

SOFTWARE ENGINEERING GRADUATION MODULE 2

1. Thông tin về học phần (General Information)

Tên học phần (Course name): Software Engineering graduation module 2

Mã học phần (Course code):

Số tín chỉ (Number of credits): 4

Loại học phần (Course type): Compulsory

Học phần tiên quyết (Prerequisites):

- Information System analysis and Design (INT1342)
- Software quality assurance (INT1416)

Học phần trước (Previous courses):

Học phần song hành (Parallel courses):

Các yêu cầu đối với học phần (Course requirements):

- Lecture room: Projector, microphone and speaker, air conditioner.
- Laboratory:

Giờ tín chỉ đối với các hoạt động (Teaching and Learning hours):

- Lectures (lí thuyết): 20h
- Exercises (bài tập): 0h
- Projects (bài tập lớn): 40h
- Lab (thực hành): 0h
- Individual reading (tự đọc): 0h

Địa chỉ Khoa/Bộ môn phụ trách học phần (Address of the Faculty/Department in charge of the course):

- Address: Faculty of Information Technology 1 - Posts and Telecommunications Institute of Technology, Km10, Nguyen Trai Street, Ha Dong District, Hanoi.
- Phone number: (024) 33510432

2. Mục tiêu học phần (Objectives)

Về kiến thức (Knowledge):

The aim of this course is to provide learners with knowledge and skills for object oriented software analysis, design and software quality assurance. They include classes and relationships, software models with UML, requirement determination, analysis and design in object oriented approach. Learners will apply these skills and knowledge and make use of tools for developing software projects. They also understand the standards of software quality assurance, the techniques of testing, reviewing for each phase of software development process.

Kỹ năng (Skills):

On successful completion of this course, a learner will be able to:

- use UML diagrams for modeling software systems
- make use of tools such as VP in representing UML diagrams
- apply knowledge and skills of analysis, design and implementation for developing of software projects technique into the development of a software.

- Apply the learned knowledge to execute reviewing, testing during software development

Thái độ, Chuyên cần (Attitude):

Learners are required to attend the classes and complete assignments/projects.

3. Tóm tắt nội dung học phần (Description)

On completion of this course, learners are able to understand and apply knowledge and skills of object-oriented paradigm to developing large scale software systems and software quality assurance, applying reviewing and testing techniques during software development process are compulsory for current software engineers.

Learners are also able to take part in software projects as well as in develop software phases from requirement determination, analysis, design, implementation as well as following software quality assurance activities for the software development process, from review requirement to review analysis, review design, review source code, and testing.

4. Nội dung chi tiết học phần (Outlines)

Chapter 1 Software development process

- 1.1. Scope of software engineering
 - 1.1.1. Software
 - 1.1.2. Software development
- 1.2. Software development life-cycle
 - 1.2.1. Object-oriented software development process
 - 1.2.2. Software life-cycle models
 - 1.2.3. Tools for software development

Chapter 2 Software quality assurance process

- 2.1. Software quality assurance
 - 2.1.1. The aspects in SQA
 - 2.1.2. Standards in SQA
- 2.2. SQA during software development process
 - 2.2.1. Quality assurance in requirement phase
 - 2.2.2. Quality assurance in analysis phase
 - 2.2.3. Quality assurance in design phase
 - 2.2.4. Quality assurance in implementation phase

Chapter 3 Requirement and analysis

- 3.1. Requirement
 - 3.1.1. Concept exploration
 - 3.1.2. Business perspective
 - 3.1.3. Developer perspective
- 3.2. Requirement analysis
 - 3.2.1. Static analysis
 - 3.2.2. Dynamic analysis
- 3.3. Case study: student project in requirement and analysis phase

Chapter 4 Design

- 4.1. Database design
- 4.2. Architecture design
 - 4.2.1. MVC design
 - 4.2.2. Using CRC card
 - 4.2.3. Class candidate
- 4.3. Detail design
 - 4.3.1. Attribute and method design
 - 4.3.2. Algorithm design (SFM)
- 4.4. Case study: student project in design phase

Chapter 5 Testing

- 5.1. Testing processes
 - 5.1.1. Unit test
 - 5.1.2. Integrated test
 - 5.1.3. System test
 - 5.1.5. Acceptance test
- 5.2. Generation of testcase
 - 5.2.1. Blackbox testing
 - 5.2.3. Whitebox testing
- 5.3. Testing life-cycle
 - 5.3.1. Basic testing life-cycle
 - 5.3.2. Error report writing
 - 5.3.3. Result analysis
 - 5.3.4. Tools for testing
- 5.4. Case study: student project in testing

5. Học liệu (Textbooks)

5.1. Học liệu bắt buộc (Required Textbooks)

- [1]. Mike O'Docherty, Object-Oriented Analysis and Design: Understanding System Development with UML 2.0, Publisher John Wiley & Sons, 2005
- [2]. Murali Chemuturi. *Mastering Software Quality Assurance: Best Practices, Tools and Techniques for Software Developers*. J. Ross Publication Inc., 2011.

5.2. Học liệu tham khảo (Optional Textbooks)

- [3]. A. Dennis, B. Wixom and D. Tegarden, System Analysis Design UML 2.0: an object-oriented approach, Publisher John Wiley & Sons, Fourth Edition, 2012
- [4]. Paul Ammann and Jeff Offutt. Introduction to Software Testing. Cambridge University Press, 2016.

6. Phương pháp, hình thức kiểm tra – đánh giá kết quả học tập học phần (Grading Policy)

Grading method	Percentage	Group/Individual
- Attendance	10%	Individual
- Exercises	20%	Individual
- Mid-term projects/exams	20%	Group
- Final examination	50%	Individual

**Trưởng Bộ môn
(Head of Department)**

Nguyễn Mạnh Hùng

**Giảng viên biên soạn
(Lecturer)**

Nguyễn Mạnh Hùng