GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER- VI

Subject Name: **Operations Management (Elective-II)**
Subject Code: **2361925**

Sr. No.	Subject Content	Hrs.
1	**INTRODUCTION TO OPERATIONS MANAGEMENT (OM).** 1.1 Know the objectives of learning this subject. 1.2 Need, Scope & importance of OM in industries. 1.3 Need of attitude, knowledge & skill required for application of OM. 1.4 Operations management : concept, meaning, definition, overview, scope and importance 1.5 Optimization: concept, meaning, definition, need and scope.	2
2	**LINEAR PROGRAMMING.** 2.1 Introduction, importance, application. 2.2 Various terms, and their meaning. 2.3 Canonical form of LPP. 2.4 Mathematical formulation of the problem. 2.5 Graphical solution. 2.6 Slack & surplus variable. 2.7 Simplex method, simplex method for requirement, approximation, equality, variable unrestricted in sign for maximization and minimization (for 2 variables and maximum 3 constrains). **Note** : Problem questions (analytical and graphical both-application type) of 10-12 marks out of 70.	9
3	**TRANSPORTATION TECHNIQUES.** 3.1 Introduction, importance, applications. 3.2 Transportation techniques: initial feasible solution, vocal's approximation method, stepping stone method, row column cost method, MODI method for balanced problem (for maximum 4 sources and 4 destinations). 3.3 Simple transshipment problems. **Note**: Problem questions (application type) of 6-8 marks out of 70.	7

4	**ASSIGNMENT TECHNIQUES.** 4.1 Introduction, importance and applications. 4.2 Technique for solution, Hungarian method, modified matrix.(for maximum activities) 4.3 Maximization problem. **Note**: Problem questions (application type) of 4-6 marks out of 70.	4
5	**REPLACEMENT THEORY AND SEQUENCING PROBLEMS.** 5.1 Introduction, importance and applications. 5.2 Various terms, their meanings & definitions, cost of "Keeping it on" and "replacing", examples. 5.3 Replacement by alternative equipment, 5.4 Sequencing problems: introduction, heuristic problem solving, sequencing problems, sequencing problems for n jobs and 2 machines & n jobs and 3 machines(n= no. of jobs should not be more than 4). **Note:** Problem questions (application type) of 4-6 marks out of 70.	6
6	**INVENTORY MANAGEMENT** 6.1 Introduction, need, applications. 6.2 Various terms, their meaning and definitions. 6.3 Inventory models, their derivations and examples. **Note**: Problem questions (application type) of 4-6 marks out of 70.	6
7	**SYNCHRONOUS MANUFACTURING.** 7.1 Concept, meaning, importance of synchronous manufacturing. 7.2 Hocky-stick phenomena. 7.3 Performance measurement-types, importance, applications (This includes financial, operational, productivity, efficiency, utility, etc.) 7.4 Unbalanced capacity-reasons, effects and strategies to balance. 7.5 Bottlenecking-reasons, effects and strategies to reduce. 7.6 Basic manufacturing building blocks. 7.7 Methods for control in synchronous manufacturing.	4
8	**WASTE MANAGEMENT AND COST CONTROL APPROACHES.** 8.1 Waste: types & reasons. 8.2 Reasons to eliminate waste. 8.3 Sources of waste & methods to minimize / eliminate waste in mechanical engineering industry, examples/ situations.	4

	8.4 Cost control: concept, need and significance. 8.5 Cost control methods : Approaches, examples/ situations suitable for mechanical engineering situation.	
	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 20:30:50 respectively.
e. Submit solution / answer keys along with distribution of marks in each question for the paper being submitted.

Reference Books:

1. Production & operations management	Chase and Aquilano (Lrwin publication)
2. Operations management: Problems and model	Elwood S. Buffa (John Willy & sons)
3. Operations research	S.D.Sharma
4. Operations research	N.R. Dave, Manglani (C. Jamnadas & co.)
5. Production and operations management	Everette, Adam Jr., Ronald J. Ebert (PHI publi.)
6. Operations research	Taha H.A. (PHI publication)

Additional Reference Books:

1. Principles of operation research	Harvey M.Wagner
2. Operations research	M.M.Metwally, H.U.Tama schke, G.R.West (J.K.Publishers)

3. Productivity Engineering & Management	Sumenath (TMGH publication)
4. Purchasing and inventory control	K.S.menon (Wheeler publisher)
5. Production and inventory control	George W.Plosse (PHI publication)