Course Title:	Production Planning and Inventory Control
Course Code:	SM637
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.

Course Description and Objectives

This course intends to firstly make students aware of the issues faced by production managers in today's global environment. Secondly, it aims to provide students with the tools and techniques to solve these issues in light of advances in information technology.

In particular, this course will provide a general framework of Manufacturing Planning and Control (MPC) system and how it relates with other functional areas of an enterprise such as marketing, finance, etc. It will mainly focus on the internal supply chain and flow of material in a manufacturing firm, application of different techniques available in production planning and control literature to optimize the flow, and thereby effectively contribute to a firm's competitive advantage. While the focus of this course is towards manufacturing industry but majority of techniques learned here will be equally applicable to service industry.

Learning Outcomes

After the completion of this course you should be able to: (1) determine the type of production planning and control system that should be in place to support the overall strategy of a firm, (2) appreciate the overall perspective of the manufacturing function and the complexity of managing the flow of material in a business, (3) develop an ability to understand the structure of modern operations planning and control systems in companies, and (4) understand when and where particular planning and control approaches are appropriate in operations.

COURSE REQUIREMENT
PRODUCTION PLANNING AND INVENTORY CONTROL (SM 637)

GRADING

The grade you receive for the course is intended to certify your demonstrated proficiency in the course material. Proficiency will be estimated by measuring your performance on (1) Short tests, (2) Assignments, (3) Term project, and (4) Comprehensive End Term Exam. Your course grade will be based on a weighted evaluation of the following categories:

Assignments	15%
Two Short Tests	30%
Project	25%
Comprehensive End Term	30%
	100%

TEXTBOOK

The course is delivered through lectures and class discussions. All the readings assigned are from the following textbook:

Vollman, T. E., Berry, W., L., Whybark, D. C., Jacobs, F. R., "Manufacturing Planning & Control for Supply Chain Management", 5th Edition, McGraw-Hill, 2005.

PROJECT GUIDELINES

The semester project will be done in teams of no more than three students. You are required to form groups before the start of second class otherwise I will make groups myself.

Course Schedule

SESSION (DATE)	TOPIC/CONTENT	READINGS	LEARNING OUTCOMES	INSTRUCTIONAL STRATEGIES USED	COURSE EVALUATIONS
			On successful completion of the topic, students will be able to:		
1 (Oct. 1)	Course Overview - Manufacturing Competitiveness/MPC Framework	VBWJ Chapter 1	• Define and identify market, economic, technological, and organizational elements that influence MPC Systems design • Describe MPC Systems' components and match them with the needs of the firm • Identify the forces that derive the change in the MPC system	Lecture and class discussion	
2 (Oct. 8)	Demand Management & Forecasting Techniques	VBWJ Chapter 2	• Appreciate the role of demand management in MPC systems • Differentiate between independent and dependent demand • Apply different techniques in forecasting short to medium term demand under different conditions • Produce and evaluate detailed forecast and asses its quality using different metrics	Lecture and class discussion	**Class assignment problems 2, 6, 7, & 8**

3(Oct. 15)/ 4(Oct. 22)/ 5(Oct. 29)	Inventory Management	VBWJ Ch 5 & handout	• Differentiate between different types of inventory and appreciate their importance in production planning • Measure different costs associated with inventory management • Demonstrate the knowledge of different types of inventory management systems employed in the industry • Apply different models to solve inventory problems in different environment	Lecture and class discussion	**Class assignment problems handout and case study**
6 (Nov. 5)	**SHORT TEST 1 (1st Half)** Material Requirements Planning: Product Structure and Bill of Material Explosion, Lot Sizing and Buffering	VBWJ Ch 7& 14, pp 222-245 & 479-488	• Explain where MRP fits in the overall framework of MPC and how it is related to other MPC components • Demonstrate the knowledge about Bill of Material and how it is used in MRP • Compare different techniques used in MRP for lot sizing • Identify uncertainties in MRP and explain how to protect against them	Lecture and class discussion	**Class assignment problems 5, 6, 8 (PP252-255), 5, 6, 7 (pp496)**
7 (Nov. 12)	MRP continues…				
Eid Holiday (Nov. 19)					

8 **(Nov. 26)**	Capacity Requirements Planning	VBWJ Ch 10, pp 336-364	• Illustrate the role of capacity planning in MPC system • Apply finite scheduling techniques and carry out their cost-benefit analysis	Lecture and class discussion	**Class assignment problems 3, 5, 9, 13, 14**
9 **(Dec. 3)**	Master Production Scheduling (MPS): Records and Record Processing Customer Order Promising	VBWJ Ch 6, pp 168-205	• Explain the role of MPS in MPC and its relation with other business activities • Demonstrate the knowledge of different techniques available to assist this process • Convert MPS into final build schedule • Apply two-level MPS in complex environment	Lecture and class discussion	**Class assignment problems 5, 7, 9, & 10**
10 **(Dec. 10)**	Distribution Requirement Planning (DRP)	VBWJ Ch 8, pp 260-275	• Identify the role played by DRP in MPC system • Demonstrate the ability to apply DPR techniques to manage the demand and supply of goods • Identify the management issues with DRP	Lecture and class discussion	**Class assignment problems 4, 7, & 15**
11					

(Dec. 17)	**SHORT TEST 2 (1ST Half)**				
	Scheduling	VBWJ Ch 16, pp 539-560	• Describe in their own words the basic concepts of shop control and specify the models used therein • Summarize the research findings, which is helpful in assigning jobs or labor to machines • Apply Theory of Constraints (TOC) scheduling to multiple constraint resources	Lecture and class discussion	**Class assignment problems 6, 8, & 18**
12 (Dec. 24)	**Scheduling continues…**				
13 (Dec. 31)	**Just-in-Time (JIT)**	VBWJ Ch 9& 15, pp 300-324 & 502-528	• Describe the key features of JIT and their impact on MPC system • Illustrate the JIT principle in a simplified example • Identify key areas of research in JIT which relate to MPC • Explain the impact of JIT decisions on MPS, production floor control, and operating performance	Lecture and class discussion	**Class assignment problems 3, 5, & 12**
14 (Jan. 6)	**Just-in-Time (JIT) continues…**				
15 (Jan. 13)	**Strategy and MPC System Design**	VBWJ Ch 13, pp447-468	• Compare different alternatives in designing an MPC system to meet a firm's evolving needs • Demonstrate the ability to		

			integrate MPC application across supply chain to improve competitiveness		