# Special Topics
# Software Specification and Construction

2018


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**Class Hours** -
**Office Hours** - TBD; anytime electronically; by appointment; after class

## 1 Overview

To give the students a solid understanding of modern software construction. To prepare students to construct sequential and concurrent programs. To encourage the construction of software systems of high quality. In-depth study of software construction in a modern language including control structuring and packaging. Concepts such as information hiding, data abstraction, and object-oriented software construction are discussed and illustrated.

## 2 Required Text

1. Barbara Liskov with John Guttag. Program Development in Java . Addison Wesley, 2001.
2. Joshua Bloch. Effective Java. Third Edition.
3. Some assignments require programming techniques not covered in the two required texts. I will provide pointers to online material at the appropriate time.

Any Java reference, either text or online . Recommended. Online Java documenation is available from Oracle.

## 3 Grading

Course letter grades will be assigned using the following official scale.
TBD
Course percentage grades are broken down into the following categories.

**15%** Quizzes
There will be a quiz during each meeting. Quiz content will focus on material presented in lecture the week prior. The lowest quiz score is dropped. Missed quizzes may be made up *within the same week* during my office hours.

**35%** Assignments
There will be ten or more programming assignments.Programs must be submitted online and are be graded on correctness, clarity, and style. Assignments are assigned and due at the **beginning** of lecture on Monday. No assignment grades are dropped, but students wishing to replace their lowest assignment grade may attempt an optional assignment available at the end of the semester.

**50%** Exams

You will have one midterm and one cumulative final (with a strong emphasis on the materials covered after the midterm). Exams will take place during regular lecture period. Exam week lectures will be replaced by an ad-hoc review (you should come prepared with questions, or at the very least a vague sense of wonder).

| | | |
|---|---|---|
| **25%** | **TBD** | Midterm |
| **25%** | **TBD** | Final |

# 4 Late Policy

Late homework will not be accepted.

Quizzes missed due to unforeseen and extreme circumstances may be made up *within the same week* during my office hours. *Keep in mind that one quiz grade may be dropped.*

# 5 Academic Misconduct

The university has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. A more detailed description of Student Academic Disciplinary Procedures may be found at `www.just.edu.jo/Deanships/DeanshipofStudentsAffairs/Documents/Deanship%20of%20Students%20Affairs.doc`.

# 6 Participation by Students with Disabilities

If, due to a disability, you need special accommodations in order to meet any of the requirements of this course, you should contact me as soon as possible.

# 7 Cheating & Collaboration

All graded assignments must be your own work (your own words), but you may work with other people as long as you list their names prominently on the first page of the assignment, and/or in a comment at the top of the assignment, for example:

```
// Mazin, Homework #6, SE 431
// I discussed this assignment with Majdi,
// and Natheer. We looked at each other's design notes,
// but did not exchange the copies.
```

For this course, verbal communication and collaboration using non-code text or hand-written code is permitted, as long as it is properly documented. Documentation must also be made for help from anyone not in the course, such as a tutor, friend, or relative, and for information off the Web.

Automatic copying of assignments (e.g. email, messaging, flash drive copies, printed hard copies, etc) is **strictly** forbidden. At the very least, you must write every word in your assignments. If you are unsure whether something is permitted, please check with me. If you turn in a program which is an electronic copy (or a minor variation of a copy) of other peoples work, then the source and people who give credit to the source will receive zero for the assignment, while those who do not give credit may be given an 'F' grade for the course. Do not send your programs by email to other people!

Whether or not you have permission of the other person, submitting someone else's work as your own is plagiarism, a serious instance of academic misconduct. Everyone is responsible for learning the material themselves. Some of the assignments may be graded in person, especially in cases where the individual

contribution to the assignment is not clear. If you are graded in person, you will be expected to demonstrate that you have mastered techniques used in the material you submitted.

# 8 In-Class Communication

Phone calls, text messages, instant messages, email, and web surfing are highly disruptive to other students and hence **not allowed** during class time. Technology devices may only be used for the class purposes (e.g. following slides) Violators will be asked to leave the room. If you anticipate a call that you simply have to take (yes, that happens), please sit near the door, put your phone on vibrate, and leave quietly at the appropriate time. If you are disrupted by another student's violation of this policy, please bring the matter to my attention.

# 9 Outline

This course outline is a "living document". It can be changed in response to events in the course. You will be notified if major changes are made.
Procedural Abstraction; Exceptions
Data Abstraction
Reasoning About Data Abstraction
Iteration Abstraction; Method Guidelines
Type Abstraction
Polymorphic Abstraction
Generics
Specification Checking; Temporal Logic
Common Java Contracts
Classes and Inheritance
Enums and Annotations
Understanding the Agile Heresy
Design Patterns, Parameterized Unit Testing with Contracts
Specifications, Security