El Dorado Union High School District
Educational Services

Course of Study Information Page

Course Title: ACE Computer Programming I (#494)	
Rationale: A continuum of courses, including advanced classes in technology is needed. At Union Mine, the 4 x 4 schedules create an immediate need for additional elective options. This course provides the opportunity for students to increase their technical skills through a year long (one term) course. In addition, this course offers students the opportunity to explore video production as a possible career option.	
Course Description: This course is an introduction to computer science with an emphasis on programming concepts and methodology. Intended for students with little or no programming experience. The course will include topics such as: computer hardware and software, data representation, data storage, programming concepts and methodology including problem solving and algorithm development, sequential programming, flow of control, modular and/or object based programming. The course will include lectures, technical activities and laboratory experiences.	
Length of Course:	Year – UMHS Two semesters – EDHS, PHS, ORHS, IHS
Grade Level:	10-12
Credit: X Number of Units Meets graduation requirements Request for UC "a-g" requirements College Prep Elective Vocational	5 units per semester
Prerequisites:	Successful completion of Algebra I and Computer Technology ½
Department:	Business/Technology
District Sites:	EDHS, ORHS, PHS, UMHS, IHS
Board of Trustees Adoption Date:	January 22, 2002
Textbook/Instructional Materials:	
Date Adopted by Board of Trustees:	

Note: The EDUHS Instructor and the CSUS Computer Science Instructor will make a determination of which programming languages will be used in this course. This course of study was developed using the C language.

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UNIT #1: Overview of programming languages

GOAL: Students will be introduced to the programming languages

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Explain why programming languages are used. 2. Explain the different used of programming languages. 3. Explain the history of programming languages. 4. Explain how programming languages are used on a personal computer.	1. Read the "Introduction to Programming" in the test or online. 2. Do an Internet search on a type of programming language, (such as C, C++, Java, Qbasic, Visual Basic, etc.) and detail how it was developed and used.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
National Technology Standards: 1, 2, 4, 5, and 6 EDCOE Technology Standards and Competencies: Basics and Research National Business Education Standards: Communication, Computation, and Information Technology California Business Education Standards: 1.6 Information Technologies 4.0 Computer Science and Information Technology 4.1 Computer Science and Information Technology 4.3 Computer Science 4.4 Management of Information Systems

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UNIT #2: Running Programs

GOAL: Students will be introduced to the process of editing, running and linking a program

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Understand compiled languages. 2. Explain editing or writing a program. 3. Explain compiling. 4. Explain linking. 5 Explain executing.	1. Read material in the textbook or online. 2. Type a program in using one of the Microsoft Windows edition packages. 3. Select "Build" from the "Make" menu. 4. From the "run" menu, select "Go." 5. Use the "Next Error" from the "Search" menu to find and correct all errors.

Content Area Standards (Please identify the source)
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UNIT #3: The Structure of Programs

GOAL: Students will understand the general structure, character set, and keywords of a program

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Explain a character set. 2. Explain keywords. 3. Describe the general structure of a program. 4. Describe general statement characteristics and construction	1. Read material in the textbook or online 2. Examine a program in detail.

Content Area Standards (Please identify the source)
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UNIT #4: Writing a Simple Program

GOAL: Students will write a very simple program in a computer language

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe the function of a preprocessor directive 2. Describe how to add comments.	1. Read material in the textbook or online. 2. Write a short program that prints a message on the screen. 3. Add comments to your program.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #5: Data Types

GOAL: Students will understand the five basic types associated with local variables

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Identify and name a local variable as a specific date type 2. Initialize local variable. 3. Describe the conventions for variables. 4. Perform simple math using local variables.	1. Read material in the textbook or online. 2. Write a simple program that performs a mathematical calculation such as addition, multiplication, subtraction, division, average, etc.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #6: Input and Output Functions

GOAL: Students will understand the various input and output functions and commands

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe an input function for a program. 2, Describe an output function for a program. 3. Describe stream-oriented programs 4. Describe a direct access file	1. Read material in the textbook or online 2. Create a program that adds and prints the results.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #7: Control Loops

GOAL: Students will understand flow of control and the concept of "looping."

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. understand conditional or logical expressions as used in program control. 2. Understand different types of looping.	1. Read material in the textbook or online. 2. Create a simple program using one or more of the looping techniques that calculates temperature conversion from Fahrenheit to Celsius

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #8: Structure and Nesting

GOAL: Students will understand how to structure a program and how nesting expands the options for programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Explain how structure impacts a computer program. 2. Explain how nesting expands programming options.	1. Read material in the textbook or online. 2. Construct a simple program that determines a number between 0 and 99 and then asks the user to guess the correct number.

Content Area Standards (Please identify the source)
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UNIT #9: Conditional Execution

GOAL: Students will understand how to construct a program so that a set of instructions are performed based on a condition

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe the impact of conditions on a program. 2. Describe the use of logical expressions. 3. Describe the use of true and false. 4. Describe the use of compound statements.	1. Read material in the textbook or online. 2. Construct and debug a program that contains simple and compound statements.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #10: Functions and Prototypes

GOAL: Students will understand the importance of functions (subroutines, procedures, etc.) in computer programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe how to construct a function. 2. Describe a local function. 3. Describe function types. 4. Understand the standard library functions.	1. Read material in the textbook or online. 2. Construct and debug a program that generates a random number from 1 to 6 and displays a dice face with the appropriate pattern.

Content Area Standards (Please identify the source)
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UNIT #11: More Data Types

GOAL: Students will understand global variables and constant data types in programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe a global variable. 2. Describe how to define a constant data type.	1. Read material in the textbook or online. 2. Construct and debug a program to calculate sales tax on a purchase.

Content Area Standards (Please identify the source)
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UNIT #12: Arrays

GOAL: Students will understand how to use arrays in programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe the features of an array. 2. Describe the use of a string constant.	1. Read material in the textbook or online. 2. Construct and debug a program that reads in the text you type and stores it in a character array.

Content Area Standards (Please identify the source)
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UNIT #13: Pointers

GOAL: Students will understand the use of pointers in programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Define a variable. 2. Define a pointer. 3. Describe the process for adding a pointer to a program.	1. Read material in the textbook or online. 2. Construct and debug a program containing an array and a pointer.

Content Area Standards (Please identify the source)
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Department: Strings
Course Title: Computer Programming I (ACE)

UNIT #14: Strings

GOAL: Students will understand the use of strings in programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe a string and how it is used in programming. 2. Locate a string in a simple program.	1. Read material in the textbook or online. 2. Construct and debug a program containing a simple string.

Content Area Standards (Please identify the source)
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UNIT #15: Structures

GOAL: Students will understand how structures expand the options for programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe the difference between an array and a structure. 2. Describe the difference between structures and functions. 3. Describe how to add a pointer to a structure. 4. Describe the malloc function. 5. Describe the use of structures and linked lists. 6. Describe the function of a header file.	1. Read material in textbook or online. 2. Construct and debug a program containing structures.

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UNIT #16: Career Opportunities in Computer Programming

GOAL: Students will understand the variety of job options for computer programmers

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Describe different careers and vocations open to individuals with training in computer programming. 2. Describe the possible training options for computer programmers. 3. Describe a typical college course of study in computer programming. 4. Describe the degree options for computer programmers.	1. Read material in the textbook or online. 2. Develop a plan for training and education in one particular computer programming field. 3. Develop a portfolio of completed and debugged programs to share with prospective colleges, training facilities and/or employers.

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