Syllabus

Course Number	INFO 5100: Application Engineering and Development, Fall 2018
Instructor	Hechen Gao
Lecture Time	Saturday 12:00pm to 15:00pm
Contact	he.gao@northeastern.edu

Course Goals

The primary objectives of this course are to practice social-technical software engineering techniques to solve real-world business problems. Students will be equipped with practical design and programming techniques for the purpose of building significant business applications quickly. In a step-by-step manner, the instructor will take you through the process of systematically combining user tasks, business processes, and data to assemble applications that are user friendly and meet business requirements. You will learn how to employ the object-oriented paradigm, visual user interface design principles, the Java Programming language, as well as productivity tools to put together complicated, powerful business applications with ease and to master the art of how methodologically to write software programs for any kind of business problems. We will practice simple and smart ways of making software programming enjoyable.

Interactive Setting

Besides the lectures, the class will have coding sessions, which will permit continuous interaction. For the duration of the semester, we will focus on a single business problem – you will focus on one problem for the entire semester and that you will start small and gradually expand the scope. Students will practice the art of how to break down business requirements into small manageable components, program the components, and assemble those components into useful systems.

Approach

Students will select a practical business problem and articulate its underlying user requirements. They will engineer an information model capturing the important aspects of the business problem and define the business processes necessary to deliver the solution that will satisfy the stated business requirements as well as define the user tasks as screen designs. We will work on identifying and incorporating the information needed for the task

(screen) at hand. The information model will be linked to user screens through input and output flows and data transformation.
Students will build an inventory system for warehouse operations: the warehouse serves multiple retailers in different geographical areas. Warehouse operations employ a multitude of suppliers, offering wholesale products and services for the benefits of the retailers. What if a user of the new software wants to scale your implementation to support multiple warehouses in different localities? You will learn how Java and other object-oriented techniques can help you to do just that, in a fast and fun way.

Java Programming Language

This course covers the essential elements of the Java programming language—such as arrays, control structures, class definitions, class hierarchies, inheritance, objects, streams, constructors, collections, as well as visual forms and components. It shows how to develop and execute Java applications. Various programming assignments, which strengthen the understanding of java language, object-based, and event-driven programming, will be studied.

Tools

Java 7 or higher, and others

Tentative Schedule

Week	**Topic/Activity**	**Type**
1	Course Introduction Introduction to Java I	Lecture
2	Introduction to Java II	Lecture
3	Introduction to Java III	Lecture
4	Introduction to Java IV	Lecture
5	Introduction to Java V	Lecture
6	Case Study - Supply Chain Systems	Lecture
7	Case Study - Ads Systems	Lecture
8	Final Project Announcement Mid-term Exam	Exam

9	Web Application I	Lecture
10	Web Application II	Lecture
11	Web Application III	Lecture
12	Case Study - Order Matching Systems	Lecture
13	Case Study - Security	Lecture
14	Final Exam	Exam
15	Final Project Presentation	Final Project

Grading

Coursework will be weighted as follows:

Name	**Percentage**
Assignment	40%
Mid-term Exam	15%
Final Exam	15%
Project	60%

Plagiarism Policy

When there is evidence that a student has committed plagiarism, copied the work of others, allowed others to copy their work, cheated on an exam, altered class material or scores, or has inappropriate possession of exams, or sensitive material, the incident will be investigated. The consequences for academic dishonesty are severe and that will include a straight F in the course with the potential for dismissal.