

SYLLABUS

Fall, 2021

CSC 279 C + C++

4.0 credits

Prerequisite(s): CSC 115

Instructor: Beifang Yi
email: byi@salemstate.edu

Office: MH 211A/Online/Zoom
Hours: TR (9:25-10:40am)
WF (12:15-1:30pm)

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Section	Time	Room	Final Exam
01	Directed Studies	SSU Course Online at: https://elearning.salemstate.edu	By Dec 21, Tuesday On Canvas
Office Hours: T/R: 9:25—10:40am W/F: 12:15—1:30pm		ZOOM Meeting ID: 952 3021 3714 Passcode: 163037 https://salemstate.zoom.us/j/95230213714	

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 <https://cs.salemstate.edu/courses/course-information>. 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):

- Couse website: <http://cs6.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.

Lecture/Lab Attendance:

This course is offered in Self-studies format. Following study guides and assignment/project requirements to guide your self-study of the course topics and complete the coursework on time.

Student-Instructor Communication:

If you have any questions regarding course material, and *in particular if you are having problems with a programming assignment*, the most effective way to get assistance is to *discuss with the instructor (either in the class, in the lab, or outside the classroom)*.

Please **note**: Canvas is used for submission of the assignments/labs/projects and for posting grades. If you ask questions through Canvas-grading-submission features, they usually do **not** go to the instructor directly. Please ask questions in the class/lab or send emails (you may send email via Canvas) to the instructor!

Final Grade:

Final grade will be determined using the following grading weights:

assignments/projects	70%
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:

	Assignments/Projects	Examinations
CO01	✓	✓
CO02	✓	✓
CO03	✓	✓
CO04	✓	✓

	Assignments/Projects	Examinations
CO05	✓	✓
CO06	✓	
CO07	✓	✓

Assignments/Projects:

There will be assignments and programming projects (including written reports) to be completed throughout the semester with varying number of score points according to their difficulty levels. These assignments/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).

All the assignments/projects are available at Canvas (<https://elearning.salemstate.edu/>). Before working these assignments and projects, you must read carefully their requirements and their submissions must be submitted at Canvas

Examinations/Tests:

There will be one final (comprehensive) examination. The exam will be posted Canvas (<https://elearning.salemstate.edu/>).

Missed Tests:

Tests (mini-tests/quizzes/final-exam) may not be made up except for *documented/emergency* situations. If a test must be made up, arrangements must be made with the instructor to take the test before it is discussed in class (usually within a week of the test being administered).

Due Dates/Time:

- Late submission of assessed assignments or projects will result in penalties defined in the following:
 - **25 percentage** points will be deducted for being late, up to 24 hours.
 - **50 percentage** points will be deducted for being late, more than 24 hours and up to 48 hours.
 - **75 percentage** points will be deducted for being late, more than 48 and up to 72 hours.
 - **100 percentage** points will be deducted for being late more than 72 hours (i.e., a grade of **zero** will be given).
 - A grade of **zero** will be given for any assignments including projects which are submitted after the final examination time. That is: **no assignments (including semester project) will be accepted after the final examination.**
- Should there be an emergency that prevents you from completing/submitting your assignments/projects on time, you will need to send *an email request* for the extension on the coursework submission. The instructor will reply to this request email with a specific number of days for the extension period or a new deadline for the assignment and you will need to keep *this email as a record of the extension approval*. Sending only a request email does **not** guarantee the extension approval.
- **Please double-check** your submissions (since your assignment submissions are usually graded after their deadlines): to guarantee your successful and correct submissions, you would need to download your submissions and examine the downloaded materials; as for the projects, you would need to check the downloaded programs and then compile/run the code.

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).

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 Disability Services and obtain appropriate services.

Students must comply with the university's Covid-19 health and safety protocols for the 2020–2021 and 2021–2022 academic years. These protocols include wearing masks in class and on campus in public spaces, practicing physical distancing where possible, including in class, engaging in a daily symptom check, notifying counseling and health services at 978.542.6413 if they have any symptoms associated with COVID-19, and not coming to campus or to an in-person class if they have any of the symptoms related to COVID-19 until cleared by the student life wellness area. Students who have documented disabilities that may prevent them from complying with these policies are required to contact the disability services office.

In the event of a university declared critical emergency, Salem State University reserves the right to alter this course plan. Students should refer to [Salem State](#) 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/>) where the course contents such as announcements, assignments are posted. 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 19th**.

<p>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/).</p>

Course Schedule for CSC279—Directed Studies
(Subject to Change)

Week	Dates	Contents (textbook chapters and others)	
1	9/2—9/3	Self-studies of the following topics (via chapters of text— <i>Deitels' C How to Program, 8th edition</i>): <ul style="list-style-type: none"> • C: Introduction (Ch1-2) • C: Basics (Ch3-6) • C: Pointers (Ch7) • C: Characters, Strings (Ch8) • C: Formatted I/O (Ch9) • C: Structures, Unions, Bit Operations (Ch10) • C: File Processing (Ch11) • C: Preprocessor, Head Files (Ch13, 14) 	
2	9/6—9/10		
3	9/13—9/17		
4	9/20—9/24		
5	9/27—10/1		
6	10/4—10/8		Detailed assignments and requirements available on Canvas.
7	10/11—10/15	Self-studies of the following topics (via chapters of text— <i>Deitels' C++ How to Program, 10th edition</i>): <ul style="list-style-type: none"> • C++: Introduction (Ch1-3) • C++: Basics (Ch4-6) • C++: Templates and Exception (Ch7) • C++: More about Pointers and Classes (Ch8-9) • C++: Operator Overloading (Ch10) • C++/OOP: Inheritance & Polymorphism (Ch11-12) • C++: Stream I/O (Ch13) • C++: File Processing (Ch14) • C/C++: Standard Library (Ch15-16) • C++: Templates and STL (Ch18) • Bits, Chars, C String, structs (Ch22) • Paradigms, Type Systems • Memory Allocation and Management 	
8	10/18—10/22		
9	10/25—10/29		
10	11/1—11/5		
11	11/8—11/12		
12	11/15—11/19		
13	11/22—11/26		
14	11/29—12/3		
15	12/6—12/10		Detailed assignments and requirements available on Canvas.
16/17	12/15—12/22		Final Examination By Dec 21 st , Tuesday, on Canvas