CEPR 1978: Intermediate Level C++

Department of Computer Science
College of Applied Science & Technology
Weber State University

WEBER STATE UNIVERSITY
Worthy of Your Dreams

Course Syllabus

Instructor:	Yong Zhang	**Term:**	Summer 2017
Office:	D2-308M	**Class Meeting Days:**	Mon, Tue, Wed, Thurs
Phone:	801-626-7682	**Class Meeting Hours:**	8:00 am - 12:00 pm
E-Mail:	yongzhang@weber.edu	**Class Room:**	CCE-206
Office Hours:	N/A	**Class Location:**	Center for Continuing Education

I. Welcome!

Welcome to the world of intermediate level C++, where you will learn many concepts and techniques about intermediate level C++ programming.

II. University Course Catalog Description

This course covers intermediate level C++. Topics include Containers such as Vector, List, Set, Map; operator overloading; Templates; Exception handling, namespaces; Preprocessor macros; Object Oriented Programming; Input/Output, etc. Emphasis will be on abstraction, efficiency, reusable code, and object oriented implementation.

III. Course Objectives

By the end of this course, students will be able to:

- Understand C++11 new features and use the new features to solve a wide range of problems.
- Understand the move semantics and how it is used to improve performance.
- Understand and operate the smart pointers.
- Understand and operate the latest C++ Integrated Development Environment (IDE) Microsoft Visual Studio 2017, and how to create, compile, execute and debug programs in that environment.
- Understand and use effectively the basic containers such as set and map.
- Understand the Standard Template Library (STL) and selected algorithms, containers and templates.

IV. Course Prerequisites

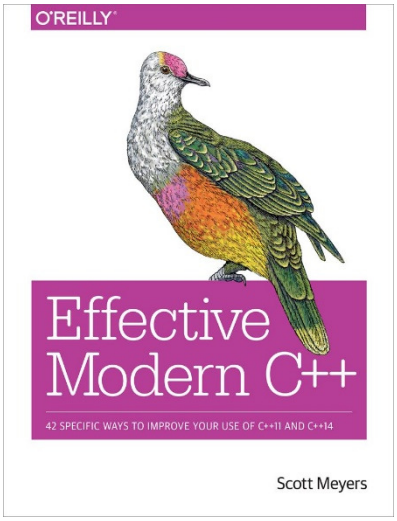
CS 1410 Object Oriented Programming using C++, or
CEPR 1979 CCE Beginning Level C++

V. Course Credits

n/a

VI. Recommended Texts and Materials

Effective Modern C++: 42 Specific Ways to Improve Your Use of C++11 and C++14, by Scott Meyers,
Publisher: O'Reilly Media; 1 edition (December 5, 2014)
ISBN-13: 978-1491903995



VII. Schedule

(All the topics, dates, and assignments are tentative, and can be changed at the discretion of the instructor)

Date	Course Work and Topics
06/19 Mon	C++11 New Features: • What is new in Visual Studio 2017 • Type inference using auto and decltype • Trailing return types • Lambda expressions • Uniform Initialization
06/20 Tue	C++11 Move Semantics: • Move Semantics Introduction • lvalue and rvalue revision • rvalue References • Move semantics implementation • std::move • Perfect forwarding
06/21 Wed	C++ Templates: • Introduction to Templates • Template Function • Template Class • Template Specification • Variadic Templates
06/22 Thurs	C++ Smart Pointers: • Pointers in C++ • unique_ptr • shared_ptr • Weak_ptr • Uniform Initialization • Smart Pointers
06/26 Mon	C++ Debugging: • Visual Studio 2017 Debugging • Assertions • Verify • Trace
06/27 Tue	C++ Containers: • Introduction to Containers • vector • List • set • map • multimap • unordered_map
06/28 Wed	C++ Exceptions: • Exception Handling: Try and Catch • Throw • Unwinding the Stack
06/29 Thurs	Other Topics