

EE 5453 --- Engineering Programming II (Fall 2015)

Course Syllabus

Instructor:

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Class Meeting Time: 4:00-4:50PM MWF

Class Location: EB 2.04.04

Office Hours: 3 – 3:50PM MWF or by appointment

Website: All class materials will be handled electronically through UTSA Blackboard Learn

Course Description:

Object-oriented programming for engineering design problems using Java and Python; scripting using Python; etc.

Prerequisite:

Graduate standing. Non-experience in Java or Python is assumed. However, it would be helpful if you have some basic knowledge in programming (in any language).

Textbook:

There's no required textbook. Lectures slides will be provided and approximately follow the references below.

References:

- Oracle Java tutorial: <http://docs.oracle.com/javase/tutorial/index.html>
- Oracle Java SE8 documentation: <http://docs.oracle.com/javase/8/>
 - Language Specification: <http://docs.oracle.com/javase/specs/jls/se8/html/index.html>
 - API Specification: <http://docs.oracle.com/javase/8/docs/api/index.html>
 - JDK Developer Guides: <http://docs.oracle.com/javase/8/docs/>
- Thinking in Java, 4th Edition: <http://mindview.net/Books/TIJ4>
 - Book for purchase; source code for download.
- Python 3 documentation: <https://docs.python.org/3/>
 - Tutorial: <https://docs.python.org/3.4/tutorial/>
 - Standard Library: <https://docs.python.org/3/library/index.html>
 - Language Reference: <https://docs.python.org/3/reference/index.html>
- Learning Python, 5th Edition: <http://www.rmi.net/~lutz/about-lp5e.html>
 - Book for purchase; source code for download.
- Dive Into Python 3: <http://www.diveintopython.net>
 - Free book for download.

Course Topics (tentative):

- Java:

- Introduction (history, editions, key features, object-oriented concepts, etc.)
- Language Basics (variables, primitive data types, arrays, operators, expressions, statements, blocks, etc.)
- Classes (objects, packages, access control, initialization and cleanup, etc.)
- Inheritance (interfaces, reusing classes, polymorphism, inner classes, etc.)
- Collections and Generics
- Error Handling with Exceptions
- Java Standard Library (Numbers, Strings, java.lang, java.util, etc.)
- I/O
- RTTI
- Python:
 - Introduction (history, key features and concepts, etc.)
 - Language Basics (statements, functions, etc.)
 - Data Types (lists, tuples, sets, dictionaries, strings, etc.)
 - Classes and Iterators
 - Modules and Packages
 - Input and Output
 - Errors and Exceptions
 - Python Standard Library

Grading Policy:

- Homework: **30%**
 - 3 homework assignments (2 Java, 1 Python), each taking 10%.
- Exams: **40%**
 - Exam 1 (10%) + Exam 2 (10%) + Final (20%)
- Project: **25%**
 - Proposal (5%) + Implementation and Final Report (15%) + Presentation (5%)
- Quizzes: **5%**
 - The instructor will randomly choose a few classes to ask the students to turn in an answer to a very simple question. These are mainly for checking attendance.
- Total: **100%**

About the Grading

- The final letter grades will be curved.
- After the grade of each assignment/quiz/exam is posted, you will have a week to see me for any misgrading or miscalculation. After that, the grade is finalized.

About the Assignments

- Tentatively, the 3 assignments will be out in the 4th, 9th, and 13th week of the semester, and due in about 5 days. No late turn-ins.
- Each assignment will be a mix of questions and programming tasks. All must be turned in through Blackboard Learn, including your answers to the questions and source code of the programming tasks.
- For the programming tasks, please straightly follow the naming/input/output requirements with each question, so that the grader can easily test your solution with unified test code.
- **All assignments must be completed individually.** There's zero-tolerance on copying source code, either from online or from classmates. Both the copier and copiee will lose all the points for the assignment.

About the Exams

- Tentatively, Exam 1 and 2 will be on Friday 9/18 and Friday 10/23, both during the class time.
- Final will be on Wednesday 12/9, 3:15PM.
- All exams are close-book and close-electronic device.
- No make-up exams (except for extremely special situations with legitimate proof and under discretion of the instructor)

About the Project:

This is an individual project. Students will have large flexibility in choosing the project topic that they would like to work on. This can be an implementation of an existing paper scheme, a literature review and report on a research topic, a demonstration (with your own contribution) of an interesting feature, an extension to an existing framework, a development of a tiny app, and so on. The instructor will provide a few sample topics that the students can choose from. However, students are encouraged to propose their own topics, **as long as the topic is not directly covered in the class lectures.** The entire project should consist of the followings:

- **Proposal:** including the topic selection, literature search, references, work plan, etc. Tentatively, you will have about 4 weeks to finish the proposal.
- **Implementation:** Students are allowed to utilize an existing framework (if such one exists for the selected topic). If one chooses to do so, he/she must clearly identify what part of the project is implemented by him/herself.
- **Final Report:** How to run your project? What approaches were followed? What are the findings? Alternatively, your final report can be based on a literature review on a particular research topic (covering a series of papers). Please complete the final report like a research paper, including Introduction, Mechanisms, Experiments, Results, Discussions, etc. You will have about 8 weeks after the proposal to complete the project and turn in the final report (project and report are finally due on Friday 11/20).
- **Presentation:** Each student will have 5-10 minutes (depending on the enrollment) to present his/her work in the class. A few PowerPoint slides should be prepared. The last two weeks (4 classes, 11/23 to 12/2) will be used for the presentations.