

ECE 309 Syllabus

Course: ECE 309
Credit Hours: 3
Course Title: Object-Oriented Programming for Electrical and Computer Engineers
Course Description:

Object-oriented design and programming of complex software. Java programming. Data abstraction and data structures. Programming by contract. Software testing. Interacting classes and interface design. Stream input/output, exceptions. Iterators, recursion, analysis of running time.

Prerequisite(s): Grade of C- or better in ECE 209. CPE or EE majors.

Textbook(s) and/or other required material:

Data Structures and Algorithms in Java, 4th Edition, Michael T. Goodrich & Roberto Tamassia. John Wiley & Sons, Inc. 2006. ISBN 978-0-471-73884-8 (required)

Course objectives. By the end of this course, the student should be able to (use demonstrative verbs):

Design and implement programs in Java using object-oriented methods.
Design and implement data structures using object-oriented methods.
Design classes which abstract data and methods.
Design interface classes.
Write programs which perform stream input and output.
Practice analyzing a program's running time.
Write methods to test other methods and programs.

Topics covered:

Object-oriented design and programming of complex software.
Java programming.
Data abstraction and data structures.
Programming by contract.
Software testing.
Interacting classes and interface design.
Stream input/output, exceptions.
Iterators, recursion, analysis of running time.

Class/laboratory schedule (sessions per week and duration of each session):

2 75 minute class sessions per week.

Contribution of course to meeting the requirements of Criterion 5 - other:

Contribution of course to meeting the requirements of Criterion 5 - math and basic sciences:

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Contribution of course to meeting the requirements of Criterion 5 - engineering topics:

3 hours

Contribution of course to meeting the requirements of Criterion 5 - general education:

Relationship of this course to program learning outcomes:

Learning Outcome	Level of Instruction	Related Course Content
Outcome A	Major	Students write object-oriented programs in Java to solve problems
Outcome B	Major	In developing programs, students repeatedly follow the debugging cycle: they develop tests to identify problems, develop further tests to determine the bugs which cause them, fix the bugs, and test the program again.
Outcome C	Intermediate	Students learn to analyze algorithm running times in order to meet speed performance requirements
Outcome D	N/A	
Outcome E	Major	Students learn to design programs to solve engineering problems
Outcome F	N/A	
Outcome G	N/A	
Outcome H	N/A	
Outcome I	N/A	
Outcome J	N/A	
Outcome K	Major	Students gain modern programming skills, developing programs in

Relationship of this course to program learning outcomes:

Learning Outcome	Level of Instruction	Related Course Content
		Java using Eclipse development environment.

Person who last prepared this description and date of preparation:

- Dean, Alexander G. (agdean) - Mar 27th, 2009 (01:51pm)