**TROY STATE UNIVERSITY**
**CS 3332 SOFTWARE ENGINEERING**
**COURSE SYLLABUS**

## INSTRUCTOR INFORMATION:

Tuan-Dung CAO Assoc. Ph.D
Vice Dean of School of Information and Communications Technology, Hanoi University of Science and Technology
Phone : 0983359425
dungct@soict.hust.edu.vn

## STUDENT EXPECTATION STATEMENT:

It is assumed the student entering this course will already have a fundamental understanding of C++.

If you have not taken courses in C++ do not continue this class. You cannot successfully complete the course without the background knowledge given in the introductory and intermediate courses. You will be using algorithms you learned in Discrete Math to solve some of the problems given in the course.

Students are expected to be aware of the software life cycle and the importance of adequately and correctly documenting code.

## COURSE DESCRIPTION:

In previous courses in computer science you were taught how to write code given a specific design and set of specifications. In this course, you will learn to develop those designs and specifications and the formal methods used.

Preface from *Software Engineering, by Ian Sommerville 7th and 8th Editions*: *"Our current software engineering methods and techniques have made us much better at building large and complex systems than we were. However, there are still too many projects that are late, are over budget and do not deliver the software that meets the customer's needs. While I was writing this book, a government enquiry in the UK reported on the project to provide a national system to be used in courts that try relatively minor offenders. The cost of this system was estimated at £156 million and it was scheduled for delivery in 2001. In 2004, costs of escalated to £390 Million and it is still not*



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*fully functional. There is, therefore, still a pressing need for software engineering education. "*

This course helps students understand theories, methods, and technologies applied for professional software development. We will discuss the nature of software and software projects, software development models and software process. Topics in this course focus on the analysis and design techniques for large high quality software systems. They include project management issues, analysis and design methods, and approaches to testing. The major work of the course is a group project

The course will cover chapters 1,4,6,7,8,10,12,14,17,18, 22 and 23. However the student is encouraged to read all of the chapters. Time does not permit us to cover all topics in this book in just one semester. It is particularly important that the student place a great deal of emphasis in understanding the different design models and the sections covering requirements analysis and system specification. As it turns out, developing a complete set of requirements and specifications is one of the more difficult and critical tasks in software engineering.

## COURSE OBJECTIVES:

At the end of this course, the student should understand the following concepts:

- Follow a Software Design to Code Development
- The Software Crisis
- Software Processes and Models
- Requirements, specification, Architectural Design, and OOD
- Verification and Validation
- Testing
- Object Oriented Design
- Patterns
- Rapid Development
- Software Reuse.

## STUDENT OUTCOMES:

Upon successful completion of the course, the student will have

- Introduction to the concepts of Software Engineering.
- Working knowledge of software development procedures using sound engineering principles.
- Introduction to Unified Modeling Language.
- Knowledge/Skills in analysis and design of software systems as well as in practice teamwork.

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## SCHEDULE (TENTATIVE TO CHANGE)

| *Week* | *Topic* | *Reading Assignment* | *Homework/Assignmenti* |
|---|---|---|---|
| 1 | Introduction to Software Engineering | Chapter1, 2.2.1 – 2.2.5 | Problems 2.11 |
| 2 | Software Processes | Chapter 4 | Problems 4.1, 4.2, 4.5 |
| 3 | Software Requirements | Chapter 6 | |
| 4 | Requirements Engineering | Chapter 7 | Problems 7.2 |
| 5 | Review and Test | Test Chapters 1, 4,6, 7 | |
| 6 | System Models | Chapter 8 | |
| 7 | Midterm | | |
| 8 | Object Oriented Design 1 | Chapter 14 | Problems 14.2, 14.4 |
| 9 | Object Oriented Design 2 | Chapter 14 | Problems 14.2, 14.4 |
| 10 | Rapid Development | Chapter 17 | |
| 11 | Software Reuse - Patterns | Chapter 18 | |
| 12 | Testing, Validation, Verification | Chapter 22/23 | Problems 22.1, 22.5<br><br>Problems 23.1, 23.5 |
| 13 | Review and Test | Test Chapter 8, Notes,<br><br>10, 14, 17, 18, 22, 23 | |
| 14 | Project Presentations | | |
| 15 | Finals Week | Final Exam | |

## BREAKOUT OF HOW GRADES WILL BE DETERMINED:

**Course Grade Components Approximate % of Grade**

| | |
|---|---|
| Attendance | 5 |
| Exercises and Project | 40 |
| Midterm | 25 |
| Final exam | 30 |

The overall course grade is based upon the student's performance on the weekly assignments, class participation, and quizzes.



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## ASSIGNMENT OF GRADES:

Grades will be assigned according to point system on the following scale:

| | |
|---|---|
| A | 90 - 100 |
| B | 80 - 89 |
| C | 70 – 79 |
| D | 60 – 69 |
| F | 59 and below |

## HONESTY AND PLAGIARISM

The awarding of a university degree attests that an individual has demonstrated mastery of a significant body of knowledge and skills of substantive value to society. Any type of dishonesty in securing those credentials therefore invites serious sanctions, up to and including suspension and expulsion (see Standard of Conduct in each TROY *Catalog*). Examples of dishonesty include actual or attempted cheating, plagiarism*, or knowingly furnishing false information to any university employee.

*Plagiarism is defined as submitting anything for credit in one course that has already been submitted for credit in another course, or copying any part of someone else's intellectual work – their ideas and/or words – published or unpublished, including that of other students, and portraying it as one's own. Proper quoting, using strict MLA formatting, is required, as described by the instructor. All students are required to read the material presented at: http://troy.troy.edu/writingcenter/research.html

## TEXTBOOK(S) AND/OR OTHER MATERIALS NEEDED:

- Somerville, Ian (2001)Addison-Wesley Software Engineering 7th Edition). Massachusetts: Addison Wesley ISBN 0-321-21026-3
- OR
- Somerville, Ian (2001)Addison-Wesley Software Engineering 8th Edition). Massachusetts: Addison Wesley ISBN 0-321-31379-8
- Pressman, Roger Software Engineering: A Practitioner's Approach 7th Edition. Mc GrawHill ISBN: 0073375977 Copyright year: 2010