

ICS 45C: Programming in C++ (as a Second Language)

[Schedule](#)

[Dr Klefstad's Office Hours](#)

[TA/Tutor Office Hours](#)

[Advice to Students](#)

[Lecture Rules](#)

[Lecture Zoom Link](#)

This course covers concepts and details related to programming in C++. Be sure you [Watch](#) [Watch](#) [Watch](#)

No one is allowed in lecture unless they are officially enrolled in the course. Anyone caught in lecture during any test will be assumed to be cheating and will be submitted for academic dishonesty. Recording of lecture or taking video of lecture is strictly forbidden. Anyone caught with a camera or cell phone out during an exam will be assumed to be cheating and will be submitted for violating academic dishonesty.

If you must miss a quiz due to important reason, like job interview, etc, that is why we drop one lowest quiz for everyone - to be fair. We will not allow make-up or reschedule for any reason (unless you are so ill, you can't make it to class - and then you need an official signed, dated, doctor's note).

ACCESS STUDENTS: you must use your access student ID that begins with an X. Your old UCI ID is no longer active so do not use it. Do HW and QZ along with other students and submit on time. If you get added after Friday of 2nd week, we will grade your work. You can self-enroll in Piazza and then access syllabus, lecture slides, homework, etc. For homework, create the report and zip file then mail them to me (klefstad at uci dot edu) as an attachment before the deadline.

Lecture

Attending lecture and participating in lecture is required. I will not repeat lecture material in office hours or on the discussion forum. Lecture is your one chance to experience the new material. I do not allow recording of any lectures. Students who miss lecture rarely pass this class unless they are already fluent in C++. Even students who have had a year of C++ at another school say they learned a lot more in this class.

Email to instructor

Do not email me with questions about the course or course material. Post all course related questions on Piazza. This gives other students, TAs, and the instructor a chance to answer for you and for everyone else at the same time. If you have a *personal issue* or *emergency*, please *do* email me about it as soon as possible. I typically have 600 to 700 students each term and can get overwhelmed by email if I get too much. If you do send email, be sure to say which course you are in. I'm always teaching two or more classes.

Giving up

Courses often get hard while you are taking them. You may feel like giving up. Giving up will certainly result in you getting behind and getting an F course grade. I want to encourage you now, do not give up! You can do it, but you must persist. If you feel like giving up, come see me in office hours as soon as possible.

Discussion Forum

Students should expect to spend significant time writing and debugging programs related to the homework assignments. I recommend students schedule three to four 4-hour blocks per week to work on homework programs. All students are expected to read and post on the class on-line discussion forum. You can sign up here Piazza [Sign-up](#). You can visit the forum here Piazza [forum](#).

If you have a question about homework or course material, do not email it to the the instructor or the TAs. Instead, post your questions to Piazza. This allows everyone in the class a chance to answer it first, so you are likely to get a very quick answer. The instructor and TAs will also read Piazza and may answer there, but

everyone will be able to see the question and answer which reduces duplicate questions. If you have a personal issue or want to discuss your homework or quiz score, come see your instructor or TA during office hours or email them if you can't make office hours.

Helping other students learn is encouraged. Most interesting stuff happens in Q&A. You may post small program fragments on Piazza related to your question or your answer, but please do not post answers to homework problems anywhere.

I only answer primary questions on Piazza. I generally do not answer follow-up questions. Students and TAs: please do answer questions on Piazza if you know the answer.

Textbook

Students should have access to one good C++ programming textbook. Absolute C++ by Savitch is recommended, but there are many good C++ books that may be used as alternatives. Lecture notes, homework assignments, and a discussion forum will be provided on-line.

Computing Platform (operating system, editor, compiler, debugger)

We use openlab.ics.uci.edu computers to write and debug your programs. These computers use the Linux operating system and the command processor is called bash. If you have never logged into the ICS machines before, you may need to authorize your account first http://www.ics.uci.edu/~lab/students/acct_activate.php

You can [set up ssh keys](#) or use vpn with ssh to connect to openlab computers from off campus.

We use the gcc compiler invoked with the command g++. [Here](#) is how to log into and use the C++ compiler on our openlab computers.

You can set-up a password reset [here](#).

If you accidentally delete your files, you can recover them yourself [read about it here](#). If you just want a fresh start with your .bash_profile, you can copy a new copy with cp

```
cp /opt/local/etc/skel/example.bashrc ~/.bashrc
```

If putty logs you out, look at the Keepalive values in Settings under Connection. Set them to longer to keep you alive longer while you are idle. [Here is how to](#) disable timeout on PuTTY - the annoying way it disconnects you if you let it sit idle for too long.

Use g++ on openlab.ics.uci.edu as that is the only platform where we will provide help. You can find excellent cheat-sheets or tutorials on-line using Google. Example searches include "vim command summary" and "linux command summary" if you want to find quick reference sheets. [Here is one for vim that just gives basic commands.](#) [Here is another one for vim that is more exhaustive.](#) [Here is one for linux bash commands.](#) [Here is one for bash scripts.](#) [Make tutorial.](#)

Valgrind is a valuable tool for detecting run-time errors with your C++ program. You can run it on Linux (to get basic checking) with the following command

```
valgrind program_name program_arguments
```

or to get very careful checking

```
valgrind --tool=memcheck --leak-check=yes --show-reachable=yes --track-origins=yes program_name program_arguments
```

You must run valgrind on your program for part of your submission report.

You can use scp or ftp to transfer files between computers (like openlab and your laptop).

If your only programming language experience is in Python, I suggest you read this tutorial on C++ arrays [Tutorial](#). There are many videos on C++ such as this one [Learn C++ Video](#). Generally, [this site](#) is useful and where you should start when you want some help from the Internet. Don't waste your time on stackoverflow.com.

No Group Work!

All work is to be completed individually. There is no group work or group collaboration allowed in this course. Discussing concepts with others at a high level is encouraged, but **it is cheating to work on homework programs together, or to copy parts or all of your programs from any source including another student (current or previous), or from the Internet, or from a book**. We will use MOSS to check for cheating on homework submissions. Anyone whose homework is flagged as a copy will receive a zero for that homework submission. Guard your programs and do not share them with anyone. If you copy any code, MOSS will catch it as a copy - even if you rename identifiers and reorganize your code within the file.

Cheating

Familiarize yourself with UCI Academic Integrity Policy <http://honesty.uci.edu/> Anyone caught cheating in this class will be submitted to the University for prosecution and if found guilty, will receive a course grade of F. [Here are some important examples of violations](#). **DO NOT POST SOLUTIONS TO ANY ASSIGNMENTS ON-LINE - especially on github. This is facilitating cheating which is very serious form of cheating. Posting homework solutions on-line ruins the homework. Homework is where students learn. If they see (or worse use) a solution, that ruins their chance to learn from that assignment.**

Schedule

<u>Week</u>	<u>Reading</u>	<u>Lecture</u> <u>Zoom Link</u>	<u>Homework</u> <u>Assigned</u>	<u>Exam</u>
		Course Introduction	HW0	
1		Overview of C++	HW1	Q0
2		C++ Overview Continued	HW2	Q1
3		Classes and Arrays	HW3	Q2
4		Dynamic Allocation of Arrays	HW4	Q3
5		Linked Lists and Recursion	HW5	Q4
6		Inheritance and Polymorphism	HW6	Q5
7		Templates, Exception, Namespaces	HW7	Q6
8		STL Containers	HW8	Thanks-Giving
9		STL Iterators and Algorithms	HW9	Q7

10		Review Final Quiz		FQ
Finals				

Homeworks (HW) are due one week after assigned. Homework is due before 2am on Wednesday. You may submit homework up to 24 hours late (until 2am Thursday) for a 20 point penalty. HW1 is due before 2am Wednesday Week 2 for full credit, but you may submit it up to 2am Thursday of Week 2 (with a late penalty). HW0 is important set-up and practice. Do it as soon as you can before the end of Week 1.

Never copy and paste code when you are learning a new language. Writing/typing all of it is a valuable experience and there is no short cut for it. I recommend NEVER TAKE PICTURES in lecture either. After struggling, you will be tempted to look at that picture sooner than you should. Lecture slides, your notes, Internet sources, pictures may be helpful to get past a difficult but, but you should not use them until you are absolutely stuck. What are you going to do when you can't find help? You need to be able to construct programs yourself. We are trying to have you learn this skill.

Submitting your Homework and Report

[Here is how to submit your homework assignments to the EEE dropbox.](#)

[Here is the sample format to use for your report for gradescope.](#)

It is your responsibility to ensure that your submission is what you intend to submit. Every term we have students who submit the wrong file. We will no longer allow you to resubmit at a later time without penalty if you submit the wrong files. You should verify that what you submitted is correct. You may submit multiple times, but only your last submission will be graded and the time of that last submission will be used to determine when it was submitted for on-time or late credit.

Tutor Hours in ICS2 room 100 (Note this room is shared with Tutors for 45J and 46)

Jessica	Shu	jcschu	jcschu@uci.edu	ICS 45C Openlab	TTh 2:00 - 3:20PM
Yuqi	Huai	yhuai	yhuai@uci.edu	ICS 45C Openlab	TTh 5:00 - 6:20 PM
Leyang	Yu	leyangy	leyangy@uci.edu	ICS 45C Openlab	MWF 2:00 - 2:50PM
Yasvi	Patel	patelya	patelya@uci.edu	ICS 45C Openlab	MWF 10:00 - 10:50AM
David	Yip	dyip2	dyip2@uci.edu	ICS 45C Openlab	MWF 12:00 - 12:50PM

Quizzes (Q) will be given weekly in lecture (usually on Thursday at the end of lecture) as scheduled above. Quiz coverage is the homeworks and lectures since the previous quiz. Quiz 1 will be given Thursday of Week 2

at the end of lecture. Quiz 0 is a practice quiz to give you a sample of what a quiz will be like. I suggest you practice by printing it, then doing it at home with a 15 minute timer. Also, each week when you start on your homework, write your entire first draft of each program on paper while trying to get the logic and syntax correct. Enter what you wrote, then notice the errors as the compiler tells you about them. Note what mistakes you made and correct them.

You must bring valid picture ID with you to all exams (quizzes). We will check everyone's ID during the final quiz. Anyone without a valid picture ID may be photographed during the quiz and must bring a valid photo ID to office hours to get credit for the final quiz. I prefer a valid drivers license, but a UCI student ID **that is clearly readable** is also acceptable. If your UCI ID is faded so that any of these three - ID number, name, or picture - is not clearly readable, it is not acceptable for ID verification.

There are no make-ups on regular quizzes unless you are seriously ill and under care of a doctor. You must provide official, dated documentation from your doctor saying you are too ill to take the exam on the day it is given. I do allow quiz make-up for those attending the **Grace Hopper** conference with proof of attendance, but the quiz must be made-up the following week in my office hours.

There are no make-ups on the final quiz.

Regrades: If you have any issue with grading of your homework or quiz, you must contest it within one week of the grade being posted (e.g., on Gradescope). The only issue for regrade are clear mistakes in grading where a correct answer was mistakenly marked wrong (this does happen) or where points were incorrectly totalled (this is more rare).

You may contest your grade on each homework or quiz at most once per item through gradescope.

There is no re-grading after 10th week. Note also, I never second-guess the TA's grading and amount of points deducted for a given error. That decision is up to the TA/Reader after discussing grading with me beforehand.

Course Grades

What	Number	Percent Grade
Quizzes 1-7	7 (lowest dropped)	40
Homeworks	9	30
Final Quiz	1	30
Total		100

Course letter grades will be assigned by the default straight scale in the EEE gradebook.

Out of 100% scale:

A+ ≥ 97.5 > A ≥ 93.5 > A- ≥ 90

B+ ≥ 86.5 > B ≥ 83.5 > B- ≥ 80

C+ ≥ 76.5 > C ≥ 73.5 > C- ≥ 70

D+ ≥ 66.5 > D ≥ 63.5 > D- ≥ 60 > F

IMPORTANT: There is no other extra credit in this course. The university only allows grade adjustments for grading errors on our part. Please do not ask us to allow you to do "anything" to improve your course grade after it is calculated. By asking for such special accommodations, you are putting us in a very difficult position. All such requests will be ignored or pointed back to this note. The time to think about doing "anything" is during the course when you can make changes like

- attending lecture faithfully and on time, reading assigned reading before lecture,
- paying attention in lecture and taking hand-written notes on things you don't already know,
- ask questions when you don't understand,
- studying more effectively before exams (like asking yourself hypothetical questions),
- reading exam questions very carefully and giving clear, correct answers,
- starting homework & other assignments early and ensuring they are completed on time or early.
- Sadly, many students won't read this, but if you do, you are on the right track.