MANUFACTURING PLANNING AND CONTROL

MBA BATCH: 2017-19 / TRIMESTER - IV

DEPARTMENT OF MANAGEMENT, BANGALORE CAMPUS

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INSTRUCTOR AND CONTACT INFORMATION

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INTRODUCTION

This course provides you with profound insights into how to coordinate the supply, production and distribution functions. It will also teach you how to balance conflicting objectives to minimize the total of all the costs involved and maximize customer service.

Manufacturing Planning and Control course outline contains information about the Course, the objectives, curriculum, learning outcomes and detailed sessions plan.
Details of the text and other reference materials, the internal assessment plan and students' actions expected are also included.
Students are expected to review and understand all areas of the course outline.

COURSE DESCRIPTION AND CONTEXT

With the global marketplace constantly changing, it is crucial that your Manufacturing Planning and Control (MPC) system evolve to stay current with technology, product and market conditions.

This course is essential if you are working in any capacity of operations in the supply chain because you'll gain a thorough understanding of Manufacturing Planning and Control key elements.

Regardless of what industry or business you work in, understanding all the various systems involved in Manufacturing Planning and Control is ideal if you're looking to advance your career and increase your organization's bottom line.

Within the constraints imposed by its design, an operation has to be run on an ongoing basis. 'Planning and control' is concerned with managing the ongoing activities of the operation so as to satisfy customer demand.

All operations require plans and require controlling, although the degree of formality and detail may vary.

To get the most value out of our resources we must design production processes that make products most efficiently. Managing the operation means planning for and controlling the resources used in the process.

Manufacturing Planning and Control, MPC, is responsible for the planning and control of the flow of materials through the manufacturing process.

Production planning and control are essential for customer delight and overall success of an organization.

For efficient, effective and economical operation in a manufacturing unit of an organization, it is essential to integrate the production planning and control system. Production planning and subsequent production control follow adaption of product design and finalization of a production process.

Production planning and control address a fundamental problem of low productivity, inventory management and resource utilization.

Production planning is required for scheduling, dispatch, inspection, quality management, inventory management, supply management and equipment management.

Production control ensures that production team can achieve required production target, optimum utilization of resources, quality management and cost savings.

Planning and control is an essential ingredient for success of an operation unit. The benefits of production planning and control are as follows:

- It ensures that optimum utilization of production capacity is achieved, by proper scheduling of the machine items which reduces the idle time as well as over use.
- It ensures that inventory level is maintained at optimum levels at all time, i.e. there is no over-stocking or under-stocking.
- It also ensures that production time is kept at optimum level and thereby increasing the turnover time.
- Since it overlooks all aspects of production, quality of final product is always maintained.

Production Planning

Production planning is one part of production planning and control dealing with basic concepts of what to produce, when to produce, how much to produce, etc. It involves taking a long-term view at overall production planning. Therefore, objectives of production planning are as follows:

- To ensure right quantity and quality of raw material, equipment, etc. are available during times of production.
- To ensure capacity utilization is in tune with forecast demand at all the time.

A well thought production planning ensures that overall production process is streamlined providing following benefits:

- Organization can deliver a product in a timely and regular manner.
- Suppliers are informed will in advance for the requirement of raw materials.
- It reduces investment in inventory.
- It reduces overall production cost by driving in efficiency.

Production planning takes care of two basic strategies' product planning and process planning.

Production planning is done at three different time dependent levels i.e. long-range planning dealing with facility planning, capital investment, location planning, etc.; medium-range planning deals with demand forecast and capacity planning and lastly short term planning dealing with day to day operations.

Production Control

Production control looks to utilize different type of control techniques to achieve optimum performance out of the production system as to achieve overall production planning targets. Therefore, objectives of production control are as follows:

- Regulate inventory management
- Organize the production schedules
- Optimum utilization of resources and production process

The advantages of robust production control are as follows:

- Ensure a smooth flow of all production processes
- Ensure production cost savings thereby improving the bottom line
- Control wastage of resources
- It maintains standard of quality through the production life cycle.

Production control cannot be same across all the organization. Production control is dependent upon the following factors:

- Nature of production (job oriented, service oriented, etc.)
- Nature of operation
- Size of operation

COURSE OBJECTIVES

OBJECTIVES:

- You will be able to develop, manage and control all aspects of an effective and efficient manufacturing planning and control system- a key to the success of any product manufacturing company
- You will gain knowledge to develop a demand management system, including activities such as forecasting, determining and estimating customer demand, converting specific customer orders into promised delivery dates, and balancing demand with supply
- You will understand the Sales and Operations Planning-how to link strategic goals to production by developing an overall business plan which integrates the various functional planning efforts
- You will have the ability to construct and manage an effective Master Production Schedule that provides the basis for making good use of manufacturing resources
- You will understand the Materials Requirement Planning-a basic tool for performing the detailed material planning function
- You will be able to apply the Capacity Planning and Management techniques for determining the capacity requirements and to match capacity with plans
- You will learn how to develop and use an effective Production Activity Control system in order to ensure the execution of materials plans, reduce WIP, inventories and lead times, and meet customer service goals
- You will be able to integrate supply chain inventory information and physical distribution with the Manufacturing Planning and Control system by developing an efficient Distribution Requirements Planning system

COURSE CURRICULLUM

- The Basics of MPC
- ERP
- Demand Management
- Forecasting
- S&OP
- MPS
- MRP
- Capacity Planning and Management
- JIT
- DRP
- MPS Design

METHODOLOGY

The program combines with a blend of formal instructions, interactive discussions, case studies, audio-visual presentation, practical demonstrations and written assignments, intended to allow students to solve practical problems. Guest faculty will handle two sessions to provide a practical view of the SAP software system.

LEARNING OUTCOMES

The student will reliably demonstrate the ability to: Determine the optimum production levels to meet defined demand within specified capacity limits. Prepare a production plan consisting of labor, materials, equipment, inventory, and a production cost budget summary Determine the resources requirements for a specified production plan Prepare a capacity plan using capacity requirements planning procedures.

REQUIRED COURSE MATERIALS AND READINGS

Suggested Readings/ References:

The text book that would be used for this course is:
Vollmann, T.E., W.L. Berry, D.C. Whybark, and F.R. Jacobs, Manufacturing Planning and Control for Supply Chain Management, Sixth Edition, McGraw-Hill, New Delhi

Participants have to be prepared with a few additional readings for some sessions as
Communicated. Extensive use of cases will form part of the readings.

OPTIONAL COURSE MATERIALS & READINGS (CASES, ARTICLES, REPORTS ETC)

- Manufacturing, Planning and Control by Pratik Jonsson and Stig-Arne Mattsson, Tata McGraw-Hill edition, New Delhi
- Schonberger, R. J., World Class Manufacturing, The Free Press, Collier Macmillan Publ., London, 1986.
- Ohno Taiichi, Toyota production system, Productivity press
- Articles from the Internet.
- HBR cases.

EVALUATION CRITERIA

Components and Weights

Components	**Weightage (%)**
Component 1 Assignment	20%
Component 2 Presentations/case analysis	20%
Component 3 Quiz	20%
End term	**40%**
Total	**100%**

ACADEMIC DISHONESTY

It is the responsibility of each student to become acquainted with and to uphold the ideals set forth by the university. Cases of academic dishonesty shall be processed in accordance with the Academic Integrity Policy prescribed by the university. For any clarification, contact the administration section in your department.

DETAILS OF SESSION: TENTATIVE COURSE SCHEDULE

WEEK	SESSION NO.	TOPICS TO BE COVERED	ASSIGNED READING, CASE DISCUSSION, ASSIGNMENTS
As shown in Example below			
Day 1& 2	Session No. 1to 3	Introduction to the course. MPC system, Definition and Framework, Demand Management Discuss the Context for MPC Define MPC Systems Describe the MPC System Framework Correlate MPC Systems with the needs of the Firm Discuss Demand Management (MPC Systems)-Forecasting Distinguish between Independent / dependent demand, customer order	Chapters 01, 02of the recommended text VWBJ Lecture and class discussions

		decoupling point.	
Day 2&3	Session No. 4 to 6	Demand Management, S&OP Describe MPC in different manufacturing environments (MTS,ATO,ETO) Forecast end item demand using Moving Averages and Exponential. Forecast Aggregate Demand using PyramidalForecasting techniques. Discuss Marketing inputs to SOP Review the Aggregate Planning Process Prepare an Aggregate Plan using different strategies (Level, Chase, Sub Contract) Revise the existing Aggregate plan by incorporating data from Marketing and Production.	Chapters 01, 02,03 Lecture In-class tutorial
Day 4&5	Session No.7to9	ERP, SCM, MPS Define ERP and connect functional units with ERP Management of SC Logistics Review tasks associated with Master Production Scheduling. Utilize planning techniques to create a MPS. Discuss the Bill of Materials Structuring for the MPS. Review Master Production Schedule Stability Develop and manage a Feasible MPS.	Chapters 01A, 04,05,06,10A Lecture In-class tutorial
Day 5,6,&7	Session No.10 to14	MPS MRP,DRP & JIT MRP & MPC, MRP Dynamics, Technical Issues, Using the MRP system, DRP in SC, Issues, Techniques and Principles	Chapters 06A,07, 09, 10 Lecture In-class tutorial
Day 8&9	Session No.15to18	MRP,DRP&JIT, Inventory Control JIT Principles, Applications, Implications Management Issues, Inventory costs, EOQ	Chapters 07, 09,10,11 Lecture In-class tutorial
Day 10 &11	Session No.19 to21	Capacity Planning and Utilisation Discuss the role of Capacity Planning. Complete a Rough Cut Capacity Plan using CPOF & Resource Bill. Complete a Detailed Capacity Plan by Scheduling Capacity and Materials together Discuss Management issues in Capacity Planning Elaborate on Capacity Utilization.	Chapter 07 Lecture In-class tutorial

Day 11 &12	Session No.22 to24	Production Activity Control MPC System Design Summarize a Framework for Production Activity Control Review Production Activity Control techniques. Apply Production Activity Control techniques.	Chapters 08,12 Lecture In-class tutorial

**Note: Faculty should give tentative schedule of all the 24 sessions and Topics to be covered along with the cases and assignments if any. (If required, changes can be done at later stage)
** 1 Session= 75 Min. (1.15hr)