Course Syllabus

Course Information

CS/SE 4376.002 Object-Oriented Design (Object-Oriented Programming Systems)
Spring 2023
Tuesday / Thursday 4:00-5:15
JO 4.614

Professor Contact Information

Dr. Mark C. Paulk
Office: ECSS 3.610
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Office hours: Mon / Tues 10:00-11:00, Wed / Thur 2:30-3:30, or by appointment

Course Pre-requisites, Co-requisites, and/or Other Restrictions

CE/CS 2336 (Computer Science II) with a grade of C or better or equivalent

CE/CS/SE 3354 (Software Engineering)

Course Description

In-depth study of the features/advantages of object-oriented approach to problem solving.
Special emphasis on issues of object-oriented analysis, design, implementation, and
     testing.
Review of basic concepts of object-oriented technology (abstraction, inheritance, and
     polymorphism).
Object-oriented programming languages, databases, and productivity tools.

Student Learning Objectives/Outcomes

1) Ability to understand the difference between object-oriented, structured, and
   functional design paradigms
2) Ability to understand and use the elements and concepts of the Unified Modeling
   Language (UML)
3) Ability to understand and use use case analysis and domain modeling
4) Ability to understand and use basic design patterns in object-oriented design

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Required Textbooks and Materials
- C. Larman, <u>Applying UML and Patterns, Third Edition</u>, 2005.

Recommended Course Materials
- R.C. Martin, <u>Agile Software Development: Principles, Patterns, and Practices</u> (2002),
  <u>Clean Code</u> (2009), and <u>Clean Architecture</u> (2018)
- M. Seidl, M. Scholz, C. Huemer, and G. Kappel, <u>UML @ Classroom: An
  Introduction to Object-Oriented Modeling</u>, 2015

Other useful papers and books will be referenced in the lectures. Publications that are
available online will be linked in the References folder in eLearning. Send Dr. Paulk
email if any dead links are noted in the References.

Assignments & Academic Calendar

Tuesday, Jan 17   Classes begin
    1. Object-Oriented Analysis and Design
    2. Iterative, Evolutionary, and Agile
    3. Case Studies
    4. Inception Is Not the Requirements Phase
    5. Evolutionary Requirements
    6. Use Cases
    7. Other Requirements
    8. Iteration 1 – Basics
    9. Domain Models (plus Seidl – Structure Modeling)
Thursday, Feb 23, Exam #1
    10. System Sequence Diagrams (plus Seidl – Sequence Diagrams)
    11. Operation Contracts
    12. Requirements to Design – Iteratively
    13. Logical Architecture and UML Package Diagrams
    14. On to Object Design
    15. UML Interaction Diagrams
    16. UML Class Diagrams
March 13-17, Spring Break
Tuesday, April 11, Exam #2
    17. GRASP: Designing Objects with Responsibilities
    18. Object Design Examples with GRASP
    19. Designing for Visibility
    20. Mapping Designs to Code
    21. Test-Driven Development and Refactoring
    22. UML Tools and UML as Blueprint
    23. Iteration 2 – More Patterns
    24. Quick Analysis Update
    25. GRASP: More Objects with Responsibilities
    26. Applying GoF Design Patterns
Thursday, May 4, Last day of class
Monday-Tuesday, May 8-9, Exam #3

Attendance Policy

You are expected to attend class.

By CS Department policy, if you miss three (3) consecutive classes, your grade drops one letter grade.

By CS Department policy, if you miss four (4) consecutive classes, you fail the class.

A sign-in sheet will be passed around each class that you are to initial.

Excused absences, which do not count against this policy, include
- dealing with serious medical issues (doctor's excuse)
- attending a conference (registration)
- participating in a UTD-sponsored event (coach or sponsor letter)
- at the teacher's discretion …

Send an email with a reason and justification, e.g., doctor's excuse or sponsor's letter, to obtain an excused absence. Include all days for which an excuse is requested. Excused absences may result in a homework extension (or alternate assignment), but students are still responsible for keeping up with the work.

Grading Policy

Assignments	25%
Exam #1	25%
Exam #2	25%
Exam #3	25%

Grading Curve

97-100	A+
93-97	A
90-93	A-
87-90	B+
83-87	B
80-83	B-
77-80	C+
73-77	C
70-73	C-
67-70	D+
63-67	D
60-63	D-
under 60	F

There will be no extra credit work.

Exams

There will be three exams.

Exams will be administered online in the eLearning / Testing Folder.

Exams may be in the classroom or in the Testing Center (depending on availability). The Testing Center is usually open between 8:30am and 8:45pm (check for specific hours). You must register with the Testing Center at least two days before the exam.

Questions will be true/false and multiple choice. There will usually be 20-25 questions on an exam.

You may have one page of notes (front and back, handwritten or typed). You may use a calculator. You may use scratch paper and a pen/pencil.

Exams will last 60 minutes from the time started (and then will be automatically submitted). Exam results will be available in eLearning after the due date/time.

If a student misses an exam for an approved reason (acceptable in the judgment of Dr. Paulk), a makeup exam may be scheduled. Makeup exams are hardcopy with essay answers and problems.

Exams are not comprehensive.

There will be no class on the day of an exam.

Connectivity Problems

Since quizzes and exams are online, it is possible that a network problem could result in a connection failure.

If you drop out of a quiz or exam, the timer will continue to count down. If you log back in quickly, you may be able to resume without penalty.

If you continue to have connectivity issues, contact Testing Center staff or the instructor for assistance.

Homework Assignments

You will usually have a week to do a homework assignment.

Assignments will usually be due at the scheduled beginning of class.

Assignments must be turned in on time – late assignments will receive a grade of 0 unless an excuse is accepted by the teacher.

Assignments should include the class/section, the assignment, and your name (or your team's number and members) at the beginning of the file. File names of softcopy assignments should include the class/section, the assignment, and your (or your team's) name.

Assignments should be submitted through eLearning. You have an unlimited number of submission attempts for an assignment up until the time it is due.

Assignments may be deferred for an excused absence; students are still responsible for the material covered in class. Deferred assignments may be replaced by a make-up assignment (since I typically review assignments at the beginning of the class when they are due). The instructor will determine whether a late assignment will be deferred, replaced, or get a grade of 0.

Homework assignments will be graded by a Grader or Teaching Assistant (TA).
- the Grader/TA will be assigned later
- you can email the Grader/TA via eLearning's "UT Dallas Email" option
  - select the name of the Grader in the "Select User" menu
  - or select "All Teaching Assistant Users"
- If you have any questions concerning the homework assignments, please speak with the Grader/TA about it first.
- If you still have a question or concern, then see me about the issue.
  - visit during my office hours or schedule an appointment

Teams

Teams will be assigned by the instructor.
- Some time may be allocated in class to work on team assignments, but you are expected to find time to collaborate outside of class.
- The team decides how it's going to work together and allocate the tasks.
- One team member turns in the assignment for the whole team.
- All team members will receive the same grade on each assignment.
  - Exception: project assignment to rate the contribution of your teammates to the project – an INDIVIDUAL assignment

A team member may be "fired" by his/her team if they are not contributing to the team. Fired team members will be assigned to a new team (which may only have one member). "Firing" is by unanimous vote of other team members as reviewed by the instructor.

There are other dysfunctional team possibilities. "Firing" is 3:1 or 4:1; you can also apply for a 2/2 or 3/2 split or even ask the instructor to take you off your team. This will be at instructor discretion.

At the end of the term, each team member will have the opportunity to "grade" their (remaining) team members on a 100 point scale. Your grade on this assignment will be the average of your team's scores for you.

AccessAbility Resource Center

It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with me and allow one-week advance notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact the Office of Student AccessAbility for a confidential discussion. OSA is located in the Administration Building, suite 2.224. They can be reached by phone at 972- 883-2098, or by email at studentaccess@utdallas.edu.

Additional Course & Instructor Policies

1)   If you send email to the teacher or the Grader, include which class you are
     discussing in the email (including the section number). eLearning's "UTDallas
     email" can be used to send email to the teacher or Grader and includes the class
     info.
2)   You are expected to silence mobile phones and not talk during class except as part
     of class discussions.
3)   You are expected to cite the work of others when appropriate using an acceptable
     citation style. You are expected to do your own work!
4)   You are expected to work with your team actively and professionally. Discussions
     with your teammates about the homework can be an important part of learning.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's
policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

***The descriptions and timelines contained in this syllabus are subject to change at the
discretion of the Professor.***