Syllabus
CSE 8313 Object-Oriented Analysis and Design

Fall 2006

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Course Overview
Object technology has matured significantly over the past 15 years and its basic concepts
have become part of mainstream software development. During the semester we will
explore the various dimensions of object-oriented analysis and design. The course will
focus on three main themes:

1. Objects, OOA&D, UML
2. Design Patterns & Heuristics
3. Design issues for concurrent systems and real-time

Object-Oriented Programming
To truly understand the issues surrounding object-oriented design, one must understand
how OO concepts map to programming languages. Although not everyone in the field of
software engineering does programming on a daily basis, you are expected to be able to
read, modify and refactor object-oriented code, specifically Java since that is the
language used in all the examples and exercises. If you are familiar with C++, you should
have no problem with Java. If you do not have any exposure to objects, you may want to
take a look at some of the introductory material on the web that relates to objects and
Java. The class home page contains links to some good introductory Java books as well
as some videos that can help you jumpstart Java.

Textbooks:
Lethbridge & Laganiere. Object-Oriented Software Engineering.

Tools:

UML: we will be exploring UML during the semester. You should have access to
a UML tools such as Rational Rose or Rhapsody.
IDE: an interactive development environment for Java such as NetBeans or
Eclipse can be quite useful.

Grading:
Exams: 40%
Homework: 35%
Term Report and Presentation: 15%
Class participation: 10%
Exams.
- There will be four exams, one at the beginning of each class.
- Exams will start at 8:30. You will be allowed a 3x5 index card. Use the time from 8-8:30 to review for the exam and eat breakfast.
- There will be no exam in session 1. Class will begin at 8:30.

Assignments
- There will be 4 assignments each due at the beginning of classes 2, 3, 4 & 5.
- Your assignments should be submitted as a zip file to Blackboard (courses.smu.edu).

Course Outline
1. Software Engineering and Object Technology; Review of Objects; UML Overview; Testing with JUnit [textbook: chapters 1-3]
2. Requirements and Modeling; Introduction to Design Patterns [chaps 4-6]
3. Users, tasks and interactions; modeling interactions and behavior [chaps 7-8]
4. Real-Time systems and concurrency; software architectures, model driven development; SysML [chaps 9-10]
5. Special topics; Project reports

Project Report
Each student will pursue a topic of his/her choice during the semester. Some suggested topics are listed below. Project reports and presentations are due at the last class. Your report should be 10 –20 pages. During the last class, be prepared to make a 10-15 minute presentation of your topic. The topic can be from any area related to object technology. Your topic should be selected by session 2.

A List of Possible Topics:
- Object-Oriented Testing
- Aspect Oriented Programming – tutorial and examples
- Eclipse Framework – tutorial and development of a plug-in
- Object Constraint language
- Silicon Objects
- Advanced design patterns
- Service Architectures – what role for objects?
- Object Technology in Scripting Languages

Report Requirements
- The report should be organized in sections and subsections
- An abstract should be provided
- A list of annotated references should be included

Report Grading
- content 60%
- presentation 30%
- organization 10%