

GUJARAT TECHNOLOGICAL UNIVERSITY

MASTERS IN COMPUTER APPLICATION

Year – I (Semester – I) (W.E.F. JULY 2017)

Subject Name: Program Design Techniques (PDT)

Subject Code: 3610003

1. Objectives:

- To understand the need of Program Design Techniques
- Learning basics of Program Design techniques
- To get a clear idea of various strategies and patterns of Program Design techniques, their need, scenarios (Situations) and scope of their applicability.

2. Prerequisites: None

3. Course Contents:

Sr. No.	Course Content	No. of Sessions
1	Unit 1 : Introduction Software Design Design Process: What is design, Role of design activity, Design as a problem solving , Design as a wicked problem Software Design Process: what is software, building models, transferring design knowledge, constraints upon the design process and product, Recording design decisions, designing with others. Design in the Software Development Design: A context for design, Linear development process, Incremental development process, Economic factors, the longer term	08
2	Unit 2 : Effective Design Solutions Describing a design solution: Representing abstract ideas, Design viewpoints for software, Forms of notation Transferring Design Knowledge: the need to share knowledge, the architecture concept, design methods, design patterns, A uniformed interpretations	07
3	Unit 3: Design Methods Design Representations: A problem of selection, Black-box and white box notations, Developing a diagram Rationale for methods: what is software design method, the support that design methods provide, why methods donot work miracles, problem domains and their influence	09

4	Unit 4: Design Process and Strategies Design process and strategies: the role of strategy in methods, Describing the design process-the D-Matrix, Design by top-down decomposition, Design by composition, Organizational influence	04
5	Unit 5: Design Practices Stepwise refinement: the historical role of stepwise refinement, architectural consequences, strengths and weaknesses of stepwise strategy Incremental Design : Black box and white box stages, prototyping, An example DSDM	05
6	Unit 6: Structural Systems Analysis and Structured Design Origins, development and philosophy, Representation forms for SSA/SD. The SSA/SD process, the role of heuristics in SSA/SD, External forms of SSA/SD, SSA/SD: an outline example	06
7	Unit 7: Designing with objects: The object concepts, Design practices for the object-oriented paradigm, Object oriented frameworks, Object based design, Object oriented design Component-based Design : The component concepts, Designing with components, Designing components, At the extremity - COTS	11

4. Text Book(s):

1. David Budgen, Software Design , Pearson, ISBN 978-81-317-1868-1

5. Unit wise coverage from Text book(s):

Unit 1	Topics
I	Chapter 1,2,3
II	Chapter 5,6
III	Chapter 7, 8
IV	Chapter 9
V	Chapter 11,12
VI	Chapter 13
VII	Chapter 16, 17

Suggested Tutorial:

- **Function Decomposition diagram :** Draw function decomposition diagram for Food Ordering System
- **Data Flow Diagram :** draw Level 0 and 1 data flow diagram for Food Ordering system

6. Accomplishments of the student after completing the course:

- Gain an insight into the programming design techniques