C++ Programming for Engineers

COP 2274 Section EE01
Class Periods: Tuesday, 5-6th period, 11:45 AM-1:40 PM
Thursday, 6th period, 12:50 PM-1:40 PM
Location: TBA on Canvas
COP 2274 Section EE02
Class Periods: Tuesday, 7th period, 1:55 PM-2:45 PM
Thursday, 7-8th period, 1:55 PM-3:50 PM
Location: TBA on Canvas
Academic Term: Fall 2020

Instructor:
Kwansun Cho
ckstone@ufl.edu
(352) 294-6883
Office Hours: Thursday, 9:35 AM-11:30 AM, office location (TBA on Canvas)

Peer Mentor:
Please contact through the Canvas website

- [Section EE01] Benjamin Hicks, benjamin.hicks@ufl.edu, office location (TBA on Canvas), office hours (TBA on Canvas)
- [Section EE02] Christopher Kim, kimc@ufl.edu, office location (TBA on Canvas), office hours (TBA on Canvas)

Course Description
This is an introductory course for those who have little experience in programming and have been looking to obtain a hands-on learning experience to the C++ programming language. Developing problem solving and computational thinking skills in an engineering field is encouraged in this course and emphasized with a reasonably high degree of mathematics.

Course Pre-Requisites / Co-Requisites
MAC 2312 - Analytic Geometry and Calculus 2 with a minimum grade of C

Course Objectives
The main objective of this course is to provide a foundation in C++ programming for engineering problem solving using the C++ programming language. Students will develop the skills to implement software solutions to a wide-range of engineering problems. Furthermore, students will be able to apply these skill sets to other programming languages.

Materials and Supply Fees
Not applicable

Professional Component (ABET):
This course uses several programming assignments that teach students how to effectively develop programming solutions to engineering problems. Students will develop the skills to analyze a given engineering/mathematical question and pose it is a software solution.

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High

2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	High
3. An ability to communicate effectively with a range of audiences	Low
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Medium
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	High

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Required Textbooks and Software

- Title: Absolute C++
- Author: Walter Savitch
- Publication date and edition: 2015, 6th edition
- ISBN number: 978-0133970784

An official textbook is REQUIRED (see above) and additional course materials will be posted on the Canvas course website. It will be every student's responsibility to be familiar with the relevant chapter(s) of the textbook and the material posted on the course web site each week. In-class and homework assignments may be completed using the free Visual Studio Community IDE downloadable directly from Microsoft site (https://visualstudio.microsoft.com/downloads/). Students may use an alternative software (Xcode, CodeLite, Linux command-line environment, etc…), but these will not be officially supported.

Course Schedule

Module 01 (08/31 – 09/04): Introduction – Compiling and Running C++ Program
Module 02 (09/07 – 09/11): C++ Basics / Chapter 1
Module 03 (09/14 – 09/18): Flow of Control – Branching and Looping / Chapter 2
Module 04 (09/21 – 09/25): Function Basics / Chapter 3
Module 05 (09/28 – 10/02): Parameters and Overloading / Chapter 4
Module 06 (10/05 – 10/09): Recursion / Chapter 13 / **Exam 1**
Module 07 (10/12 – 10/16): Arrays / Chapter 5
Module 08 (10/19 – 10/23): Structures and Classes / Chapter 6
Module 09 (10/26 – 10/30): Constructors and Other Tools / Chapter 7
Module 10 (11/02 – 11/06): Operator Overloading, Friends, and References / Chapter 8 / **Exam 2**
Module 11 (11/09 – 11/13): Strings / Chapter 9
Module 12 (11/16 – 11/20): Pointers and Dynamic Arrays / Chapter 10
Module 13 (11/23 – 11/24): Inheritance / Chapter 14
Module 14 (11/30 – 12/09): Polymorphism and Virtual Functions / Chapter 15 / **Exam 3**

Online Course Recording
Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Attendance Policy and Class Expectations
Weekly online classes will be held *synchronously via Zoom*. *Regular* ***attendance is REQUIRED***. Attendance will be taken at the beginning of class and all students *must* join to the designated class link provided through the Canvas website (https://elearning.ufl.edu) and be present for their attendance to count. This course runs on **a flipped classroom** design. **Students will be expected to read the assigned chapter in the required textbook and watch the lecture videos for a particular module at home before coming to class every week.** During class hours, simple yet relevant in-class programming assignments are provided to reinforce new C++ programming concepts and skills and **students must submit their complete in-class assignments before leaving class that day. Students are not allowed to submit in-class assignments without attendance**. Every student is responsible for being aware of all posted course material and all announcements made during class even if they do not explicitly appear on the syllabus. Excused absences must be consistent with university policies in the undergraduate catalog (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) and require appropriate documentation.

Make-Up Policy
Makeups for exams, homework assignments, and in-class assignments are NOT normally allowed. If you cannot attend an exam, you must contact the instructor well in advance (at least 7 days before an announced exam date). Submitting an exam, homework assignment, or in-class assignment late will result in a zero. Arrangements will be made for students on a case by case basis for excused reasons. Failure to contact the instructor prior to the exam will result in a zero. It is every student's responsibility to honor and respect the given deadlines posted on Canvas.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
In-class assignments / Attendance (13)	100 each	39%
Homework assignments (4)	100 each	28%
Exam 1	100	10%
Exam 2	100	10%
Exam 3	100	13%
		100%

Grading Policy
All homework assignments are assigned through the Canvas course site. **Please note the deadlines are strictly enforced.** For example, if the deadline is 11:59 pm, any assignment submitted after this time is considered late. It is also each student's responsibility to submit the correct file and ensure the submission is successful before the deadline (please double check your Canvas submissions). If you are unable to submit your homework through Canvas, send a copy of your assignment to your instructor ***before*** the stated deadline! There will be three exams and **all exams must be taken online using Honorlock** and will emphasize the most recently covered material. Exam details will be posted on Canvas.

Percent	Grade	Grade Points
93.4 - 100	A	4.00

90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations
Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

University Honesty Policy
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Academic Dishonesty
- **Sharing or copying of code** through any medium such as email, text, snapchat etc., and plagiarism, in addition to other dishonest behaviors, are all considered to be academic dishonesty. No information regarding the solutions of assignments and exams may be shared by students except for a discussion at a conceptual level.
- Collaboration (helping out others at a conceptual level through discussions) is encouraged in the course. However, looking at any piece of a classmate's code, sharing files, searching for solutions found online, or using someone else to complete an assignment is strictly prohibited.
- Any student found to have violated these rules, whether a provider or receiver of an unauthorized help, will be given a zero on that assignment and will be reported to the Honor Court. If students aren't clear on what constitutes plagiarism, ask the course staff.
- **It is strongly encouraged for a student to visit the course staff in-office hours whenever he/she/they have doubts.**

Online Exams through Honorlock

- Honorlock will proctor each student's exams this semester. Honorlock is an online proctoring service that allows each student to take an exam from the comfort of his/her/their home. Students DO NOT need to create an account, download software or schedule an appointment in advance.
- Honorlock is available 24/7 and all that is needed is a **computer**, a **working webcam**, and a **stable Internet connection**. To get started, each student will need Google Chrome and to download the Honorlock Chrome Extension. The extension can be downloaded at www.honorlock.com/extension/install.
- When a student is ready to test, log into Canvas, go to his/her/their course, and click on his/her/their exam. Clicking "Launch Proctoring" will begin the Honorlock authentication process, where a student will take a picture of himself/herself/themselves, show his/her/their ID, and complete a scan of his/her/their room. Honorlock will be recording his/her/their exam session by webcam as well as recording screen. Honorlock also has an integrity algorithm that can detect search-engine use, so please do not attempt to search for answers, even if it's on a secondary device.
- Honorlock support is available 24/7/365. If a student encounters any issues, he/she/they may contact Honorlock by live chat, phone **(844-243-2500)**, and/or email **(support@honorlock.com)**.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall*,* 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://care.dso.ufl.edu.

On-Line Students Complaints*:* http://www.distance.ufl.edu/student-complaint-process.