

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: VI Mechanical Engineering

Subject Name: **Industrial Engineering**

Subject Code: **161907**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
3	0	0	3	70	30	50

Sr. No	Course Content	Total Hrs.
1.	Location Selection and Plant Layout: Nature of Location Decision, Importance of Plant Location, Dynamic Nature of Plant Location, Choice of site for selection, State regulations on location, Government policies on decentralization. Industrial Estates, Economic Survey of Site selection, SEZ, Comparison of location,	03
	1.1 Principles of Plant layout and Types, factors affecting layout, methods, factors governing flow pattern, travel chart, analytical tools of plant layout, layout of manufacturing shop, repair shop and services sectors.	03
2.	Production Planning and Control: Introduction : Types of production systems and their characteristics functions and objectives of P.P.C., product design and development including standardization and simplification,	03
	2.1 Sales forecasting, concept, techniques, application, production planning and process planning,	03
	2.2 Sequencing, loading and scheduling, techniques and their selection, line of balance, assembly line balancing, dispatching, progress control.	04
3.	Productivity and Work Study: Definition of productivity, application and advantages of productivity improvement tools, reasons for increase and decreases in productivity. Areas of application of work study in industry. Reaction of management and labour to work study.	03

	3.1 Method Study: Objectives and procedure for methods analysis, Recording techniques, Micro motion and macro-motion study: Principles of motion economy, Normal work areas and work place design.	04
	3.2 Work Measurement: Objectives, Work measurement techniques - time study, work sampling, pre-determined motion time standards (PMTS) Determination of time standards. Observed time, basic time, normal time, rating factors, allowances, and standard time. introduction to ergonomics	04
4.	Job Evaluation and Wage Plan: Objective, Methods of job evaluation, job evaluation procedure, merit rating (performance appraisal), method of merit rating, wage and wage incentive plans	03
5.	Industrial Legislation Need for Industrial legislation, Factories act 1948, Industrial dispute act 1947, The Indian trade unions act 1926, Industrial employment act 1946, Payment of wage act 1936, Workmen compensation act 1923, Payment of bonus act 1965, Employees provident fund scheme 1952,	03
6.	Inspection and Statistical Quality Control: Inspection – functions, types, objectives and benefits, quality control – principles, Concepts of quality circles, Total quality management, Quality assurance, Quality audit, ISO, and six sigma.	03
	6.1 SQC Concept, variable and attributes, normal distribution curves and its property charts for variable and attributes and their applications and interpretation (analysis) process capability,	04
	6.2 Acceptance sampling, sampling plans, OC curves and AOQ curves.	03
7.	Entrepreneurship: Concept, product identification, infrastructure facilities, preparation of project report, sources of industrial finance, Resources allocation, Government incentives to entrepreneurs.	02

Text Books:

1. Industrial Engineering and Production Management – By M. Mahajan, Dhanpat Rai & Co.
2. Industrial Engineering and Production Management Martand Telsang S Chand & company.
3. Industrial Engineering and Production Management by Banga and Sharma, Khanna publishers.

Reference Books:

1. Production System, Planning, Analysis and Control – By J.L. Riggs 3rd ed. Wiley
2. Industrial Engineering and Organization Management by S K Sharma, Savita Sharma, KATSON Books
3. Industrial Engineering and Management by Dr. B.Kumar Khanna Publishers