

**Course Code :** ME 796

**Course Title :** Design for Manufacturability

**Credit Hours :** 3

### **Course Description**

Introducing the design for X concept. Design for casting, forming, machining and joining. Developing and implementing of DFX tools. Product development methodology. Applications for design for manufacturing requirements.

### **Course Objectives**

- This course provides the students with the skills to practice design for manufacturability. They will understand the concept of design for X.
- They will be able to select the design parameters according to available manufacturing techniques, reliability, quality, assembly and environmental considerations.

### **Course Topics**

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| Week no. 1:  | Introduction to design process                              |
| Week no. 2:  | The concept of design for X (DFX)                           |
| Week no. 3:  | Design for manufacturing, casting and forming               |
| Week no. 4:  | Design for manufacturing, machining                         |
| Week no. 5:  | Design for manufacturing, modern manufacturing processes    |
| Week no. 6:  | Design for assembly and joining                             |
| Week no. 7:  | 7th Week Assessment   |
| Week no. 8:  | Developing DXF tools  |
| Week no. 9:  | Implementing DFX tools                                      |
| Week no. 10: | GRAI integrated methodology approach to product development |
| Week no. 11: | Design for dimensional control                              |
| Week no. 12: | 12th Week Assessment  |
| Week no. 13: | Design for life cycle                                       |
| Week no. 14: | Design for competitiveness                                  |
| Week no. 15: | Project Presentation  |
| Week no. 16: | Final Examination   |

### **References**

- Groover, M.P., "Automation, Production Systems and Computer - Integrated Manufacturing", Prentice Hall, 2001

- James A. Rehg, Henry W. Kraebber, "Computer-Integrated Manufacturing", Pearson Education, Inc., 2005.
- Hill, T., "Manufacturing Strategy" Homewood, IL: Richard D. Irwin, 1989.
- Vollmann, T. E., W. L. Berry, and D.C
- . Whybark, "Manufacturing Planning and Control Systems", Homewood, 1997
- Boothroyb, G., and P. Dewhurst., "Product Design for Manufacture and Assembly," Manufacturing Engineering, April 1988.
- Foston, A. L., C. L. Smith, and T. Au., "Fundamentals of Computer-Integrated Manufacturing," Prentice Hall, 1991.
- Rehg, J.A., "Introduction to Robotics in CIM Systems", Prentice Hall, 2003
- Lochner, R.H., "Designing for Quality", Statpower Associates, 1991.