



FUNCTIONAL AND CONCEPTUAL DESIGN

PROF.ASOKAN T

Department of Design Engineering
IIT Madras

TYPE OF COURSE : New | Core | UG/PG

COURSE DURATION : 12 weeks (20 Jul' 20 - 9 Oct' 20)

EXAM DATE : 17 Oct 2020

INTENDED AUDIENCE : Undergraduate/graduate students interested in new product development

COURSE OUTLINE :

Introduce Engineering Design as a structured process, different from the Conventional Design Engineering. Learn the importance of Systematic Design Process in Product Design Identify various steps involved in the design process. Learn the importance of function and form in the design process Apply the systematic design process for product development.

ABOUT INSTRUCTOR :

Dr Asokan T is a Professor in the department of Engineering Design and currently the Head of the Department. He has more than 25 years of professional experience in teaching and research. He has been teaching the course on Functional and Conceptual Design for the last 10 years for the undergraduate students. He is active in the design and development of products and has more than 18 patents filed/granted in India and abroad.

COURSE PLAN :

Week 1: Overview of the design process- How Engg. Design is different from conventional design

Week 2: Steps in Design Process: Understanding the Opportunity, Mission statement

Week 3: Customer need identification- Like/Dislike Method, Affinity diagram

Week 4: Product Specifications: Design Metrics, Bench marking, QFD

Week 5: HoQ and examples

Week 6: Functional Design: Functional Decomposition- FAST, Function structure, Function tree

Week 7: Functional Decomposition- Examples

Week 8: Product Architecture: Portfolio architecture

Week 9: Unshared, Modular, customizable architectures; Choosing portfolio architecture, Module heuristics

Week 10: Concept Development – Converting functions to concepts, Concept development tools- Intuitive and Logical Methods

Week 11: Brainstorming, 6-3-5, TRIZ

Week 12: Concept selection- Concept screening, scoring and ranking