

General Outline

- Introduction
- Some Definitions
- Product Design versus Development
- Design Fundamental Rules
- Concurrent Engineering

Introduction

- The MIJC: a step towards establishing a product design culture.
- The goal of this course is to give you the tools to develop an efficient design process regardless of the product being designed.

(Definitions (1/3

- **Product:** A term used to describe all goods, services, and knowledge sold.

(Definitions (2/3

- **A Product Development Process** is the entire set of activities required to bring a new product concept to a state of market readiness.
- PD is the organization and management of people and the information they develop in the evolution of a product.

(Definitions (3/3

- **A Design Process** is the set of technical activities within a PD process that work to meet marketing and business case vision.

Six Phases of PD

1. Planning
2. Concept development
3. System-level design
4. Detail design
5. Testing and refinement
6. Production ramp-up

Product Types

- Market-Pull Products (furniture, sporting goods, tools)
- Technology-Push Products (Cellular phones, ABS, Medical equipment)

The Life of a Product

- Identification of need
- Development of engineering requirements
- Design concept development
- Product design
- Manufacturing
- Assembly
- Distribution
- Installation
- Use
- Retirement, disassembly, reuse, and recycle.

Product Conceptual Design

Design = Science + Art

FORM and FUNCTION

- The product FORM should reflect its FUNCTION
- FUNCTION = What the product is to do
- FORM = How the product is to do its FUNCTION

- FORM = Shape (geometry), Material, Connections, Energy and Material Flow, Operation Procedure (Information Transfer), etc....
- Design is the process of mapping function to form.
- Design problems have many satisfactory solutions and no clear best solution