GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER- VI

Subject Name: **Advance Industrial Engineering. (Elective –II)**
Subject Code: **2361923**

Sr. No.	Subject Content	Hrs.
1	**PROCESS PLANNING.** 1.1 Know the objectives of learning this subject. 1.2 Need, Scope & importance of Advance Industrial Engineering (AIE) in industries. 1.3 Need of attitude, knowledge & skill required for application of AIE. 1.4 Process planning- introduction and concept. 1.2 Process planning organization. 1.3 Information required for process planning. 1.4 Process planning procedure. 1.5 Working drawing. 1.6 'Make or buy' decision and factors affecting it. 1.7 Process selection and factors affecting it. 1.8 Machine capacity & analysis of it. 1.9 Process and equipment selection procedure, process sheet description. 1.10 Selection of material, jigs, fixtures, tools, other special attachment, cutting tools, gauges, etc. 1.11 Process analysis. 1.12 Types of process planning-manual, automated and generative methods with their merits. 1.13 Information on various Computer Aided Process Planning (CAPP),packages available in market. **Note** : Question/s to prepare process planning of given component (application type) of 6-8 marks out of total 70.	7
2	**QUALITY CONTROL AND STATISTICAL QUALITY CONTROL (QC & SQC).** 2.1 Evaluation of quality definitions 2.2 Evaluation of quality concepts (Demings principles, Juran's message, Malcolm Baldridge Award, Shingo's zero defect, Philip B. Crosby's philosophy, Feigenbaum's total quality control, Ishikwawa's company-wide quality control) 2.3 Definitions of quality policy, quality management, quality systems, quality control, (QC) quality circle, quality assurance (QA), and	6

	SQC 2.4 Difference between quality & quality control. 2.5 Tools to achieve quality (QC, SQC, QA, TQC, TQM, Quality function deployment (QFD),quality system standards (ISO 9000, BS 14000). 2.6 Industrial applications (interpretation and analysis) of control charts (for variables and attributes). **Note** : Question/s to interpret and analyze of given control chart data (application type) of 6-8 marks out of total 70.	
3	**TOTAL QUALITY MANAGEMENT (TQM).** 3.1 TQM – introduction, philosophy concept, definition and principles. 3.2 TQM – importance with respect to employee leadership, customer satisfaction, quality, etc. 3.3 Methods to achieve. **Note:** Question/s to analyze given related short case (application type) of 4-6 marks out of total 70.	5
4	**TOTAL QUALITY CONTROL (TQC).** 4.1 TQC – evaluation of concept, results and benefits, challenges, method to built, applications. 4.2 QC versus TQC. 4.3 TQC versus TQM.	4
5	**QUALITY FUNCTION DEPLOYMENT (QFD).** 5.1 QFD – rational, concepts (system and house of quality), 5.2 QFD – methodology – building of planning and deployment matrix and development of process plans, control charts and operating instruction sheets. 5.3 Benefits of QFD. 5.4 Narrate various applications of QFD. **Note:** Question/s to build QFD matrix of given data (application type) of 4-6 marks out of total 70.	6
6	**ISO 9000.** 6.1 ISO 9000 – introduction, need, scope & field of applications, importance, features, terminology used. 6.2 Series of ISO 9000 standards 6.3 Steps in developing and implementation of ISO 9000. 6.4 Registration for ISO 9000, its validity, certifying bodies. 6.5 Advantages and implications of ISO 9000.	4

7	**JUST IN TIME (JIT) MANUFACTURING.** 7.1 JIT - Logic, concept, meaning, definitions & advantages. 7.2 JIT - Japanese practices 7.3 Basic elements of JIT. 7.4 Kanban systems in JIT. 7.5 Frame work for implementation of JIT. 7.6 Applications of JIT such as leveling, production, pull system introduction, product design, process design and bill of material implications, purchasing, etc. (in brief) 7.7 Impact of JIT. **Note** : Question/s to analyze given related short case (application type) of 4-6 marks out of total 70.	6
8	**REENGINEERING.** 8.1 Reengineering – nature, principles, process 8.2 Process redesign techniques and tools. 8.3 Reengineering and continuous improvement. 8.4 Integrated reengineering and process improvement.	4
	Total	42

Notes:

A. FOR STUDENTS.

a. It is advised that student download this copy of syllabus and plan to achieve the objectives of learning this subject.

B. FOR PAPER SETTER/MODERATOR.

a. Refer GTU syllabus and do not take reference of previous TEB question papers.
b. Ask the questions from each topic having marks weightage proportionate to hours allotted to that topic.
c. Optional questions must be asked from the same topic. That is weightage of compulsory attendance part of questions will be equal to proportionate to hours allotted to each topic.
d. Marks ratio of knowledge: comprehension: application types questions must be 30:30:40 respectively.
e. Submit solution / answer keys along with distribution of marks in each question for the paper being submitted.

Reference Books:

1	Industrial engineering and management	Dr. O. P. Khanna, Dhanapatrai & sons, Delhi.
2	TQM and ISO 14000	Dr. K.C.Arora, S.K. Kataria & Sons. (Topic 3)
3	ISO 9000 Path to TQM	R.Subburaj, Allied publuication (Topic 3)
4	Total quality management	Feigenbaum
5	Statistical quality control	E.L.Grant (McGH publication
6	Total quality control essentials	Servsingh soin (McGH Newyork)
7	Quality function deployment	Ronald G. Ray (TMH publishers 1996)
8	Production and operation management	Chase/Aquilano- (Irwin publisher

Additional Reference Books:

1	Statistical quality control	R. C. Gupta, Khanna publications 1993
2	Manufacturing planning & control systems	Thomas E. Wollmann, William L. Bery D. Clay Whybark, Galgotia publi. Pvt.Ltd., Delhi.
3	Just in time manufacturing	M G Korganker Makmilan India Ltd.
4	ISO 9000 family standards.	
5	Statistical quality control	A. Zaide (PHI Publisher)
6	Quality function deployment	A Kao Vogi (Productivity press Cambridge 1990)
7	Quality function deployment	Bossert J.I. (ASQC quality press, Wisconsin USA 1991)
8	JIT – Approach, Concepts & implementation	AICTE
9	Quality control using advance SQC techniques and modern machines for inspections	AICTE
10	Quality management	AICTE