Syllabus
COSC-052-20 - Computer Science II - Summer 2022
Jul 11, 2022 - Aug 12, 2022
3:30 pm - 5:25 pm Monday, Tuesday, Wednesday, Thursday

Instructor: Willis Addison Woods, Ph.D.
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Office Hours: TBD (see TA Calendar link on Canvas for office hours)

TAs: TBD (see TA Calendar link on Canvas for office hours)

Prerequisites: COSC 051 – Computer Science I

Course Description:
This is an intense, accelerated summer experience. The rapid pace is mitigated by relatively small class sizes and individual attention available to each student. During the normal school year sections may have 30 or 40 students. Instructors generally have less availability and personalized assistance is often provided by teaching assistants. Summer sections typically have 10 or less students. This results in more personal interaction with the instructor and one-on-one assistance with complex concepts and programming techniques. Take advantage of this opportunity to completely and thoroughly explore exciting advanced topics and develop proficiency in one of most venerable programming languages within industry and academia alike.

COSC-052 surveys advanced topics of C++ programming and basic concepts of data structures. It is intended for computer science majors, minors, and other students with a serious interest in learning C++ programming. The course covers program organization, pointers, self-referential classes, dynamic object creation and destruction, linked lists, recursion, inheritance, abstract base classes, virtual methods, polymorphism, template classes, exception handling, C-style arrays, bit operations, random file access, basic algorithm analysis, big-Oh notation, abstract data types, stacks, queues, deques, lists, vectors, sequences, priority queues, searching, and sorting. COSC-051 followed by COSC-052 is a major introductory sequence and together complete the General Education requirement for Math/Science. This course can also be used to fulfill the math/computer science portion of the General Education Math/Science requirement.

Course Objectives:

- Learn advanced C++ concepts and techniques
- Apply advanced C++ to implement data structures
- Apply advanced C++ to implement algorithms
- Use all of the above to solve problems
- Learn to analyze algorithm efficiency

Required Text:
Starting Out With C++, Early Objects, 10th Edition by Tony Gaddis, Judy Walters, and Godfrey Muganda

Recommended Reference:
C++ Primer Plus, 6th Edition by Stephen Prata

Grading:
Exams: Midterm (18%), Final (25%)

Programming Projects (40%)
Project 1 (8%)
Project 2 (8%)
Project 3 (12%)
Project 4 (12%)

Homework/Quizzes/Class participation/"Citizenship" (17%)

Grading Scale:

Grade	*Range*
A	94 and up
A-	90-93
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	74-76
C-	70-73
D	61-69
F	60 and below

Course Readings:
Starting Out With C++, 10th Edition, Tony Gaddis, Judy Walters, and Godfrey Muganda, Pearson, ISBN 9780135235003

Week 1: Chapter 7 (Sections 7.1 - 7.5 and 7.10 – 7.12), Chapter 16 (Section 16.1), Chapter 11, Chapter 4 (Section 4.13), Chapter 5 (Section 5.12), Appendix F, Chapter 13 (Sections 13.1 – 13.3), Chapter 12 (Section 12.5), Chapter 10
Week 2: Chapter 11 (Sections 11.9 – 11.14), Chapter 15 (Sections 15.1 - 15.3), Chapter 18 (Sections 18.1 - 18.3 and 18.5), Chapter 16 (Sections 16.2 - 16.4)
Week 3: Chapter 14 (Sections 14.1 – 14.4), Chapter 18 (Section 18.4), Chapter 7 (Sections 7.1 - 7.5)
Week 4: Chapter 17 (Section 17.2), Chapter 9 (Sections 9.1 – 9.5)
Week 5: Chapter 9 (Section 9.6), Supplemental Reading TBA

Submitting Assignments: Programming assignments will be submitted to Canvas. The final grade will be a combination of automatic test routines and manual evaluation by me and/or TAs. All electronic submission requirements (source code, reports, conclusions, etc.) must be submitted to the correct location prior to the due date and time. Source code should be text files with the appropriate extension. Other file formats will be specified in the project description if applicable, naming conventions will be specified in the project description.

Additionally, please note:

- Unless otherwise specified, all assignments are due before class begins on the due date.
- A 2.5% penalty will be deducted each quarter-hour for any programming assignment that is submitted late. .
- No make-up exams or early exams will be provided.
- If you miss a pop quiz or in-class graded exercise, no make-up will be provided (see below for possible exceptions).
- In general requests for due date extensions will not be considered. If you have a personal or family emergency that affects your schoolwork, I expect you to notify me immediately. Your notification to me must include contact information for your academic advisor. After discussing your emergency situation with your academic advisor and/or dean's office; I will determine if an accommodation is justified. If you have a medical issue or emergency notify me immediately. Once the medical situation is under control I will need a copy of a doctor's note explaining any missed class time or inability to work on assignments. Your doctor's note must be acquired **prior to** the missed requirement and must **clearly and definitively state** that you were unable to complete schoolwork during the time of the missed requirement.

Programming Environment: This class is about the use of computer programming to solve problems. You will do a lot of C++ programming. There are several Integrated Development Environments (IDEs) that you can use to create C++ programs. I will provide links to some of these options separately. Installation and use of any such third-party application is optional, is your responsibility, and will not be covered during class. ALL graded projects and homework assignments **must** compile on the computer science server specified for this class (cs-class-1.georgetown.edu). Before submitting any programming assignment, your source code must be copied to the server and compiled using the GNU C++ compiler provided on that server. Again, there are many different development environments and computer tools that you may use to accomplish this. The simplest option is to create your programs directly on the server using a UNIX text editor. This is perfectly acceptable and eliminates the need to transfer files to the server prior to compiling your program.

Attendance and Expectations: Attendance is required. Not attending lectures will have an adverse effect on your class participation score. Further, you will be responsible for everything covered in class even if it is not in the textbook. Class participation could include pop quizzes and if you miss one of those there will be no makeup. If you need to leave the classroom during a lecture feel free to do so as quietly as possible. Please turn off cell phones or set them to vibrate prior to the start of class. Food and drinks are not allowed in the classroom.

Academic Honesty: I am required to report any suspicion of academic dishonesty to the Honor Council.

Exams must be entirely your own work. During exams, you are not allowed to view any other students work, show any other student your work, or engage in any discussion unless you need to ask **me** to clarify something regarding an exam question. Exams will be closed book and closed notes unless otherwise specified.

All homework assignments and individual projects must be the result your own effort. You may use outside resources such as research papers and books from the library but any solution techniques taken from outside sources must be properly documented. In the case of computer code submissions, these references should be cited in the program comments. Material from web sites should be cited with a url and adequate information to determine what was used from that site.

You are permitted to have conversations and interactions with other students concerning general programming techniques. This means the type of discussions one would reasonably expect to occur standing in front of a whiteboard. This **explicitly precludes** the detailed discussion of your program code or other assignment products. You are **strictly prohibited** from discussing the specific details of your project or homework solution. You are **strictly prohibited** from viewing or copying someone else's source code. You are **strictly prohibited** from allowing someone else to view or copy your source code. You may not email or otherwise provide to someone else the files associated with your programming project or other assignment documents. You may not submit someone else's file or files as your own.

Weekly Class Schedule: A class schedule is provided separately. It is possible that inclement weather or some other event could shut down the Georgetown campus. If that happens our class will meet as scheduled using Zoom Conferencing. I will schedule some "virtual office hours" using Zoom. You are encouraged to connect to one of those sessions early in the summer session to ensure that you can successfully join and participate in a Zoom Conference. The morning a campus shutdown is announced is not a good time to start dealing with connection issues.

Course topics, administrative guidelines, and other specifics discussed in this syllabus are subject to change. Notice of any changes will be provided in class.

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