Module 1
The competitive environment in the market, The WTO agreement and its effect on Indian Industries, Manufacturing as a competitive strategy, Competitive Advantages and Disadvantages

Module 2

Module 3
Just in time manufacturing, Kanban system, and Agile Manufacturing

Module 4
Reengineering, TQM, MRP

Module 5
ERP, and simulation as tools for competitive manufacturing, Intelligent Manufacturing

Module 6
Elementary of manufacturing systems for different manufacturing scenarios - Dedicated manufacturing system, Flexible manufacturing system (FMS), cellular manufacturing system (CMS), and Re-configurable manufacturing system (RMS); Selection of manufacturing systems.

Module 7
Concept of CIM, FOF, Network based manufacturing, and E-Manufacturing

Books Recommended:
1. Manufacturing Excellence in Global Markets W. Euershelm
3. Computer Automation in Manufacturing T.O.Boucher
4. Intelligent Manufacturing Planning P. Gu.
ME 7033  POWER PLANT ENGINEERING

Module 1:  Introduction: Review of electricity generation in Indian context and energy scenario in India, Principal types of power plants, special feature, application and future trend of developments.  
(5 Lectures)

Module 2:  Steam Power Plants: Major components of power plant, fuels and their properties, storage, preparation, handling and burning, Ash handling and dust collection, Feed water treatment plants, cooling towers, insulation, Heat balance of power plant.  
(5 Lectures)

Module 3:  Nuclear Power Plants: Principle of power generation by nuclear fission and fusion, fuels for nuclear power plants, preparation and care, fertile materials and breeding, Different types of reactor, Breeder reactors, Radioactive waste disposal systems.  
(5 Lectures)

Module 4:  Diesel and Gas Turbine Power Plants: Introduction, field of use, air supply, and cleaning system, fuel storage and supply systems, cooling systems, lubricating and starting systems, Components of gas turbine power plant, Different arrangements of components, Optimum design of Gas turbine unit for combined cycle plant, comparative study of diesel and gas turbine plants.  
(5 Lectures)

Module 5:  Hydraulic Power Plants: Different types of hydraulic power plants, rain fall and run-off measurements and plotting of various curves for estimating power available with or without storage, Pump storage plant.  
(5 Lectures)

Module 6:  Combined operation of different power plants: Introduction, Advantages of combined working, load division between power stations, storage type hydro-electric power plant in combination with steam plant, Coordination of different types of power plants, Instrumentation and control methods used in different types of power plant.  
(5 Lectures)

Module 7:  Economic Analysis:  Difference between Base load and peak load plants, Different terms and definitions, Means of meeting the total load demand, Performance and operating characteristics of power plants, Load division, Tarrif method for Electrical Energy.  
(5 Lectures)

Books:

1. Power Plant Engineering: by F.T. Morse.
2. Power Plant Engineering: by Arora & Domkundwar, Dhanpatrai Publication
ME 7039 MECHATRONICS

MODULE 1 : Introduction to Mechatronics, Design Process, Modeling Electromechanical systems, System Interfacing, Instrumentation and Control System Introduction to Micro and Nano technology (5L)


MODULE 3 : Digital Logic, signal Conditioning, Op amplifiers, Filtering, Active and Digital Filters, digital Outputs and power Drives, A to D converters, voltage Regulators, Power Supplies and Batteries, Timer (5L)

MODULE 4 : Actuators, Permanent Magnet Brushed DC Motor Characteristics, Characteristic Equations for Constant Voltage, Solenoids, Brushless DC motors, Stepper Motors, Pneumatic and Hydraulic Systems, Piezo Actuators (5L)

MODULE 5 : MECHATRONICS projects and Systems Engineering, Rapid Prototyping and Mechanical Systems, RP techniques, SLA, SLA, FDM, Soft modeling Circuit Prototyping (5L)

MODULE 6 : Microprocessors General Aspects, Definition and brief description, Characteristic of microprocessor, Buses, Memory and Input/ Output, ALU, Timing and Control unit, Microcontrollers (5L)

MODULE 7 : Artificial Intelligence, fuzzy Logic, Microsensors, On line Quality Control, PLC, System Transfer Functions, Data Acquisition Systems (5L)


(3). Introduction to Mechatronic Design by Carryer,Ohline, Kenny

(4). An Instruction to Mechatronics, by Devdas Shetty
Module 1

**INTRODUCTION:** introduction to lean, sustainable, green manufacturing; concept of Eco friendly manufacturing; the 18 monozukuri principles.

Module 2

**REGULATORY CONSIDERATIONS:** Regulatory considerations and sustainability strategies, Imperative global warming perspectives, Carbon credits, green power and renewable energy credits;

Module 3

**ENVIRONMENTAL PERFORMANCE INDICES:** Effect of industrial activity on environment, measures and metrics; ranking of risks; Environmental Load Units (ELU); International green manufacturing standards and compliance; ISO 14000;

Module 4

**MATERIAL FLOWS THROUGH THE ECONOMY AND THE ENVIRONMENT:** Metals production, Metal recycling, Energy and other advantages of metal recycling,

Module 5

**INDUSTRIAL WASTE:** Type of wastes, causes of waste generation and its elimination in manufacturing industries, Hidden waste in industries, workplace organization.

Module 6

**ANALYTICAL TOOLS:** Lean vision and lean principles, value added and non-value added activities Metrics for sustainable practices; life cycle assessment/impact tools; Product Stewardship in Industry

Module 7

**ECO FRIENDLY MANUFACTURING SYSTEM:** Green Design and Manufacturing in Consumer Products; Green rapid prototyping and rapid manufacturing; green packaging; Green collaboration processes via the Internet; Reverse supply chain, green supply chain.

**Text Books**
1. *Fast Track to Waste Free Manufacturing*  J.W. Davis, Productivity Press USA

**Reference Books:**
Module-1
Introduction to business ethics, ethical principles in life, utilitarianism justice and fairness

Module-2
Social responsibility of business organisations

Module-3
Introduction to corporate governance

Module-4
Ethics of consumer protection, relevance of ethics in marketplace

Module-5
Business and its internal constituencies, employee issues

Module-6
Indian value system and its utility in present context

Module-7
Roles and responsibilities of an individual in the present social context.

Text Books:
1. Business Ethics concept and cases: Valesquez -TMH Publication
2. Human Values-A.N. Tripathi-New age Publication
3. Ethics in Management and Indian ethos-BiswanathGhosh-vikas publication
4. Ethics in Management-aryakumar-Anne books Pvt. limited