GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Vocation (B.Voc), 3rd Semester
Branch: Information Technology
Subject Name: Object Oriented Analysis & Design
Subject Code: 1130503

Type of course: Core

Prerequisite: Software Engineering

Rationale: Object oriented modeling and design promotes better understanding of requirements; clear designs and gives maintainable systems. A good design leads to better implementation of product and saves on time.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	0	3	50	0	0	0	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA-Progressive Assessment

Content:

Sr. No.	Content	Total Hrs.	Module % Weightage
1	**Introduction** OO orientation, OO development, OO themes, Usefulness of OO Development Modeling as a Design Technique Modeling, Abstraction, The Three models	02	10
2	**Class Modeling** Object and Class concepts, Link and Association Concepts, Generalization and inheritance, Class Model, Navigation of Class model Advanced class Modeling Advanced object and class concepts, Association Ends, N-ary Associations, Aggregation, Abstract classes, Multiple inheritance, Metadata, Reification, Constraints, Derived Data,Packages	12	20
3	**State Modeling** Events, States, Transitions and Conditions, State Diagrams, State Diagram behavior Advance State Modeling Nested state diagram, Nested states, Signal Generalization, Concurrency, State Model, Relation of class and State Models Interaction Modeling Use case models, Sequence Models, Activity Models Advanced interaction Modeling Use case relations, Procedural sequence Models, Special constructs of activity Models	12	20
4	**Process Overview** Development stages, Development life cycle System conception Developing a system concept, Elaborating a concept, preparing a Problem statement Domain Analysis Overview of analysis, Domain class model, domain state model, domain interaction model, Iterating the analysis Application Analysis Application Interaction model, Application Class model, Application State Model, Adding operations	8	20

5	**System Design** Overview, Estimating performance, Making a reuse plan, breaking a system into subsystems, Identifying concurrency, Allocation of subsystems, Management of data storage, Handling global resources, Choosing a software control strategy, Handling boundary conditions, Setting trade off priorities, common architectural styles, Architecture of the ATM system Class Design Overview, gap , realizing use cases, Designing algorithms, Recursing downward, refactoring, Design optimization, Reification of behavior, Adjustment of inheritance, Organizing a class design, ATM example	8	30
	Total	**42**	**100**

Reference Books:

1. Software Testing & Quality Assurance Theory and Practice, Kshirsagar Naik and Priyadarshi Tripathy,Wiley Student edition
2. Software Testing, MG Limaye, Tata McGraw-Hill Education,2009
3. Software Project Management, Sanjay Mohapatra, Cengage Learning
4. Software Engineering: A practical Approach, Roger S.Pressman, McGraw-Hill

Suggested Specification table with Marks (Theory): (For BVOC only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	20	20	0	0	0

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Course Outcomes:

Sr. No.	CO Statement	Marks % Weightage
CO-1	Describe the static structure of a system.	20
CO-2	Describe the aspects of a system that change over time as well as control behavior.	20
CO-3	Describe how objects collaborate to achieve overall results.	20
CO-4	Formulate a model and device high level strategy for building a solution.	20
CO-5	Learning of different project management tools.	20

Laboratory work: NA

List of Open Source Software/learning website:

1. Object Oriented Modeling and design with UML, By Michael Blaha, James Rambaugh, Pearson
2. Object Oriented Analysis, Design and Implementation By Brahma Dathan, Sarnath Ramnath, University Press
3. Object Oriented Systems and Development By Ali Bahrami Tata McGrawHill Edition.