

# Introduction to C++ Programming

## ITP 165 (2 Units)

---



Summer 2016

### 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 through the use of 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

Raymond Kim

### Office Hours

Monday – Thursday: 3:00pm – 4:00pm  
OHE 530G

### Lecture / Lab

Monday – Thursday: 1:30pm – 2:50pm  
OHE 542

### Required Textbooks

None.

### Optional References

To supplement course material a good introductory C++ reference is recommended like the tutorials available at [LearnCpp.com](http://LearnCpp.com), [CPlusPlus.com](http://CPlusPlus.com), and [CProgramming.com](http://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 practicals	20%
Assignments	40%
Midterm exam	20%
Final exam	20%
<b>Total</b>	<b>100%</b>

## 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 practicals

There will be lab practicals after most lectures. These practicals will be immediate application of the material presented in lecture. These practicals 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)**

### **Assignments**

Each assignment must be completely *individually*. There are no group projects in this class. The assignments will be posted on Blackboard in the "Assignments" section. Each assignment will include instructions, a due date, and a link for electronic submission. Assignments must be submitted using this link.

It is your responsibility to submit your assignments on or before the due date. Assignments turned in one day late will have 20% of the total points deducted from the graded score. 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 assignments must be digitally submitted through Blackboard except when otherwise specified by the course staff. Do not email assignments to the instructor or lab assistant. Assignment questions should be posted to the online question forum. Class time is for lecture and lab practicals only. Do not send any email to the instructor regarding assignments or ask specific assignment questions during the lecture sessions. You are encouraged to attend the instructor's office hours for assignment 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 will 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 12<sup>th</sup> 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](mailto:sarc@usc.edu) describes reporting options and other resources.

## **Academic Conduct and Academic Support Systems (continued)**

### **Support Systems**

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs [http://sait.usc.edu/academicssupport/centerprograms/dsp/home\\_index.html](http://sait.usc.edu/academicssupport/centerprograms/dsp/home_index.html) provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

### **A Further Note on Plagiarism**

In this class, all homework submissions will be compared with current, previous, and future students' submissions using MOSS, which is 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.

It is okay to discuss solutions to specific problems with other students, but it is not okay to look through another student's code. It does not matter if this code is online or from a student you know, it is cheating. Do not share your code with anyone else in this or a future section of the course, as allowing someone else to copy your code carries the same penalty as you copying the code yourself.

# Introduction to C++ Programming

## ITP 165 (2 Units)

### Course Outline

Note: Schedule subject to change

Day	Topic(s)	Practical	Homework
5/18	Intro	None	Homework 1 Due in week 2
5/19	Variables	LP1	
5/23	Booleans and conditionals	LP2	Homework 2 Due in week 3
5/24	More Conditionals	LP3	
5/25	Loops	LP4	
5/26	Arrays/More loops	LP5	
5/30	<b><u>MEMORIAL DAY</u></b>		
5/31	C-style strings	LP6	Homework 3 Due in week 4
6/1	Using functions	LP7	
6/2	Binary/Hex	LP8	
6/6	Creating functions	LP9	Homework 4 Due in week 5
6/7	Pass by reference	LP10	
6/8	More functions	LP11	
6/9	<b><u>MIDTERM</u></b>	None	
6/13	Getline and File I/O	LP12	Homework 5 Due in week 6
6/14	MT Review	LP13	
6/15	Structs	LP14	
6/16	Class	LP15	
6/20	Separate Files	LP16	Homework 6 Due in week 7
6/21	Memory and Variables	LP17	
6/22	Basic Pointers/Dynamic Memory	LP18	
6/23	Arrays and Dynamic Memory	LP19	
6/27	Has-a and Destructors	LP20	Homework 7 Due in week 8
6/28	Vectors	LP21	
6/29	More has-a, Is-a Basics	LP22	
6/30	Inheritance	LP23	
7/4	<b><u>FOURTH OF JULY</u></b>		Homework 8 Due in week 9
7/5	Virtual functions	LP24	

<b>Day</b>	<b>Topic(s)</b>	<b>Practical</b>	<b>Homework</b>
7/6	Abstract classes	LP25	
7/7	Bitwise review	LP26	
7/11	Bitwise operators	LP27	
7/12	Where to go from here		
7/13	<b><u>FINAL EXAM</u></b>		