COMPSCI 174: Introduction to C++ (Spring 2018)

Section 02: Tu/Th: 2:00pm – 3:15pm, McGraw Hall 0115

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Office Hours:	Mondays: 2:00pm – 4:30pm, Thursdays: 9:30am -12:00 noon, and other times by appointment

Welcome to CS 174, Introduction to C++. C++ is the first popular programming language that has brought a new way of designing and implementing an application. C++ has combined principles from structured and object-oriented programming languages. Having a solid background in C++ and object-oriented (OO) design will help us tremendously in understanding the Object-Oriented paradigm, designing and implementing any applications. By the end of this course, you are expected to have a thorough understanding of fundamental concepts in structured programming languages, such as control structures, pointers, and functions. Also, you are expected to have basic object-oriented concepts such as classes and objects, and you will be able to design and implement solutions to real-world problems using these concepts.

❖ Course Description

This course teaches basic programming skills using the structured high-level language C++. Topics include basic input and output, declaration and use of variables, use of control statements, implementation of functions using value and reference parameters, arrays, classes, and objects. Students will write moderately complex applications using C++.

Prerequisite: MATH 141 with a grade of C or better, or MATH 139 with a grade of B or better, or a waiver of MATH 141, or a score of 3 or higher on the AP Computer Science Principles exam.

❖ Course Objectives

- Given a real-world problem, students will be able to develop C++ programs to gather input data and solve the problem using fundamental control structures, functions, data structures such as arrays, and classes.
- Given a real-world problem, students can solve it using basic object-oriented programming.

❖ Textbook

"***C++ How to Program***" by Paul J. Deitel, 9th Edition, ISBN-13: 9780133378719, Pearson, Feb. 2013. Textbooks are available through UW-W Textbook Rental (located in the basement of the UW-W Bookstore).

❖ Course Site

Electronic course support is offered through the Desire2Learn (D2L) course management system. D2L can be accessed online at http://www.uww.edu/desire2learn/. Please check D2L on a regular basis for class announcements, assignments, course materials, tests, and grades. All PowerPoint slides and class examples used in this course will be available on the D2L course site.

❖ Computing

We will be using a Linux server from the school to get access to GNU C++ on Linux. This server can be accessed outside of school using UWW VPN and PuTTY. Each student will have an account to log in.

❖ Grading Scheme and Policies

The contribution of assignments, quizzes and tests to the overall grade is shown below:

Class Attendance and Participation	10%
Lab Assignments	35%
In-class Quizzes	15%
Midterm Exam	15%
Final Exam	25%
Final Grade	100%

The following grading scheme is used to calculate final letter grade:

93 – 100%	A	87 – 89%	B+	77 – 79%	C+	67– 69%	D+	0 – 59%	F
90 – 92%	A-	83 – 86%	B	73 – 76%	C	63 – 66%	D		
		80 – 82%	B-	70 – 72%	C-	60– 62%	D-		

Lab Assignments (35%)

Lab assignments are designed in a way to apply specific knowledge and to exercise your creative ability to integrate different knowledge to solve a problem. All the lab assignments are due by the given deadlines. **No assignments will be accepted more than one week late. Assignments handed in during the week after the due dates will be docked 25%.** If you have special justified reasons that you have to turn in late, you should let me know beforehand.

Students are required to submit their lab assignments to the specified D2L dropbox by the due dates. **Always keep computer copies of your submitted assignments.** Specific guidelines for submitting lab assignments will be delivered by the time they are issued. **Lab assignments are individual assignments, which should be done on your own**, but you may discuss assignment problems with your instructor, or other students.

Evaluation Criteria of Lab Assignments

- **Timeliness:** The assignments should be completed on time. Please see policy for late assignments below. Deadlines are given for all assignments.
- **Completeness:** All parts of a given assignment are to be submitted at the same time. However, if you have not completed an assignment by the time it is due, you are better off submitting what you have rather than nothing.

- **Accuracy:** The assignment has been completed according to the directions given. The deliverable delivered is what was asked for. **Program needs to be runnable**.
- **Efficiency:** The code should be concise and clear.
- **Readability:** Appropriate comments are required to help others understand. Also the code should be well formatted with nice alignment.

Class Attendance and Participation (10%)

Students are expected to attend class regularly. Missing class will have a negative impact on your grade in this class. You may have maximum two unexcused absences. Being engaged in class is defined as coming to class prepared, making comments relevant to the class discussion, and showing courtesy and respect for your classmates. Inattentive activities, including usage of electronic devices, or did not complete in-class hands-on practices during class time unless the instructor grants explicit permission, will be counted as absence. Students are responsible for the portion of the material covered in class and any homework given during the semester. Classroom etiquette requires you come to class on time, remain until class ends, and not maintain a conversation while the instructor or another student is speaking. If you must leave early, please do so without disrupting the class.

Quizzes (15%)

There will be in-class quizzes, which help ensure students stay up with assigned material and participate in the in-class exercises. There is no made-up quiz except for absences with a documented excuse.

Exams (40%)

Two announced examinations will be given. **Midterm exam will be given in Thursday class (March 15) in week 8. Final exam will be on Tuesday (May 15) during exam week as scheduled**. A missed exam will count as zero unless the reason for missing the exam is approved by instructor as a valid excuse. This approval should be gained in advance except in cases of emergency.

❖ Tentative Course Schedule

WEEK	Textbook Chapters	Topics
1 (1/22 – 1/28)	Chapter 1, Chapter 2 (2.1, 2.2)	Welcome, Syllabus Review, Introductions, Programming Environment
2 (1/29 – 2/04)	Chapter 4 (4.1-4.3, 4.11, 4.12), Chapter 2 (2.6-2.8)	Variables and basic data types, arithmetic operations, type casting
3 (2/05 – 2/11)	Chapter 4 (4.4-4.6), Chapter 5 (5.6)	Selection statements
4 (2/12 – 2/18)	Chapter 5 (5.3-5.5, 5.7)	Repetition statements
5 (2/19 – 2/25)	Chapter 6 (6.1-6.5)	Functions (part 1), Functions (part 2)
6 (2/26 – 3/04)	Chapter 6 (6.11-6.18), Chapter 8(8.5, 8.7)	Functions (part 3), Array (part 1)
7 (3/05 – 3/11)	Chapter 6 (6.6,6.7), Chapter 7(7.1-7.5)	Functions (part 4), Array (parts 2 and 3)

8 (3/12 – 3/18)	Review for Midterm Exam, **Midterm exam in-class on Thursday, March 15**	
9 (3/19 – 3/25)	Chapter 8 (8.1-8.4)	Pointers (part 1)
10 (4/02 – 4/08)	Chapter 8 (8.8, 8.9), Chapter 10 (10.9)	Pointers (part 2)
11 (4/09 – 4/15)	Chapter 3 (3.1-3.4)	Classes and objects (part 1)
12 (4/16 – 4/22)	Chapter 3 (3.5-3.8)	Classes and objects (part 2)
13 (4/23 – 4/29)	Chapter 3 (3.5-3.8)	Classes and objects (part 3)
14 (4/30 – 5/06)	Chapter 21, Chapter 14	Strings, file operations
15 (5/07 – 5/11)	Course Wrap Up, and Review for Final Exam	
16	**Final exam is in-class, 2:30pm-4:30pm, Tuesday May 15**	

Course Policies

- Students are expected to attend classes.
- No other coursework, readings, surfing online, or chatting online is allowed in class.
- Unless specifically being utilized in classroom activity, cell phones, laptops, tablets, and other electronic devices must be turned off and stored during class.
- Read assigned chapters from the textbook and supplementary material as assigned.
- No extra credit work will be given to substitute the required work.
- Discussions, answering questions in class, and coming prepared to class with assigned readings are expected; asking questions in class are greatly appreciated.
- A student may not earn credit for any course which is a pre-requisite for another course in which credit has been earned unless prior departmental approval is obtained.

Need for Assistance: If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as instructor have outlined, or which will require academic accommodations, please notify the instructor as soon as possible.

❖ General Education

This course is a Quantitative Reasoning (GQ) elective in the General Education program. It addresses the following General Education goals:

- Critical and Creative Thinking: Students apply their knowledge of the programming constructs taught in this course to design and evaluate strategies (i.e., algorithms) for solving a variety of increasingly complex problems. Specific General Education learning outcomes addressed include:
  - 2a: Explain and analyze relevant ideas, arguments, and problems
  - 2g: Design, evaluate, and implement strategies to solve problems or answer open-ended questions
- Quantitative Reasoning: Algorithms and computer programs are mathematical formalizations of strategies for solving problems. Students convert problem

statements given in English and/or in algebraic forms into algorithms and then into programs. They then evaluate the correctness of their programs' output and correct errors in their strategies as needed (e.g., debugging). Students are also sometimes asked to explain information presented in mathematical forms, e.g., the expected behavior of a segment of program code when executed by a computer. Specific General Education learning outcomes addressed include:

- 5a: Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words
- 5b: Convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)
- 5c: Efficiently and accurately carry out calculations to solve problems using appropriate tools and technology

Achievement of these outcomes will be assessed through programming lab assignments, quizzes, and exams. Feedback will be given primarily through grades and comments on quizzes and assignments.

❖ Important Additional Information

Academic Misconduct

The University believes that academic honesty and integrity are fundamental to the mission of higher education and of the University of Wisconsin System. The University has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Students who violate these standards are subject to disciplinary action. UWS Chapter 14 identifies procedures to be followed when a student is accused of academic misconduct. For additional information, please refer to the section in the Student Handbook titled "Student Academic Disciplinary Procedures."

Absence for University-Sponsored Events

University policy adopted by Faculty Senate and the Whitewater Student Government states that students will not be academically penalized for missing class in order to participate in university-sanctioned events. They will be provided an opportunity to make up any work that is missed; and if class attendance is a requirement, missing a class in order to participate in a university-sanctioned event will not be counted as an absence. A university-sanctioned event is defined to be any intercollegiate athletic contest or other such event as determined by the Provost. Activity sponsors are responsible for obtaining the Provost's prior approval of an event as being university-sanctioned and for providing an official list of participants. Students are responsible for notifying their instructors in advance of their participation in such events.

University Policies

The University of Wisconsin-Whitewater is dedicated to a safe, supportive and non-discriminatory learning environment. It is the responsibility of all undergraduate and graduate students to familiarize themselves with University policies regarding Special Accommodations, Misconduct, Religious Beliefs Accommodation, Discrimination and Absence for University Sponsored Events. (For details please refer to the Undergraduate Bulletin; the Academic Requirements and Policies and the Facilities and Services sections of the Graduate Bulletin; and the "Student Academic Disciplinary Procedures" [UWS Chapter 14]; and the "Student Nonacademic Disciplinary Procedures" [UWS Chapter 17]).

The UW System standard for work required per credit is that students are expected to invest at least 3 hours of combined in-class and out-of-class work per week for each academic unit (credit) of coursework; thus, a 3-credit course will typically require a minimum of 9 hours of work per week (144 hrs./semester).

Important Dates

Date	Deadline
Jan. 29	Last day to add a semester course.
Feb. 2	Last day to drop a course so that no 'W' grade is assigned.
Feb. 4	Last day to drop a course for 100% refund.
Feb. 18	Last day to drop a course for 50% refund.
May 1	Last day to drop a course – 'W' grade assigned.

I have tried to detail all course requirements in the syllabus, and I urge you to read the syllabus thoroughly and keep a copy of it handy for your review. You can always reach me through e-mail (caoy@uww.edu). Usually I will get back to you within 24 hours.