapted CTE Course Blueprint
of
Essential Standards

Business and Information Technology Education

6422 Computer Programming II

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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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
Column information	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. **Cognitive Process Dimension:** 1 Remember 2 Understand 3 Apply 4 Analyze 5 Evaluate 6 Create **Knowledge Dimension:** 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 6422 COMPUTER PROGRAMMING II

(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
	Total Course Weight	**100%**	
A	**ADVANCED CONCEPTS OF OBJECT-ORIENTED PROGRAMMING**	**54%**	
1.00	**Apply C# Procedures in the XNA Framework.**	**15%**	**C3**
	1.01 Understand classes, structures, and the XNA Framework. (6%) 1.02 Apply decision structures to modify and access object properties (6%) 1.03 Apply procedures to randomize output and obtain player input. (3%)		
2.00	**Apply multimedia programming concepts.**	**13%**	**C3**
	2.01 Apply the Rectangle class to handle images and collision. (5%) 2.02 Understand how to work with XML files. (3%) 2.03 Apply implementation of sound and video. (5%)		
3.00	**Apply advanced properties of arrays.**	**17%**	**C3**
	3.01 Apply procedures to construct two-dimensional arrays. (6%) 3.02 Apply procedures to construct dynamic arrays. (5%) 3.03 Apply procedures to sort and search arrays. (6%)		
4.00	**Understand game design principles.**	**9%**	**B2**
	4.01 Understand the seven elements of game design. (6%) 4.02 Understand the Game Design Document. (3%)		
B	**ADVANCED PROGRAMMING CONCEPTS**	**46%**	
5.00	**Apply procedures to design class structures.**	**23%**	**C3**
	5.01 Understand classes, objects, properties, and instance variables. (5%) 5.02 Apply procedures to initialize objects using constructors. (5%) 5.03 Apply procedures to create methods and instantiate an object from a class. (5%) 5.04 Apply procedures to create class methods with value, reference and default parameters. (5%) 5.05 Apply procedures to overload class methods. (3%)		
6.00	**Apply advanced object-oriented programming concepts.**	**23%**	**C3**
	6.01 Apply inheritance and composition to create derived classes. (6%) 6.02 Understand polymorphism. (6%) 6.03 Understand data encapsulation. (5%) 6.04 Understand abstract classes and interfaces. (3%) 6.05 Understand overriding and shadowing. (3%)		