COURSE SYLLABUS

CIS 476/566 – Software Architecture and Design patterns

Fall 2007

Course Description

A Design Pattern is a catalogued solution that has been applied and tested in multiple situations to produce well-designed reusable object-oriented software. Designing with reusability is an art, typically acquired after many years of software development, refining and iterating over designed software modules. In this course, each pattern session will start with theoretical understanding followed by practical use. The design patterns will be described using Intent, Motivation, Sample Code, Applicability, Structure, Consequences and its Known Uses. The students will also test their understanding by completing a practical assignment for few very popular design patterns.

Prerequisite: CIS 200, CIS 350, CIS 375 Knowledge of C++ and OOAD

Class Timing: 6:10PM – 9:00PM Tuesday

Location: ~~SB 12~~ ELB 119

Instructor: Dr. Brahim Medjahed

Office: CIS 242

Office Hours: 1:00PM – 4:00PM Tuesday
Or By appointment

Email: brahim@umich.edu

Office Phone: (313) 583-6449

Web Page: http://www.engin.umd.umich.edu/»brahim/CIS476-566/CIS476-566.htm

Steps to access course resources on VLT:

- **Register with VLT system, if you are already not registered.**
- **Enroll in the class CIS476/566 using key: CIS476-566-Fall07**

Text Book:

- **Design Patterns: Elements of Reusable Object-Oriented Software, Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides Addison-Wesley.**

Reference books and Recommended Reading:

- **Object-Oriented Design with Applications (Second Edition) by Grady Booch**

- **UML Distilled – Third Edition by Martine Fowler, Addison Wesley**
- **Pattern-Oriented Software Architecture: A System of Pattern by Frank Buschmann, Regine Meunier, Hans Rohnert, Peter Sommerlad, Michael Stal, John Wiley & Sons; 1996.**
- **Design Patterns Explained by Shalloway and Tautt, 2004, ISBN:0321247140**

Course Contents

- Introduction to Patterns
- Introduction to UML
- Idioms
- Software Design Patterns From GoF
  - Creational Patterns
  - Structural Patterns
  - Behavioral Patterns
- Software Architectural Patterns
  - Layer, Pipe and Filters, and Black Board
  - Broker
  - Reflection and Microkernel

Classroom hours distribution

Lecture Session-I	6:10PM – 7:15PM
Break	7:15PM – 7:25PM
Lecture Session-II	7:25PM – 9:00PM
Questions	Anytime

Point Distribution

1. Assignment 1 5%
2. Assignment 2 15%
3. Assignment 3 15%
4. Assignment 4 15%
5. Midterm Exam 25%
6. Final Exam 25%

NOTE: Graduate Students will have more questions than undergraduate students in assignments 3 and 4.

Schedule

	Posted	Due
Assignment 1	09/25//2007	10/02//2007
Assignment 2	10/09/2007	10/23/2007
Assignment 3	10/30/2007	11/13/2007
Assignment 4	11/20/2007	12/04/2007
Midterm		10/30/2007
Final		See official Schedule

Grading

• >=94	A+
• <94 and >=92	A
• <92 and >=88	A-
• <88 and >=85	B+
• <85 and >=82	B
• <82 and >=78	B-
• <78 and >= 75	C+
• <75 and >= 72	C
• <72 and >= 68	C-
• <68 and >= 65	D+
• <65 and >= 62	D
• <62 and >= 55	D-

Learning Outcomes

- Knowledge of UML and reusable objects
- Ability to design and apply existing software patterns
- Ability to analyze software problem and apply architectural patterns
- Ability to use the software design tool in an integrated environment

Disability Resource Service:

The university will make reasonable accommodations for person with documented disabilities. Students need to register with Disability Resource Services (DRS) every semester they are enrolled for classes. DRS is located in Counseling & Support Services, 2157 UC. To be assured of having services when they are needed, students should register no later than the end of the add/drop deadline of each term.

Statement on Academic conduct:

The University of Michigan- Dearborn values academic honesty and integrity. Each student has a responsibility to understand, accept, and comply with the university's standards of academic conduct as set forth by the Code of Academic Conducts, as well as policies established by the schools and colleges. Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offences. Violations will not be tolerated and may result in penalties up to and including expulsion from the University.