PG DEPARTMENT OF COMPUTER SCIENCE				*CLASS: I M.Sc.* Computer Science				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Contact Hours/week**	**CIA**	**Ext**	**Total**
I	Elective - 1	21P1DME1(C)	Object Oriented Analysis And Design	4	5	25	75	100

Nature of Course				
Knowledge and skill	✓		Employability oriented	
Skill oriented			Entrepreneurship oriented	

Course Objectives

1. To impart knowledge of object basics and life cycle.
2. To learn the various methods for constructing UML.
3. To understand Object oriented concepts with Use cases.
4. To know the importance of object oriented designing.
5. To apply the concepts of software quality and testing.

Unit	Content	Hrs	K-Level	CLO
I	**Introduction: An overview:** Introduction – Two orthogonal views of the software – Object-oriented systems development methodology – overview of unified approach. **Object basics:** object state and properties – Object behaviour and methods – object responds to message – Encapsulation and Information hiding-Class hierarchy – object relationships and associations – Aggregations and object containment – Advanced topics. **Object Oriented System development life cycle**: Introduction – software development process – building high quality software – Use-case driven approach- reusability.	15	Up to K2	1
II	**Methodology and UML: Object – Oriented Methodologies:** Introduction – Survey – Rumbaugh, Booch, Jacobson methodologies – Patterns – Frameworks – Unified approach. **Unified modeling language:** Introduction- Static and Dynamic models – UML diagrams – Class diagram - Use case diagrams – Dynamic modelling – Model organization – Extensibility.	15	Up to K4	2
III	**Object – Oriented Analysis: Use-Case Driven: Object – Oriented Analysis Process: Identifying Use Cases:** Introduction – Understanding the business layer – the unified approach – business process modeling – use case model – developing effective documentation. **Object – Oriented Analysis: Classification:** Introduction – classification theory – naming classes. **Identifying Object Relationships, Attributes and Methods:** Super-Sub class relationships – Aggregation – methods and messages – defining methods for Via Net Bank objects	15	Up to K3	3

IV	**Object – Oriented Design : Object – Oriented Design Process and Design Axioms:** Object – oriented design axioms – Corollaries – design patterns. **Designing Classes:** Class visibility – refining attributes – designing methods and protocols. **Access Layer:** OODBMS: The pure world - Object relational systems: The Practical world – multi database systems. **View Layer:** Macro level process – micro level process – the purpose of a view layer interface.	15	Up to K3	4
V	**Software Quality: Software Quality Assurance:** Introduction – quality assurance test – testing strategies - Impact of Object Orientation on Testing – Test cases – Test plan – continuous testing. **System usability and measuring user satisfaction:** Introduction – Usability Testing – user satisfaction test.	15	Up to K4	5

Book for study

"Object Oriented Systems development" by Ali Bahrami, McGraw Hill Education (India) Private Limited, Edition 2008.

Chapters

Unit I - 1.1, 1.2, 1.3, 1.5, 2.5, 2.6, 2.7, 2.8, 2.9, 2.11, 2.12, 2.14, 3.1 to 3.5
Unit II - 4, 5
Unit III – 6.1, 6.3, 6.4, 6.5, 6.6, 6.7, 7.1, 7.2, 7.8, 8.3, 8.4, 8.9, 8.10
Unit IV – 9.3, 9.4, 9.5, 10.5, 10.6, 10.8, 11.7, 11.8, 11.9, 12.4, 12.5, 12.6
Unit V – 13.1 to 13.7, 14.1, 14.2, 14.3

Books for Reference

1. "Object Oriented Analysis and Design using UML" by Jaya Mala, S. Geetha, McGraw Hill Education, 2013.
2. "Object Oriented Analysis and Design" by Atul Kahate, Tata McGraw Hill Education, 2004.
3. "Object-Oriented Analysis and Design Using UML" by Mahesh P.Matha, PHI Learning Private Limited, 2012.

Web Resources

1. http://www.dba-oracle.com/t_object_oriented_analysis_models.html
2. https://creately.com/blog/diagrams/uml-diagram-types-examples/
3. https://www.geeksforgeeks.org/unified-modeling-language-uml-introduction/

Rationale for Nature of the course

- Improve the quality and productivity of system analysis and design and focus on behaviour of information system into small modules that combines both data and process

Activities on Knowledge and Skill

1. Group Discussion
2. Quiz
3. Seminar

Pedagogy

Chalk and talk Materials, PPT, Assignment, Seminar, Group Discussion and Interaction.

Course Designer(s) Name

1. Mrs. S. Rajalakshmi
2. Mrs. R. Lakshapriya

Lesson Plan

UNIT	Topics to be Covered	Hours	Mode
I	An overview. Object basics. Object Oriented System development life cycle.	5 5 5	Lecture Lecture Lecture & GD
II	Object – Oriented Methodologies. Unified modeling language.	7 8	Lecture Lecture, PPT
III	Object – Oriented Analysis Process: Identifying Use Cases. Object – Oriented Analysis: Classification. Identifying Object Relationships, Attributes and Methods.	6 4 5	Lecture Lecture Lecture
IV	Object – Oriented Design Process. Designing Classes. OODBMS.	5 5 5	Lecture Lecture Lecture & GD
V	Software Quality Assurance. System usability and measuring user satisfaction.	8 7	Lecture Lecture, Assignment

Course Learning Outcomes

On the completion of the course, the students will be able to

CLOs	COURSE LEARNING OUTCOMES	K - Level
CLO 1	Summarize the basics of Objects. Describe the life cycle for object development.	**Up to K2**
CLO 2	Classify various UML methodologies. Construct various UML diagrams.	**Up to K4**
CLO 3	Identify the relationships between attributes and Use cases.	**Up to K3**
CLO 4	Evaluate the process of designing in OOAD. Measure the need of different layers.	**Up to K3**
CLO 5	Describe various testing strategies and the usability level of a product.	**Up to K4**

(3– Advanced Application, 2 – Intermediate Level, 1- Basic Level)

Mapping of CLOs with POs

CLOs / POs	PO1	PO2	PO3	PO4	PO5
CLO1	2	2	1	1	-
CLO2	2	3	3	2	2
CLO3	2	3	2	1	-
CLO4	2	3	3	3	-
CLO5	2	3	1	1	2

Continuous Internal Assessment (CIA): 25 Marks

Components	Marks	K Level
Test (Average of two tests) (Conducted for 40 marks and converted into 10 marks)	10	(Refer Next Table)
Assignment	5	K4
Seminar	5	K4
Quiz	5	K4
Total	25	

Learning Outcome Based Education & Assessment (LOBE)

Formative - Blue Print – Model for Object Oriented Analysis and Design
Articulation Mapping – K Levels with Courses Learning Outcomes (CLOs)

Internal	CLOs	K- Level	Section A		Section B (Either/or Choice)	Section C (Open Choice)
			Short Answers			
			No. of Questions	K- Level		
CIA I	CLO 1	Up to K2	2	K1	2(K1&K1)	2(K2)
	CLO 2	Up to K4	3	K2	2(K4&K4)	1(K4)
CIA II	CLO 3	Up to K3	2	K1	2(K2&K2)	2(K3)
	CLO 4	Up to K3	3	K2	2(K3&K3)	1(K3)
Question Pattern (CIA I & II)	No. of Questions to be asked		5		4	3
	No. of Questions to be answered		5		2	2
	Marks for each question		2		5	10
	Total Marks for each section		**10**		**10**	**20**

- *CLO5 will be allotted for individual Assignment which carries five marks as part of CIA component.*