C/C++ Programming I Syllabus

UC San Diego
EXTENSION

Course Information

Course Number: CSE-40475
Section ID: 162461
Quarter: Winter 2022
Course Dates: 1/11/2022 – 3/12/2022
Credit units: 3.0

Instructor Information

Name: Ray Mitchell
Email: MeanOldTeacher@MeanOldTeacher.com

Instructor/Student Communication

Instructor/student communication is via email only and is strongly encouraged. There are no specific “office hours” but inquiries are answered as quickly as possible, often within minutes.

Course Description and Objectives

This course provides a working knowledge of data types, basic operations, standard library functions, portability issues, standard programming practices, and style. C and C++ are covered concurrently with C++ being presented as a "safer" version of C that offers an extended set of features and capabilities rather than as an object-oriented language. Object-oriented programming is taught in the **C/C++ Programming III** and **IV** courses.

Course Prerequisites

Recent completion of an introductory programming course in any language or equivalent experience is recommended. Students are expected to be familiar with general concepts such as logical problem solving, constants, variables, arithmetic operations, loops, and functions.

Course Materials

Operating Systems and Program Development Tools:
This course is not tied to any specific operating system or program development tools and students may choose according to their own needs and preferences. The most commonly chosen free products are "Visual Studio Community" for Windows, "Xcode" for macOS, and "Code::Blocks" for Linux, Windows, and macOS.

Drawings, Diagrams, and PDF File Conversion:
Some assignments require drawings/diagrams in PDF format that must either be machine-produced or neatly drawn by hand and digitized. PDF converters are readily available as well as being built into many applications such as Microsoft Word, Visio, etc.

Required Book:
The only book required for this course is titled "Beginning & Advanced C/C++ Notes" and students must refer to it as they listen to the course's audio lessons. It is only available from the UCSD Bookstore and includes a hard copy and an online version. For convenience students are initially provided with the sections necessary for the first three lessons. Since this book is only a collection of notes pertaining to the course lessons and homework and is not intended as a comprehensive textbook, supplemental textbook recommendations are provided for students wanting more comprehensive information.

Email Is Required:
Email addresses for which attachment files having **.zip**, **.pdf**, **.txt**, **.c**, **.cpp**, or **.h** extensions are removed or corrupted are not suitable for this course. Students should always check their spam mailboxes if an expected email is not received.

Course "Academic Integrity" Policy

Please make sure you fully understand every aspect of the course academic integrity policy as stated below and ask questions if you do not. I take it very seriously and will enforce it.

Course "Academic Integrity" Policy

The following are considered academic integrity policy violations:

1. Submitting a solution you did not design and develop entirely on your own.
2. Altering a solution that is not entirely your own in an attempt to "fool" the instructor.
3. Working together with one or more other persons toward a common solution.
4. Making any part of a solution accessible to anyone else.

Getting instructor help is recommended when having problems and you may use any code he gives you. Occasionally discussing general strategies and general coding issues with others is permissible, but your solutions must be your own work.

PENALTIES for any violation of the course's academic integrity policy:

1. A score of zero for the entire assignment containing such a violation in any exercise.
2. Review of all previous assignments with a score reduction to zero if previously unnoticed academic integrity violations are found.
3. Potential referral to the Office of Student Conduct for further action.

Assignment Information and Grading Policies

- The final course grade is based entirely on eight 20-point assignments, all of which consist of "exercises" that are customized for and emailed to each student at the beginning of the course. There are no exams, extra credits, makeups, or dropped scores.
- Exercises are ONLY accepted for grading via email submission to the "assignment checker" and may be resubmitted as many times as desired before the deadlines indicated in the table below. After each deadline, the newest of each on-time exercise will be graded, recorded, and returned via email along with my solutions.
- Students are allowed one five-day extension for their choice of assignments 1-7 (but not 8) if requested before the deadline and I am notified upon completion. Extensions will also be granted for verifiable serious illness, medical/family emergencies, U.S. military obligations, and extremely late enrollments, but not for job-related issues, vacations, or anything else.

Exercise Submission Deadlines **Unexcused late submissions will receive NO credit.**			
Asg #	Related Notes	All Are Tuesdays @ 11:59PM	Time Zone
1	1.1 – 1.18	January 18	PST
2	2.1 – 3.7	January 25	PST
3	3.8 – 4.3, D.1 – D.9	February 1	PST
4	5.1 – 5.19	February 8	PST
5	6.1 – 6.13	February 15	PST
6	6.14 – 7.7	February 22	PST
7	7.8 – 9.11	March 1	PST
8	9.12 – 10.8	March 8	PST
9	10.9 – 10.15	*no assignment 9*	--

Course Grading Scale:
The final course grade is determined entirely by the sum of the points earned on the eight 20-point assignments as indicated in the table on the right.

Refundable Deductions:
No deductions will be refunded for any assignment unless I have made an error.

Final Course Grades			
Points	Percent	Grade	Status
>= 152	95%	A+	pass
>= 136	85%	A	pass
>= 128	80%	B+	pass
>= 104	65%	B	pass
>= 96	60%	C+	pass
>= 80	50%	C	pass
>= 77	48%	C-	pass
< 77	48%	F	fail

Course Topical Outline

The following topics are scheduled to be covered during the lessons indicated but are subject to change based upon class needs. Note numbers refer to notes in the required course book.

1. *Notes 1.1 – 1.18*
   Introduction and Fundamentals
   Character and String Literals
   Compound Assignment
   Elements of a Simple Program
   Console I/O

2. *Notes 2.1 – 3.7*
   Arithmetic Types & Conversions
   The **size of** Unary Operator
   #include and #define
   const-qualified Variables
   Boolean Type
   Relational and Logical Statements
   for Statements

3. *Notes 3.8 – 4.3, D.1 – D.9*
   while and **do** Statements
   break and **continue** Statements
   if and **if**/**else** Statements
   switch Statements
   Character Analysis Functions
   Flags
   I/O Redirection
   End of File and EOF
   Preprocessor Topics

4. *Notes 5.1 – 5.19*
   Function Syntax
   Pass/Return Mechanism
   Function Prototypes
   Default Arguments
   Function Overloading
   Call By Value
   Reference Variables
   Automatic and **static** Variables
   External Variables
   Communication between Files
   static Externals and Functions
   Function-like Macros using #define
   inline Functions

5. *Notes 6.1 – 6.13*
   The Right-Left Rule
   One-dimensional Arrays
   Pointer Basics
   Pointers and Functions
   Call/Return by Reference
   const-qualified Call/Return

6. *Notes 6.14 – 7.7*
   Arithmetic Operations on Pointers
   Pointers and Arrays
   Functions and Arrays
   Strings and String I/O
   Library String Functions
   The **string** class

7. *Notes 7.8 – 9.11*
   Multidimensional Arrays
   Ragged Arrays
   Command Line Arguments
   Dynamic Storage
   Dynamic Ragged Arrays
   The **typedef** Facility
   Enumerated Data
   Structures

8. *Notes 9.12 – 10.8*
   Structures, cont'd.
   Data & Function class Members
   Text and Binary Files
   File Handling Functions
   Operations on Text Files

9. *Notes 10.9 – 10.15B*
   Operations on Binary Files
   File Descriptor I/O