

COURSE SYLLABUS

CSC13002 – Nhập môn công nghệ phần mềm

1. GENERAL INFORMATION

Course name:	Introduction to Software Engineering
Course name (in Vietnamese):	Nhập môn công nghệ phần mềm
Course ID:	CSC13002
Knowledge block:	Basic Professional Knowledge
Number of credits:	4
Credit hours for theory:	45
Credit hours for practice:	30
Credit hours for self-study:	90
Prerequisite:	None
Prior-course:	
Instructors:	Nguyễn Thị Minh Tuyền

2. COURSE DESCRIPTION

The course is designed to provide students the concepts, principles, and practices of software engineering, focusing on software requirements specification, analysis & design, implementation, testing, integration, maintenance, and management. The students will also have opportunities to apply software engineering principles, methods, techniques, and tools by working on multi-person teams to develop and deliver software products.

3. COURSE GOALS

At the end of the course, students are able to

ID	Description	Program LOs
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G1	Work individually and in group to present reports based on available templates	2.2, 2.3.1, 2.4.1, 2.4.2, 2.4.3, 2.4.4
G2	Explain software concepts in English.	2.4.3, 2.4.4, 2.4.5
G3	Explain basic concepts, principles, methods, and techniques in software engineering	1.5, 3.3
G4	Classify and compare different software processes	1.5.2
G5	Set up at basic level each phase in software development lifecycle	5.1.1, 5.1.2, 5.2.1, 5.2.2, 5.3.1, 6.1.1
G6	Construct software artifacts in each phases in software process.	5.1.3, 5.2.2, 5.3.2, 5.3.3, 6.1.2
G7	Use CASE tools	1.3.7

4. COURSE OUTCOMES

CO	Description	I/T/U
G1.1	Set up, organize, operate and manage team	I,T
G1.2	Participate in group discussion on course topics	U
G1.3	Analyze, synthesize and write technical reports based on available templates	I,T
G2.1	Explain course concepts in English.	I
G2.2	Summarize course session in English.	I

G3.1	Explain basic concepts in Software engineering: software, system, process, main activities in a SDLC, SRS, diagrams.	I,T
G3.2	Recognize roles, describe responsibilities and professional ethics in Software engineering	I
G3.3	Improve skills to update new knowledge, self-study, self-development and adaptation	I
G3.4	Establish career skills	I
G4.1	Differentiate software processes: waterfall model, incremental development, reuse-oriented software engineering	I,T
G5.1	Describe main activities in a process: requirements engineering, analysis, design, implementation, V&V, deployment, evolution	I,T
G5.2	Outline processes in analysis & design activities	I,T,U
G5.3	Explain the importance of project management	I
G5.4	Practice software phases in SDLC	I,T,U
G6.1	Construct basic software artifacts for a small and medium-sized software in a systematic way.	T,U
G7.1	Use CASE tools and technologies in developing software (Slack, Trello, GitHub, Visual Paradigm, IDEs, etc.)	I,T,U

5. TEACHING PLAN

ID	Topic	Course outcomes	Teaching/Learning Activities (samples)	Assessment activities
1	Course introduction Overview Watch videos #1, #2	G1.1, G1.2, G2.1, G2.2, G3.1, G3.2, G3.3, G3.4	Lecturing Q&A, Group discussion Role play Team & project registration	

			(Chapter 1)	
2	Software processes Watch videos #3, #4	G1.2, G2.1, G2.2, G3.3, G4.1, G5.1	Lecturing Group discussion (Chapter 2)	ASSN#1
3	Project management Watch video #6	G1.2, G2.1, G2.2, G3.3, G3.4, G5.3	Brainstorming Lecturing Playing games Group Discussion (Chapters 22, 23)	ASSN#2
4	Requirements engineering	G1.2, G2.1, G2.2, G3.3, G5.1	Lecturing Role play Group discussion (Chapter 4)	ASSN#3
5	System modeling	G1.2, G2.1, G2.2, G5.1, G5.2, G7.1	Group discussion & presentation (Chapter 5)	ASSN#4
6	Architectural design	G2.1, G2.2, G5.1, G5.2, G7.1	Lecturing Q&A Exercises (Chapter 6)	Quiz#1 ASSN#5
7	Design and Implementation	G1.2, G2.1, G2.2, G5.1, G7.1	Lecturing Group discussion & presentation (Chapter 7)	ASSN#6

8	User interface design	G1.2, G2.1, G2.2, G1.3, G2.1, G2.2, G5.1, G7.1	Lecturing Group discussion & design UI (Chapter 16/ SE 8 th edition)	ASSN#7
9	Software testing	G1.3, G2.1, G2.2, G5.1, G7.1	Lecturing Exercises (Chapter 8)	ASSN#8
10	Agile software development Watch video #5	G2.1, G2.2, G3.1, G4.1	Case study, Discussion Exercises (Chapter 3)	ASSN#9
11	Review	G1.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G5.4, G7.1	Q&A, Discussion Exercises	ASSN#10 Quiz#2

6. PRACTICAL PLAN

There will be no practical laboratory work. Students realize a project in team of 4–5 students (Each student has a role in his/her team). All groups are able to discuss with their TAs via online tools such as Moodle Forum, zoom, etc. The team will deliver periodical practical assignments (PAs – their templates and guidelines will be provided by TAs). All PAs will be graded.

ID	Topic	Course outcomes	Teaching/Learning Activities (samples)	Assessment activities
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1	Overview Review project topic and its description. Tools and environments.	G1.1, G1.2, G1.3, G3.2, G5.4, G6.1, G7.1	Video demonstration Q&A, Group discussion via Zoom meeting	PA#0: Project Proposal
2	Tutorial: Writing Project Plan, Vision Document. Weekly report	G1.1, G1.2, G1.3, G3.2, G5.4, G6.1, G7.1	Video demonstration Q&A, Group discussion via Zoom meeting	Project Assignment 1 (PA#1): Project Plan, Vision Document
3	UML Tutorial: Use case Diagram, Use case specification Activity Diagram Weekly report	G1.1, G1.2, G1.3, G3.2, G5.4, G6.1, G7.1	Video demonstration Q&A, Group discussion via Zoom meeting	PA#1 due. PA#2: Revised Project Plan, Use Case Diagram, Use case Specification, Weekly report.
4	Tutorial: Writing Software Architecture Document, Class Diagram. Weekly report.	G1.1, G1.2, G1.3, G3.2, G5.2, G5.4, G6.1, G7.1	Video demonstration Q&A, Group discussion via Zoom meeting	PA#2 due. PA#3: Revised Use Case specification, Architectural design, Database design, Weekly report.
5	Tutorial on Mobile and Web Development.	G1.1, G1.2,	Video demonstration	

	Weekly report.	G6.1, G7.1	Q&A, Group discussion via Zoom meeting	
6	Technical support: guidance on analysis, design, and implementation.	G1.1, G1.2, G1.3, G3.2, G5.2, G5.4, G6.1, G7.1	Video demonstration Q&A, Group discussion via Zoom meeting	PA#3 due. PA#4: Revised Architectural design, UI Prototype
7	Tutorial: drawing wireframes using tools, prototyping	G1.1, G1.2, G3.2, G6.1, G7.1	Video demonstration Q&A, Group discussion via Zoom meeting	
8	Tutorial: Testing	G1.1, G1.2, G1.3, G3.2, G5.4, G6.1, G7.1	Video demonstration Q&A, Group discussion via Zoom meeting	PA#4 due. PA#5: Revised UI Prototype Implementation, Testing
9	Technical support Weekly report	G1.1, G1.2, G6.1, G7.1	Video demonstration Q&A, Group discussion via Zoom meeting	
10	Review Technical support	G1.1, G1.2,	Video demonstration	PA#5 due.

		G6.1, G7.1G1.3, G3.2, G5.4, G6.1, G7.1	Q&A, Group discussion via Zoom meeting	PA#6: Final Project Submission
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7. ASSESSMENTS

ID	Topic	Description	Course outcomes	Ratio (%)
A1	Assignments			20%
A11	In-class participation & exercises ASSN#1 – ASSN#10	Active participation in discussion, group presentation, playing games, questions and answers Guided exercises	G2.1, G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3	10%
A12	Quizzes Quiz#1 – Quiz#2	Two quizzes check for the knowledge comprehension	G2.1, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3	10%
A2	Projects			40%
A21	Project assignments PA#0 – PA#6	4–5 students/group. Each team is required to work on a project topic and submit results regularly in form of assignments. Each team will deliver an oral presentation at the end of the course.	G1.1, G1.2, G1.3, G3.2, G5.2, G5.4, G6.1, G7.1	40%

A3	Exams			40%
A31	Final exam	Closed book exam. Check for understanding of different topics learnt. Analyze & solve given problems	G2.1, G3.1, G3.2, G4.1, G5.1, G5.2, G5.3, G5.4	40%

8. RESOURCES

Textbooks

- **Software Engineering, 10th Edition** (8th or 9th Edition are also fine), Ian Sommerville, Pearson, 2015, ISBN-13: 978-0133943030

Others

- **Software Engineering: A Practitioner's Approach, 8th Edition**, Roger S. Pressman, McGraw-Hill Higher Education, 2014, ISBN-13: 978-0078022128
- **Software Engineering with UML**, Bhuvan Unhelkar, CRC Press, 2018, ISBN-13: 978-1138297432
- IDEs
- Slack, Trello, GitHub, etc.
- Visual Paradigm
- etc.

List of videos

No.	Video name	URL
1	10 Questions to Introduce Software Engineering	https://www.youtube.com/watch?v=gi5kxGslkNc
2	Why Software Engineering Matters	https://www.youtube.com/watch?v=R3NzTt0BTWE

3	Plan-driven and Agile Software Processes	https://www.youtube.com/watch?v=q8X2Rk5sRFI
4	Fundamental Activities in Software Engineering	https://www.youtube.com/watch?v=Z2no7DxDWRI
5	Intro to Scrum in Under 10 Minutes	https://www.youtube.com/watch?v=XU0lIRltyFM
6	Software Project Management - Why it's Different	https://www.youtube.com/watch?v=TYBVAvWkG6M

9. GENERAL REGULATIONS & POLICIES

- All students are responsible for reading and following strictly the regulations and policies of the school and university.
- Students who are absent for more than 3 theory sessions are not allowed to take the exams.
- For any kind of cheating and plagiarism, students will be graded 0 for the course. The incident is then submitted to the school and university for further review.
- Students are encouraged to form study groups to discuss on the topics. However, individual work must be done and submitted on your own.