

SYLLABUS

Fall, 2017

CSC 279 C + C++

4.0 credits

Prerequisite(s): CSC 115 or CSC 202J

Instructor: Beifang Yi

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Hours: 10:50-12:20 (T/R)
12:30-1:30 (W)
3:30-4:30 (W)

WebSite: <http://cs.salemstate.edu/~byi/>

Section	Time	Room	Final Exam
01	T & R 1:40pm—2:55pm	MH 206	Thursday 12/14, 2:00pm-4:00pm MH 206
L21	T & R 3:05pm—4:20pm	MH 210	

Catalog description:

This course presents the particular goals, features, and strengths and limitations of the C and C++ programming languages. C's capabilities and limitations as a procedural programming language are examined, followed by an exploration of C++ as an object-oriented language that provides access to C's feature set. Topics include language grammar rules and their effect on programming style, operators, pointer and reference types, bit manipulation, memory management, and the utilization of the STL (Standard Template Library). Programming assignments will highlight the use of each language in appropriate contexts (e.g. C: systems programming, text processing; C++: program-solving strategies emphasizing OO and the use of the STL). Fundamental programming language paradigms, type systems, and memory allocation and management strategies are presented and discussed, followed by comparative analysis of the languages utilized in this course and its prerequisites. Three lecture hours and three hours of scheduled laboratory per week, plus extensive programming work outside of class.

Course Goals:

The aims of this course are:

- CG1: to present typical concepts and features of a procedural programming language (C);
- CG2: to provide additional experience in problem-solving and programming in an object-oriented programming language (C++);
- CG3: to enhance students' skills in problem analysis and program design and implementation via the use of C and C++ capabilities and their related toolkits;
- CG04: gain a basic level of understanding of fundamental programming language concepts.

Course Objectives:

Upon completion of this course, the student will have demonstrated the ability to:

- CO01: understand and utilize the syntax and special capabilities of the C and C++ languages, including preprocessors, header files, pointer vs. reference in each language, operators, bit manipulation, and memory management;
- CO02: determine whether to select or create algorithms and language features for the solution of a complex problem, and use these ingredients effectively to generate a solution to the problem;
- CO03: solve problems that appropriately utilize the features of the C language;
- CO04: solve problems that appropriately utilize the features of the C++ language, including the various types of reuse available via object-oriented programming;

- CO05: understand and use a variety of components from the C++ Standard Library and Standard Template Library;
- CO06: design and implement solutions to relatively large-scale problems using object-oriented tools, and provide appropriate documentation for the solutions;
- CO07: demonstrate knowledge of fundamental programming language paradigms, type systems, and memory allocation and management strategies.

Course Topics:

A detailed topics list and a general course bibliography can be found on the Computer Science Department website at <http://cs.salemstate.edu/dept/index.php?page=184>. Select CSC 279 to access a PDF document.

Texts: (required)

- **C How to Program**, 8th Edition, by P. Deitel and H. Deitel. Pearson, 2016 (ISBN: 978-0-13-397689-2).
- **C++ How to Program**, 10th Edition, by P. Deitel and H. Deitel. Pearson, 2017 (ISBN: 978-0-13-444823-7)

Required Material:

(Required) Thumb (flash) drive (or other portable memory devices and/or online storage), 4 GB minimum.

Additional references (optional):

- Course website: <http://cs.salemstate.edu/~byi/CSC279/index.html>.
- Prata, Stephen. **C++ Primer Plus**. Sixth Edition. Sams, 2011.
- Prata, Stephen **C Primer Plus**, Sixth Edition., Sams, 2013.
- Seacord, Robert. **Secure Coding in C and C++. Second Edition**. Addison-Wesley, 2013
- Schildt , Herbert. **C++ Programming Cookbook**. McGraw-Hill, 2008.

Cell phones:

Turn the ringer off, or, better yet, *turn the phone off*.

Class Attendance:

Class attendance is highly recommended. You are responsible for all materials presented in class, examinations, and other announcements. No excuses of any nature will be construed as relieving you from the responsibility for completion of the work assigned. Each student is responsible for completing all course requirements and for keeping up with all that goes on in the course (whether or not the student is present).

Final Grade:

Final grade will be determined using the following grading weights:

written assignments	10%
programming projects	50%
midterm examination	10%
final examination	30%

Attendance is not used to calculate the final grade: *however*, note that you are at all times responsible for assignments and materials presented in class.

The following table shows how the course work is assessed against the course objectives:

	Written Assignments	Programming Projects	Examinations
CO01	✓		✓
CO02	✓		✓
CO03		✓	✓
CO04	✓	✓	✓
CO05	✓	✓	✓
CO06		✓	
CO07		✓	✓

Programming Assignments/Projects:

There will be several programming projects (assignments) to be completed throughout the semester with varying number of score points according to their difficulty levels. These projects will help students understand C/C++ concepts, get hands-on experience in application of the programming techniques, and improve program-solving capabilities in real world problems. There is a deadline to each project and *penalty* will be imposed for late submissions (see the Due Dates/Time below).

For each project of 100 or more score points, a write-up should be submitted which describes the problem, solutions, and other requirements (usually, there are additional requirements for the assignments). For such programming projects, the following should be provided: (1) short description of the problem and solution design and implementation, (2) instructions on how to compile and run the program, (3) testing results, (4) well-documented source code, and (5) input data (if applicable).

There will be bonus projects given in the semester which are optional for bonus project credits. Bonus credits will be added to the final grade (with some adjustment).

All the projects must be submitted at Canvas (<https://elearning.salemstate.edu/>).

Written Assignments:

There will be a series of written assignments from the textbook and other sources: question-answering and/or short essay-writing. Reading will be a part of the written assignments. Please note that in addition to these (written) assignments there will be (Programming) Projects. There is a deadline to each assignment and *penalty* will be imposed for late submissions (see the Due Dates/Time below).

All the assignments must be submitted at Canvas (<https://elearning.salemstate.edu/>).

Examinations/Tests:

There will be one midterm and one final (comprehensive) examination. The midterm will be held in week 8 *depending* on class progress. **Note:** Make-ups are given for examinations only under exceptional circumstances and with documented circumstances.

Missed Tests:

Missed tests will be made up *only under extreme conditions/emergency with the proper documentation*. Students who know in advance that they must be absent on an exam day for an excusable reason should notify the instructor prior to the exam day. Students who are absent on the day of the exam for an excusable reason should contact the instructor immediately following their absence. Makeup work will be permitted *only when* the instructor is presented with acceptable documentation for acceptable absences. It is student's responsibility to notify the instructor of any excused absence as far in advance as possible.

Due Dates/Time:

- **There will be a 50% penalty for each week an assignment (programming project/short-answer/written exercises...) is late;** penalties accrue at the due time of the assigned due date (which means that *no* credit points will be given to any assignments submitted one week or more than one week late).
- **No assignments (lab/project/short-answer exercise...) will be accepted after the final examination.**

Study Groups:

While I strongly encourage study groups, I require that each student hand in his/her answers in her/his own words - if two answers are highly similar to each other, neither will receive credit.

When working on your programming projects, you may discuss with others the project topics, the algorithms and methodologies related to the project; but when you work on writing the code, this coding work should be 100% of your own work. **If two answers/written code segments come out exactly the same or highly similar, neither will receive credit and/or further actions will be taken** (such as reporting to the department and/or university). Given the nature of most of the projects, homework questions and writing assignments, it will be almost impossible for two people to come up with highly similar answers UNLESS they copy.

Academic Integrity:

Academic Integrity Policy and Regulations can be found in the University Catalog and on the University's website (http://catalog.salemstate.edu/content.php?catoid=13&navoid=1295#Academic_Integrity). The formal regulations are extensive and detailed - familiarize yourself with them if you have not previously done so. A concise summary of and direct quote from the regulations: "Materials (written or otherwise) submitted to fulfill academic requirements must represent a student's own efforts". *Submission of other's work as one's own without proper attribution is in direct violation of the University's Policy* and will be dealt with according to the University's formal Procedures.

All students are expected to be familiar with the academic regulations, including those regarding Academic Integrity, for Salem State University as published in the college catalog. In addition, each student is responsible for completing all course requirements and for keeping up with all that goes on in the course (whether or not the student is present).

Salem State University is committed to providing equal access to the educational experience for all students in compliance with Section 504 of The Rehabilitation Act and The Americans with Disabilities Act and to providing all reasonable academic accommodations, aids and adjustments. Any student who has a documented disability requiring an accommodation, aid or adjustment should speak with the instructor immediately. Students with Disabilities who have not previously done so should provide documentation to and schedule an appointment with the Office for Students with Disabilities and obtain appropriate services

In the event of a University declared critical emergency, Salem State University reserves the right to alter this course plan. Students should refer to saalemstate.edu for further information and updates. The course attendance policy stays in effect until there is a university declared critical emergency. In the event of an emergency, please refer to the alternative educational plans for this course located at Canvas (<https://elearning.salemstate.edu/>). Students should review the plans and gather all required materials before an emergency is declared.

Please remember that if, for any reason, you decide to drop this course, you **MUST** do so officially through the Registrar's office. The last day to withdraw from a course this semester is **November 27th**.

Note: This syllabus represents the intended structure of the course for the semester. If changes are necessary, students will be notified in writing and via all regular class communication mechanisms (class discussion, emails, and/or the course link at Canvas <https://elearning.salemstate.edu/>).