

No	Information of every subject	
1	Unit name:	Industrial Engineering and Management
2	Code:	McE- 51018
3	Classification:	Engineering subject
4	Credit value:	2
5	Semester/ Year Offered:	1/5
6	Pre-requisite:	NA
7	Mode of delivery:	Lecture, Presentation, Discussion, Class Work
8	Assessment system and breakdown of marks:	Assignment, Tutorial, Exam 1, Exam 2
	Assignment / Tutorial	30%
	Exam 1	35 %
	Exam 2	35%
9	Academic staff teaching unit:	Department of Mechatronics
10	<p>Course outcome of unit:</p> <p>After completion of this course, students will be able to</p> <ul style="list-style-type: none"> • Understand basic concepts of industrial engineering and about the various phases of its conceptual development. • Know about the factors for plant location, methods and objective of plant layout, GT, cellular manufacturing and FMS. • Learn about forecasting. • Study the various strategies to meet the fluctuating demand in the intermediate range of planning. • Learn about the capacity planning. 	
11	<p>Synopsis of unit:</p> <p>Industrial engineering and management is a core subject for mechanical and production engineers. It is also very useful regarding production and operations management, statistical quality control, and total quality management. The course covers basic concepts of industrial engineering and about the various phases of its conceptual development. The course includes about the factor for plant location, GT, cellular manufacturing, FMS, capacity planning, basic EOQ model and engineering design process.</p>	

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Topic:

1.Industrial Engineering and Production Systems

1.1 Introduction

1.2 Historical Development of Concepts in Industrial Engineering and Management

1.3 Production Systems

1.4 Selection of Production Systems

1.5 Productivity

2.Facility Location and Layout

2.1 Introduction

2.2 Facility Location

2.3 Transportation Method

2.4 Centroidal Method

2.5 Facility/Plant Layout

2.6 Systematic Layout Planning

2.7 Block Diagram

2.8 Assembly Line Balancing

2.9 Group Technology

2.10 Cellular Manufacturing

3.Forecasting

3.1 Introduction

3.2 Forecasting Methods

3.3 Time-series Forecasting

3.4 Forecasting Performance Measurement

4.Aggregate Planning

4.1 Introduction

4.2 Aggregate Planning Strategies

4.3 Mixed Strategy

5.Capacity Planning: MRB MRP II and ERP

5.1 Introduction

5.2 Materials Requirement Planning

5.3 MRPII

5.4 Enterprise Resource Planning

6.Inventory Control

	<p>6.1 Introduction</p> <p>6.2 Classifications of Inventory</p> <p>6.3 Inventory Costs</p> <p>6.4 Continuous and Periodic Inventory Review Systems</p> <p>6.5 Economic Order Quantity</p> <p>6.6 Reorder Point</p> <p>6.7 Order Quantity for Variable Demand</p> <p>7.Product Design and Development</p> <p>7.1 Introduction to Engineering Design</p> <p>7.2 Product Concept and Concept Selection</p> <p>7.3 Product Life Cycle</p> <p>7.4 Morphology of Design</p> <p>7.5 Standardization, Simplification, Differentiation and Diversification</p> <p>7.6 Interchangeability and Modular Design</p> <p>7.7 Concurrent Engineering</p> <p>7.8 Economic Considerations in Product Design</p> <p>7.9 Aesthetic Considerations in Design</p> <p>7.10 Ergonomic Considerations in Design</p>
14	<p>Main references:</p> <p>A Textbook of “Industrial Engineering and Management”, Pravin Kumar</p>
15	<p>Additional references:</p> <ul style="list-style-type: none"> ➤ Craig, C. and Harris, R. (1973), 'Total Productivity Measurement at the Firm Level', Sloan Management Review, (Spring 1973) 13-28. ➤ James, R- W and Alcorn, P. A. (1991), A Guide to Facilities Planning (Engtewood Clifs, NJ: Prentice Hall). ➤ Shubin John A. and Madeheirl H. (1986), Plant layout (New Delhi: Prentice Hall of India). ➤ Singh, S. P. and Sharma, R. R. K. (2006), A Review of Different Approaches to the Facility Layout Problems’, International Journal Advanced Manufacturing Technology.