Amity School of Engineering & Technology, Amity University
Department of Computer Science & Engineering

Module Information Sheet
Odd Semester- 2014

Module Details

Module Code	**BTC**
Module Title	**Object Oriented System Design**
Prerequisite	**Object oriented programming Basic terms, Software Engineering, Software Project Management.**
Co- requisite	**None**
Text Book	**Craig Larman,"Applying UML and Patterns: An Introduction to object-oriented Analysis and Design and iterative development", Third Edition, Pearson Education, 2005**
Reference Books	• **Mike O'Docherty, "Object-Oriented Analysis & Design: Understanding System Development with UML 2.0", John Wiley & Sons, 2005.** • **James W- Cooper, Addison-Wesley, "Java Design Patterns – A Tutorial", 2000.** • **Micheal Blaha, James Rambaugh, "Object-Oriented Modeling and Design with UML", Second Edition, Prentice Hall of India Private Limited, 2007** • **Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides,"Design patterns: Elements of Reusable object-oriented software", Addison-Wesley, 1995.**
Instructor Name	**Hari Mohan Pandey**
Module Coordinator	
Contact Details	**Department of Computer Science & Engineering, E2 block, 4th floor, cabin 21** **Mobile No: 09810625304** **E-mail: hmpandey@amity.edu**
Credit Points	**03**
Online support	**www.amizone.net**

Module Description

The purpose of this module is to acquaint students with key aspects of object-oriented principles and systems modeling. It also aims to give students skills in the use of appropriate tools and familiarity with techniques applied at different stages of the software development lifecycle.

Significance of the Module

Object oriented concepts have been the backbone of software solution design across platform such as embedded, internet and business solution. Over the years the market is growing stronger and bigger size. Meanwhile, the need for reliable and scalable software solution design is ever-increasing. Hence, the skilled professionals with good foundation of object oriented concepts are needed to fulfill the ever increasing requirements.

Module Outcomes

Upon completion of this module, students will be able to:

- Develop a working understanding of formal object-oriented analysis and design processes,
- Develop an appreciation for and understanding of the risks inherent to large-scale software development
- Develop an understanding of the application of OOAD practices from a software project management perspective

Attendance Policy

- Regular class attendance is expected of all students.
- Attendance falling below 75% will result in the students becoming ineligible to appear for the final examination.
- If a student arrives late for class and the roll has been taken, it is the responsibility of the student to notify the instructor at the end of that class that he/she arrived late and was not absent.
- Students should regularly check amizone for their attendance.

Class Schedule

Day	Mon	Tue	Wed	Thru	Fri	Sat	Remark
Time	10:10 -11:00	11:05-11:55	2:45-3:35	1:50-2:40	10:10-11:00 1:50-2:40		
Venue	E3-326	E3-326	E3-326	E3-323	E3-326 E3-323		

Assessment Methods

Assessment #	Type Of Assessment	Week	Maximum Mark
1.	Case Study & Presentation (Individual)	4th week	10
2	Case Study & Presentation (Individual)	7th Week	10
3.	Case Study & Presentation (Individual)	10th Week	10
4.	Term Test/Class Test	Notified by Exam office	10
5.	End Term Exam	Notified by Exam office	70

Composition of Module Work

30% Course work
70% End semester Examination

Delivery Methods

- Presentations using Audio/ Video aids to explain the concepts of the module
- Interactive Class Lectures (Supplementary material and Text books are provided).
- Online demonstration of all the practical components.
- Practice session has been set where faculty will demonstrate the theoretical concepts using appropriate tool.
- Practice session for students where faculty will monitor and help students to learn the concepts practically.

- **Theory: 03 hours per week**

Class manner and expected behavior

- The College prohibits the consumption of food products in class.
- You are responsible for any planned class activity such as a test or quiz even if you were absent from an earlier class in which it was announced. You must contact a fellow class member or the professor after an absence to inquire about what has happened in your absence.

- Only one person should be speaking at a time during a lecture, whether that is the instructor or a fellow class member commenting or asking a question.
- It is totally inappropriate to work on other reading or writing activities at length while your professor is lecturing.
- If you are too tired to be in class, stay home. People who fall asleep will be asked to leave.
- Active cell phones and pagers cannot be used. If you regularly carry one of these devices during the day, make sure you shut it off before coming in class.

Session Plan

Lecture #	Topic Covered
1	Introduction to OOSD: What is OOSD?, Why it is important?
2	Decryption about UML and introduction of united process phase
3	Case Study to understand the importance of OOSD
4	UML and NextGen POS System,
5	Introduction to Use Case Modeling
6	Understanding the basic notations/symbols used in Use case modeling,
7	Use of include, extend and generalization in Use case modeling
8	**Issuing and discussion of Assignment-1/Case Study-1**
9	**Use Case Modeling with the help of software such as Start UML, Rational Rose or any other.**
10	Introduction of models and class diagram.
11	Procedure for finding conceptual classes and description classes
12	Different types of associations used in class model.
13	Attributes, process of model refinement
14	Procedure of finding conceptual class hierarchies
15	understanding the role of Aggregation and composition
16	UML activity diagram and modeling

17	**Issuing and discussion of Assignment-2/Case Study-2**
18	**Demonstration of class diagram designing using UML tool**
19	Introduction to sequence diagram,
20	Relationship between sequence diagram and use cases
21	Logical architecture and UML package diagram
22	Logical architecture refinement
23	UML class diagram
24	UML interaction diagram
25	**Demonstration of Sequence diagram designing using UML Designing tool**
26	Design Issues, Unified Approach to design
27	Partitioning of analysis model, Concurrency and subsystem allocation,
28	Task management component. User interface component,
29	Data management component, Resource management component,
30	Inter-subsystem, Communication, Object description,
31	Data structure, Component and interfaces,
32	Design Patterns and reuse,
33	Elaboration and implementation of Use cases Class,
34	Object collaboration, Interaction,
35	Working with State Transition diagram
36	**Issuing and discussion on Assignment-3/Case Study-3**
37	GRASP: Designing objects with responsibilities
38	Responsibility of Creator – Information expert – Low Coupling – Controller
39	High Cohesion – Designing for visibility
40	Applying GoF design patterns – adapter, singleton, factory and

	observer patterns
41	UML state diagrams and modeling
42	Operation contracts- Mapping design to code
43	UML deployment and component diagrams
44	**Revision and resolving students issues**
45	**Presentation of Assignment and Oral/viva**

NOTE: The schedule is subject to change at the discretion of the Instructor.