ITMD 411 Syllabus

ITMD 411 Intermediate Software Development

Hours: 3 credit hours / 45 contact hours

Instructor: James Papademas

Textbook, title, author, and year:
Starting Out with Java: From Control Structures to Data Structures, 4th Edition, Tony Gaddis, 2020

Specific course information

a. **Course Description:** This course covers object-oriented programming concepts in the Java Standard Edition platform. Employing the latest software development kit, the student considers software development topics in data structures, stream I/O, serialization, concurrency and graphical clients. Software engineering topics including packaging, deployment, debugging and unit testing. Hands on exercises reinforce concepts gained throughout the course. A final project integrates course topics into a contemporary Graphical User Interface client application.
b. **Prerequisites:** (ITM 311 or CS 116 or CS 201) and (ITM 312 or ITM 313 or CS 331)
c. **Required.**

Specific goals for the course:

a. **Program Educational Objective:**
1. Problem solve and create innovative answers to provide technology solutions for the problems of business, industry, government, non-profit organizations, and individuals.
b. **Course Outcomes:**
Students completing this course will be able to:
- Understand basic Object-Oriented programming concepts.
- Apply Test Driven Development methodologies.
- Understand packaging and deployment Java SE applications.
- Describe Software development terminology.

b. **Course student outcomes:**
Students completing this course will be able to:
- Write Object Oriented Java SE code.
- Create a Java based Graphical User Interface.
- Locate application functionality from a large programmer API.
- Author well-constructed code and software documentation.
- Utilize an IDE to develop, test and debug Java SE code.
- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions **(ABET Computing Criterion 3.1)**
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline **(ABET Computing Criterion 3.2)**
- Identify and analyze user needs and take them into account in the selection, creation, evaluation, and administration of computer-based systems **(ABET IT Criterion 3.6)**

Topics to be covered

a. Java SE Essentials, algorithm development, the Java compiler/Eclipse IDE
b. Object-Oriented Programming (OOP) concepts / OOAD (OOP Designs)
c. Arrays and Array lists
d. Abstraction, Inheritance, Polymorphism
e. Stream I/O
f. Exception Handling
g. Generics
h. Collections
i. Stream API
j. Linked Lists
k. Stacks, Queues
l. Databases
m. GUI's – Swing
n. Serialization
o. Networking
p. Regular Expressions
q. Packaging and Deployment
r. Concurrency
s. JUnit testing / TDD