

**COURSE TITLE**      **Problem Solving and Programming Techniques in C++ (COMP SCI 216)**  
 Fall 2021 - (4 credits) – Lecture Room (Prog. Theory in M2819 & Comp. Lab M2819)  
 Sep. 8<sup>th</sup> – Dec. 17<sup>th</sup> (Mondays & Wednesdays @ 3:25 – 5:25PM)

**TEXT**                    **Problem Solving with C++, (10<sup>th</sup> Edition)**  
 By WALTER J.SAVITCH  
 ISBN-13: 978-0-13-444828-2 | ISBN-10: 0-13-444828-6

**INSTRUCTOR**         SIVASAMY Ahilan  
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**OFFICE HOURS**      MWF 2:00pm-3:00pm by virtual appointment

**COURSE WEB SITE**   <http://canvas.uwosh.edu/> click on the following link --> COMP SCI 216-001C

**COURSE CONTENT**   This course introduces students to computer programming in the C++ language through classroom and laboratory work. It is designed primarily for engineers and similar majors who need a one-shot introduction to programming for their major. We will work entirely with Windows-based computers and using Microsoft Visual Studio 2019. The formal catalog description is as follows:

***Program design using both modular and object-oriented methods. Topics covered to include stream I/O, recursion, multi-dimensional arrays, sorting and searching, pointers and dynamic memory allocation, classes and abstract data types, and operator overloading. Prereq: advanced high school mathematics or equivalent, or previous programming experience, or cons. instr. MS***

<b>GRADING</b>	Pre-lab Exercises .....	12 @ .....	5 pts 8%	of grade
	Lab Exercises.....	12 @ ..	10-25 pts 30%	of grade
	Quizzes .....	11 @ .....	10 pts 12%	of grade
	Midterm Exams.....	2 @ .....	100 pts 25%	of grade
	Final Exam (Proctored)	1 @ .....	200 pts 25%	of grade

<b>SCALE</b>	A .....	92 -100%	B- .....	80 - 82%	D+ .....	68 - 70%
	A- .....	90 - 92%	C+ .....	78 - 80%	D .....	62 - 68%
	B+ .....	88 - 90%	C .....	72 - 78%	D- .....	60 - 62%
	B .....	82 - 88%	C- .....	70 - 72%	F .....	0 - 60%

**HOMEWORK**         Homework includes independent work creating documents and normally from the exercises at the end of each section. This will be completed entirely outside of class, though you are welcome to ask me questions. The textbook for this course is meant to be used in front of a computer too, following a detailed set of instructions. Depending on the timing of the class, some chapters may be completed before going over the material in class; those will be worth more points.

**LABS**                    Once per week we will hold a lab session in the computer lab, going over pre-labs. During this time, we will experiment with and learn about the concepts that have been covered recently in class.  
  
 Labs will typically include three components: lab programs, discussion questions and thought questions.

- Lab programs are the focal point of most labs, practicing recently covered material.
- Discussion questions ask you to reflect upon concepts presented in the closed lab programs. They are written up once the programs are completed.
- Thought questions are conceptual questions from recent material, which will be used on quizzes and exams.

Labs are due at the start of class lecture time on the date indicated on the schedule below. Program code must be stored on the Canvas assignment folders to be graded. Documents must be submitted to Canvas assignment folders. Until both of those are taken care of, your submission will be considered late.

Late submissions receive 90% of their grade if they are turned in by the next class session after the due date, 75% if within one week and 50% if within two weeks. Labs are not accepted for credit beyond two weeks after the due date.

#### **PRE-LABS**

In order to prepare you for the work to be done in lab, I will normally give you an assignment to work on at least one class period before the lab is scheduled. This assignment will either reinforce concepts that are crucial to understand before beginning the lab, or actually get you started on the work for the lab. We will spend some class time the session before the lab to get you started, but much of the work will typically be completed outside of class. In either case, it is crucial that you complete the pre-lab exercises before attending lab sessions.

Pre-labs are due at the start of class (not at the start of lab) on the day of the lab. They must be submitted in person; electronic submissions are not acceptable. If a pre-lab is not completed by the start of class period, it will receive 75% of its grade. If a pre-lab is not completed by the start of lab period, it will receive 50% of its grade. Pre-labs will not be accepted for credit after the end of that week's lab period.

#### **QUIZZES**

Nearly every week that an exam is not scheduled you will take a short online quiz. Each quiz will have two types of questions: shallow and deep. The first are shallow-knowledge questions taken from that day's or very recent days' reading assignments. The second are deep-knowledge questions taken from the "Thought Questions" I will have provided to you with the previous lab. Each category of question is worth 5 points, for a total of 10 points per quiz.

Quizzes will be posted on the Canvas site about 24 hours before the class. You can take them any time before class, as long as you begin at least 15 minutes before class on the day it is due. Quizzes will be timed so that you have 10 minutes to finish. Other than documented network outages, there are no makeups for quizzes. The lowest grade for the semester will be dropped.

#### **E-MAIL**

I will only accept email from your UW Oshkosh email account. Your email message **MUST** have a legitimate subject line for example: *CS 216 Question*. Using this method of communicating with me helps me identify your email in a huge In Box and minimizes the chance of your message being deleted by the UW SPAM filter. Avoid the use of short subject line phrases that are flags to the filter: "Please Review", "Your Application", or "My Class". It is your responsibility to make sure that I receive your emails in the proper manner and format. I will not respond to improper emails. Make arrangements with me in advance if there is a valid cause to make an exception.

**COMMUNICATION**

I will be using Canvas to post homework, grades, feedback, and other important communication. It can be accessed through Quick Links at the UW Oshkosh site at <http://uwosh.edu/>.

Time is of the essence: it is critically important to check your student email account and Canvas for feedback on a daily basis in order to stay abreast of important course communications.

Cell phone use is prohibited during class. If you have a need of an exception, see me first.

**ATTENDANCE**

Attendance during lab sessions is required unless prior arrangements are made. If you are not present throughout the lab, you will lose 10% of that lab grade. During a scheduled lab session you must work on the lab of that day until you are finished or class is completed.

Attendance is *required*. That means if you do not attend, you will be held responsible for the material covered. You will not receive participation points unless you are in class and have completed and uploaded the demonstration file.

Attendances during *programming* exams are required. If you must miss an exam due to a crisis circumstance, or for any reason, an arrangement for a makeup may be granted at my discretion only if I receive advance notice and evidence of the circumstance. If advance arrangement is not made, you will not have the opportunity for a make-up exam under any circumstance. Therefore makeup must be made in advance or you will not receive credit for the exam.

If you need to make arrangements to miss any required sessions due to religious holidays or other similar circumstances, please make such arrangements in the first week of class.

UW Oshkosh has allocated specific weeks for vacations, therefore there will be no homework extensions or test make-up opportunities for vacations taken during designated course time.

**CANCELLATIONS**

If a class needs to be cancelled or significantly changed from the original syllabus on short notice, I will send an e-mail message to the class e-list and post an announcement on the Canvas Web site. You are responsible for reading your student e-mail account and checking Canvas site or one of the two to be aware of such notices.

In the case of inclement weather that might result in class cancellation, do not call the university.

Cancellations will be posted on our campus Web site, and announced on radio stations WAPL (105.7 FM), WHBY (1150 AM), WROE (94.3 FM), WKFX (104.9 FM), WUSW (96 FM), WOSH (1490 AM), WOZZ (93.5 FM) and television stations WBAY (Channel 2), WFRV (Channel 5) and FOX (Channel 11). NOTE: If you have cable, the channel numbers may differ from the above.

**COMPUTER LABS**

The main computer labs are in rooms 2821 and Media lab. Also, lab 1826 in the engineering and lab 1249 in the Library is available too. Hours for the labs are posted on the doors or the IT Help Desk Web site. Smaller labs are located in other areas of the building. Lab 2821 is available for walk-in student use at all open hours. Media lab are available for walk-in student use whenever there is no class using it. Note: Email and non-media related projects are discouraged to be used in the Media lab. To weekend lab users: Lab 1015 is open all day on Saturday when the building is open. Lab hours can change without notice so check the posted hours regularly.

Problems with the equipment in the computer labs should be reported immediately to the campus IT Help Desk by email. If the problem cannot be solved over the phone, staff will come to the lab in person. IT Help Desk (Library) staff can assist you with the operation of the lab but will not help you complete your class assignments. My office is just across the hall from the upstairs labs, so stop in and see me if you have any questions. For other campuses, please get to know them – from IT help desk.

## SOFTWARE

The software we will be using for the programming phase of the course is Microsoft Visual C++ 2019 to compile our programs. You can use either the version that comes within Visual Studio or download the free Express Edition from Microsoft's Web site. On campus we have the complete version installed.

If you download the Community Edition, make sure that you register your software within 30 days too, or your license will expire. I've heard horror stories from students about that kicking out at a particularly bad time.

All that said, I don't really care what you use to do your programming. C++ is a standardized language, and we are not using any advanced features of the Windows platform, so you can use whatever IDE and whatever compiler and whatever platform you like, as long as the programs run when you hand them in.

Installing the software for use off campus is entirely optional to you. There is a free (but limited) version of the software called the Community Edition. You can download the software from Microsoft's Web site at

<https://visualstudio.microsoft.com/vs/community/>.

Students recently installed this version at home, and it seems to work fine for the things we will do in this course.

## CHEATING

Any student involved in a cheating incident during an exam will fail the course and have academic misconduct charges filed against them. Plagiarism and cheating are serious offenses and may be punished by failure on quizzes, paper or project; failure in course; and or expulsion from the University. When taking an online quiz, you can have the textbook available to help you with the answers. However, you are expected to take the online quizzes without getting assistance from anyone or working with other classmates. Homework must be your own original, independent work. At my discretion, homework submissions that I deem combined efforts will receive NO CREDIT and be subject to academic misconduct charges. Homework and Lab work must be your own original, independent work. Homework and Lab submissions that are combined efforts will have their grade divided by the number of people in the group. Thus, if you want credit for your work, do not use someone else's and do not share your own.

*All suspected incidents of academic misconduct shall be handled using the UW System rules, Chapter 14. "Academic misconduct" includes, but is not limited to, the following examples: "cheating on an examination, collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as one's own work, when a part or all of the paper or assignment is the work of another; tampering with the laboratory experiment or computer program of another student. (From UWS 14.03)" Further definition of "academic misconduct" can be found in UWS 14.03. UWS 14 is available to all students in the library; additionally, all students received a copy of this policy during their orientation.*

<https://uwosh.edu/deanofstudents/student-conduct/academic-misconduct/>.

**MISCELLANEOUS**

If you have needs for test-taking or note-taking accommodations, discuss it with me as early in the semester as possible. Free tutoring is sometimes available for this course if needed. Tutoring is most valuable if begun before you become lost in the course, so talk to me at the first sign of danger. I will also assist you in forming a study group with your classmates early in the semester if desired. For computing essentials, you can get assistance from the IT Helpdesk or by attending the Wired for Success workshops. Be proactive about your learning and you will get more out of the course.

**SCHEDULE**

The following is a **VERY** tentative schedule for this semester. Readings listed for a particular day should be read **before** that day's class. Pre-lab, lab and quiz points are subject to change.

Date	Topics	Reading	Quizzes	Pts	Due	Pts
	Intro to Course and background					
Wed. 9/08	Problem Solving	Tools in the Lab	1.1 – 1.3			
Mon. 9/13	<i>Programming Techniques</i>	Pre-lab 1	1.4			
Wed. 9/15	Problem Solving	Lab 1: Problem Solving	2.1 – 2.5		Pre-lab 1	5
Mon. 9/20	Flow of Control	Pre-lab 2	3.1 – 3.4	Quiz 1	10	Lab 1 10
Wed. 9/22		Lab 2:	3.4		Pre-lab 2	5
Mon. 9/27	Procedural	Pre-lab 3	4.1 – 4.4	Quiz 2	10	Lab 2 20
Wed. 9/29		Lab 3:	4.5 – 4.6		Pre-lab 3	5
Mon. 10/04	Functions	Pre-lab 4	5.1 – 5.3	Quiz 3	10	Lab 3 20
Wed. 10/06		Lab 4:	5.4 – 5.5		Pre-lab 4	5
<b>Mon. 10/11</b>	<b>Exam 1 (chap. 1-5)</b>					
Wed. 10/13	I/O Streams	<i>Prep. on next set of labs</i>	6.1 – 6.3			
Mon. 10/18	I/O Streams & Arrays	Pre-lab 5	7.1	Quiz 4	10	Lab 4 20
Wed. 10/20		Lab 5:			Pre-lab 5	5
Mon. 10/25	More Arrays	Pre-lab 6	7.2 – 4.3	Quiz 5	10	Lab 5 25
Wed. 10/27		Lab 6:	7.4		Pre-lab 6	5
Mon. 11/01	Strings & Vectors	Pre-lab 7	8.1 – 8.3	Quiz 6	10	Lab 6 20
Wed. 11/03	Pointers	Lab 7:	9.1 – 9.2		Pre-lab 7	5
Mon. 11/08	Defining Classes	Pre-lab 8	10.1 – 10.3	Quiz 7	10	Lab 7 20
Wed. 11/10	<i>Review + Extras</i>	Lab 8:	10.4		Pre-lab 8	5
<b>Mon. 11/15</b>	<b>Exam 2 (chap. 6-10)</b>					
Wed. 11/17	Overloading	<i>Prep. on next set of labs</i>	11.1		Lab 9	25
Mon. 11/22	Arrays in Classes	Pre-lab 9	11.2 – 11.4	Quiz 8	10	Lab 8 20
<i>Wed. 11/24</i>	<i>Thanksgiving Holiday</i>					
Mon. 11/29	Sorting and searching algorithms	Pre-lab 10	12.1 – 12.2	Quiz 9	10	Pre-lab 9 5
Wed. 12/01	Linked Lists	Lab 9 & 10:	13.1 – 13.2		Pre-lab 10	5
Mon. 12/06	Inheritance	Pre-lab 11	15.1 – 15.3	Quiz 10	10	Lab 10 20
Wed. 12/08	Exception Handling	Lab 11: Sorting	Pre-lab 12	16.1 – 16.2	Quiz 11	Pre-lab 11 5
<b>Mon. 12/13</b>	<b>FINAL PROGRAMMING EXAM (3:25PM – 5:25PM)</b>		<b>Cumulative</b>		10	Lab 11 20
Wed. 12/15		Pre-Lab 12 (5) & Lab 12 (20)			labs 12	25