Catalog description:
This course introduces software tools that enable engineers to become more effective and productive at writing quality code. The students will be grouped into teams of two (or three) that each will undertake a software project guided by a set of several designed lab experiments. The project will reinforce object oriented programming concepts, and will involve software tools that expose students to source control, documentation, debugging, build automation, testing, profiling, configuration and deployment. The Java language will be overviewed, and students have the choice of using Java or C++ to conduct their work.

Required or Elective:
Elective for CCE / ECE
Level: Second year and higher

Prerequisites:
By topic: Students are expected to have basic knowledge of data structures.
By Course: EECE 330

References:
• Thinking in Java by Bruce Eckel. Prentice-Hall 2000.
• The Practice of Programming. Brian Kernighan and Rob Pike. 1999, Addison- Wesley.

Course objectives:
1. Knowledge and practice of various programming and software design paradigms.
2. Advanced knowledge and application of team work methodologies in software engineering and their relation to verification.
3. State of the art knowledge of programming tools.
4. Experience in building, writing and presenting production quality systems with user guides and documentation.

Topics
1. Object Oriented Programming Overview
2. Documentation
3. Source Control
4. Debugging
5. Automatic Build
6. Software Testing
7. Profiling
8. Configuration and deployment tools

Course outcomes:
1. Build industrial and commercial software systems from scratch
2. Find and resolve bugs and problems in computing systems
3. Work in distributed teams and use lightweight productivity tools
4. Automate the system building and maintenance cycle

Class/laboratory schedule
a) One 3-hours session weekly
b) The course requires the students to work an equivalent on 3 hours outside the lab to prepare for each session

Resources for the course:
Experiment booklets, extracts from books, articles, publications, and online material

Evaluation:
1. Assignments: %30
2. Project: 50 %
3. Instructor Evaluation: 20 %

Professional component:
Engineering topics: 80%
General education: 10%
Mathematics and basic sciences: 10%

Computer usage:
Students pick their platforms and programming languages from a fixed selection of tools.

Person(s) who prepared this description and date of preparation:
Fadi Zaraket, June 2012.
Wassim Masri, revised, October 2012