CSE 3311. Object-Oriented Software Engineering, Spring 2017

General

Lectures:	TuTh 3:30pm — 4:50pm, ERB 129
Instructor:	David C. Kung, ERB 532, 817-272-3627/-3784(fax)
Office Hours:	5:00pm-6:00pm Tuesday and Thursday, or by appointment
Email:	kung at uta dot edu, Fax: 817-272-3784
GTA:	TBD
TA Office Hours:	TBD
Email:	TBD at mavs.uta.edu

Course Objective in Catalog:

CSE 3311. OBJECT-ORIENTED SOFTWARE ENGINEERING. 3 Hours. Study of an agile unified methodology and its application to object-oriented software development. Topics include requirements acquisition, use case derivation, modeling and design of interaction behavior and state behavior, introduction to design patterns, derivation of design class diagrams, implementation considerations and deployment. Team project. Prerequisite: C or better in each of the following: CSE 1325 and CSE 2320, Co-requisite: CSE 3310.

Reference Books

David Kung, "Object-Oriented Software Engineering: An Agile Unified Methodology," McGraw-Hill Higher Education, 2013. ISBN: 978-0073376257.

Craig Larman, "Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development" (3rd Edition), Prentice Hall, 2004.

For UML: G. Booch, J. Rumbaugh and I. Jacobson, "The Unified Modeling Language User Guide," 2nd Ed., Addison Wesley, 2007.

Tentative Schedule

See Table 1 on next page.

Workload

Work	Quantity	Weight	Subtotal
Semester team project	1	45%	45%
Individual assignment	2	10%	20%
Midterm exam	1	15	15 %
Final exam	1	20%	20%
Total			100%

- One semester-long team project with two iterations: (45%). This includes the following:
  - *Weekly team submissions during iteration 1 (15%).*
  - *Iteration 1 analysis and design document (15%).* This document is produced by revising the weekly team submissions, and combining the results in the following order:

Date	Class Activity	Assignment (due date, email to TA by 10AM)
17-Jan 19-Jan	Policy & overview, background survey. Introduction.	background survey (1/17)
24-Jan 26-Jan	Agile unified process and methodology. Requirements acquisition & specification.	
31-Jan 2-Feb	Team project and project requirements. Teams formed by instructor & TA.	Project requirements specification (2/7)
Iteration 1: 2/7-3/9 (this iteration requires weekly team submissions).		
7-Feb 9-Feb	Domain modeling, class diagram.	brainstorming & classification sheets, domain model class diagram (2/14)
14-Feb 16-Feb	Deriving use cases from requirements. Use case diagram.	abstract and high-level use cases, use case diagrams (2/21)
21-Feb 23-Feb	Actor-system interaction modeling.	expanded use cases for selected use cases, to be determined in class (2/28)
28-Feb 2-Mar	Object interaction modeling. Sequence diagram.	For selected use cases, produce scenarios, scenario tables, informal and formal sequence diagrams (3/7). **Homework 1 (3/30)**
7-Mar 9-Mar	Deriving Design Class Diagram (DCD). Reserved.	DCD for selected use cases (3/9), note there is only one DCD, not one for each use case.
14-Mar 16-Mar	*** SPRING BREAK ***	
21-Mar 23-Mar	Midterm examination. No class. Teams are required to revise the weekly-submissions and combine them into an iteration 1 analysis and design document.	**Iteration 1 document (3/28). It includes requirements spec, domain model, list of all use cases and high-level use cases; expanded use cases, scenarios, scenario tables, sequence diagrams for selected use cases, and DCD.**
Iteration 2: 3/28-4/27 (this iteration requires only iteration team submission, due 4/27).		
28-Mar 30-Mar	Applying controller pattern. Applying expert pattern and creator pattern.	Iteration 2 analysis and design document for iteration 2 use cases, to be determined in class (4/27). Teams must apply controller, expert and creator patterns whenever appropriate. **Homework 2 (HW2, 4/20)**
4-Apr 6-Apr	Other popular agile methods.	
11-Apr 13-Apr	System engineering.	
18-Apr 20-Apr	Object state modeling and state pattern (May leave to 4361)	
25-Apr 27-Apr	Review for final exam. Reserved.	
2-May 4-May	Reserved. Reserved.	
5-May	*** Last day of classes ***	
11-May	Comprehensive final exam, Thursday 2:00pm-4:30pm	

1. For individual homework assignments, email the required files to TA by the deadline. Files must be prepared and named according to homework description; points will be deducted if these are not followed.
2. For team project iteration dues, email the document to TA by 10 AM on the due date, also submit before class on the due date two hardcopies of the document. 10% will be deducted for every 24 hours passing the due date.

Table 1: Tentative schedule

Title page: project document title and list of team members.

A brief project description.

Requirements specification.

Domain modeling. This includes:

Business description
Brainstorming worksheet
Classification worksheet
A domain model class diagram (DMCD)

Use case modeling. This includes:

Use case derivation worksheet
A list of numbered abstract use cases, each with its high-level use case

Actor-system interaction modeling. This includes:

Expanded use cases for selected use cases for iteration i, i=1, 2. Indicate also nontrivial steps in the expanded use cases.

Object-interaction modeling. This includes for each nontrivial step of each expanded use case:

Scenario description
Scenario table
Informal sequence diagram
Design sequence diagram

Design class diagram (DCD).

– *Iteration 2 analysis and design document (15%).* This document is the same as iteration 1 analysis and design document except that this is for iteration 2 use cases.

- Two individual homework assignments, 10% each. These are also used as ABET assessments of student outcomes e, c and k for the SE degree. These outcomes evaluate students' abilities to formulate a solution to an engineering problem, design a system/component to solve the engineering problem, and use tools and techniques (see below for more detail).

  Keep your homework confidential and do not share it with anybody. Academic dishonesty will result in zero point and academic discipline.

- One midterm exam (15%) and one comprehensive final exam (20%). These are open book tests, not open note. Each has a number of questions, and requires the student to *CIRCLE* the *BEST ANSWER*, not just the correct answer, from 4 choices. No electronic devices are permitted in the exam.

About Teamwork

Team members are required to WORK TOGETHER THROUGHOUT THE PROJECT — that is, WORK TOGETHER FROM BEGIN TO END. You should plan on committing your time and effort to team work. Teams that do not work together produce very poor results and receive very poor scores! Teamwork, teamwork, teamwork! Keep this in mind.

Make sure that you perform well in your team. The peer evaluations form (see Table) submitted by your peers will affect your project scores. Each negative point, i.e., "-1", deducts 1% from your teamwork score. For example, if your team gets 90 for iteration 1, and you receive five "-2" from your peer evaluations, then your score drops to 80.

Teams or team members should report to the instructor **AS SOON AS POSSIBLE** if there are problems in the team that will affect teamwork.

Grade Distribution

Total Score	>= 85	>= 70	>= 60	>= 50	< 50
Grade	A	B	C	D	F

The grades are computed by a program according to your scores. Even if you get 84.99 your grade will be a "B", not an "A" though it is so close to 85.

General Grading Criteria

The homework assignments are required to satisfy the Accreditation Board of Engineering and Technology (ABET) outcomes (c), (e) and (k):

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(e) an ability to identify, formulate, and solve engineering problems

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

The homework assignments are evaluated according to the following rubrics:

Level L5. 100-90 points. Proposed solution significantly exceeds expectation, the solution is well-organized and clearly formulated, needed assumptions are clearly stated.

Level L4. 89-80 points. Proposed solution is adequate and valid, the solution is organized and adequately described, assumptions are stated.

Level L3. 79-70 points. Proposed solution is somewhat adequate and valid, the solution is somewhat organized and partially described, important assumptions are stated.

Level L2. 69-60 points. Proposed solution is only marginally adequate or valid, the solution is poorly organized or difficult to understand, important assumptions are not stated.

Level L1. 59-0 points. Proposed solution is incorrect or far from adequate and valid, the solution is impossible to comprehend.

Project Grading Criteria

The team project is evaluated each increment using an evaluation sheet similar to the one shown in Figure 1. The weights shown in the figure will be changed slightly later. Pay attention to the weights given to the different categories of items. If your presentation and/or documentation misses an item, then the item will receive zero point. Teamwork means team members should check the team submissions before submitting them. Missing items and late submissions happen all the time in previous semesters!

CSE 3311 Project Increment Evaluation Sheet													
Team #													
		Level 5			Level 4		Level 3		Level 2		Level 1		
Submission	%	High quality work that exceeds expectation			Clearly high quality work		Major components are present, good quality work		Major components missing, work quality is poor		Many components missing, work is very poor		
		100	95	90	85	80	75	70	65	60	40	20	0
Requirements	**5**												
Use Case Modeling	**20**												
Abstract/High Level Use Cases	5												
Expanded Use Cases	5												
Use Case Diagram	5												
Requirements – use case	5												
Domain Modeling	**20**												
Brainstorm & Classification	5												
DM Class Diagram	15												
Object Interaction Modeling	**25**												
Scenarios/Scenario Tables	10												
Sequence Diagrams	15												
Design Class Diagram	**20**												
Software Demonstration	**10**												
Total	**100**												

Figure 1: Sample project evaluation sheet

Assignment Rules

1. Late assignments will be accepted before the explanation of the homework assignment in class. Late assignment are subjected to 10% deduction and additional 10% deduction for every 24 hours passing the deadline. After the explanation, no assignment will be accepted. This rule will be consistently applied to every student in all cases, regardless whatever good reason you may have.

2. You are encouraged to discuss homework with your classmates but not allowed to copy the solutions from or share the solutions with anybody. If you violate this rule, then you will receive no credit for that assignment unless you can prove that you are not involved.

3. The GTA will do most of the grading. If you do not agree with the result, contact the GTA first. Please contact the instructor if you cannot reach a consensus. This would help the GTA improve her/his grading skill and avoid inconsistency due to improper interference of the instructor.

4. No additional make-up assignment will be provided for any student to improve grade.

Go Home Early Request

Requests for permission to go home before the final exam date will not be granted except for medical reasons and with a proof from a doctor.

Class Email Alias

I will broadcast important messages, homework assignments, project descriptions etc. to students of the class. The messages will be delivered to your UTA email account. If you do not receive such messages, please contact me immediately so that I can add you to the list. It is your responsibility to contact me when your email account has changed.

Your Standing and Class Statistics

The GTA will be responsible for uploading your scores to the blackboard and publish class statistics so you will know your standing in the class. Please remind the GTA and the instructor to do so if this does not happen in due time.

Team Member Peer Evaluation

Your teamwork performance is an important part of this course. At end of each increment, each student is required to submit his team member evaluation form, which requests the student to evaluates the performance of other team members. Each submission is 1% (if there are three increments, then the total is 3% for the semester). Table is the evaluation form. Only hard copies of the evaluation form are accepted. Submit the form on the last day of the increment presentation.

Project Team Member Evaluation Form

Team#___ Iteration#____ Course#_____ Fall / Spring Year_____

Please submit hardcopy or fax to David Kung 817-272-3784, EMAIL NOT ACCEPTABLE

Most team members perform well in a project team. However some members perform extremely well and some very poorly. It is constructive to encourage the outstanding members and inform those who need improvements. This form allows you to convey such information to your team members whenever you deem there is such a need.

Please give an integer rating of -2 (poor), -1 (below average), 0 (average), +1 (above average), or +2 (excellent) for some of the aspects of the members you want to convey your assessment. Your evaluation might be reproduced (to hide your identity) and presented to the relevant members. However, the identity of the evaluator will be kept absolutely confidential in all cases.

Member name					
Group meeting attendance					
Group discussion					
Individual assignment					
Technical contribution					
Organizational contribution					
Overall performance					

Comments: (use additional sheets if needed)

Name: _____ Signature: _____ Date: _____

Please fill the course info, read, sign and return this statement to the instructor. Thanks.

Statement of Ethics
Student Confirmation
(CSE_____, Spring [], Summer [], Fall [], Year of _____)

The following is an excerpt from the College of Engineering's statement on Ethics, Professionalism, and Con-duct of Engineering Students. The notes are modifications appropriate for Computer Science and Engineering courses. Read the statement carefully, sign it, and return it to your instructor. A copy of the original policy is available for examination in the Computer Science and Engineering office. Additional copies of this statement can be obtained from your instructor or the Computer Science and Engineering office.

Statement on Ethics, Professionalism, and Conduct of Engineering Students
College of Engineering, The University of Texas at Arlington

The College cannot and will not tolerate any form of academic dishonesty by its students. This includes, but is not limited to 1) cheating on examination, 2) plagiarism, or 3) collusion.

Definitions:
A. Cheating on an examination includes:
1. Copying from another's paper, any means of communication with another during an examination, giving aid to or receiving aid from another during an examination;
2. Using any material during an examination that is unauthorized by the proctor;
3. Taking or attempting to take an examination for another student or allowing another student to take or attempt to take an examination for oneself.
4. Using, obtaining, or attempting to obtain by any means the whole or any part of an unadministered examination.
B. Plagiarism is the unacknowledged incorporation of another's work into work which the student offers for credit.
C. Collusion is the unauthorized collaboration of another in preparing work that a student offers for credit.
D. Other types of academic dishonesty include using other student's printouts from the ACS labs or students' disk, etc.

Notes:
1. The use of the source code of another person's program, even temporarily, is considered plagiarism.
2. Allowing another person to use your source code, even temporarily, is considered collusion.
3. In this class, the specific exceptions given below are not considered scholastically dishonest acts:
A. Discussion of the algorithm and general programming techniques used to solve a problem
B. Giving and receiving aid in debugging
C. Discussion and comparison of program output
4. The penalty assessed for cheating on a given assignment will be twice the weight of the assignment and will include notification of the proper authorities as stipulated in the UTA Handbook of Operating Procedures and on the web at http://www2.uta.edu/discipline
5. You may be entitled to know what information UT Arlington (UTA) collects concerning you. You may review and have UTA correct this information according to procedures set forth in UT System BPM #32. The law is found in sections 552.021, 552.023 and 559.004 of the Texas Government Code.

I have read and I understand the above statement.

Student's signature:_____

Student's name (printed):_____

Student's ID number:_____