COURSE SYLLABUS

CIS 476/566 – Software Architecture and Design patterns
Fall 2012

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 Monday
Location: Science Building 213
Instructor: Dr. Brahim Medjahed
Office: CIS 242
Office Hours: 2:30PM – 6:00PM Monday Or By appointment
Email: brahim@umich.edu
Office Phone: (313) 583-6449
Course Web Page: http://vlt.engin.umd.umich.edu

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.

Course Contents
• Introduction to Patterns and UML
• 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
Course Policy
- Lecture notes and announcements will be posted on VLT. Please make sure you have a valid email address in your VLT profile. Please read your email regularly for announcements.
- All students must respect the statement on academic conduct (see Section 9).
- You are expected to return your assignments at the due date. Late assignments will be penalized 5 points off for each late day. Assignments are not accepted after 4 days from the due date.
- Cell phones must be turned off during lectures. If you are unwilling to turn your phone off, do not bring it to class. If you are observed using your phone during class, you will be asked to leave. It is not permitted to use head phones, ear buds, etc. during lectures. You may use a computer to take notes during lecture. Use of your computer for purposes not directly related to CIS 476/566 is not permitted (for example, email, watching videos, etc.). If you are observed doing so, you will be asked to leave the class.
- If there are mistakes in grading your homework assignment, project, or exam, please contact me within a week after the return of your work. The entire work will be graded again and the new grade will replace the original one, whether the new grade is higher or lower than the original grade.

Classroom hours distribution

<table>
<thead>
<tr>
<th>Session</th>
<th>Time</th>
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<tbody>
<tr>
<td>Lecture Session-I</td>
<td>6:10PM – 7:15PM</td>
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<tr>
<td>Break</td>
<td>7:15PM – 7:25PM</td>
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<tr>
<td>Lecture Session-II</td>
<td>7:25PM – 9:00PM</td>
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Questions Anytime

Point Distribution

1. Assignment 1 10%
2. Assignment 2 10%
3. Assignment 3 10%
4. Assignment 4 10%
5. Midterm Exam 30%
6. Final Exam 30%
Total 100%

Schedule

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Posted</th>
<th>Due</th>
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<tbody>
<tr>
<td>Assignment 1</td>
<td>09/24/2012</td>
<td>10/08/2012</td>
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<tr>
<td>Assignment 2</td>
<td>10/08/2012</td>
<td>10/22/2012</td>
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<tr>
<td>Assignment 3</td>
<td>10/29/2012</td>
<td>11/19/2012</td>
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<tr>
<td>Assignment 4</td>
<td>11/19/2012</td>
<td>12/10/2012</td>
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<tr>
<td>Midterm</td>
<td>10/29/2012 6:10pm – 9pm</td>
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<tr>
<td>Final</td>
<td>12/17/2012 6:30pm – 9:30pm</td>
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**Grading**

- $\geq 95$ A+
- $< 95$ and $\geq 93$ A
- $< 93$ and $\geq 90$ A-
- $< 90$ and $\geq 87$ B+
- $< 87$ and $\geq 84$ B
- $< 84$ and $\geq 80$ B-
- $< 80$ and $\geq 77$ C+
- $< 77$ and $\geq 74$ C
- $< 74$ and $\geq 70$ C-
- $< 70$ and $\geq 67$ D+
- $< 67$ and $\geq 64$ D
- $< 64$ and $\geq 60$ 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 Service every semester they are taking classes. DRS is located in counseling and Support Services, University Center 2157.

**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.