LOS MEDANOS COLLEGE

ARTICULATION AGREEMENT **DATE DRAFTED**: October 31, 2022
VALID ACADEMIC YEARS: FA22-SP23

LMC COURSE: COMSC-044 "Introduction to C++ Programming

HIGH SCHOOL/ADULT EDUCATION SCHOOL COURSE: Computer Programming

S**chool:** Heritage High School
Address: 101 American Ave., Brentwood, CA 94513

A. **COLLEGE COURSE DESCRIPTION:** This course is designed to be an introduction to the C programming language. We use a C++ text because C is a subset of C++ and is an object-oriented language. C++ has evolved into one of the leading programming languages in the computer software industry. C++ compilers are available on all platforms ranging from microcomputers to mainframes. The course will include structured program design, programming style, documentation, modular design, code reusability, program verification and testing, data abstraction, information hiding, and data structuring. Problems will come from the areas of business.
B. **UNITS: 3**
C. **PRE-REQUISITES: NA**
D. **HIGH SCHOOL/ADULT EDUCATION CLASS DESCRIPTION:** This is an introductory course in computer programming designed to focus on problem-solving skills, critical thinking, and computer ethics. It includes the basic concepts of structured programming, object-oriented programming, and top-down design. Student will learn to design (structured) algorithms to solve (programming) problems. Although a specific language will be used, the coverage of algorithms and object-oriented design techniques is general enough to enable the student to use this course as a foundation for problem solving in any programming language. The course includes the use of Visual Basic as the programming language. Structured programming and object-oriented programming will be taught through lectures, demonstration, analysis, and programming projects generally related to math and business.

E. **REQUIRED CONTENT FOR ARTICULATION:**

1. THE COMPUTER
   1.1 Demonstrate a working knowledge of the computer: Computer hardware peripherals, parts, care and handling and operations.
2. THE WINDOWS OPERATING SYSTEM
   2.1 Develop a basic understanding of the Windows operating system by performing file management tasks using common Microsoft Applications.
   2.2 Demonstrate the proper use and care of computer storage media
   2.3 Demonstrate knowledge of Microsoft Visual Basic Integrated Development Environment to create applications that are compatible with the Windows Operating System
3. THE PRINTER
   3.1 Demonstrate a working knowledge of the printer: hardware, care and handling and operations.
4. PROGRAM DEVELOPMENT
   4.1 Clearly define
   4.2 Develop a plan

4.2.1 Develop and apply simple algorithms.
4.3 Subdivide problems into logical modules.
4.3.1 Create flowcharts to visually demonstrate the logical subdivisions and flow.
4.4 Code the sequence of steps in a computer language.
4.4.1 Code in VISUAL BASIC
4.4.2 Write interactive Input/Output procedures.
4.5 Enter the program and have the computer execute the sequence of instructions.
4.6 Rework the program until accomplishes the required task.
4.6.1 Debug and expand/enhance the program.

5. PROGRAMMING TOPICS
   5.1 Introduction to VB Programming
   5.2 Program and Graphical User Interface Design
   5.3 Program Design and Coding
   5.4 Variable and Arithmetic Operations
   5.5 Decision Structures
   5.6 Loop Structures
   5.7 Creating Web Applications
   5.8 Using Procedures and Exception Handling
   5.9 Using Arrays and File Handling
   5.10 Incorporating Databases with ADO.NET
   5.11 Multiple Classes and Inheritance

E. REQUIRED COMPETENCIES (PERFORMANCE OBJECTIVES) FOR ARTICULATION

The student will:

1. Be introduced to computer programming.
2. Improve problem-solving and critical thinking skills through structured programming.
3. Design and implement fluently coded computer-based solutions from selected problems in an accepted high-level language.
4. Become familiar with ethical issues in computer technology.

F. METHODS FOR END OF COURSE ASSESSMENT:

TEACHING STRATEGIES AND PROCEDURES	GRADING CRITERIA:	
Lectures, demonstrations, and hand-outs	Programming projects	20%
Programming by imitation	Final exam project	10%
Analysis of teacher provided materials	Final exam	10%
Study assignments from texts and quizzes	Assessments	60%
Classroom discussions		
Individual and team programming on selected projects		

F. TEXTBOOKS OR OTHER SUPPORTING MATERIALS

- Microsoft Visual Basic 2017 – Comprehensive
- Microsoft Visual Studio 2017 (Teacher Resource)

G. PROCEDURES AND/OR CRITERIA FOR COURSE ARTICULATION:
(all of the following must be met)

1. Students **must apply** to Los Medanos College and register in **CATEMA** to receive credit recommendations by their high school teacher.
2. Students **must be recommended** for credit by their high/adult ed. schoolteacher in **CATEMA.** *Teachers recommend credit at their discretion.*
3. Students **must complete** the **Computer Programming class at Heritage High School** with an overall grade of "B" or better.
   High school/Adult Ed. teachers will enter this grade in CATEMA.
4. Students **must earn** a "B" or better on the agreed upon college/high school final exam procedure.
   High school/Adult Ed. teachers will enter this exam grade in CATEMA.
5. Articulated college credit may only be recommended by the high school teacher and received by the student **within the academic year** in which it was earned.
6. Upon completion of the above, the student will receive on his/her LMC and CCCCD (California Community College District) transcript the units of credit for LMC's **COMSC-044 "Intro to C++ Programming"** course.
7. College transcripts will reflect the **FINAL EXAM GRADE** earned and will be notated as *Credit by Exam.

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HIGH SCHOOL/ADULT EDUCATION SCHOOL COURSE: Computer Programming

School: Heritage High School
Address: 101 American Ave., Brentwood, CA 94513

COLLEGE SIGNATURES

Natalie Hannum
Natalie Hannum (Nov 17, 2022 15:27 PST)

Natalie Hannum Date
LMC Vice President of Instruction

Dennis Franco Date
LMC Dean of Instruction (Interim), Computer Science

Louie Giambattista
Louie Giambattista (Nov 15, 2022 10:18 PST)

Louie Giambattista Date
LMC Computer Science Department Chair

HIGH SCHOOL/ROP/DISTRICT SIGNATURES

Carrie Wells
Carrie Wells (Nov 17, 2022 16:11 PST)

Carrie Wells Date
Principal, Heritage High School

Erik Faulkner
Erik Faulkner (Dec 12, 2022 08:18 PST)

Erik Faulkner Date
LUHSD Asst. Superintendent, Educational Services

Robert Pardi
Robert Pardi (Nov 18, 2022 14:20 PST)

Robert Pardi Date
Faculty, Heritage High School

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