PSN COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous)
Melathediyoor, Tirunelveli – 627152

Department of Computer Science and Engineering

COURSE FILE
(Regulation 2018)

Subject Code	: 503014
Subject Name	: OBJECT ORIENTED ANALYSIS AND DESIGN
Regulation	: REGULATION 2018
Semester	: V
Academic Year	: 2023 - 2024
Department	: COMPUTER SCIENCE AND ENGINEERING
Degree & Programme	: B.E. COMPUTER SCIENCE AND ENGINEERING
Prepared By	
Name	: Mrs. A.Enitha
Designation	: Assistant Professor
Department	: Computer Science and Engineering

Course File Verification and Auditing

Part-I
(At the beginning of the semester)

Submission Date	Check List								Verified by HOD	Verified by Academic Auditor
	Vision and Mission	Course Description, Objective and Outcomes	CO-PO mapping	Course Plan and Target	Syllabus and Content beyond Syllabus	Assignments & additional resources	Course Delivery Plan	University Question Papers		

Part-II
(After CAT - I)

Submission Date	Check List					Verified by HOD	Verified by Academic Auditor
	Syllabus Coverage	Notes and Other Materials	Performance Analysis	Feedback	Proof for Participatory Learning		

Part-III
(After CAT - II)

Submission Date	Check List					Verified by HOD	Verified by Academic Auditor
	Syllabus Coverage	Notes and Other Materials	Performance Analysis	Question Papers and Keys	Proof for Participatory Learning		

Part-IV
(After Model examination)

Submission Date	Check List					Verified by HOD	Verified by Academic Auditor
	Syllabus Coverage	Notes and Other Materials	Performance Analysis	Question Papers and Keys	Proof for Participatory Learning		

Semester Academic Audit

Audit Remarks:
Signature of the Auditor(s):

Signature of Director (Academics) Signature of Principal

Contents

33	Students' group list for topic discussion	
34	Course Review & Closure Report	

COURSE PLAN

R- 2018

Subject Name & Code	**OBJECT ORIENTED ANALYSIS AND DESIGN & 503014**
Course Type	**Core Paper**
Programme	**B. E Computer Science an d Engineering**
Year/ Semester/ Section	**III / V**
Nature of Course / Credit	**Theory / 3**
Course Coordinator	**Mrs.A.ENITHA**

VISION AND MISSION OF THE INSTITUTE:

Institution Vision	Emerge as a pioneer institute inculcating engineering education and skills, research, values and ethics.	
Institution Mission	**IM-1**	To achieve greater heights of excellence in technical knowledge and skill development through innovative teaching and learning practices.
	IM-2	To develop the infrastructure to meet the demands of technological revolution.
	IM-3	To improve and foster research in all dimensions for betterment of society.
	IM-4	To develop individual competencies to enhance employability and entrepreneurship in students.
	IM-5	To instill higher standards of discipline among students, inculcating ethical and moral values for societal harmony and peace.

VISION AND MISSION OF THE DEPARTMENT:

Department Vision	To emerge as a preeminence program to produce quality Computer Science and Engineering graduates	
Department Mission	**DM-1**	To enhance professional and entrepreneurial skills through industry institute interaction to enable them in getting better placement
	DM-2	To promote research and continuing education
	DM-3	To train the students according to their discipline to meet dynamic needs of the society

1. PRE REQUISITES

- OOPS Concepts
- Software Engineering

2. COURSE DESCRIPTIONS

- Regardless of the software development approach, from the classic waterfall to extreme programming (XP), all of the experts agree that quality software development requires both analysis and design.

- The Unified Modeling Language (UML) provides a common, standard notation for recording both analysis models and design artifacts.

- This course delves into the processes of both object-oriented analysis and object- oriented design using UML as the notation language.

3. CARRIER OPPORTUNITIES:

Job Description:

- Ability to design and code right solutions starting with broadly defined problems
- Strong Analytical and Problem Solving skills
- Able to write well designed, accurate, testable, modular, maintainable code
- Java Developer & Java Backend Developer – OOPS/OOAD
- Dot Net Developer
- Python Developer
- Full Stack Developer
- Design Patterns

4. SYLLABUS

UNIT – I	INTRODUCTION	Hrs
An Overview of Object-Oriented Systems Development - Object Basics -Object Oriented Systems Development Life Cycle: Introduction – The software development process – Building high quality software – Object oriented systems development.		9
UNIT - II	**OBJECT ORIENTED METHODOLOGIES**	**Hrs**
Introduction – Survey - Rumbaugh Methodology - Booch Methodology -Jacobson Methodology - Patterns - Frameworks - Unified Approach - Unified Modeling Language: Introduction – Static and dynamic models – Why modeling – Introduction to UML – UML diagrams: class diagram -Use case diagram –dynamic modeling.		9
UNIT - III	**OBJECT ORIENTED ANALYSIS**	**Hrs**
Introduction – Why analysis is a difficult activity – Business object analysis –Use case driven object-oriented analysis Business process modeling – Use case model – Developing effective documentation – Case study - Object Analysis: Classification - Identifying Object relationships, attributes and methods.		9
UNIT – IV	**OBJECT ORIENTED DESIGN**	**Hrs**
Introduction – The object-oriented design process – Object oriented design axioms – Corollaries – Design patterns - Designing Classes - Class Visibility: Designing well-defined Public, Private and Protected Protocols – Designing Classes - Access Layer: Object Storage and Object Interoperability.		9
UNIT – V	**DOMAIN MODELS**	**Hrs**
Domain Models-Finding conceptual classes and description classes-Associations - Attributes-Domain model refinement-Finding conceptual class Hierarchies-Aggregation and Composition Case Study-the next Gen POS system, Inception-Use case Modeling-Relating Use cases-include, extend and Generalization - Elaboration.		9

Total: 45 Period

5. COURSE OUT COMES

CO's	CO – STATEMENTS	BLOOMS LEVEL	PO's
CO 1	To understand the object oriented life cycle.	K1	2,2
CO 2	To identify objects, relationships, services and attributes through UML.	K2	2,2,3
CO 3	Analyse how to draw the use-case diagrams.	K4	2,2
CO 4	To understand the Object Oriented Design process.	K1	2,2
CO 5	To learn about software quality and usability.	K2	3,3

6. INSTRUCTIONAL LEARNING OUTCOMES

UNIT	LEARNING OUTCOMES
I	The outcome will be assess through assignment-1, Class test -1, MCQ Test-1, CAT-1.
II	The outcome will be assess through assignment-2, Class test -2, MCQ Test-2, CAT-1
III	The outcome will be assess through assignment-3 Class test -3, MCQ Test-3, CAT-2.
IV	The outcome will be assess through assignment-4, Class test -4, MCQ Test-4, CAT-2.
V	The outcome will be assess through assignment-5, Class test-5, MCQ Test-5, CAT-3.

7. PROGRAMME EDUCATIONAL OBJECTIVES (PEO's)

S. No	Objective	PEOs
PEO1	Fundamental Knowledge	Graduates will be able to perform in technical and managerial roles ranging from design, development and problem solving to suit to the industrial needs
PEO2	Career Development	Graduates will be able to successfully pursue higher education, Graduates will have the ability to adapt, contribute and innovate new technologies in different domains of computer science & Engineering
PEO3	Social Identity	Graduates will be ethically and socially responsible engineers in computer science & Engineering disciplines

8. PROGRAM OUTCOMES [PO's]

PO's No	KNOWLEDGE	STATEMENTS	APPLIANCE
1	Engineering Knowledge	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	Theory/ Practical / Project work
2	Problem Analysis	Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	Theory / Practical / Projects
3	Design / Development of Solutions	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	Theory / Practical / Projects
4	Conduct Investigations of	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of	Theory / Practicals

	Complex Problems	data, and synthesis of the information to provide valid conclusions.	
5	Modern Tool usage	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.	Theory / Practical / Project work
6	The Engineer and Society	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.	Theory / Industrial visit / In plant training
7	Environment and Sustainability	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.	Theory / Industrial Visit/ In plant Training
8	Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	Theory / Industrial visit / In plant training
9	Individual and Team Work	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	Projects
10	Communication	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	Projects/ Seminar/ Mini Project
11	Project Management and Finance	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	Projects
12	Life-long Learning	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	Projects / Higher Studies

9. PROGRAMME SPECIFIC OBJECTIVE (PSO's)

PSO1	Proficient and Innovative with a strong cognizance in the IOT, through the Application of acquired knowledge and skills.

PSO2	Design and Implement IOT based solutions for improving operational efficiency by investigating existing industrial environment.

10. CO- PO MAPPING

CO's NO	COURSE OUTCOME	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1	To understand the object oriented life cycle.	2	2										2		
CO2	To identify objects, relationships, services and attributes through UML.	2	2						2				2		
CO3	Analyze how to draw the use-case diagrams.		2				2						2		
CO4	To understand the Object Oriented Design process.		2										2		
CO5	To learn about software quality and usability.		3										2		

11. TEXT BOOK & REFERENCE BOOK LIST

Sl. No	Description	Legend
Text Book(s):		
1	Grady Booch "Object oriented analysis and design with applications", Pearson Education, First impression, 2010.	T1
Reference Book(s):		
1	G Sudha Sadasivan, "Object-Oriented Analysis and Design", First Edition, Macmillan, 2009.	R1
2	Applying UML and Patterns: An Introduction to object- oriented Analysis and Design and iterative development, Craig Larman, ", Third Edition, Pearson Education, 2012	R2

12. Web Resources

Sl. No	Topic	Web link
1.	OOAD with UML Training	https://www.webagesolutions.com/courses/TP1136- ooad-with-uml

13. E- learning / NPTEL

NPTEL/ OTHER UNIVERSITY video lectures related to syllabus:

Video	https://nptel.ac.in/courses/106/105/106105153/
Lecture Notes	https://www.smartzworld.com/notes/object-oriented-analysis-design- notes-pdf-ooad-notes-pdf/

14. MAGAZINE & JOURNALS

Magazine	*https://www.computer.org/csdl/magazine/co/1995/03/r3092/13rRUytWFcp*
Journals	*https://ieeexplore.ieee.org/document/7474471*

15. LESSON PLAN

S. No.	Unit	Topic to be covered	Hours Needed	Mode of Teaching (BB/ PPT/ Others)	Text/ Ref. Book	Page No.
		Introduction				
1	I	An Overview of Object Oriented Systems Development Object Basics	1	**PPT**	Text Book	3
2		Object Oriented Systems Development Life Cycle	2	**PPT**	Text Book	7
3		Introduction : The software development process	2	**PPT**	Text Book	12
4		Building high quality software	2	**PPT**	Text Book	14
5		Object oriented systems development.	2	**PPT**	Text Book	24
		Object Oriented Methodologies				
6	II	Introduction , Survey ,Rumbaugh Methodology	2	**PPT**	Text Book	29
7		Booch Methodology ,Jacobson Methodology ,Patterns	1	**PPT**	Text Book	37
8		Frameworks ,Unified Approach	2	**PPT**	Text Book	43
9		Unified Modeling Language: Introduction	1	**PPT**	Text Book	71
10		Static and dynamic models , Why modeling – Introduction to UML	1	**PPT**	Text Book	75
11		UML diagrams: class diagram	2	**PPT**	Text Book	88
12		Use case diagram ,dynamic modeling			Text Book	92
13	II*	Toxic chemical substances spraying robot and skyscrapers's glass washing robot *	1	**PPT**	Web	

		Object Oriented Analysis				
14	**III**	Introduction ,Why analysis is a difficult activity	2	**PPT**	Text Book	96
15		Business object analysis , Use case driven object oriented analysis Business process modeling	2	**PPT**	Text Book	111
16		Use case model , Developing effective documentation	1	**PPT**	Text Book	112
17		Case study , Object Analysis: Classification	2	**PPT**	Text Book	121
18		Identifying Object relationships, attributes and methods	2	**PPT**	Text Book	126
		Object Oriented Design				
19	**IV**	Introduction ,The object oriented design process	1	**PPT**	Text Book	147
20		Object oriented design axioms , Corollaries	2	**PPT**	Text Book	155
21		Design patterns ,Designing Classes	2	**PPT**	Text Book	163
22		Class Visibility: Designing well-defined Public, Private and Protected Protocols	2	**PPT**	Text Book	171
23		Designing Classes	1	**PPT**	Text Book	175
24		Access Layer: Object Storage and Object Interoperability	1	**PPT**	Text Book	185
25	**IV***	SCADA systems in wastewater treatment*	1	**PPT**	Web	
		DOMAIN MODELS				
26	**V**	Domain Models-Finding conceptual classes and description classes	2	**PPT**	Text Book	192
27		Associations, Attributes	2	**PPT**	Text Book	206
28		Domain model refinement-Finding conceptual class Hierarchies	2	**PPT**	Text Book	213
29		Aggregation and Composition Case Study,the next Gen POS system	1	**PPT**	Text Book	215
30		Inception-Use case Modeling	1	**PPT**	Text Book	218
31		Relating Use cases-include, extend and generalization-Elaboration	1	**PPT**	Text Book	238
32	**V***	Application of Distributed Control System in automation of Process Industries*	1	**PPT**	Web	
					Total Hours Needed = 45+3=48 Hours	

*** Content beyond Syllabus**

Signature	Prepared by:	Approved by:	
Name :	**Mrs.A.ENITHA**	**DR.M.VARGHEESE**	**Dr. V. Manikandan**
Designation:	Assistant Professor	HoD / CSE	Principal
Date:			

NAME LIST

III CSE B

Sl. No.	REGISTER NUMBER	NAME OF THE STUDENT
1	95222103049	Nigila Kannan
2	95222103050	Nimesh Varshan S
3	95222103051	Pandi Selvam J
4	95222103052	Prabhu P
5	95222103053	Prakash Rajan K
6	95222103054	Prakash S
7	95222103055	Prasanna T
8	95222103056	RajKumar M
9	95222103057	Rakesh S
10	95222103058	RamKumar G
11	95222103059	Ramakrishnan N
12	95222103060	Ramalakshmi S
13	95222103061	Ravikumar C
14	95222103062	Renuku Devi B
15	95222103063	Rosan N
16	95222103064	Rose Mary J
17	95222103065	Sanjay Kumar R
18	95222103066	Sankar R
19	95222103067	Sathishkumar C
20	95222103068	Sathishkumar R
21	95222103069	Selvapriya R
22	95222103070	Selvaraj S
23	95222103071	Sembulingam S
24	95222103072	SenthurPandian T
25	95222103073	ShanmugaPriya M
26	95222103074	Siva Balan T
27	95222103075	Sivakumar S

28	95222103076	Sivasankari M
29	95222103078	Sri Ram N
30	95222103079	Srivarshini R
31	95222103080	Suba Sangeetha S
32	95222103082	Sudharsha Prabha U
33	95222103083	Valagurunathan S
34	95222103084	Vignesh G
35	95222103085	Vignesh T
36	95222103086	Vishnu Priya S
37	95222103087	Viswajith N
38	95222103088	Yogalakshmi K
39	95222103301	Mahalingam K
40	95222103302	Manjunath D
41	95222103303	Moammed Abdulla A
42	95222103304	Nirmal Kumar S
43	95222103305	Saravana Kumar S
44	95222103306	SimsonChelladurai D
45	95222103307	Singaravelan A

15. CLASS TIME TABLE:

PSN COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

Melathediyoor, Tirunelveli –627152
(Approved by AICTE and Recognized by UGC Section2f &12B)
(Accredited by NAAC with A+ Grade, Affiliated to Anna University)
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Website; www.psncet.ac.in **Email.ID:**principal@psncet.ac.in
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Department of Computer Science and Engineering

PSNCET/CSE/34/Academic Plan/23-24 (Odd)/01 **Date: 23.05.2023**

Time Table –AY 2023-24– ODD Semester – III CSE (B) w.e.f 01.06.23

Time	9.00am to 10.00am	10.00am to 11.00am	11.00amto 11.20am	11.20am to 12.10pm	12.10pm to 1.00pm	1.00pm to 2.00pm	2.00pm to 2.50pm	2.50pm to 3.40pm	3.40pm to 3.50pm	3.50pm to 4.40pm
Mon	IP(Test)	DSP	BREAK	NM	OOAD	LUNCH	OOAD LAB		BREAK	OOAD LAB
Tue	CE(Test)	IP		CD	NM		OOAD	DSP		LIBRARY
Wed	DSP(Test)	NM		VE	CE		IP	CD (PRAC. COMP.)(T)		CD (PRAC. COMP.)(T)
Thu	OOAD(Test)	CE		NM	CD		IP LAB			IP LAB
Fri	CD (Test)	OOAD		VE	IP		DSP (T)	CSDT III		CSDT III

Sl.No.	Subject Name	Credit	Hrs	Staff Name
1	503011 - Numerical Methods	3	4	Ms.SelvaRatna AP/Maths
2	503012 – Compiler Design (Practical Component Paper) (CD)	4	3+2	Ms.Sweta AP/CSE
3	503013 – Internet Programming	3	4	Ms.Booma AP/CSE
4	503014 – Object Oriented Analysis and Design	3	4	Mrs.A.Enitha, AP/CSE
5	503015 – Digital Signal Processing	4	4	Ms. Sundari.K, AP/ECE
6	Open Elective–I –505901- Consumer Electronics	3	3	Ms.Janagi .K., AP/ECE
7	503107 – Internet Programming Lab	2	3	Ms.Booma AP/CSE
8	503108 – Object Oriented Analysis and Design Lab	2	3	Mrs.A.Enitha, AP/CSE
9	501115-Career Skill Development Training – III (CSDT III)	2	2	Dr.Radhakrishnan,Asso.Prof / CSE
10	Library		1	Mrs.A.Enitha, AP / CSE
11	Mandatory Course : 501802 – Value Education and Human Rights	2	2	MBA Staff
12	In-plant Training			

Class Advisor: **Mrs.A.Enitha, AP / CSE**

Dept. TT Coordinator Coll.TT Coordinator HOD PRINCIPAL

Time	9.00am to 10.00am	10.00am to 11.00am	11.00amto 11.20am	11.20am to 12.10pm	12.10pm to 1.00pm	1.00pm to 2.00pm	2.00pm to 2.50pm	2.50pm to 3.40pm	3.40pm to 3.50pm	3.50pm to 4.40pm
Mon			BREAK		OOAD	LUNCH	OOAD LAB		BREAK	OOAD LAB
Tue							OOAD			
Wed										
Thu	OOAD(Test)									
Fri		OOAD								