ITP 165 – Introduction to C++ Programming

2023 fall Units: 2
section 31882 MW 12-13 WPH102
section 31891 MW 15-16 LVL 17

Instructor: Dr. Barrett Koster
Office: RRB 211 and zoom 501 267 3551
Office Hours: T + Th 10am-noon in person or zoom, F 3-5pm zoom, or by appointment
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Teaching Assistants:
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Course Description

Introduction to programming using C++, including variables, operators, conditionals, loops, arrays, vectors, strings, functions, files, structs, pointers, dynamic allocation, and a start on classes. Class time will be about half lecture, and half lab, where students practice programming the topic of the day. There will be about 10 almost-weekly homeworks (programs to write), and 2 exams on paper.

Catalogue Description

Introduction to programming using C++, including variables, operators, conditionals, loops, arrays, vectors, strings, functions, files, structs, pointers, dynamic allocation, and an introduction to classes.

Learning Objectives

Students will be able to
1. design algorithms for simple calculations and data processing, and
2. write, run, and debug C++ programs to do such tasks, including use of variables, conditionals, loops, i/o, functions, structs and some classes.

Prerequisites: none
Co-requisites: none
Concurrent Enrollment: none

Technological Proficiency : students should be able to handle text files, rename files, save and load files, find and organize files on your computer. You also need to know how to get on Blackboard and submit files to Blackboard.

Media There is no required text (book) for this course.

Blackboard Homework programs will be assigned and submitted on Blackboard. Files for class and lecture slides will also be posted on Bb. This is the place to look when you want to know what's next in class, what is due. Attendance is monitored with Course Tools/Qwickly Attendance.

Piazza . We use this platform (preferred over email) to communicate, about the homework, office hours, questions from class.

IDE and computer . You need a computer for class and to do your homework. (The ITP department has loaners if you don't have your own.) We are going to use replit.com for actual programming, an online compiler (so all you need is a web browser). It is highly recommended that you also have an IDE on your machine. Visual Studio for C++ is goodon PC, as is xCode on Macs. If you use just replit.com, use an unguessable account name and keep it secret.

Nature of the course Programming is learned by doing. A typical class will have 30 minutes of lecture and live programming, where we demo the day's feature together. Then you will program 'lab'. Labs should take you less than an hour. There will be two tests and possibly some 'notecard-quizzes', all on paper. There will be 10 (as currently planned) programs to write for homework. Most of your effort should go to these homework assignments.

Grading (note that the unweighted numbers on Blackboard may not match)

what	% of grade
labs	10
homework	50
midterm exam (and quiz)	20
final exam	20
total	100

Grade scale

letter	range
A	93+
A-	90-92.99
B+	87-89.99
B	83-86.99
B-	80-82.99
C+	77-79.99
C	73-76.99
C-	70-72.99
D+	67-69.99
D	63-66.99
D-	60-62.99
F	0-59.99

Assignment Submission Policy Homeworks are to be submitted on Blackboard only. The link should allow for multiple submissions, but only the last one will be graded. Some systems do not allow submission of .cpp files, so you should be able to change your files to .txt and submit, as needed.

Lab assignments are assigned during the class session and are due soon. You generally get the points if you make a reasonable attempt.

Each homework assignment must be completely individually. There are no group projects in this course. This is really important. Do not present or allow someone to present another person's work as ones own. You are not supposed to be looking at each other's programs or working on each other's programs. If I find matching programs (and we have a system for finding it, so it is easy to find), your case gets sent to the Office of Academic Integrity. Typical sanction (from me and or them) is an F on the program or an F in the course and an 'integrity' note on your transcript. You would be better off with a plain F. Please, I am begging you, do not turn in work that is not yours. If you do poorly on an assignment, take your hit with honor.

Lateness It is your responsibility to submit your all homework assignments on or before the due date. Homework grades will be deducted up to 10% per day late. You have a 1-day grace period you can use on any ONE assignment. If you turn in an assignment late and wish to use this, put a note on it for the TA. You only have one of these per semester. Some times students do not feel good about their work and they do not turn it in. Do not do that -- TURN STUFF IN. If you improve your program, fine, turn it in again. If you are embarrassed that it is late or not complete, turn it in. It is almost always better than a 0. Write comments in it, say what you have tried. Tell me what is working and what you know is not working. And turn it in.

procedure for extension Extensions may be granted for documented medical or other emergency. If you have a valid excuse for turning in an assignment late, send me a message (Piazza private preferred) with documentation and also submit to Blackboard a summary of your request as a 'first draft' of your homework. I will add a note on Bb with my decision and typically give a score of -1, which lets the TA know that I have given you an extension and your real work will arrive later. You can then submit your actual assignment later as a '2nd version' for a real score. Note: the critical part is the submission to Bb -- I cannot leave a note for the TA to accept your work late unless there is a submission there for me to put the note on.

Homework assignment questions should be posted to the online question forum Piazza. General questions or examples can be 'public'. Use private mode to post your code if you have specific questions. DO not post your homework code publicly. Try to avoid email to the professor. You are encouraged to attend the office hours for homework related questions. We give good help; use it.

Additional Policies If you have a documented reason for missing an exam or if you need special accommodations, please let me know ahead of time and we will make arrangements. Back up your work. A crashed computer is not a valid excuse for late work.

If you think that something of your homework was not graded correctly, contact the person who graded it to see if you can clear it up. If you still don't like it, come see me (professor). Generally, this should happen within a week of getting a grade. Do not come to me at the end of the semester with some complaint that is months old.

The university allows students to join courses up to the end of week 3. You will need my permission to join the course, and I generally give it with the understanding that late-comers will catch up within a week of arrival and at the latest by the beginning of week 5.

Schedule for ITP-165 Intro C++

2023 fall

Links on this page only work on MY computer. - BEK

week	Mon	topics	Wed/Fri	topics (HW due Friday midnight)
1	Aug 21	1. topic: class policies , introduction lab: set up, repl or other	Aug 23	2. topic: variables lab: Madlib

2	Aug 28	3. topic: Conditionals lab: Premium	Aug 30	4. topic: Booleans lab: Scratch Off due: HW Donut
3	Sep 4	Labor Day, no class	Sep 6	5. topic: While Loops live: sum x^2 , factoring lab avg numbers until -100 (sentinel, accumulator) due: HW Horoscope
4	Sep 11	6. topic: For Loops live: break int lab: lab stars, triangle, Factorial	Sep 13	7. topic: Arrays , random numbers live: reverse a sentence lab: GradeBook due: HW Mortgage
5	Sep 18	8. topic: Functions 1 , live: and create some faces lab: draw hotel	Sep 20	9. topic: Vectors live: stars with functions lab: redo gradebook with vector and functions
6	Sep 25	10. Cypher, functions, indexing (live) lab count words	Sep 27	11. topic: Files , getline live: read files, use functions lab: copy file, 5 word lines due : HW Pancakes or Numbo?
7	Oct 2	12. Functions 2 live: paper quiz lab?: parse	Oct 4	13. topic: Function Misc , PBR vs PBV , design lab: comment functions due : HW Quizzle due Sunday night?
8	Oct 9	14. topic: review for test , don't s	Oct 11	15. exam 1
9	Oct 16	16. topic: stringsArrays ... C-strings , live: sum of dice lab: generalize dice	Oct 18	17. topic: Structs live: Point, distance(), midPoint() lab: Card struct
10	Oct 23	18. topic: more structs , use vectors of structs, ... lots of data lab: books	Oct 25	19. topic: Pointers (+memory in general) live: exiting programs, check addresses, copies lab: try finding addresses of things
11	Oct 30	20. topic: Dynamic Allocation live: lab17: dynamic allocation	Nov 1	21. topic: Dynamic Arrays live: do array load of dictionary for gloss lab: bubble sort due: HW Gloss
12	Nov 6	22. Stable Marriage (code live, good pointer practice)	Nov 8	23. Pointers on Pointers lab: work on Food Diary
13	Nov 13	24. topic: Classes + into constructors here. lab: battleship prep due: HW Food Diary	Nov 15	25. topic: Class Functions , leb: Money

14	Nov 20	26. topic: Class Functions 2 (access)	Nov 22	ThanksGiving no class
15	Nov 27	27. topic: Final Review , due: Player	Nov 29	28. Perspectives lab: Tournament live: evals, questions?
FINAL exam	12pm section	Friday Dec 8 11am-1pm	3pm section	Monday Dec 11 2-4pm

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Statement on Academic Conduct and Support Systems

Academic Conduct: Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on Research and Scholarship Misconduct.

Students and Disability Accommodations: USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call studenthealth.usc.edu/counseling Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call suicidepreventionlifeline.org Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call studenthealth.usc.edu/sexual-assault Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086 eeotix.usc.edu Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298 usc-advocate.symplicity.com/care_report Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776 osas.usc.edu OSAS ensures equal

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access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy. USC Campus Support and Intervention - (213) 821-4710 campussupport.usc.edu Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity, Equity and Inclusion - (213) 740-2101 diversity.usc.edu Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call dps.usc.edu, emergency.usc.edu Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call dps.usc.edu Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC) ombuds.usc.edu A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

Occupational Therapy Faculty Practice - (323) 442-3340 or otfp@med.usc.edu chan.usc.edu/otfp Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.