

# GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Semester: III

Mechanical(Machine Design)

Subject Name: **Product Design (Major Electives IV)**

| Sr.No | Course content                                                                                                                                                  |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.    | <b>Introduction to product development.</b>                                                                                                                     |
| 2.    | <b>Product development process tools:</b><br>Product development teams and planning.                                                                            |
| 3.    | <b>Scoping Product development:</b><br>Determining what to develop, Mission statement and Technical questioning, Business case analysis, Design drivers.        |
| 4.    | <b>Understanding Consumer Needs:</b><br>Customer satisfaction, gathering customer needs, organizing and prioritizing customer needs.                            |
| 5.    | <b>Establishing Product needs:</b><br>Functional development, function trees, establishing system functionality, Augmentation, functional common basis.         |
| 6.    | <b>Product Tear down and Experimentation:</b><br>Tear down process, methods and application.                                                                    |
| 7.    | <b>Benchmarking and Establishing Engineering Specification:</b><br>Benchmarking approach, Support tools for Benchmarking, Setting product specification.        |
| 8.    | <b>Product Architecture:</b><br>Product Modularity, Modular design by clustering and functional methods.                                                        |
| 9.    | <b>Generating Concepts:</b><br>Basic methods and advanced methods.                                                                                              |
| 10.   | Concept Selection; Estimating Technical Feasibility, Concept selection processes, basic and advanced methods; Concept Embodiment; Modelling of Product Metrics. |

## Reference Books:

1. Kevin Otto, Kristin Wood, Product Design – Techniques in Reverse Engineering and New product Development
2. Eary and Johnson, Process Engineering
3. George E Dieter, Engineering Design, McGrawhill int. Edition
4. Chittle, Product Design, PHI