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 Course Title: Công nghệ Phần mềm

English Course 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**
				Information Technology; Communication&Computer Network; Software Engineering				
Required □	Optional □	Required □	Optional □	Required [x]	Optional □	Required □	Optional □	Alternative subject of Graduation Thesis □

- Required courses: 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. Hoang Thi Canh	01682324556	htcanh@ictu.edu.vn	Leader
2	MSc. Nguyen Hong Tan	0943252165	nhtan@ictu.edu.vn	Member

No.	Lecturer name	Phone number	Email	Note
3	PhD. Nguyen Van Nui	0964719929	nvnui@ictu.edu.vn	Member
4	MSc. Nguyen Thu Phuong	0982483420	ntphuong@ictu.edu.vn	Member
5	MSc. Pham Thi Thuong	0912838646	ptthuong@ictu.edu.vn	Member
6	MSc. Bui Thi Thanh Xuan	0902001581	bttxuan@ictu.edu.vn	Member

4. Objectives

- Objectives:

+ Knowledge: After studying this course, 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 course 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 course 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 course: The course belongs to the major core courses, which is compulsory.

The course contributes to meeting the L7, L9, L11, L13 learning outcomes of the training program…

5. Description of content and output standards:

- 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*

Notation CLOs	Contents	Level		PLOs
		Knoweldge	Skills	
C1	Understand the basics in the field of software technology	2	2	L7
C2	Understand the basics of the software development process.	2	2	L7
C3	Apply the specification analysis knowledge that requires software to solve problems in the software development process	3	3	L9
C4	Understand the knowledge related to system design analysis methods and tools	2	2	L7
C5	Apply knowledge of modern software architecture to come up with solutions in software development.	3	3	L9, L11
C6	Apply the knowledge to install software simulation.	3	3	L9, L11
C7	Apply knowledge about the software life cycle, software testing to predict problems arising in the process of building, operating and maintaining software.	3	3	L13

Notation CLOs	Contents	Level		PLOs
		Knoweldge	Skills	
C8	Apply software project management skills in the software development process	3	3	L13

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 (Translated by Ngo Trung Viet) (1997), *Software Engineering*, Part I, II, III, Education Publisher.

[4] Lê Đức Trung (2001), *Software Engineering*, Science and Technics Publishin.

[5] Ngô Trung Việt, Nguyễn Kim ánh (2003), *Introduction to Software Engineering*, Science and Technics Publishing.

[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	Learning Outcomes	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, C2, C4	1		
	Test No.2: (b_2)	C3, C5, C6	1		
	Test No.3: (b_3)	C7, C8	1		
The end of the term.	Final exam	C1, C2, C3, C4, C5, C6, C7, C8		e	70%
Final Score: (f)				f = d ×30% + e ×70%	

- Final exam: *Multiple choice question*

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

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	Presentation; 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;
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	Presentation; Raise and solve problems;	C1; C8	[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	Presentation; 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	Presentation; 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	Presentation; Raise and solve problems;	C3	[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; C3; C8	[1]. Chapter 3 [2]. Chapters 4, 5 [3]. Part I, II, [4]. Chapter 4 [5]. Chapter 4
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	Presentation; Raise and solve problems;	C4;C5	[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	Presentation; Raise and solve problems;	C4; C5	[1]. Chapter 4 [2]. Chapter 6,7 [3] Part III, [4]. Chapters 5, 6 [6]. Chapter 1,2,3
		Test No1	Written assessment	C1; C2; C4	[1] . Chapter 1,2;

No.	Period	Contents	Teaching Methodology	CLOs	References
					[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	C4; C5	[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 5.6 Case study	Presentation; Raise and solve problems;	C6	[1]. Chapter 5 [2]. Chapter 7 [3] Part III, [4]. Chapter 7 [6]. Chapters 4, 5
		Test No2	Written assessment	C3, C5, C6	[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	C6	[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	Presentation; Raise and solve problems;	C7	[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	Presentation; Raise and solve problems;	C7	[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 the supervision of the lecturer	C7	[1]. Chapter 6 [2]. Chapter 8 [3] Part III
15	3	**Chapter 7: Software deployment and maintenance** 7.1 Deployment Phase 7.2 Software Maintenance 7.3 Software improvement processes	Presentation; Raise and solve problems;	C7	[1]. Chapter 7 [2]. Chapters 10 - 15
16	3	**Chương 7: Triển khai và**	Presentation; Raise and	C7	[1]. Chapter 7

No.	Period	Contents	Teaching Methodology	CLOs	References
		bảo trì phần mềm 7.4 System re-engineering 7.5 Case study	solve problems;		[2]. Chapters 10 - 15
		Test No. 3	Group presentations	C7, C8	[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; C7	[1]. Chapter 8 [2]. Chapters 16 - 21

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

5th October, 2017

Vice Rector	Dean	Head of Department	Composer Team
PhD. Do Dinh Cuong	PhD. Nguyễn Hải Minh	MSc. Nguyễn Hồng Tân	Hoang Thi Canh Nguyen Hong Tan Nguyen Van Nui Nguyen Thu Phuong Pham Thi Thuong Bui Thi Thanh Xuan