San José State University
College of Engineering
Graduate and Extended Studies

CmpE 202 Software Systems Engineering , Spring 2018

Course and Contact Information

Instructor:	Mohamed Fayad
(Virtual) Office Location:	ENG 283I
Telephone:	(408) 924-7364
Email:	m.fayad@sjsu.edu
(Virtual) Office Hour:	Monday and Tuesday from 3:30 to 5:45 p.m.
Class Days/Time:	MPE 202-01-- Engineering Bldg., Every Monday at 6:00 p.m. CMPE 202-02-- Engineering Bldg., Every Tuesday at 6:00 p.m.
Classroom:	MPE 202-01-- Engineering Bldg., Room 337 CMPE 202-02-- Engineering Bldg., Room 325
Prerequisites:	Instructor Consent
Canvas Website:	**http://coe-cmpe-fayad.sjsu.edu/drfayad**

Canvas Format and Canvas Learning Management System

All the required materials will be posted on Canvas within a few days

Course Description

Course Catalog Description

Integrated approach to software systems development including requirements elicitation, analysis modeling, design modeling, tradeoff studies, risk assessment, economic evaluation, configuration management, modeling languages, capability maturity modeling, and software quality management.

Integrated approach to software systems development including requirements elicitation, conceptual modeling, requirements analysis, software design, software architectures, tradeoff

studies, risk assessment, software reuse through software patterns and application frameworks, economic evaluation, modeling languages, and all aspects of software modeling

Course Learning Outcomes (CLO)

1. Have the ability to perform software development tasks from User & system point of views.
2. Have the ability to generate requirements and design artifacts for implementers to construct software systems.
3. Have the ability to work in a team environment.
4. Have the ability to work on advanced and newest topics in software system engineering

Upon successful completion of this course, students will be able to:

CLO 1: Assignments, Team Projects, practical problems, Extra Assignments, Open Discussions, assignments and Project Reviews, Quizzes, Exam,

CLO 2: Assignments, Team Projects, Practical Problems, Extra Assignments, Open Discussions, assignments and Project Reviews, Quizzes, Exam,

CLO 3: Team Projects, Practical Problems, Team Project Reviews
CLO 4 Assignments, Team Projects, practical problems, Extra Assignments, Open Discussions, assignments and Project Reviews, Quizzes, Exam,

Required Textbook

Textbook

M. E. Fayad, H. A. Sanchez, S. G .K. Hegde, A. Basia, and A. Vakil. **"Software Patterns, Knowledge Maps, and Domain Analysis"**. Boca Raton, FL: Auerbach Publications, November 2014. ISBN 9781138033733 -- Reference - 448 Pages - 100 B/W Illustrations

https://www.crcpress.com/Software-Patterns-Knowledge-Maps-and-Domain-Analysis/Fayad-Sanchez-Hegde-Basia-Vakil/p/book/9781466571433

1. **SWEBOK is an official service mark of the IEEE**

http://www.swebok.org/

A project of the IEEE Computer Society Professional Practices Committee, SWEBOK, Guide to the Software Engineering Body of Knowledge, 2004

Other Readings

Required Articles, Columns, Case Studies, and Patterns **will be posted on the web later. Materials will be provided for each lecture.**

Course Requirements

a. Projects

I. Team Projects:

The class will be divided into groups of **2-3 (three-four)** for team projects .. **Three preferred**. Students will be responsible for forming groups. **Students of the best teams' projects will give final presentations of their project work if asked.** Grading criteria and project ideas will be posted in a project Web page. I am part of your team and others will be announced per each team

Two team projects will be added in the final version of the green sheet and will be discussed in the class.

II. Individual Assignments: One assignments of two students

NOTE: Each team is only allowed to sign up for one optional project.

- On occasion, students take advantage of group work, letting other members perform the bulk of the work while they reap the benefits of a good grade and can spend more time on other classes. This happens only occasionally, but it will not be tolerated in this course. Two policies will help prevent this:

1. **Twice** during the semester, group members will be asked to fill out a detailed peer assessment for group members per project. Penalty will be assigned for no peer assessments. This assessment will be based on four scales:

Assessment	Meaning	Correspondence
Zero	Doesn't do anything	Get a Zero on the project
D	• 25% effort • Attends 25% of the meetings • Doesn't participates in the discussion • Does a poor job	Get a 25% of the project's grade
C	• 50% effort • Attends 50% of the meetings • Participates rarely in the discussion • Does a so-so job	Get 50% of the project's grade
B	• 75% effort • Attends 75% of the meetings • Participates partially in the discussion • Does an okay job	Get 75% of the project's grade
A	• 100% effort • Attends all the meetings • Participates effectively in the discussion • Does an excellent job	Get 100% of the project's grade

Merely attending meetings won't be enough. Group members must be prepared for meetings, make good suggestions, perform their share of the work, and work well with other members.
The grading criteria for peer assessment is as follows:
a. Has the group member attended meetings?
b. Has the group member been prepared for group meetings? I.e. was he/she aware of assignment requirements, performed her/his duties, able to speak intelligently about the project, etc.?
c. Has the group member participated positively in meetings?
d. Has the group member performed their share of the work, as assigned?
e. Rate the quality of this group member's input to group discussions and design issues.
f. Has the group member been able to work well with others?
g. Rate the overall value of this group member to the project.
h. Rate the level of initiative this group member has exhibited in the project.
i. Other comments?

- **Groups experiencing problems** with a student should let me know there's a problem with his team. Do this early enough in the semester. My experience is that group members wait until it's too late to take action. My objective is to ensure that each group member has the opportunity to succeed. I will handle the situation and ensure there is no animosity while resolving the problem. Usually, a brief discussion will clear the matter up entirely and without further problems.

b. Essay: Optional for extra points – Check Due Date for signing for an Essay

c. Practical Problems: Must do for extra points

c. Exams: Two exams. **There will be no make up tests**.

d. Quizzes: 6 Quizzes per semester

e. Due Dates:

Team Projects	*Due Date*
Team Project Problem Statement (Project Requirements)	**Start from Monday, February 5, 2018 to Monday, March 5, 2018 Midnight – Soft-copy Only**
Team Project One Submission – Hard and Soft Copies **Team Project #1 is related to Domain Analysis Using Knowledge Map** **Requires: 3 members team**	**CmpE202-01, Monday, April 16, 2018 in the beginning of the lecture** **CmpE202-02, Tuesday, April 17, 2018 in the beginning of the lecture** **E-mail a Soft-copy before the lecture And submit the hardcopy in the beginning of the lecture** **File Formats; CmpE 202-01** **Final Report** CmpE202-01-TeamName-KMDomainName-TP1.doc **Appendix** CmpE202-01-TeamName-KMTeplantDomainName-TP1.doc **Figures** CmpE202-01-TeamNameKMDomainName-S-Figure-1-TP1.vsd CmpE202-01-TeamNameKMDomainName-S-Figure-2-TP1.vsd And etc. All Figures must be submitted in the following formats: Vsd, doc, pdf, and jpg **For CmpE 202-02** **Replace CmpE202-01 with CmpE202-02**
Team Project Two Submission – Hard and Soft Copies **Team Project #2 is related to how to analysis and write a**	**CmpE202-01, Monday, May 07, 2018 in the beginning of the lecture** **CmpE202-02, Tuesday, May 08, 2018 in the beginning of the lecture**

true requirements and Software Architecture on Demand	**E-mail a Soft-copy before the lecture And submit the hardcopy in the beginning of the lecture** **File Formats; CmpE 202-01** **Final Report** CmpE202-01-TeamName-KMDomainName-TP2.doc **Appendix** CmpE202-01-TeamName-KMTeplantDomainName-TP2.doc **Figures** CmpE202-01-TeamNameKMDomainName-S-Figure-1-TP2.vsd CmpE202-01-TeamNameKMDomainName-S-Figure-2-TP2.vsd And etc. All Figures must be submitted in the following formats: Vsd, doc, pdf, and jpg **For CmpE 202-02** **Replace CmpE202-01 with CmpE202-02**

Individual Assignments	*Due Dates*
Individual Assignment 1 Submissions – Hard and Soft **Assigment #1 is related to Comparative Study between the Traditional and Stable Models** **Requires: 2 Students**	**Monday, April 09, 2018 (01)** **Tuesday, April 10, 2018 (02)** **E-mail a Soft-copy before the lecture And submit the hardcopy in the beginning of the lecture** **File Formats; CmpE 202-01** **Final Report** CmpE202-01-FirstInitialLastName-TopicAbbriv-A1.doc **Figures** CmpE202-01FirstInitialLastName-TopicAbbriv—Fig-1-A1.vsd CmpE202-01FirstInitialLastName-TopicAbbriv—Fig-2-A1.vsd And etc. All Figures must be submitted in the following formats: Vsd, doc, pdf, and jpg **For CmpE 202-02** **Replace CmpE202-01 with CmpE202-02**

CmpE202-[S#]-[TeamName]-[DomainName]-KM-TP1.doc

Exam	*Date*
Midterm Exam (Close Book)	**Monday, April 09, 2018 (01)** **Tuesday, April 10, 2018 (02)**
Final Exam (Close Book)	**Monday, May 21, 2018 (01)** **From 17:15 To 19:30** **Tuesday, May 22, 2018 (02)** **From 17:15 To 19:30**

Grading Policy

a. Your grade in this course will be based on your performance on written homework, test, and team projects.

Team Project One	**20%**
Team Project Two	**20%**
Individual – TwoTM	**20%**
Quizzes:	**10%**
Midterm Exam	**10%**
Final Exam	**20%**
Total	**100%**
Essay	**5% (Extra)**
Practical Problems	**5% (Must do .. Extra)**

NOTES:
[1] Exceptional work on one or more of your projects or your assignments will be awarded between 1 to 5 whole points and it will be only awarded with complete submissions of all of your projects, assignments, and exams.

[2] If your final grade is greater than your midterm grade, your final grade will replace your midterm grade.

Final Grades:

Letter grades will be assigned at the end of the course. Final grades will be based on a competitive curve. Graduate and undergraduate students are graded separately. Students will be informed of their standing at intervals throughout the course. Final grades *are not* ***negotiable***. Unless there are mathematical errors, I will be unavailable to discuss final grades. Borderline cases will be considered with extreme care, and fair grades will be rendered.

b. Extra Credit Options:

1. See Individual Essay (Optional), if completed on time, it will be graded for whole 5 or more points.

c. Penalty for Late or Missing Work:

1. No credits for late of any of your team or/and individual projects.
2. If you sign for individual project #3 and don't deliver, you will be penalized for 5 whole grade points.
3. No credits will be given for late submission of essays
4. Failure to use the submission guidelines three times, you will be panelized for a one (1) whole grade point and block your name from the electronic mails.

Avoid misusing the e-mail system, you may be panelized.

Classroom Protocol

- Be fully engaged: listen, pay attention, ask questions, involve in discussions during the lecture.

- Avoid distractions and avoid multitasking, such sleep, eat, email, text, Google, read the paper, etc.
- Must take his/her own note: try the Cornell Method "Good note takers listen actively while they write, think while they listen, and make conscious choices about what to record." [1]
- Attendance: Student must attend all the lectures and if the student miss 4 lectures will be dropped from the class and the door of the lecture room will be locked 1:55 p.m.

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[1] DeZure D, Kaplan M, and Deerman MA Research on student notetaking: implications for faculty and graduate student instructors. http://www.math.lsa.umich.edu/~krasny/math156_crlt.pdf

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines	Assignment Due Date
1	6:00 p.m./ 1/29 (1) & 1/31 (2)	Syllabus, course requirements, general information, first lecture notes – Software and System Engineering (SSE): Standards, Methodologies, Methods and techniques, processes, Process essentials. What is the differences between the problem space and the solution space in SSE	
2	6:00 p.m./ 2/05 (1) & 2/06 (2)	Software Process Documentations, Software processes essentials, Fayad's Model Essentials, Process Documentation Template, and examples of Documented Processes	
3	6:00 p.m./ 2/12 (1) & 2/13 (2)	Fayad's Modeling Heuristics, Overview of UML, discuss briefly UML Models and show the differences between Static and Dynamic Models. Process Rationals	
4	6:00 p.m./ 2/19 (1) & 2/20 (2)	Use case known Templates, Fayad's Use Case Template, continue on Model Essentials, Use Case Heuristics, Discuss Team Projects ..Team Project Requirements and Submissions	
5	6:00 p.m./ 2/26 (1) & 2/27 (2)	Discuss Individual Assignments and Team Projects and signup for them. Class, Object, Actor, Role, Attributes, and Operations, Object-Oriented Principles	
6	6:00 p.m./ 3/05 (1) & 3/06 (2)	Class and Object Diagrams Traditional and Software Stability Model Illustrate models of Use Case and Class Diagrams	Team Project #2 Project Requirements
7	6:00 p.m./ 3/12 (1) & 3/13 (2)	CRC Cards and Sequence Diagram, Traditional and Software Stability Models, Knowledge Maps Illustrate models of CRC Cards, Class Diagrams, and Sequence Diagrams	

8	6:00 p.m./ 3/19 (1) & 3/20 (2)	User's Requirements, Analysis, and Texting How to write user requirements -- Traditionally	
9	6:00 p.m./ 3/26 (1) & 3/27 (2)	Software Design, Architectures, and Testing Knowledge Maps Illustrate models and patterns	
10	6:00 p.m./ 4/09 (1) & 4/10 (2)	Software Design, Architectures, and Testing Knowledge Maps Illustrate models and patterns	Assignment One & Midterm
11	6:00 p.m./ 4/16 (1) & 4/17 7(2)	Programming, and Software Maintenance	Team Project One
12	6:00 p.m./ 423 (1) & 4/24 (2)	How to Implement Stable Analysis, Design, and Architecture Patterns	
13	6:00 p.m./ 4/30 (1) & 4/31 (2)	Traditional Design Patterns and Stable Analysis, Design, Architectural Patterns, and the differences between them and provide examples for both Illustrate models of Both	
15	6:00 p.m./ 5/07(1) & 5/08 (2)	Illustrate models and patterns Individual Assignment Demos	Team Project Two
16	6:00 p.m./ 5/14 (1) & 5/15 (2)	New Trends in SSE and Team Project Presentations and Discussions	
17	Final Exam	**Monday, May 21, 2018 (01) From 17:15 To 19:30 Engineering Room 337 Tuesday, May 22, 2018 (02) From 17:15 To 19:30 Engineering Room 325**	Final Exam

The schedule is subject to change with fair notice.