El Dorado Union High School District
Educational Services

Course of Study Information Page

Course Title: ACE Computer Programming II (#495)	
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 will provide instruction on programming concepts using a high-level, block-structured language. The course will offer an introduction to methodologies for program design, development, testing, and documentation. Topics include algorithm and program design, control structures, arrays, functions, procedures, text files, and records. 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 X Elective Vocational	5 units per semester
Prerequisites:	Successful completion of Algebra I, Computer Technology ½ and ACE Computer Programming I
Department:	Business/Technology
District Sites:	EDHS, ORHS, PHS, UMHS, IHS
Board of Trustees Adoption Date:	January 22, 2002
Textbook Title:	
Date Adopted by Board of Trustees:	

EL DORADO UNION HIGH SCHOOL DISTRICT
Educational Services

Department: Business/Technology
Course Title: Computer Programming II (ACE)

UNIT #1: The Fundamentals

GOAL: Students will be introduced to advanced programming in a specific language

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Simple programs. 2. Variables, Objects and their declarations. 3. Keywords and identifiers. 4. Chained assignments. 5. Integer types. 6. The simple operators. 7. The char type.	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

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: Conditional Statements and Integer Types

GOAL: Students will be introduced to the use of conditional statements and integer types in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Input 2. The if statement 3. The if...else statement 4. The relational operator 5. The compound statement 6. A nested conditional 7. The switch statement 8. Scope 9. Enumeration types 10. Integer type conversions	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #3: Iteration and Floating Types

GOAL: Students will be introduced to the use of iteration and floating types in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. The while statement 2. The do...while statement 3. The for statement 4. The break statement 5. The continue statement 6. The goto statement 7. The real number type 8. Constants, variables and objects 9. Pseudo-random numbers	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #4: Functions

GOAL: Students will be introduced to the use of functions in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. The standard C Library functions 2. User-defined functions 3. Test driver 4. Function declarations and definitions 5. Separated compilation 6. The void function 7. Boolean functions 8. !/O functions 9. Passing by reference 10. Passing by constant reference 11. Inline functions 12. Scope 13. Overloading 14. Default arguments	1. Read material in the test or online. 2. Create and debug a simple program using the skills taught in this unit.

Content Area Standards (Please identify the source)
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UNIT #5: Arrays

GOAL: Students will be introduced to the use of arrays in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Processing arrays 2. Initializing an array 3. Passing an array to a function 4. Simple sorting and searching algorithms 5. Type definitions 6. Multidimensional arrays	1. Read material in the ext or online. 2. Create and debug a simple program using the skills taught in this unit.

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

GOAL: Students will be introduced to the use of pointers and references in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Reference 2. Pointers 3. Derived types 4. Object and values 5. Returning a reference 6. Arrays and pointers 7. The new operator 8. The delete operator 9. Dynamic arrays 10. Using const with pointers 11. Pointers to pointers 12. Pointers to functions 13. NUL, NULL and void	1. Read material in the est or online. 2. Create and debug a simple program using the skills taught in this unit

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

GOAL: Students will be introduced to the use of strings in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Review of pointers 2. Strings 3. String I/O 4. Some cin member functions 5. The ctype.h header file 6. Arrays of strings 7. The C-string handling library	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

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

GOAL: Students will be introduced to the use of classes in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Class declarations 2. Constructors 3. Access functions 4. Private member functions 5. The copy construction 6. Destructor 7. Constant objects 8. Structures 9. Pointers to objects 10. Static data members 11. Static function members	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

Content Area Standards (Please identify the source)
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UNIT #9: Overloading Operators

GOAL: Students will be introduced to the use of overloading operators in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Overloading the assignment operator 2. The this pointer 3. Overloading the arithmetic operators 4. Overloading the relational operators 5. Overloading the stream operators 6. Overloading the increment and decrement operators 7. Overloading the script operators	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #10: A String Class

GOAL: Students will be introduced to the use of a string class in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. The string class interface 2. The constructors and destructors 3. The copy constructor 4. The assignment constructor 5. The addition constructor 6. The comparison constructor 7. Stream operators	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

Content Area Standards (Please identify the source)
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UNIT #11: Composition and Inheritance

GOAL: Students will be introduced to the use of composition and inheritance in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Composition 2. Inheritance 3. Protected class members 4. Private Access versus protected access 5. Virtual functions and polymorphism 6. Abstract base classes 7. Object-oriented programming	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #12: Stream I/O

GOAL: Students will be introduced to the use of stream I/O in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Stream classes 2. The ios class 3. Ios format flags 4. Ios state variables 5. The istream and ostream class 6. Unformatted input functions 7. Unformated output functions 8. Stream manipulator 9. Disk File I/O with stream 10. Character I/O 11. Binary I/O 12. Object I/O 13. I/O with multiple object 14. The file pointer	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

Content Area Standards (Please identify the source)
The students will achieve the following content standards:
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UNIT #13: Templates and Iterators

GOAL: Students will be introduced to the use of templates and iterators in advance programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. Function templates 2. Class templates 3. Container classes 4. Subclass template 5. Passing template classes to template parameters 6. Iterator classes	1. Read material in the test or online. 2. Create and debug a simple program using the skills taught in this unit.

Content Area Standards (Please identify the source)
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UNIT #14: Libraries

GOAL: Students will be introduced to the use of libraries in advanced programming

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. The standard C++ library 2. Proprietary libraries 3. The standard C headers 4. String streams 5. File processing 6. The standard template library	1. Read material in the text or online. 2. Create and debug a simple program using the skills taught in this unit.

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The students will achieve the following content standards:
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UNIT #15: Career Exploration Unit

GOAL: Students will locate a professional computer programmer and shadow them for a pre-determined period of time

OBJECTIVES The student will:	SUGGESTED ACTIVITIES
1. The responsibilities of a professional computer programmer 2. The training required to secure employment in the computer programming field 3. The education required to secure training in the computer programming field	1. Using professional organizations and other resources, students will locate professional computer programers and arrange to shadow them at work. 2. Students will compile a portfolio of the programs they have developed to share with prospective employers, colleges, universities and technical schools.

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