



Dr Hasan Murad
School of Management
WE LEAD. OTHERS FOLLOW.

Course Title:	Technology and Operations Management
Course Code:	OM565
Department:	Operations and Supply Chain

HSM Vision

HSM envisions its success in the sustainable contribution that it will make to the industry, academia and research in public and private sector. HSM will lead by providing professionally competent and ethically conscious human resources engaged in the global and local context to foster socio-economic growth and sustainability for the society. HSM envisages having faculty with high research potential and a deep desire for cutting edge research including collaboration with national and international partners.

HSM Mission

Being a research-oriented and student-centric business school, we emphasize research publications in impact journals as well as state-of -the-art learning methodologies. We will prepare our students to become the future ethical business leaders and the guiding post for the society, while equipping them with the knowledge and skills required by world-class professionals. We will be the leading choice for organizations seeking highly talented human resource. HSM will foster internationalization with key stakeholders and actively work to exchange best practices with business schools across Pakistan through collaborations, workshops, conferences and other means.

CAPSULE STATEMENT

The global business system is changing the way everyone communicates, lives, and works. The pace of technological change is quickening as computers and communication networks make it possible for firms to react faster to innovations and shifts in demand. The new global information links connect customers, retailers, and manufacturers with a touch of button.

The use of technology in this new information age has collapsed the traditional barriers that once existed. Companies now make worldwide products.

These changes have a tremendous impact on the production operations of companies. Effective management of these operations has become an area of growing concern. Continuous improvement of products, services and processes, and elimination of all forms of waste, have become inevitable for companies who aim to remain competitive in the global market.

Operations Management is a discipline and profession that studies and practices the process of planning, designing, and operating production systems and subsystems, in both manufacturing and services, to achieve the goals of the organization.

LEARNING OBJECTIVES

The purpose of the course is to develop ability in the participants to:

- Appreciate the role of Operations Management in an organization
- Formulate and communicate production processes in the terminology of OM
- Use quantitative and qualitative methods to make better decisions as managers
- Effectively utilize various tools and techniques to improve the products and services, and thus enhance the competitiveness of an organization

LEARNING METHODOLOGY

Following instructional tools and methodologies may be utilized during the course.

Lectures	In-class Skill Development Exercises	Simulations
Computer Software Tools	Case Studies & Presentations	Industrial Trip

COURSE ASSESSMENT

Quizzes	10%
Assignments	15%
Class Participation	10%
Presentations	10%
Project	10%
Midterm	15%
Final Exam (Comprehensive)	30%

REQUIRED TEXT BOOK

Heizer, Jay and Render, Barry, *Operations Management*, 9th Edition, Prentice Hall. 2008.

REFERENCES

Chase, Richard B., Aquilano, Nicholas J., and Jacobs, F. Roberts, *Operations Management for Competitive Advantage*, Eleventh Edition, McGraw Hill, New York, 2006.

Raturi, Amitabh S., Evans, James R, *Principals of Operations Management*, South-Western, 2005.

PARTICIPATION

Operations Management CLASS POLICY

Each course participant shall be expected to participate fully in class discussions. You will be expected to contribute significantly to in-class analysis and discussion of readings and case studies.

Ways to effectively contribute include:

Responding to questions.

- Asking questions that lead to revealing discussions.
- Presenting alternative positions, ways of looking at problems
- Providing extensions, e.g., novel application of a tool or technique.
- Providing illustrations, e.g., examples of “real world” applications.

Talking during the class without permission, coming late, leaving class during discussion or lecture and using mobile phones in class will count as negative participation.

TEAM WORK

Teamwork is a very important part of your learning experience and you are expected to learn to do tough assignments in teams (*not chosen by you*) and meet the deadlines and quality standards. Groups of no more than 4 members will be finalized before the end of *first week*. The assignments, projects and presentations during the course will be based on the group work unless otherwise specified. Once formed participants will not be allowed to change the group without the resource person’s permission. It is recommended that all students should equally participate in the group assignments in order to avoid undue burden on some group members.

ORAL PRESENTATIONS

Each individual will be asked to present a topic before the class at least once during the course. The topics of these presentations will be provided by the resource person. 15 minutes will be

allowed for each presentation including the time for questions. Students are encouraged to use visual aids (power point slide) for these presentations. **A hardcopy of the presentation (in handout format) is to be handed to the resource person before the presentation.** You are encouraged to show and discuss your presentation with me before the class.

ASSIGNMENTS

Group and individual assignments will be assigned regularly. Assignments should be uploaded on Moodle before the due date. On the day of the assignment submission please be prepared for presenting your findings in front of the class as one of the participants/groups may be called for this purpose.

PROJECT

Project in this course is an exercise related to process improvement. Outcome of this project is developing understanding about *process strategy & analysis*. For the project you are required to choose one process of any company and do the following;

- Explain the process using process mapping techniques
- Identify the flaws in the existing processes
- On the basis of process analysis techniques learned in the class suggest improvements in the process.
- Prove that your solution will improve the situation.
- In the last session of this course you are expected to submit the hard copy and present the finding of the project in front of the class.

QUIZZES

1. Quizzes are taken unannounced
2. From a total of (n) quizzes, best (n -1) quizzes may be considered for the final grade.
3. No make-up quizzes will be allowed.

USE OF MOBILE PHONES AND OTHER ELECTRONIC DEVICES

1. Use of mobile phones and any other electronic device (except calculators) is prohibited during the class time.
2. All mobile phones should be turned-off and secured in pockets or bags during the class time, and may not be used for ANY purpose, including calculations, time-keeping, etc

EMAIL

In order to contact me through email please use email addresses with your name. In case you do not have such address, make one for this course.

COUNSELING HOURS

Counseling hours will be displayed on the office door after the first week. Please follow the displayed timings for your visits. In case you need time other than the counseling hours, please take the appointment through email.

If you find the course difficult I suggest that you should contact me in the first quarter of the course. Because the concepts usually build upon each other, understanding the basics is absolutely necessary.

Course Content

Topics	Chapters	Learning Outcomes	Assessment Tools
OPERATIONS & PRODUCTIVITY Role of Operations Management (OM) as one of the Three Core Functions in an Organization History of OM, Significant Contributions in field of OM, Future trends in OM, , Difference b/w goods and services, Productivity	1	Define OM, Understand the role of OM in business Management Understand the role of productivity in Operations Calculate single factor and multifactor productivity	Assignment
OPERATIONS STRATEGY IN GLOBAL ENVIRONMENT Developing Mission & OM Strategies, Critical Success Factors (CSF), Aligning Core Competencies with CSF, Ten OM Decisions DESIGN OF GOODS & SERVICES Issues for product design	2,4	Define mission and strategy, Identify and explain three strategic approaches to competitive advantage, Identify and define the 10 decisions of operations management, Identify and explain four global operations strategy options Understand design issues in products	Assignment
PROCESS STRATEGY Four Process Strategies, Process Analysis and Design, Process Mapping, Flow Diagrams, Process Charts, Service process design, Process Re-engineering	6	Describe four production process strategies, Compute crossover points for different processes, Describe customer interaction in process design, Ability to analyze and improve a process	Presentations, Assignment, Project Assignment Class Activity
CAPACITY PLANNING Design & Effective Capacity, Capacity Cushion, Capacity considerations, Managing demand, Capacity Planning, Leading vs Lagging Strategies, Single & Multiple Product Break Even Analysis for Capacity Planning, Using Decision Trees for Capacity Decisions	Sup-6	Define capacity, Determine design capacity, effective capacity, and utilization, Compute break-even, Apply decision trees to capacity decisions, Compute net present value, Understand the appropriateness of different strategies for capacity enhancement.	Presentations, Assignment, Case Submission & Discussion
LOCATION STRATEGIES Factors Affecting Location Decisions, Methods for Evaluating Location Alternatives, Factor Rating Method,	7	Identify and explain major factors that affect location decisions, Apply the factor-rating method, location break-even analysis and center-of-gravity method	Presentations, Assignment, Case Discussion

Load-Distance Methods, Center of Gravity Method, Using Linear Programming Transportation Models for Location Decisions, Service location Strategy			
LAYOUT STRATEGIES Types of Layout, Layout Design, Fixed Position Layout, Process- Oriented Layouts, Office Layout, Retail Layout, Repetitive and Product-Oriented Layout, Assembly Line Balancing	8	Discuss important issues in different types of layouts, modern warehouse management and terms such as cross-docking, and random stocking, Identify when fixed-position layouts are appropriate, Explain how to achieve a good process-oriented facility layout, Define product-oriented layout , balance production flow in a	Presentations , Assignment,
HUMAN RESOURCES & JOB DESIGN Job Design, Ergonomics WORK MEASUREMENT Time Motion Studies, Establishing Work Standards, Work Sampling	9, Sup- 9	Understand major issues in job design, understand major ergonomic and work environment issues, and learn procedures for work measurement.	Presentations, Project Submission
INVENTORY MANAGEMENT Role of Inventory in Operations, ABC analysis, Record accuracy, Cycle counting, Inventory Models, Fixed Period Systems, Continuous Review Systems, Basic EOQ Inventory Model	11	Conduct an ABC analysis Explain and use cycle counting Explain and use the EOQ model for independent inventory demand Compute a reorder point and explain safety stock	Presentations, Assignment,
INVENTORY MANAGEMENT Safety Stock, Service Level, Probabilistic Models: Constant Lead Time (LT)-Probabilistic Demand Models, Probabilistic LT-Constant Demand Models, Probabilistic LT-Probabilistic Demand Models, and,	11	Apply the production order quantity model, Explain and use the quantity discount model, Understand service levels and probabilistic inventory models	Presentations , Assignment,
AGGREGATE PLANNING The planning Process, AP Strategies, Level Strategy, Chase Strategy, Methods for AP, AP in Services	12	Define aggregate planning, Identify strategies for developing an aggregate plan, Prepare AP using chase, level and mixed strategies, Understand yield management	Presentations, Case Submission & Discussion

<p>MATERIAL REQUIREMENTS PLANNING (MRP) & ERP Master Production Schedule, Bill of Materials, MRP structure, MRP Tables, Lot Sizing Techniques, Extensions of MRP, MRP in Services, Enterprise Resource Planning (ERP)</p>	<p>13</p>	<p>Develop a product structure, Build a gross requirements plan, Build a net requirements plan, Determine lot sizes for lot-for-lot, EOQ, and PPB, Describe MRP II, Describe closed-loop MRP, Describe ERP.</p>	<p>Presentations, Case Submission & Discussion</p>
<p>JIT & LEAN OPERATIONS JIT layout, inventory, Scheduling and quality. Lean operations</p>	<p>15</p>	<p>Define just-in-time, TPS, and lean operations, Define the seven wastes and the 5Ss, Explain JIT partnerships</p>	<p>Case Discussion</p>
<p>INDUSTRIAL TRIP / GUEST SPEAKER</p>			
<p>SHORT TERM SCHEDULING Strategic Importance of Scheduling, Scheduling Process-focused Facilities, Loading Jobs, Sequencing Jobs, Finite Capacity Scheduling, Theory of constraints, Scheduling repetitive facilities, Scheduling Services</p>	<p>13</p>	<p>Explain the relationship between short-term scheduling, capacity planning, aggregate planning, and a master schedule, Draw Gantt loading and scheduling charts, Apply the assignment method for loading jobs, Name and describe each of the priority sequencing rules, Use the cyclical scheduling technique</p>	<p>Assignment</p>