THAI NGUYEN UNIVERSITY
UNIVERSITY OF INFORMATION AND COMMUNICATION TECHNOLOGY

SOCIALIST REPUBLIC OF VIET NAM
Independence - Freedom – Happiness

COURSE SYLLABUS

(Training Level: Undergraduate)

Course Title:

Vietnamese Subject Title: Công nghệ Phần mềm

English Subject Title: Software Engineering

Course Code: SOE232

Major: Information Technology; Communication & Computer Network; Software Engineering.

Version: 2017

1. General Information

- Number of credits: 3 (Theory: 3; Practice: 0)

- Types of Knowledge:

General Education		**Base core courses**		**Major core courses**		**Concentration courses**		**Others**
						(Write a major name)		
Required □	Optional □	Required □	Optional □	Required [x]	Optional □	Required □	Optional □	Alternative subject of Graduation Thesis □

- Required course(s): Databases, Object-oriented programming, Data Structure, and algorithms.
- Pre-requisite: None
- Co-requisite: None
- Facility Requirements: Classrooms with projectors
- Departments in Charge: Faculty Information Technology

2. Time Allocated

Total: 54 Periods	Theory: 33 periods
	Discussion/ Group Presentation: 18 periods
	Assignment/ Essay/ Practice: 0.
	Tests: 3 periods *+ Theory: Number of Tests:03 Periods: 03* *+Practice: Number of Tests:0 Periods: 0*
Self-study: 90 periods. Other activities: 0 period	

3. Lecturers' Information

No	Lecturer name	Phone number	Email	Note
1	MSc. Hoàng Thị Cành	0382324556	htcanh@ictu.edu.vn	Leader
2	MSc. Nguyễn Hồng Tân	0943252165	nhtan@ictu.edu.vn	Member
3	PhD. Nguyễn Văn Núi	0964719929	nvnui@ictu.edu.vn	Member
4	MSc. Nguyễn Thu Phương	0982483420	ntphuong@ictu.edu.vn	Member
5	MSc. Phạm Thị Thương	0912838646	ptthuong@ictu.edu.vn	Member
6	MSc. Bùi Thị Thanh Xuân	0902001581	bttxuan@ictu.edu.vn	Member

4. Objectives

- Objectives:

+ Knowledge: After studying this subject, students will understand the basic principles of the specification process, development, evaluation, operation and maintenance of software, the principles of organization and project management. Students are aware of the content of knowledge and working methods in the stages of building software systems and have the ability to apply to build quality application software.

+ Skills: Students have the ability to use a number of specific methods and tools to perform basic activities in the process of building soft stools and have the ability to use supporting tools in software project management. Students develop thinking, analytical and decision-making skills, problem-solving and development skills, skills to work with a wide range of subjects and self-development skills in accordance with the fast-growing, strong, and continuous trend of Information Technology in general and Software Technology in particular.

+ Attitude: The subject creates confidence, professionalism in problem solving. Promote the students' sense of self-study and creativity. Consciously apply the knowledge learned to life in general and professional reality in particular.

- Position of the subject: The course belongs to the major core courses, which is compulsory.

The subject contributes to meeting the L7, L11, L12 learning outcomes of the training program.

5. Description of content and course learning outcome:

- Knowledge Standards: *(1) Remember ⇨ (2) Understand ⇨ (3) Apply ⇨ (4) Analyze ⇨ (5) Create.*

- Attitude Standards: *(1) Copy ⇨ (2) Self-manipulation ⇨ (3) Masterfully repeating to the norm ⇨ (4) Combining multiple activities ⇨ (5) Completely proactive*

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Notation CLOs	Contents	Level	
		Knoweldge	Skills
C1	Apply the basics in the field of software technology and the impact of the software industry on society	3	3
C2	Apply software engineering knowledge in implementing software lifecycle phases	3	3
C3	Apply knowledge about the software testing to predict problems arising in the process of building, operating and maintaining software.	3	3
C4	Apply software project management skills in the software development process	3	3

6. Reading List

- Main syllabus:

[1] Department of Software Engineering, Faculty of Information Technology, Thai Nguyen University of Information and Communication Technology (2018), *Introduction to Software Engineering Lecture.*

- References:

[2] Ian Sommerville (2015), *Software Engineering,* 9th Edition.

[3] Roger S. Pressman (dịch: Ngô Trung Việt) (1997), *Kỹ nghệ phần mềm*, Tập I, II, III, NXB Giáo dục.

[4] Lê Đức Trung (2001), *Công nghệ phần mềm*, NXB Khoa học và Kỹ thuật.

[5] Ngô Trung Việt, Nguyễn Kim ánh (biên soạn) (2003), *Nhập môn Công nghệ phần mềm*, NXB Khoa học và kỹ thuật.

[6] Stephen R. Schach (1999), *Classical and Objecture Oriented Software Engineering with UML and C++*, 4th ed., McGraw-Hill.

7. Score Assessment

- Score Scale: 10.

- Components Assessment:

Evaluation Time	Components Assessment	Course Learning Outcome	Factor	Score	Weight
During the duration of the course	Attendance: (score b_0)		1	d=($b_0+b_1+b_2+b_3$)/4	30%
According to the teaching plan in section 9	Test No.1: (b_1)	C1; C4	1		
	Test No.2: (b_2)	C2	1		
	Test No.3: (b_3)	C3	1		

Evaluation Time	Components Assessment	Course Learning Outcome	Factor	Score	Weight
During the duration of the course	Attendance: (score b_0)		1	d=($b_0+b_1+b_2+b_3$)/4	30%
According to the teaching plan in section 9	Test No.1: (b_1)	C1; C4	1		
	Test No.2: (b_2)	C2	1		
	Test No.3: (b_3)	C3	1		
The end of the term.	Final exam	C1; C2; C3; C4		Final examination: e	70%
Final Score: (f)				f = d ×30% + e ×70%	

- End-term Examination: *Multiple choice*

8. Regulations for students

8.1. Student's duties

- Read the material and prepare for each lesson before attending class.
- Complete assigned assignments.
- Prepare discussion content for the course.

8.2. Regulations on Exams and Academic Studies

- Students must attend classes, ensuring at least 80% of classroom sessions.
- Complete the assigned tasks for the course.
- Participate in the full number of regular tests.

9. Teaching Plan

No.	Period	Contents	Teaching Methodology	CLOs	References
1	3	**Chapter 1: Overview of Software Engineering** 1.1 Overview of software engineering 1.2 Some basic concepts 1.3 The ethical and professional responsibilities of software engineering engineers	Present; Raise and solve problems;	C1	[1] . Chapter 1; [2] . Chapter 1, 2, 22, 23, 24, 25; [3] . Part I; [4] . Chapter 1; [5] . Chapter 1;

No.	Period	Contents	Teaching Methodology	CLOs	References
2	3	**Chapter 1: Overview of Software Engineering** 1.4 Human factors and career classification in software engineering 1.5 Overview of software project management	Present; Raise and solve problems;	C1; C4	[1] . Chapter 1; [2] . Chapter 1, 2, 22, 23, 24, 25; [3] Part I; [4]. Chapter 1; [5]. Chapter 1;
3	3	**Chapter 2: Software Development Process** 2.1 Software Development Model 2.2 Software process operations	Present; Raise and solve problems;	C2	[1] . Chapter 2 [2]. Chapter 3 [3]. Part I, [4]. Chapter 2,3 [5]. Chapter 2,3
4	3	**Chapter 2: Software Development** Process 2.3 Problems related to software processes	Present; Raise and solve problems;	C2	[1] . Chapter 2 [2]. Chapter 3 [3]. Part I, [4]. Chapter 2,3 [5]. Chapter 2,3
5	3	**Chapter 3: Analysis and specification of software requirements** 3.1 What is the software requirement? 3.2 System requirements 3.3 User Requirements 3.4 Process for determining requirements 3.5 Case study	Present; Raise and solve problems;	C2	[1]. Chapter 3 [2]. Chapters 4, 5 [3]. Part I, II, [4]. Chapter 4 [5]. Chapter 4
6	3	**Discussion:** Students discuss topics in chapters 1,2,3: Software specification	Student groups present and discuss according to the plan under the supervision of the lecturer	C1; C2; C4	[1]. Chapter 3 [2]. Chapters 4, 5 [3]. Part I, II, [4]. Chapter 4 [5]. Chapter 4

No.	Period	Contents	Teaching Methodology	CLOs	References
7	3	**Chapter 4: Software Design** 4.1 Activities during system design 4.2 Architectural Design 4.3 User Interface Design 4.4 Design of data structures	Present; Raise and solve problems;	C2	[1]. Chapter 4 [2]. Chapter 6,7 [3] Part III, [4]. Chapters 5, 6 [6]. Chapter 1,2,3
8	3	**Chapter 4: Software Design** 4.5 Algorithm design 4.6 Case study	Present; Raise and solve problems;	C2	[1]. Chapter 4 [2]. Chapter 6,7 [3] Part III, [4]. Chapters 5, 6 [6]. Chapter 1,2,3
		Test No. 1	Written	C1; C4	[1] . Chapter 1,2; [2] . Chapters 1, 2, 22, 23, 24, 25;; [3] Part I, II, III; [4] . Chapter 1,2; [5] . Chapter 1,4;
9	3	**Discussion:** Students discuss topics in chapter 4: Software design	Student groups present and discuss according to the plan under the supervision of the lecturer	C2	[1]. Chapter 4 [2]. Chapter 6,7 [3] Part III, [4]. Chapters 5, 6 [6]. Chapter 1,2,3
10	3	**Chapter 5: Software installation** 5.1 Overview 5.2 Programming method 5.3 Some programming rules 5.4 Multilayer Model 5.5 Tools to organize, manage, share Source Code	Present; Raise and solve problems;	C2	[1]. Chapter 5 [2]. Chapter 7 [3] Part III, [4]. Chapter 7 [6]. Chapters 4, 5

No.	Period	Contents	Teaching Methodology	CLOs	References
		5.6 Case study			
		Test No. 2	Written	C2	[1]. Chapter 5 [2]. Chapter 7 [3] Part III, [4]. Chapter 7 [6]. Chapters 4, 5
11	3	**Discussion:** Students discuss topics in chapter 5: Software installation	Student groups present and discuss according to the plan under the supervision of the lecturer	C2	[1]. Chapter 5 [2]. Chapter 7 [3] Part III, [4]. Chapter 7 [6]. Chapters 4, 5
12	3	**Chapter 6: Software Testing** 6.1 Software verification and testing 6.2 Software testing 6.3 Principles in Software Testing	Present; Raise and solve problems;	C3	[1]. Chapter 6 [2]. Chapter 8 [3] Part III
13	3	**Chapter 6: Software Testing** 6.4 Software testing process 6.5 Software testing levels 6.6 Specification and source code survey techniques 6.7 Software testing techniques 6.8 Case study	Present; Raise and solve problems;	C3	[1]. Chapter 6 [2]. Chapter 8 [3] Part III,
14	3	**Discussion:** Students discuss topics in chapter 6: Software testing	Student groups present and discuss according to the plan under	C3	[1]. Chapter 6 [2]. Chapter 8 [3] Part III

No.	Period	Contents	Teaching Methodology	CLOs	References
			the supervision of the lecturer		
15	3	**Chapter 7: Software deployment and maintenance** 7.1 Deployment Phase 7.2 Software Maintenance 7.3 Software improvement processes	Present; Raise and solve problems;	C3	[1]. Chapter 7 [2]. Chapters 10 - 15
16	3	**Chương 7: Software deployment and maintenance** 7.4 System re-engineering 7.5 Case study	Present; Raise and solve problems;	C3	[1]. Chapter 7 [2]. Chapters 10 - 15
		Test No. 3	Group presentations	C3	[1]. Chapter 7 [2]. Chapters 10 - 15
17	3	**Chapter 8: Advanced Topics in Software Engineering** 8.1 Flexible software analysis method 8.2 Reuse the software 8.3 Component-based software technology 8.4 Distributed software technology 8.5 Service-oriented architecture 8.6 Embedded software	Present; Raise and solve problems;	C1	[1]. Chapter 8 [2]. Chapters 16 - 21
18	3	**Discussion:** Students discuss topics in chapters 7, 8: Software maintenance plan, training plan, Software acceptance. Review.	Student groups present and discuss according to the plan under the supervision of the lecturer	C1; C3	[1]. Chapter 8 [2]. Chapters 16 - 21

10. Competent Authority Approval: University of Information and Communication Technology

August 27th, 2017

Vice Rector	Dean	Head of Department	Composer Team
			Hoang Thi Canh
			Nguyen Hong Tan
			Nguyen Van Nui
			Nguyen Thu Phuong
			Pham Thi Thuong
			Bui Thi Thanh Xuan
Ph.D. Do Dinh Cuong	**Ph.D. Nguyen Hai Minh**	**Mc.S. Nguyen Hong Tan**	

11. Updated Procedure

1st update: **Updater**