

**Course Code :** ME 795

**Course Title :** Embedded Control of Manufacturing Processes

**Credit Hours :** 3

### **Course Description**

Manufacturing process control strategies, Computer integrated manufacturing (CIM), Flexible manufacturing systems (FMS), Automated handling, and quality control systems.

### **Course Objectives**

- This course provides the students with the general concepts for control of manufacturing processes.
- It introduces the modern tools for process modeling, optimization and control.
- It presents the integrated approach, which combines statistical process control (SPC) and traditional automatic process control (APC).

### **Course Topics**

Week no. 1:	Introduction to Manufacturing process control
Week no. 2:	Modeling of manufacturing process
Week no. 3:	Control of manufacturing process
Week no. 4:	Optimization of manufacturing process
Week no. 5:	Traditional automatic process control (APC)
Week no. 6:	Statistical process control (SPC)
Week no. 7:	7th Week Assessment
Week no. 8:	Computer-integrated manufacturing (CIM)
Week no. 9:	Flexible manufacturing systems (FMS)
Week no. 10:	Automated handling systems
Week no. 11:	Robotics in manufacturing systems
Week no. 12:	12th Week Assessment
Week no. 13:	Automated quality control systems
Week no. 14:	Production planning and control
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.