

EASWARI ENGINEERING COLLEGE
DEPARTMENT OF INFORMATION TECHNOLOGY
LESSON PLAN

SUBJECT CODE : CS 2353

SUBJECT TITLE : OBJECT ORIENTED ANALYSIS AND DESIGN

HOURS DISTRIBUTION : (L T P C 3 0 0 3)

COURSE/ BRANCH : B.Tech (Information Technology)

SEMESTER : VI

ACADEMIC YEAR : 2014 - 2015

FACULTY NAME : A.L.AGASTA ADLINE

OBJECTIVE OF COURSE :

The student should be made to:

- Learn the basics of OO analysis and design skills
- Learn the UML design diagrams
- Learn to map design to code
- Be exposed to the various testing techniques

OUTCOME OF COURSE :

At the end of the course, the student should be able to:

- Design and implement projects using OO concepts
- Use the UML analysis and design diagrams
- Apply appropriate design patterns
- Create code from design
- Compare and contrast various testing techniques

PREREQUISITE: Object Oriented Programming concepts, Software Engineering phases and models, Software testing techniques

Sl.No	TOPIC	No. of Periods	Reference Books	Page No.
UNIT I (9)				
Objectives:	To make the students understand the basics of OOA, OOD and UML. To make them learn the use case modelling notations, guidelines and use case relationships			
1	Introduction to OOAD – What is OOAD?	1	T1	7
2	What is UML?	1	T1	11-14
3	What are the United process(UP) phases	1	T1	33-34
4	Case study – the NextGen POS system	1	T1	43-44
5	Inception	1	T1	47-51
6	Use case Modeling – Definitions	1	T1	61-77
7	Use case Modeling - Notation ,Example	1	T1	78-79
8	Use case Modeling – Guidelines	1	T1	80-88
9	Relating Use cases – include, extend and generalization.	1	T1	493-500
Outcome:	Students will be able to design projects using OO concepts, and do use case modeling.			
UNIT II (9)				
Objectives:	To make the students learn the basics of domain models and classes. To make the students understand and learn the UML activity diagrams.			
10	Elaboration	1	T1	124-130
11	Domain Models	1	T1	131-139
12	Finding conceptual classes and description classes	1	T1	139-149
13	Associations	1	T1	149-158
14	Attributes	1	T1	158-166
15	Domain model refinement	1	T1	501-504
16	Finding conceptual class hierarchies	1	T1	505-514
17	Aggregation and Composition	1	T1	519-521
18	UML activity diagrams and modelling	1	T1	477-484
Outcome:	Students can identify classes, attributes and relationships. They can also do domain modeling.			
UNIT III (9)				
Objectives:	To make the students learn the UML interaction and class diagrams. To make the students understand the logical architecture.			
19	System sequence diagrams -Relationship between sequence diagrams and use cases	1	T1	173-177
20	Logical architecture	1	T1	197-201
21	UML package diagram	1	T1	201-211
22	Logical architecture refinement	1	T1	559-571
23	Logical architecture refinement - Other layer pattern issues	1	T1	571-577
24	UML class diagrams -definition, classifier,attributes, operations & methods, keywords, stereotypes	1	T1	249-260

25	UML class diagrams- generalization, dependency, interfaces,constraints, association,singleton classes, template classes, active class	1	T1	260-270
26	UML interaction diagrams - sequenceand communication diagrams, common UML interaction diagram notation	1	T1	221-227
27	UML interaction diagrams- basic sequence diagram notation, basic communication diagram notation	1	T1	227-247
Outcome:	Students can identify the relationship between interaction diagrams and usecases. They can also apply appropriate design patterns and will be able to depict interaction and class diagrams.			
UNIT IV (9)				
Objectives:	To make the students learn GRASP- Methodological approach to basic OO design. To make the students understand the the GoF design patterns.			
28	GRASP: Designing objects with responsibilities	1	T1	271-280
29	GRASP: Creator – Information expert	1	T1	280-283
30	Low coupling –Controller –High Cohesion	1	T1	283-291
31	Applying GRASP to object design-creator, information expert	1	T1	291-299
32	Applying GRASP to object design-Low coupling –Controller –High Cohesion	1	T1	299-318
33	Designing for visibility	1	T1	363-368
34	Applying GoF design patterns- adapter, GRASP principles,factory	1	T1	435-442
35	Applying GoF design patterns-singleton, strategy	1	T1	443-452
36	Applying GoF design patterns- observer patterns	1	T1	463-471
Outcome:	Students will be able to do OO design using GRASP. They can also apply the GoF design patterns and principles.			
UNIT V (9)				
Objectives:	To make the students understand and learn the UML state, deployment and component diagrams. To make the students do forward engineering.			
37	UML state diagrams and modeling - Introduction, Definitions	1	T1	485-487
38	UML state diagrams and modeling -Apply state machine diagrams	1	T1	487-490
39	UML state diagrams and modeling - Examples: NextGen	1	T1	490-492
40	Operation contracts - Introduction, Definitions	1	T1	181-187
41	Operation contracts - Example,guidelines	1	T1	187-189
42	Operation contracts -NextGen POS & Monopoly contracts	1	T1	190-193
43	Mapping design to code	1	T1	369-376
44	UML deployment diagrams	1	T1	651-653
45	UML component diagrams	1	T1	653-654

Outcome:	Students can construct state, deployment and component diagrams. They also perform code generation.
Total	45

Assignment Topics

SL.NO	ASSIGNMENT TOPICS	SUBMISSION DUE
1	Testing: Issues in OO Testing – Class Testing – OO Integration Testing –GUI Testing – OO System Testing	25.01.2015
2	UML diagrams - Case Study	15.02.2015
3	Test case generation from UML diagrams.	22.03.2015

Beyond Syllabi Topics

1. Advanced State Modeling: state diagrams; Nested states; Relation of class and state models
2. Agile Methodology and OOAD

Text books :

- T1 Thomas Erl, "Service-Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 2005.

References:

- R1. Thomas Erl, "SOA Principles of Service Design "(The Prentice Hall Service-Oriented Computing Series from Thomas Erl), 2005.
- R2. Newcomer, Lomow, "Understanding SOA with Web Services", Pearson Education, 2005.
- R3. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services, An Architect's Guide", Pearson Education, 2005.
- R4. Dan Woods and Thomas Mattern, "Enterprise SOA Designing IT for Business Innovation" O'REILLY, First Edition, 2006.

Prepared By

Approved By

A.L.Agasta Adline

HOD

PROGRAMME EDUCATIONAL OBJECTIVES

1. Graduates will be proficient in utilizing the fundamental knowledge of basic sciences and mathematics to the applications relevant to various streams of Engineering and Technology.
2. Graduates will possess core competencies necessary for application of knowledge of computers and telecommunications equipment to store, retrieve, transmit, manipulate and analyze data in the context of business enterprise.
3. Graduates will be capable of thinking logically, pursue lifelong learning and will have the capacity to understand technical issues related to computing systems and design optimal solutions.
4. Graduates will be able to develop hardware and software systems by understanding the importance of social, business and environmental needs in the human context.
5. Graduates will gain employment in organizations and establish themselves as professionals by applying their technical skills to solve real world problems and meet the diversified needs of industry, academia and research.
6. Graduates will be aware of professional ethics of the software industry and equip themselves with communication skills essential for working in community.

PROGRAMME OUTCOMES(a-l)

- (a) Ability to apply knowledge of computing and mathematics appropriate to Information Technology
- (b) Ability to analyze a problem, and identify computing requirements appropriate to its solution
- (c) Ability to design, implement, and evaluate a system, process, component, or program to meet specific requirements
- (d) Ability to interpret and synthesis data to provide valid conclusions
- (e) Ability to function effectively as a team member to achieve a common goal
- (f) Ability to understand professional, ethical and social issues and responsibilities
- (g) Ability to communicate effectively with a diverse groups
- (h) Ability to analyze the local and global impact of Information Technology on society
- (i) Ability to recognize and engage in continuing professional development and lifelong learning
- (j) Ability to use current techniques, skills, and tools necessary to accomplish projects related to Information Technology.
- (k) Ability to understand the impact of the professional engineering solutions in societal and environmental contexts for sustainable development.
- (l) Ability to understand engineering and management principles to manage projects in multidisciplinary environment.

MAPPING OF COURSE OUTCOMES WITH PEOs & POs

UNITS	Course outcome	PEO1	PEO2	PEO3	PEO4	PEO5	PEO6	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	Students will be able to design projects using OO concepts, and do use case modelling.	H	W	M	W	M	W	H	H	H	M	W	W	W	H	M	H	W	H
2	Students can identify classes, attributes and relationships.	H	H	M	W	H	W	H	H	H	M	W	W	W	W	W	H	W	M
	They can also do domain modelling.	M	H	M	W	H	W	H	H	H	M	M	W	M	M	M	H	W	H
3	Students can identify the relationship between interaction diagrams and use cases.	H	H	M	H	H	W	H	H	H	M	W	W	W	W	W	H	W	M
	They can also apply appropriate design patterns and will be able to depict interaction and class diagrams.	H	H	M	W	H	W	H	H	H	H	W	W	W	W	M	H	W	H
4	Students will be able to do OO design using GRASP.	H	H	H	M	H	W	H	H	H	H	W	W	M	W	M	H	W	H
	They can also apply the GoF design patterns and principles.	H	H	H	W	H	W	H	H	H	H	W	W	W	W	M	H	W	H
5	Students can construct state, deployment and component diagrams.	H	H	M	W	H	W	H	H	H	H	M	W	W	W	W	H	W	M
	They also perform code generation.	M	H	H	H	H	M	H	H	H	H	M	W	M	W	M	H	W	H

S- STRONG

M-MEDIUM

W-WEAK