# GUJARAT TECHNOLOGICAL UNIVERSITY

## M.E. Mechanical (Industrial Engineering)

Semester: II

**Subject: Production and Service Operations Management**
**Code: 1724602**

| Sr. No. | Topic | Hours |
|---|---|---|
| 1 | **Introduction:** Basic Concepts of Operations Management, Types of Manufacturing Systems and their Characteristics, Operations in Service, Operations Strategy*(In Manufacturing and Services)*, Operations Priorities. | 06 |
| 2 | **Product and Process Design(Manufacturing):** Product Life-Cycle, Different Product Design Strategies, Process Selection and Design Alternatives, Technological Considerations. | 10 |
| 3 | **Production Scheduling:** Single Machine Scheduling *(Conditions/Assumptions of single machine scheduling, Definitions of Processing time, Ready Time, Due date, Completion time, Flow time, Lateness, Tardiness, Mean flow time, Mean tardiness, Shortest Processing Time (SPT) Rule to minimize mean flow rate, Weighted Mean flow rate, Earliest Due Date (EDD) Rule to minimize maximum lateness)*, Flow Shop Scheduling *(Conditions/Assumptions of flow-shop scheduling, Johnson's Algorithm for 2 machines n jobs problems)*, Job Shop Scheduling *(Introduction, Graphical solution of 2 jobs and M machines*), | 10 |
| 4 | **Service Operations Management:** Differences and similarities Between Manufacturing & Service,Operations Strategy in Service,Nature of Services, Contemporary View of Service Management, Operational Classification of Service, Service Design Alternatives, Scheduling in Services. | 08 |
| 5 | **Just In Time (JIT):** Introduction to JIT Manufacturing Concept, Working of Kanban System, JIT Implementation Requirements, JIT Application in Different Environments, Push and Pull Manufacturing Comparison**,** JIT in Services. | 06 |
| 6 | **Work Force Management:** Job Design Decisions, Specialization of Labor, Job Enlargement, Job Enrichment and Job Rotation, Performance Appraisal, Incentive Plans. | 06 |
| 7 | **Contemporary Production Management Concepts:** Business Process Reengineering,Lean, Agile and World Class Manufacturing *(BasicConcept, Methodology, Characteristics, Applications)*, Operations Systems of the Future | 06 |
| | **Total** | 52 |

### Term Work:

The term work shall be based on the topics mentioned above.

### Practical / Oral:

The candidate shall be examined on the basis of term-work.

## Text Books:

1 Production and Operations Management – Manufacturing and Services, Richard B. Chase, Nicholas J. Aquilano, F. Robert Jacobs, Tata McGraw-Hill Publishing Company Limited.

2 Production and Operations Management by R. Panneerselvam, Prentice – Hall of India Private Limited, New Delhi.

## Reference Books:

1 Operations Management – Strategy and Analysis, Lee J. Krajewski and Larry P. Ritzman, Pearson Education Asia (Addison-Wesley).

2 Modern Production/Operations Management, Elwood S. Buffa and Rakesh K. Sarin, Wiley Student Edition.

3 Production Operations Management, Adam E. Jr. and Ebert R. E., Edition, Pearson Education India.

4 Operations Management: Policy, Practice, and Performance Improvement, Brown S., Blackmon K., Cousins P. and Maylor H., Butterworth-Heinemann, UK.

5 Operations Management, Dervitsiotis K. N., McGraw Hill International Book Co. Singapore.

6 Production & Operations Management Starr M. K., Thomson Business Information.