

MANUFACTURING PROCESSES, PLANNING AND SYSTEMS				
CLASS T.E. (INFORMATION TECHNOLOGY)			SEMESTER V	
HOURS PER WEEK	LECTURES	:	04	
	TUTORIALS	:	02	
	PRACTICALS	:	--	
			HOURS	MARKS
EVALUATION SYSTEM:	THEORY		3	100
	PRACTICAL		--	--
	ORAL		--	25
	TERM WORK		--	25

1. Introduction to Production and Operations Management

Products and services, the product/ process Continuum, the transformation process, product design, process design, automation

2. Manufacturing Processes

Elementary treatment on various manufacturing process like turning, milling, shaping and drilling- machine tools, tooling and set up for each processes. Basic concepts on cold and hot working with metals – examples. Welding brazing and soldering: Differences, elementary treatment on important welding process, brazing and soldering techniques, soldering techniques for manufacturing/electrical/electronic components – cleaning. Solder, flux materials, process and preventions of dry soldering.

3. Polymeric Materials

Classification – examples, properties and application areas, processing of plastics – elementary treatment on compression/transfer moulding, injection moulding and extraction (film, pipes, sheets and cable/wire coursing)

4. Operations Planning

Business Objectives, Systems Analysis, Operations Sheet preparation, Information, Sequence of Operations, pinion operations Sheet, welded Steel Assembly operations Sheet, Trends.

5. Quality Systems

Definition of quality, TQM concept, SQC tools like bar and pie charts, scatter diagram, cause effect diagram, Pareto analysis, Quality systems and Process Improvement, Process Variation, Control Charts for Variable Data, Control charts for Attribute Data, Process Capability Analysis, Statistical Design of Experiments, reliability Theory

6. Computer Numerical Control Systems:

Types of CNC Systems, Evolution of CNC Machine tools, types of Controllers, CNC Operational Sequence, rectangular Coordinates, Program Formatting and Coding.

7. Process Automation

Simulation, Automation, Robots, Group technology, Flexible, Manufacturing Systems.

Other Production Systems, Economic Considerations, lean current and re-engineering, lean manufacturing.

8. Operator- Machine Systems

Operator-Machine Systems Structure, Ergonomics, Designing Ergonomic Tools, Redesigning Workstations, Job Analysis, Systems to measure Injury Frequency, Impact of Intelligent Systems.

9. Facility capacity and layout planning

Capacity planning, Decision tree analysis in Facility Capacity planning, facility layout planning, assignment model in layout planning, load-distance analysis in process layouts

10. Demand Management

The make –to –stock , the Assemble-to-order, make to order environment, sales and operations planning, master production scheduling , dealing with customers on a day –to-day basis, Information use in Demand Management make –to-knowledge data capture and monitoring customer relationship management, outbound product flow, CANBAN.

11. Materials requirement planning (MRP) & Just-in-time (JIT) practices

Material requirement planning in manufacturing, MRP-JIT production systems, Sales and operations planning, Enterprise Resource Planning, Forecasting for Strategic business planning, sales and operations planning, master production scheduling,

Text book

1. Phillip F. Ostwald and Jairo Munoz, “Manufacturing Processes and Systems” Wiley India Edition ISBN No: 978-8126-518937
2. Vollmaan , Berrt, Whybark, Jacobs “Manufacturing planning and control for supply chain Management” Tata McGraw Hill

Reference

1. Mikell P. Groover, “Fundamental of Modern Manufacturing” Wiley India Edition
2. Kanishka Bedi, “Production and operations management”, OXFORD university press
3. E. S. Buffa, “Modern Production and Operation Management”, Wiley.
4. H. G. Menon, “Total Quality Mngagement in Product Manufacturing”,
5. D. H. Bester Field, “ Total Quality Management”, PHI
6. Raghuvanshi, “Production Technology”.
7. Garmo, “Materials and Manufacturing Processes”.

Term Work

Term work shall consist of at least 10 assignments/ demonstration of workshop practice / documentation of industry visit and one written test.

Marks

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| 1. Attendance (Theory and Practical) | 05 Marks |
| 2. Laboratory work (Experiments and Journal) | 10 Marks |
| 3. Test (at least one) | 10 Marks |

The final certification and acceptance of Term Work ensures the satisfactory Performance of laboratory Work and Minimum Passing in the term work.