M6401 PRODUCT DESIGN AND DEVELOPMENT
[Lecture: 39 hours]

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1. OBJECTIVE AND SCOPE

The commercial success of a manufacturing firm depends upon its ability to identify the needs of the customers and to quickly create products that satisfy these needs and these products can be produced effective, efficiently and economically. To meet these goals, it requires the contributions of various different functions, including marketing, design, manufacturing, etc. in a multi-disciplinary and cross-functional approach. Product design and development will be such a subject to provide for an overview of this approach and describe the functional requirements that make this approach successful. Covered within this subject are the need for and what is a multi-disciplinary, cross-functional approach, the product development processes, the various product development strategies, e.g. total design approach, functional approach, etc., needs finding and identifications, establishing product specifications, generation of ideas and concepts, concepts evaluation and selection, product architecture, product aesthetics, form creation, semantics and languages, and corporate and product identity.

2. SUBJECT CONTENT

MODULE 1 : INTRODUCTION AND PRODUCT DEVELOPMENT PROCESSES AND STRATEGIES


MODULE 2 : NEEDS IDENTIFICATION AND PRODUCT SPECIFICATIONS


MODULE 3 : GENERATION AND EVALUATION OF IDEAS AND CONCEPTS

MODULE 4 : PRODUCT ARCHITECTURE  


MODULE 5 : PRODUCT AESTHETIC AND FORM CREATION  


MODULE 6 : PRODUCT SEMANTICS AND IDENTITY  


MODULE 7 : PRINCIPLES OF DESIGN  

Overview of principles of axiomatic design. Application of axiomatic design theory. Teaching cases and case studies. Theoretical foundation of axiomatic design. General design theory (GDT). Design Theory and Methodology (DTM) research.

MINI PROJECT  

A mini project will be carried out within this subject and it will serves as the first exploratory phase of the ‘smart’ product design project that candidates are required to complete.

3 REFERENCES  


