

Introduction to C++ Programming

ITP 165 (2 Units)



Fall 2017

Description

Fundamentals of C++ syntax and semantics, including function prototypes, overloading, memory management, abstract data types, object creation, pointers to class members, and I/O streams.

Objective

This course will teach students problem solving skills using the C++ programming language.

Concepts

Programming fundamentals including variables, control statements, loops, and arrays, pointers, functions and object-oriented programming.

Prerequisites

None. This class is intended for students with no prior programming experience.

Instructor

Listed on Blackboard under Contacts

Office Hours

Listed on Blackboard under Contacts

Lecture / Lab

See online schedule of classes for exact times
1 hour 20 minutes twice weekly
Or 2 hours 50 minutes once weekly

Required Textbooks

None.

Optional References

To supplement course material a good introductory C++ reference is recommended like the tutorials available at LearnCpp.com, CPlusPlus.com, and CProgramming.com.

Course website

All course material will be on Blackboard (<http://blackboard.usc.edu>).

We will use Piazza (<http://piazza.com/>) as an online question and discussion forum.

Grading

The following percentage breakdown will be used in determining the grade for the course.

| | |
|----------------------|-------------|
| Lab assignments | 20% |
| Homework assignments | 40% |
| Midterm exam | 20% |
| Final exam | 20% |
| Total | 100% |

Grading Scale

The following shows the grading scale to be used to determine the letter grade.

| | |
|---------------|----|
| 93% and above | A |
| 90% - 92% | A- |
| 87% - 89% | B+ |
| 83% - 86% | B |
| 80% - 82% | B- |
| 77% - 79% | C+ |
| 73% - 76% | C |
| 70% - 72% | C- |
| 67% - 69% | D+ |
| 64% - 66% | D |
| 63% and below | F |

Policies

Lab assignments

There will be lab assignments after most lectures. These assignments will be immediate application of the material presented in lecture. These assignments will be graded as pass/fail. For credit on each practical you must complete the practical before class time has ended. Each practical will contribute to your overall grade. There is no way to make up a missed practical, however a practical grade can be dropped provided either prior instructor approval or a documented emergency.

Policies (continued)

Homework assignments

Each homework assignment must be completely *individually*. There are no group projects in this class.

Each homework assignment will include instructions, a due date, and a link for electronic submission. Homework assignments must be submitted using this link.

It is your responsibility to submit your all homework assignments on or before the due date. Homework assignments turned in one day late will have 20% of the total points deducted from the graded score. Homework assignments turned in two days late will have 50% of the total points deducted from the graded score. After two days, submissions will not be accepted and you will receive a 0.

All homework assignments must be digitally submitted through Blackboard except when otherwise specified by the course staff. Do not email homework assignments to the instructor or lab assistant.

Homework assignment questions should be posted to the online question forum. Class time is for lecture and lab assignments only. Do not send any email to the instructor regarding homework assignments or ask specific homework questions during the lecture sessions. You are encouraged to attend the office hours for homework related questions.

Exams

Make-ups are only allowed under extraordinary circumstances. Students must provide a satisfactory reason (as determined by the instructor) along with proper documentation. There are two exams: a midterm and a final. These exams are comprehensive of all topics covered.

Lab facilities

You are encouraged to save your work using a USB flash drive or a website such as [Dropbox](#). You must keep a copy of all coursework. You will not be able to save your work on the ITP lab computers. Any work saved to the computer will be erased after restarting the computer.

ITP is not responsible for any work lost.

ITP will have open lab hours starting the third week of the semester. The open labs may not have course staff there. These lab times are there in case you need extra time to complete your work.

Incomplete and Missing Grades

Excerpts for this section have been taken from the University Grading Handbook, located at <http://www.usc.edu/dept/ARR/grades/gradinghandbook/index.html>. Please see the link for more details on this and any other grading concerns.

A grade of Missing Grade (MG) “should only be assigned in unique or unusual situations... for those cases in which a student does not complete work for the course before the semester ends. All missing grades must be resolved by the instructor through the Correction of Grade Process. One calendar year is allowed to resolve a MG. If an MG is not resolved [within] one year the grade is changed to [Unofficial Withdrawal] UW and will be calculated into the grade point average a zero grade points.”

A grade of Incomplete (IN) “is assigned when work is no completed because of documented illness or other ‘emergency’ **occurring after the twelfth week** of the semester (or 12th week equivalency for any course scheduled for less than 15 weeks).”

Academic Conduct and Academic 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 Section 11, Behavior Violating University Standards <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity

<http://equity.usc.edu/> or to the Department of Public Safety

<http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>.

This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

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” <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Support Systems:

Student Counseling Services (SCS) - [\(213\) 740-7711](tel:(213)740-7711) – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

National Suicide Prevention Lifeline - [1-800-273-8255](tel:1-800-273-8255)

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

Relationship & Sexual Violence Prevention Services (RSVP) - [\(213\) 740-4900](tel:(213)740-4900) - 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

Office of Equity and Diversity (OED)/Title IX compliance – [\(213\) 740-5086](tel:(213)740-5086)

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

Student Support & Advocacy – [\(213\) 821-4710](tel:(213)821-4710)

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

Diversity at USC – <https://diversity.usc.edu/>

Tab for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students

A Further Note on Plagiarism

All submissions will be compared with current, previous, and future students’ submissions using a code plagiarism identification program. If your code significantly matches another

student's submission, you will be reported to SJACS with the recommended penalty of an F in the course.

You may discuss solutions to specific problems with other students, but you should not look through another's code. The code can be from an online forum or another student, the source is immaterial – all code submitted in this course must be your own. Do not share your code with anyone else in this or future sections of the course, as allowing someone to copy your code carries the same penalty as copying the code yourself.

Introduction to C++ Programming

ITP 165 (2 Units)

Course Outline

Note: Schedule subject to change

| W | Topic(s) | Practical | Homework |
|----|-------------------------------------|-----------|----------------|
| 1 | Introduction | None | Homework 1 |
| | Variables | LP1 | Due in week 2 |
| 2 | Booleans and conditionals | LP2 | Homework 2 |
| | More conditionals | LP3 | Due in week 3 |
| 3 | <u>LABOR DAY HOLIDAY</u> | None | |
| | Open lab | None | |
| 4 | Loops | LP4 | Homework 3 |
| | More loops and arrays | LP5 | Due in week 5 |
| 5 | More arrays and C-style strings | LP6 | Homework 4 |
| | Using functions | LP7 | Due in week 6 |
| 6 | Writing functions | LP8 | Homework 5 |
| | Pass by references vs pass by value | LP9 | Due in week 8 |
| 7 | <u>Midterm</u> | None | |
| | Debugging | LP10 | |
| 8 | Midterm review | MT review | Homework 6 |
| | String streams and file I/O | LP11 | Due in week 9 |
| 9 | Structs | LP12 | Homework 7 |
| | Memory, variables, and pointers | LP13 | Due in week 10 |
| 10 | Basic pointers | LP14 | Homework 8 |
| | Dynamic memory and arrays | LP15 | Due in week 11 |
| 11 | Classes | LP16 | Homework 9 |
| | Class functions | LP17 | Due in week 12 |
| 12 | Separate files | LP18 | Homework 10 |
| | Dynamic memory with classes | LP19 | Due in week 13 |
| 13 | Vectors | LP20 | Homework 11 |
| | Has-a vs. Is-a and inheritance | LP21 | Due in week 15 |

| W | Topic(s) | Practical | Homework |
|--|------------------------------------|------------------|-----------------|
| 14 | Virtual functions | LP22 | |
| | <i>THANKSGIVING HOLIDAY</i> | None | |
| 15 | Abstract classes | LP23 | |
| | Where to go from here | None | |
| <u>FINAL EXAM – as according to the final exam schedule</u> | | | |