SE 6329.001: Object Oriented Software Engineering

T/R 11:30-12:45, ECSS 2.203

Course Syllabus

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Instructor

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Teaching Assistant

Name:

Office: Phone: e-mail: Office hours:

Course Requirements

• Students who have taken CS/SE 6359 (Object Oriented Analysis and Design) are not allowed to take this class.

Pre-requisites:

- CS/SE 3354 or CS/SE 5354 Software Engineering: Software lifecycles; OOAD concepts; basic UML
- Knowledge of Java

Course Description

This course presents the concepts, methods and techniques necessary to efficiently capture software requirements in use cases and transform them into detailed designs. It combines instruction on the Unified Software Development Process (UP), object-oriented methodologies and the Unified Modeling Language (UML 2.0). In this hands-on course, students learn how to apply the UML notation in the context of an iterative, use case-driven, architecture-centric process. They are also exposed to an advanced CASE tool that allows the rapid development of UML diagrams (e.g., use case diagrams, class diagrams, object diagrams, interaction diagrams, statecharts, activity diagrams, etc.) and promotes an agile workflow by synchronizing changes in the various models and the code.

Course Learning Objectives

In this course students will learn how to:

1.	Develop models using the UML notation;	
2.	Apply an iterative, agile process;	\boxtimes
3.	Analyze requirements with use cases;	\boxtimes
4.	Create domain models;	\boxtimes
5.	Relate analysis and design artifacts;	\boxtimes

6.	Design object solutions with patterns and architectural layers;	\boxtimes
7.	Apply concepts to a semester-long software engineering project;	\boxtimes
8.	Document and present project deliverables;	\boxtimes
9.	Use an advanced CASE tool.	\boxtimes

Textbooks and Material

<u>Recommended</u>

- Applying UML and Patterns, Craig Larman, Prentice Hall, 2005
- The Unified Modeling Language User Guide, Second Edition, G. Booch, J. Rumbaugh and I. Jacobson, Addison Wesley, 2005
- UML2 and the Unified Process, Jim Arlow and Ila Neustadt, Addison Wesley, 2005

Available on elearning

• Lecture notes, exercises, homework, project description

Academic Calendar

First Day of Class	Tuesday January 10
Last Day to Add/Swap	Tuesday January 17
Census Day	Wednesday January 25
Last Day to Drop Without a "W"	Wednesday January 25
Last day of Withdrawal	Thursday March 30
Exam 1	Tuesday March 7
Spring Break	Monday March 13 - Saturday March 18

Exam 2	Tuesday April 25
Last day of Class	Thursday April 27
Final Project Deliverable	Thursday April 27
Final Grades Viewable Online	Tuesday May 9

Exam 1	Tuesday March 7
Exam 2	Tuesday April 25
Final Project Deliverable	Thursday April 27

Grading Policy

Homewo	0%	
Project	: 30%	
Exam1	: 35%	
Exam2	: 35%	

Exam1 counts only if it is greater than Exam 2; otherwise, Exam2 counts for 70%.

Course Plan

PART I. INTRODUCTION

1. Introduction to OOSE

PART II. THE UNIFIED MODELING LANGUAGE

- 2. Overview of UML 2.0
- 3. UML 2.0 Part I: Objects and Classes
 - Object Relationships
 - Inheritance and Polymorphism
 - Aggregation and Composition

4. UML 2.0 – Part II: Static Modeling Notation

- Package Diagrams
- Composite Structures
- Component Diagrams

5. UML 2.0 – Part III: Dynamic Modeling Notation

- Use Case Diagrams
- Statecharts
- Interaction Diagrams

PART III. THE UNIFIED PROCESS AND ITS APPLICATION

6. UP, UML and OO Design

- Introduction to UP
- Relationship between UP, UML and OO design

8. Inception

- Domain Model
- Use cases
- Supplementary specification, Glossary and Vision

9. Elaboration Iteration 1 – Requirements Model

- System Sequence Diagrams
- Operation Contracts

7. Logical Architecture

- What is a logical architecture?
- UML Package Diagrams

10. Design Patterns

- Creator
- Information Expert
- Coupling
- Controller
- Cohesion

- Polymorphism
- Pure fabrication
- Indirection
- Protected Variations

11. Elaboration – Iteration 1 Design Model: Use Case Realization

• Applying design patterns to object design

12. Elaboration – Iteration 1 Design Model: Design Class Diagram

• Design class diagram

13. Elaboration Iteration 1 – Implementation

- Mapping design to code
- 14. From Iteration 1 to Iteration 2
- 15. From Iteration 2 to Iteration 3

16. Documenting Architecture: N+1 Views

• Architectural views: logical, deployment, security, data, behavioral, etc.

The Rhapsody Case Tool

Course & Instructor Policies

- You are expected to attend class. Three unexcused absences will result in deducting 30% from your final grade. More than three unexcused absences will result in deducting 50% of your grade.
- 2. Teams will be formed the first week of the semester. Once teams are formed they cannot be changed.
- 3. Project deliverables (hard and soft copies) are due by the beginning of class on the day assigned (unless otherwise stated).
- 4. Late work (for projects) will be penalized 10% per day and given a zero after 5 days.
- 5. If a member of the team is not contributing during the semester, the team has to notify me in writing as to the circumstances *as soon as possible*. The student will be given a chance to participate (two week grace period), at the end of that period if there is no improvement, the student will be removed from the team and given a zero (0) for the class project. No complaints about a team member will be considered the last two weeks of the semester.
- 6. There will be NO extra credit work.
- 7. Cell phones should be placed in your backpacks during sessions.
- 8. Computers should NOT be used in the classroom during sessions.

9. You are not allowed to tape lectures. Taping will result in being dropped from this course and reported to UTD.

Student Conduct & Discipline

http://www.utdallas.edu/deanofstudents/conduct/

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the deal will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m. The contact information for the Office of Disability Services is:

The University of Texas at Dallas, SU 22 PO Box 830688, Richardson, Texas 75083-0688 (972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holidays

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

These descriptions are subject to change at the discretion of the Professor.