

IME 642A Operations Management

Instructor: Vipin B*

Lecture: 10:30 a.m.-12:00 noon, Wednesday and Friday

Credit: 9

Venue: C3, IME Building

Course Objective

This course is on the study of processes involved in the transformation of inputs to outputs in the production of goods and services, and their delivery to the customer. Quantitative techniques are heavily used in analyzing operations and improving their efficiency and effectiveness. Overall objective of this course is to manage production systems in a better way.

Prerequisite

- Basic understanding of optimization, probability, and statistics

Audience

- Interest in understanding the scientific management of production of goods and services, and their delivery.
- Interest in entrepreneurship
- Pursuing a career in managing the operations part of a business

Contents

Introduction to Operations Management

Forecasting—need, characteristics, methods, and performance.

Aggregate Planning—linear programming and transportation problem formulations.

Inventory Control—deterministic and stochastic demand settings.

Push and Pull Production Control Systems—materials requirements planning and just-in-time systems.

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Operations Scheduling—job shop and flow shop scheduling in static and dynamic environments.

Variability—sources of variability and their impact on process performance.

Quality Control—control charts, process capability, and acceptance sampling.

Supply Chain Management—concept, design, information sharing, contracts, and coordination.

Project Management—critical path method and program evaluation review technique.

Additional Topics—service operations management, behavioral operations management, and revenue management.

Key References

- S. Nahmias and T. L. Olsen, Production and Operations Analysis, Waveland Press Inc., Seventh Edition, 2015.
- L. V. Snyder and Z. M. Shen. Fundamentals of Supply Chain Theory. John Wiley & Sons, Inc., New Jersey, 2011.
- W. J. Hopp and M. L. Spearman, Factory Physics, Waveland Press Inc., Third Edition, 2011.
- G. P. Cachon and C. Terwiesch. Matching Supply with Demand: An Introduction to Operations Management. McGraw-Hill Education, 2012.
- J. D. Sterman (1989). Modeling managerial behavior: Misperceptions of feedback in a dynamic decision making experiment. Management Science, 35(3), 321-339.
- H. L. Lee, V. Padmanabhan, and S. Whang (1997). Information distortion in a supply chain: The bullwhip effect. Management Science, 43(4), 546-558.
- M. E. Schweitzer and G. P. Cachon (2000). Decision bias in the newsvendor problem with a known demand distribution: Experimental evidence. Management Science, 46(3), 404-420.

Grading Policy

- End term: 40%
- Mid term: 20%
- Quiz : 20%
- Presentation: 20%