

# **Gautam Buddha University, Greater Noida**

## **School of Engineering (Mechanical Engineering)**

<b>Degree</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Marks:100</b>
M. Tech.	Product Lifecycle Management	MEM 609	SM+MT+ET 25+25+50
<b>Semester</b>	<b>Credits</b>	<b>L-T-P</b>	<b>Exam.</b>
III	3	3-0-0	3 Hours

### **Unit - I**

**Introduction:** Extensive definition of concurrent engineering (CE); CE design methodologies; Review of CE techniques like DFM (design for manufacture); DFA (design for assembly); QFD (quality function deployment); RP (rapid prototyping); TD (total design)- for integrating these technologies; Organizing for CE; CE tool box; Collaborative product development. **(07 Hours)**

### **Unit - II**

**Use of Information Technology:** IT support; Solid modeling; Product data management; Collaborative product commerce; Artificial Intelligence; Expert systems; Software hardware component design. **(08 Hours)**

### **Unit - III**

**Design Stage:** Lifecycle design of products; Opportunities for manufacturing enterprises; Modality of concurrent engineering design; Automated analysis Idealization control; CE in optimal structural design; Real time constraints. **(08 Hours)**

### **Unit - IV**

**Need for PLM:** Importance of PLM; Implementing PLM; Responsibility for PLM; Benefits to different managers; Components of PLM; Emergence of PLM; Lifecycle problems to resolve; Opportunities to seize. **(06 Hours)**

## **Unit - V**

**Components of PLM:** Components of PLM; Product lifecycle activities; Product organizational structure; Human resources in product lifecycle; Methods; techniques; Practices; Methodologies; Processes; System components in lifecycle; slicing and dicing the systems; Interfaces; Information; Standards.

**(07 Hours)**

## **Unit - VI**

**Quality by Design:** Quality engineering & methodology for robust product design; Parameter and tolerance design; Quality loss function and signal to noise ratio for designing the quality; Experimental approach.

**Design for X-ability:** Design for reliability; Life cycle serviceability design; Design for maintainability; Design for economics; Decomposition in concurrent design; Concurrent design case studies.

**(09 Hours)**

### **Recommended Books:**

1. Integrated Product Development; M.M. Anderson and L Hein; IFS Publications.
2. Concurrent Engineering: Automation tools and Technology; Andrew Kusiak; Wiley Eastern.
3. Concurrent Engineering; Kusiak; John Wiley & Sons.
4. Concurrent Engineering; Menon; Chapman & Hall.
5. Design for Concurrent Engineering; J. Cleetus; CE Research Centre; Morgantown.
6. Concurrent Engineering Fundamentals: Integrated Product Development; Prasad; Prentice hall India.
7. Concurrent Engineering in Product Design and Development; I. Moustapha; New Age International.
8. Product Lifecycle Management; John Stark; Springer-Verlag; UK.
9. Product Lifecycle Management; Michael Grieves; McGraw Hill.