

SYLLABUS

Spring 2015

CSC 201J Software Design and Programming I

4.0 cr. [DII]

Prerequisites: high school algebra I & II, experience with a window-based operating system and the use of email and a word processor.

Instructor: Beifang Yi
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Office: MH 211A
Hours: TWR (11:30pm-1:30pm)
W (5:30pm-6:00pm; 10:00pm-10:30pm)

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Section	Time	Room	Final Exam
S1	W 6:00pm-10:00pm	MH 202	Wednesday 5/6, 8:00pm-10:00pm MH 202

Catalog description:

This course introduces a set of fundamental design principles and problem-solving techniques for the development of computer algorithms and their implementation as programs. Problem solutions are developed with the help of an appropriate modeling language and then coded in an object-oriented programming language. (Consult the Computer Science Department for the languages and tools currently in use.) Topics such as problem specification, object-oriented analysis and design, standard data types, control structures, methods and parameter passing, and design for reuse are presented through a study of specific example problems and solutions. Style, documentation, solution robustness, and conformance with specifications are emphasized throughout. Three lecture hours and three hours of scheduled laboratory per week plus extensive programming work outside of class.

Prerequisites: High school algebra I & II; experience with a window-based operating system and the use of email and a word processor.

Course Goals:

The purpose of this course is to develop students' understanding of a coherent set of tools and techniques for creating computer solutions to simple problems in data manipulation. Upon completion of the course, a student should be able to do the following:

- CG1: analyze a problem statement for completeness and clarity;
- CG2: use the methodology of object-oriented design to develop class diagrams (data descriptions and methods) for a problem solution;
- CG3: convert this solution into source code in the designated high-level programming language in accordance with a well-defined set of style rules;
- CG4: debug and test the program;
- CG5: provide clear documentation for the result.

Course Objectives:

Upon successful completion of the course, a student will have:

- CO1: demonstrated knowledge of the syntax elements of an object-oriented programming language;
- CO2: gained experience in analyzing problem statements for completeness and consistency;
- CO3: practiced standard techniques of problem analysis;
- CO4: applied the fundamentals of object-oriented design methodology;

- CO5: learned and utilized simple techniques for validation and verification of programs;
- CO6: created full documentation for several completed projects.

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 201J to access a PDF document.

Text:

(Required) Java How to Program: Early Objects, 9th Edition, by Deitel & Deitel. Prentice-Hall, 2012 (ISBN: 0132940949).

Required Material:

(Required) Thumb (flash) drive, 4 GB minimum or online storage (for saving your projects)

Software:

(Required) JDK 8 (Java SE development Kit 8) and NetBeans 8.0 (this is the only IDE that will be covered in class). Free copies of the software that have been customized for the course can be downloaded in the Department labs - instructions will be given in class.

Cell phones:

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

Lecture Attendance:

Class policy is that of the Registrar's office - see the University catalog for details. Lecture will start promptly at the scheduled time, so please make a serious effort to not be late; if you *have* to be late, please be discrete when entering the classroom. While class attendance does not *directly* affect your final grade, some of the material covered in class is not found (in the same form) in the text, so class attendance and notes are very important. Note that you are at all times responsible for materials and assignments discussed in class: if you miss a class, try to get lecture notes from a classmate and review them *before* the next lecture. We will use SSU's online course management system, **Canvas** (<https://salemstate.instructure.com/login>) to post assignments, quiz grades, and announcements regarding the course topics and progress. You will need to visit Canvas (with your SSU Navigator use-name and password) for the course activities. Canvas uses your **SSU-stored email** box for the communication between you and the instructor and thus you **must use this email** address. 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).

Scheduled Lab Attendance:

Quizzes will be held in the class/lab hours. Lab will be used to review or present software tools, to discuss and investigate Java implementation details that time may not permit to be fully explored during the scheduled lecture period, for design and implementation drills, for occasional short lab (programming) exercises, to assist with design and debugging problems that arise in longer lab / project exercises, and to check/examine/grade the exercises and homework.

Final Grade:

Final grade will be determined using the following grading weights:

	Grade-A	Grade-B	Grade-C
assignments (labs/project or short-answer exercises)	45%	45%	0%
quizzes	20%	0%	0%
midterm examination	10%	10%	10%
final examination	25%	45%	90%
semester overall final grade	Max(Grade-A, Grade-B, Grade-C)		

Two different grading formulae are used to calculate your semester overall final grade: Grade-A and Grade-B and your final grade will be the larger of them. Note it is ***much more difficult*** to get the same grade through ***Grade-B or Grade-C*** than through ***Grade-A***; it is relatively-easy to get high grade from Grade-A scheme.

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:

	Exams/Quiz Questions	Homework Problems	Programming Projects	Lab Exercises
CO01	✓		✓	✓
CO02	✓	✓	✓	✓
CO03	✓	✓	✓	✓
CO04	✓	✓	✓	✓
CO05	✓	✓	✓	✓
CO06			✓	

Student-Instructor Communication:

Learning how to develop software is very much a **hands-on, experiential process** - the only way to be sure that you understand the material is to apply it by designing and writing programs. The nature of programming is such that it is relatively easy to "get stuck" on minor technical topics that can be difficult to recognize, particularly at early stages of this course - this can lead to a significant amount of what feels like wasted time. While the single most effective way to deal with these problems is to talk to the course instructor, that approach can be problematic if the class meets only once or twice a week and/or if the instructor's office hours conflict with students' obligations.

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

Assignments (Lab Exercises/Programming Projects/Short-Answer Exercises):

About 8 exercises (including short-answer exercises, programming projects) will be assigned during the semester. *Most will have pre-lab activities to be completed prior to the implementation of the assigned tasks while a few will be in the form of short answer.* Exercises will definitely require **significant programming time outside of scheduled lab**. Submission requirements and mechanics will be stated on each exercise. In general, each exercise will have an assigned due date and time: the required material(s) are to be submitted no later than midnight of that date. Please refer to Final Grade above for the grading weight of the assignments.

*Each assignment may have different full score points, depending on the difficulty and the amount of the work of the exercises. There will be one or two extra assignments given in the semester and these extra assignments will be used as make-up assignments. Any assignment may be used as the extras. The average score for the overall assignments will be the total scores received for all the assignments divided by the total scores of the required assignments. Suppose that there will be about 1100-point assignment questions given in the whole semester and the required assignment total scores will be about 1000 points. You may **not** move the extra points to the final grade. For example, students A and B have completed 1050-point and 800-point assignments and their Semester Assignment Grades will be $1000/1000 * 45 = 45$ and $800/1000 * 45 = 36$ points respectively (suppose that the required assignment points is 1000).*

*There will be **Challenging Programming Projects**, which will be graded separately. **No late submission of these projects will be accepted. Grades earned from these Challenging Projects will be directly added to the final grade.** For example, if student C has completed 5 point Challenging Projects, these 5 points will be added to his/her final grade calculated from the table illustrated in Final Grade above.*

Readings will be assigned from the text on a regular basis: for the maximum benefit from reading, do the readings before the material is covered in class. Supplementary material will be distributed on a regular basis, and will be the primary focus of class discussions. In particular, at least one complete, functioning example Java application project will be distributed per week or biweekly: these projects include extensive student-oriented documentation/comments that are designed to guide students through the process of learning how to design and implement software. Occasional worksheets and problems will be assigned.

Exams/Quizzes:

There will be two exams, a midterm (usually in week 4) examination and a *comprehensive* final examination. Check the above for examination grading weights and times.

Quizzes will be held in class/lecture, lab, and outside-class/lab (i.e., take-home) hours. There will be about 8~10 quizzes to be held in the semester (one quiz with the lowest grade will not be used to calculate the final grading/scoring). There are different forms of quizzes: *short-answer questions* (paper-based or online, including coding practice questions) and complete *Java Programming Quizzes*.

Missed Tests:

Tests (exams and quizzes) 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:

- **There will be a 3% penalty for each day** (including weekends, holidays) **an assignment (lab/project/short-answer exercise) is late**; penalties accrue at the due time of the assigned due date.
- **No assignments will be accepted after the final examination.**
- Should there be an emergency that prevents you from completing 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 and you will need to keep *this email as a record of the extension approval*. Only a request email does **not** guarantee the extension approval.

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.*

"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 <http://www.salemstate.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 via the course link at Canvas (<https://salemstate.instructure.com/>).

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 **April 17th**.

<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://salemstate.instructure.com/).</p>
