# 2110634 Software Design and Development

## Course Syllabus

Code	2110634
Course Name	Software Design and Development
Credits	3(3-0-9)
Department	Computer Engineering
Semester	Second
Year	2553
Instructor	Chate Patanothai
	Room 19-04
	Engineering Building 4
	Phone: 0-2218-6989
	Email: <u>2110634@gmail.com</u>
	URL: http://www.cp.eng.chula.ac.th/~chate/2110634
Condition	-
Degree	Master of Science (Software Engineering)
Hours/Week	3 hours lecture
Section	1. Wed 09:00 – 12:00
	5. Sat 09:00 – 12:00
Course Description	Techniques of software design and development: project management, structured programming, verification and validation, security and privacy, and project documentation; students are required to apply these techniques to large software projects

#### Evaluations

Assignments + Participation	20%
Project	30%
Midterm	20%
Final	30% (Saturday February 26, 2010.)

#### **Textbook and References**

Roger S. Pressman, Software Engineering – A Practitioner's Approach, Mcgraw-Hill, 2004.

Bernd Bruegge and Allen H. Dutoit, *Object-Oriented Software Engineering: Using UML, Patterns and Java, 2<sup>nd</sup> Edition,* Prentice Hall, 2003.

Steven T. Albin, *The Art of Software Architecture: Design Methods and Techniques*, John Wiley & Sons, Inc., 2003.

Elisabeth Freeman, Eric Freeman, Bert Bates, Kathy Sierra, *Head First Design Patterns*, O'Reilly Media, Inc., 2004.

Eric Braude, *Software Design – From Programming to Architecture*, John Wiley & Sons, Inc., 2004.

### Topics to be covered:

- 1) Overviews of Object-Oriented Software Design
  - Surveys of software design methods
  - Software design quality (Cohesion and Coupling)
  - Design by contract
- 2) Software modeling using UML
  - Class Diagram
  - Sequence Diagram
  - Package Diagram
  - Deployment Diagram
- 3) Software Architectural Styles and Design Patterns
  - Peter Coad's Collaboration Patterns
  - Software Architecture Styles (Model-View-Controller Style, Layered Design)
  - Design Patterns (Factory Method, Observer, Strategy, State, Decorator, Singleton)
- 4) Layered Design
  - Presentation Layer (Web UI Design)
  - Business Logic Layer
  - Data Service Layer
  - O/R Mapping
  - Relational Database Design (ERD)
- 5) Integrated Development Environment
- 6) Web Services Implementations

#### Class Schedule

Period	Topics*
1	Overview of OO Software design concept
2	Software modeling using UML diagrams I
3	Software modeling using UML diagrams II
4	Collaboration Patterns
5	Software Architectural Styles
6	Layered Design
7	IDE
8	Midterm Week
9	O/R Mapping
10	Design Pattern I
11	Design Pattern II
12	Design Pattern III
13	Web Services Implementations
14	Project Presentations I
15	Project Presentations II
16	Final Examination

\*The schedule may be changed as appropriate.