SOFTWARE ENGINEERING

COURSE OUTLINE

CO3001
Thang Bui
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WEEK 1

AIMS

The goal of this course is to provide undergraduate students with

- techniques,
- methods
- and processes

for the development of software-intensive systems.

OUTLINE

An introductory course to the field of software engineering.

The goal is to provide techniques, methods and processes for the development of software-intensive systems.

Help getting familiar with software engineering activities: requirements elicitation, software specification, architectural & detailed design using design patterns.

Also cover software implementation and software testing

Use extensively the UML modeling language

STUDENT LEARNING OUTCOMES

L.O.1. Understand that software systems need to be developed methodologically and professionally;

L.O.2. Elicit requirements & perform architectural design;

L.O.3. Cary out detailed design, coding, testing;

L.O.4. Use the UML language effectively in software development.

STUDENT LEARNING OUTCOMES

No.	Course learning outcomes
L.O.1	Understand that software systems need to be developed methodologically and professionally;
	L.O.1.1 Understand principles and concepts of software engineering L.O.1.2 Understand methods and techniques of software engineering
L.O.2	Elicit requirements & perform architectural design
	L.O.2.1 Requirements elicitation L.O.2.2 Architectural design
L.O.3	Cary out detailed design, coding, testing
	L.O.3.1 Detailed design L.O.3.2 Coding L.O.3.3 Testing
L.O.4	Use the UML language effectively in software development
	L.O.4.1 UML use-case diagram L.O.4.2 UML sequence diagram L.O.4.3 UML class diagram L.O.4.4 UML activity diagram (or UML state-chart diagram)

TEXTBOOK/REFERENCE BOOK

[1] Ian Sommerville (2015), Software Engineering (10th ed.), ISBN 978-0133943030, Pearson

- https://iansommerville.com/software-engineering-book/slides/

[2] G. Booch, J. Rumbaugh, I. Jacobson (1998), The Unified Modeling Language User Guide, Addison-Wesley.

[3] E.J. Braude (2001), Software Engineering: An Object-Oriented Perspective, ISBN 978-0-471-32208-5, John Wiley.

[4] Gamma, E., Helm, R., Johnson, R., Vlissides, J., Design Patterns: Elements of Reusable Object-Oriented Software, ISBN 978-0201633610, AddisonWesley Professional (Nov. 10, 1994)

EVALUATION

Project: 40%

In-class/online activities/quizzes: 10%

Final exam: 50% (writing)

LEARNING STRATEGY

Read materials before the lectures

- => online quizzes (->10%)

Attend lectures

- => Activities on the lectures (->10%)

Review lectures

- => online quizzes (->10%)

Do the project: 40%

- 4 deliveries, 10% each

Attend final exams: 50%

PROJECT

Project:

- IoT systems

Group project

- Team work
- Individual deliveries

Deliveries:

- #1: Functional and non-functional requirement and use-case
- #2: Sequence, activity or state-chart diagrams
- #3: Architectural design
- #4: Class and Method design, class diagram, implementation

TENTATIVE SCHEDULE (CO3001_CC01)

Wk	Date	Topic	Reading	Notes
1 / 34	23/08	Ch1. Introduction	Ch1[1], Ch0[3], IEEE	Quiz#1
2 / 35	30/08	Ch2. Software process	Ch2[1], Ch1[3]	Quiz#2.1/2
3 / 36	06/09	Ch4. Requirement engineering	Ch4[1], Ch3-4[3], [2]	Quiz#3.1/2
4 / 37	*13/09*	*No class*		
5 / 38	20/09	Ch4. Requirement engineering (cont.)	Ch4[1], Ch3-4[3], [2]	Quiz##4.1/2
6-7 / 39-40	27/09-04/10	Ch5. System modeling	Ch5[1], [2]	Quiz#5.1/2, #6.1/2, Proj#1 (30/09)
8 / 41	11/10	Ch6. Architecture design	Ch6[1], Ch5[3]	Quiz#7.1/2
9 / 42	*18/10*	Ch7. Design and Implementation	Ch7[1], Ch6[3], [2]	Quiz#8.1/2, Proj#2 (21/10)
10 / 43	*25/10*	*No class*		
11-12 / 44-45	01/11 - 08/11	Ch7. Design and Implementation (cont.)	Ch7[1], Ch6[3], [2]	Quiz#9.1/2, Proj#3 (04/11) Quiz#10.1/2
13 / 46	*15/11*	*No class*		
14 / 47	22/11	Ch8. Software testing Ch9. Software evolution	Ch8[1] Ch9[1]	Quiz#11.1/2, Proj#4 (25/11)
15 / 48	29/11 (make up)	Ch3. Agile Software development Review	Ch3[1]	Quiz#12.1/2

TENTATIVE SCHEDULE (CO3001_CC02)

Wk	Date	Topic	Reading	Notes
1 / 35	27/08	Ch1. Introduction	Ch1[1], Ch0[3], IEEE	Quiz#1
2 / 36	03/09	Ch2. Software process	Ch2[1], Ch1[3]	Quiz#2.1/2
3 / 37	10/09	Ch4. Requirement engineering	Ch4[1], Ch3-4[3], [2]	Quiz#3.1/2
4 / 38	17/09	Ch4. Requirement engineering (cont.)	Ch4[1], Ch3-4[3], [2]	Quiz##4.1/2
5-6 / 39-40	24/09-01/10	Ch5. System modeling	Ch5[1], [2]	Quiz#5.1/2, #6.1/2, Proj#1 (30/09)
7 / 41	08/10	Ch6. Architecture design	Ch6[1], Ch5[3]	Quiz#7.1/2
8 / 42	*15/10*	Ch7. Design and Implementation	Ch7[1], Ch6[3], [2]	Quiz#8.1/2, Proj#2 (21/10)
9 / 43	*22/10*	Ch7. Design and Implementation (cont.)	Ch7[1], Ch6[3], [2]	Quiz#9.1/2
10 / 44	*29/10*	*No class*		
11 / 45	05/11	Ch7. Design and Implementation (cont.)	Ch7[1], Ch6[3], [2]	Quiz#10.1/2, Proj#3 (4/11)
12 / 46	*12/11*	*No class*		
13 / 47	19/11	Ch8. Software testing Ch9. Software evolution	Ch8[1] Ch9[1]	Quiz#11.1/2, Proj#4 (25/11)
14 / 48	26/11	Ch3. Agile Software development Review	Ch3[1]	Quiz#12.1/2

TENTATIVE SCHEDULE (CO3001_B01)

Wk	Date	Topic	Reading	Notes
1 / 35	27/08	Ch1. Introduction	Ch1[1], Ch0[3], IEEE	Quiz#1
2 / 36	03/09	Ch2. Software process	Ch2[1], Ch1[3]	Quiz#2.1/2
3 / 37	10/09	Ch4. Requirement engineering	Ch4[1], Ch3-4[3], [2]	Quiz#3.1/2
4 / 38	17/09	Ch4. Requirement engineering (cont.)	Ch4[1], Ch3-4[3], [2]	Quiz##4.1/2
5-6 / 39-40	24/09-01/10	Ch5. System modeling	Ch5[1], [2]	Quiz#5.1/2, #6.1/2, Proj#1 (23/09)
7 / 41	08/10	Ch6. Architecture design	Ch6[1], Ch5[3]	Quiz#7.1/2
8 / 42	15/10	Ch7. Design and Implementation	Ch7[1], Ch6[3], [2]	Quiz#8.1/2, Proj#2 (14/10)
9 / 43	22/10	Ch7. Design and Implementation (cont.)	Ch7[1], Ch6[3], [2]	Quiz#9.1/2, Proj#3 (21/10)
10 / 44	29/10	Ch7. Design and Implementation (cont.)	Ch7[1], Ch6[3], [2]	Quiz#10.1/2
11 / 45	05/11	Ch8. Software testing Ch9. Software evolution	Ch8[1] Ch9[1]	Quiz#11.1/2, Proj#4 (04/11)
12 / 46	12/11	Ch3. Agile Software development Review	Ch3[1]	Quiz#12.1/2

CONTACT

Lecturers:

- Bùi Hoài Thắng (bhthang@hcmut.edu.vn)
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- Email subject: [SE] …

Course website:

- https://elearning.cse.hcmut.edu.vn/
- http://e-learning.hcmut.edu.vn

REFERENCE SOURCES OF THE SLIDES

Slides in this course are adapted mainly from [1]. Some slides are adapted from [3].

Slides of chapter "7.3. More on Implementation" are adapted from [3].