

**LESSON PLAN**

<b>MBNO685</b>	<b>PRODUCTION PLANNING AND CONTROL</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

**OBJECTIVES**

To enable students understand the principles, practices and areas of application in PRODUCTION PLANNING AND CONTROL

**METHODOLOGY:** Lectures, Classroom discussions, Student presentations, Case analysis, Mini projects and Local industry visits

<b>Unit</b>	<b>Session /Hour</b>	<b>Topics</b>	<b>Student Preparation/ Input</b>	<b>Process/Delivery mode</b>	<b>Learning / Out put</b>	<b>Assessment/ Measurement</b>
1	1/2	Introduction to PPC-Definition of PPC-Factors determining production planning-Production control system-Factors determining production control procedure	R1 (Pg:257-264)	Faculty Students Interactive Session	Students learn how PPC deals with setting goals for production. And also Preparation of Production plan as it is one of core responsibility of PPC.	MCQ Quiz Short answers test
	2/2	Material flow pattern	Printed material	Faculty student's interaction.	Students prepare flow patterns, flow within work stations, flow	Quiz Short answers

					within departments, flow between departments, flow planning, measuring flow	test exit ticket
	3/3	Role of production planning and control in operations management-Phases in PPC functions-Functions of production planning-Function of production control-Production planning in different production system	R1 (Pg:264-279)	Group discussion faculty students interaction	Students prepare Loading,Scheduling,Combining Functions,Dispatching Reporting or Follow – up, Corrective Action Re-planning	MCQ Quiz Snap test Assignment
2	4/2	Capacity planning-Types of capacity-Capacity planning decision-Capacity Requirement Planning Routing -Route sheet	R2 (pg:242-251)	Group discussion faculty students interaction	Distinguish between long-term capacity strategy and medium-to short-term capacity strategy. Determine how capacity can be measured, Capacity calculation Identify the alternative approaches to planning capacity Capacity Requirement Planning –input and output	Quiz Short answers test exit ticket
3	5/3	Scheduling -Elements of scheduling-Scheduling technique for job shop production -Stages in scheduling Gantt chart	R1 (Pg:281-283) R2 (Pg:307-310)	Group discussion faculty students interaction Solving numerical cases in class	Learn the elements of scheduling, Process change-over reduction, Inventory reduction, leveling, Reduced scheduling effort, Increased production efficiency Labor load leveling, Accurate delivery date. Forward and backward scheduling, -learn Gantt chart the production control tool	MCQ Quiz Short answers test
	6/4	M JOB 2 M/C AND M JOB 3 M/C- Numerical problems and solutions	Printed Material	Group discussion faculty students interaction Solving numerical cases in class	Learn the thumb rule of Johnson’s algorithm	Surprise test
	7/3	Branch and Bound Technique	Printed Material	Solving numerical cases in class	Learn the algorithm of Branch and Bound Technique	

4	7/2	Resource Requirement Planning-Material Requirement Planning(MRP I) - Manufacturing Resource Planning (MRP II)-Computational procedure	R2 (Pg:260-274)	Group discussion faculty students interaction	Learn what is MRP,when to use MRP, What can MRP do, Basic Steps of MRP,overview of MRP system,MRP inputs, product structure file, Master production schedule, Inventory master file,MRP process, MRP Output, difference between MRP I and MRP II	MCQ Quiz Exit test assignment
	9/2	Forecasting –Steps in forecasting – methods in forecasting-methods of least square-Exponential smoothening	R3 (Pg:73-83)	Assignment Solving numerical cases in class	Learn what is forecasting? What are the steps in forecasting, problems in method of least square and exponential smoothening problems	Quiz Short answers test exit ticket
	10/3	Line balancing-Terminology used in line balancing-line balancing procedure-line balancing methods(Theory and numerical cases)	R2 (Pg:330-334)	Group discussion faculty students interaction	Prepare what is line balancing, objectives of line balancing, methods to improve line balancing	Quiz Short answers test MCQ
5	11/2	Production planning module of SAP R/3- Components in SAP R/3-Capacity planning in SAP R/3	T1 (pg:343-350)	Group discussion faculty students interaction	Prepare the modules in SAP R/3, its components, capacity planning	MCQ Quiz Short answers test
	12/2	Repetitive manufacturing-planning for repetitive manufacturing-production planning for process industries	T1 (pg:351-358)	Group discussion faculty students interaction	Prepare how repetitive manufacturing, master plans are typically created on a period and quantity basis (reduction in individual lot and order-specific processing)	MCQ Quiz Short answers test
Total hours						30

*Books*

***T1: PRODUCTION PLANNING AND CONTROL, Text and cases by S.K.MUKHOPADHYAY, 2ND EDITION PHI***

***Reference Books:***

- 1. R1: Production and Materials Management-K.Sridhara Bhatt***
- 2. R2: Production and operations management by K Aswathappa, Mr.K.Shridhara Bhat Himalaya publications second edition***
- 3. R3: Production and operations management by R.Panneerselvam***
- 4. R4: operations research by J.K.sharma***

**Numerical Cases to be solved in the class:**

- M job 2 machine
- M job 3 machine
- Branch and bound technique
- Line balancing
- Exponential smoothing, method of least squares
- Gantt chart
- MRP I

**Theory Problem Ratio:**

Theory	– 60%
Numerical Case	– 40%

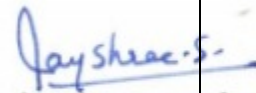
  
Ms.K.Kavitha

**COURSE COORDINATOR**



**Dr.K.Sadasivan**

**HOD**



**Dr. Jayshreesuresh**

**DEAN**

Objectives:

1. Understand Importance of quality management
2. Get an insight in to the key principles and key elements
3. Develop quality as a Passion and Habit

Unit/Session	Topic	Prerequisite	Learning	Assessment (Individual)
I -1,2	Quality Definitions Importance Types Levels	Revise POM concepts relevant to quality (Control charts, OC curve etc.) Read T-pp 1-9, Case – Quality Is King, T-pp24,25	<b>Apply</b> Garvin approaches to products of any one organization and specify standards based on each approach to each product. Experience and Participate in quality decision making through Tata Motors case analysis	Based on their summer project company experience, detail a case study of how quality levels were practiced in that organization – submission by end of 1 <sup>st</sup> week.
I-3	Quality Paradigms Dimensions CoQ	Read T-pp 10-19	Apply CoQ principles to identify CoQ for an organization.(CoQ-Numerical)	Solve problems on T-p.26 using CoQ framework.
I-4	Quality Benefit	Read T-pp 5-7	Experience the skill to calculate cost benefits using quality-profit framework.	Take a product or service, identify and quantify the benefits of improving quality and calculate the net benefits after incremental costs.
I-5	Quality Gurus-1 (Walter Shewhart, Edwards Deming, Joseph Juran, Philip Crosby,	Read T-pp 29-38	Appreciate the contribution of gurus to evolution of quality	Chart comparative time line of evolution of quality concepts AND the impact made to world economy.

	Armand Feiganbaum)			
I-6	Quality Gurus-2 (Ishikawa, Taguchi, Shingo Shigeo, Masaki Imai)	Red T-pp 39-53	Explain the difference in approaches of Western and Japanese gurus to quality.	Solve problems on QC curve and Loss Function.(Numericals)
I-7	Unit Review Case Study	Technosystems Case Study, T-pp 55	Measure impact of quality on Customers and alternative methods for ensuring quality.	Submit case study solution as group, present for class discussion.
II-1	TQM Concepts Pillars, Principles, Elements	Read T-pp 58-60, 65-70, Sundaram Clayton case T-p80	Recall the principles and concepts of TQM	Complete a quiz on TQM concepts.
II-2	Quality Leadership Traits, Functions	Read T-pp 84-87	Reflect on Leadership responsibilities needed for Quality	Assess the Strategic goals of a company based on their Mission and Vision and identify the gaps and strong points and present findings.
II-3	Strategic QM, Phases, Hoshin Kanri, BSC, Culture	Read T-pp 98-110, Industry Visit	Visit a factory practicing SQM and identify the elements in practice.	Identify the gaps between theory and practice in visit report.
II-4	TQM Awards (Deming Prize, MBNQA, EQA,EFQA, IMC-RBNQA) and ISO	Read T-pp 124-144, 516-520	Differentiate the criteria required for each award and that of ISO.	Assess the requirements to be fulfilled specific to the organization you worked during Summer for getting a particular Quality Award.
III-1	7 QC Tools	Read T-pp 227-252, Exercises pp 158-163	Select the appropriate tool for a quality problem analysis.(Control charts-numerical) Practical applications using Fish bone chart	Construct control charts for data and interpret results. Analyse a quality issue and find root cause.

III-2	7 New tools	Read T-pp 253-265, NTPC case T-pp 267-270	Select the appropriate tool for a quality management problem and solution design.	QM Cross word puzzles, in class exercises
III-3	Kaizen – process, tools (5S, 3M, SMED)	Read T-pp 272-290	Ability to apply the principles in class rooms practically (at least 3M and 5S)	Show case 5 S in respective class rooms for an audit.
III-4	Kaizen Tools (JIT, QCC, Poka-Yoke)	Read T-pp 293-308	Apply the QC Circle principles to better the environment of work.	Form QC circles and show case an improvement using QCC competitions such as QCFI.
III-5	Benchmarking	Read T-pp 345-355	Appreciate benchmarking methodologies and application	Complete a quiz on benchmarking methods
III-6	BPR	Read T-pp365-374, Escorts Case T-pp392-393	Design an existing production process and identify an alternate process with significant improvements	Depict a process using flow diagram and identify points of improvement.
III-7	Unit 3 Case Study	Read T-pp 360-362	Analyze the methodology used by the company in case.	Identify alternative methodologies that could have been used by the company with rationale.
IV-1	Reliability	Read T-pp 421-426	Explain reliability and measures. Measure from given data.(MTTF, MTBF-Numerical)	Solve problems on MTTF and MTBF.
IV-2	FMEA	Read T-pp 427-431	Given a situation can create an FMEA table and depict the same.	Able to chart an FMEA for a new product/service
IV-3	TPM	Read T-pp 431-441	Appreciate types of losses and be able to implement a preventive plan.	Complete a quiz on the concepts
IV-4	MRC Case	Pp446-447	Identify the use of	Discuss the objectives

			TPM concepts in real life	and outcomes of the TPM
IV-5	QFD	Read T-pp 290-292	Given a quality requirement for new products can detail the steps to design and produce same with House of Quality.	Design a new product/service using QFD.
IV-6	Customer Driven Quality	Read T-pp 450-454	Reflect on the role of customer for quality and how to enhance the role further.	Recall the essential components for customer requirements based on Kano's model
IV-7	Case-National Bank	Read T-pp 310-312	Identify the use of concepts learnt in real life	Differentiate Kaizen initiatives for a service vs manufacturing.
V-1	Service Quality	Read T-pp 491-500	Appreciate difference between product and service quality	Recall the elements of quality dimensions for product and service
V-2	SERVQUAL	Read T-pp 502-505	Ability to apply and measure quality of service	Explain the elements of the SERVEQUAL model and their relationships
V-3	Improving Service quality	Read T-pp 509-510	Ability to identify gaps and provide counter measures for service quality	Complete a quiz on service quality elements
V-4	Quality Audit	Read T-pp 546,547-552	Ability to conduct a quality audit for an operation	Design an audit program for implementation
V-5	End of Unit Case	Read T-pp 512-513	Analyse the case using the principles learnt.	Identify gaps and suggest improvements

Text Book (T):

1. Poornima Charantimath, Total Quality Management, 2<sup>nd</sup> Ed., Pearson, 2011

Reference (R):

1. Gitlow, H.S., et.al., Quality Management, 3<sup>rd</sup> Ed., Tata McGraw Hill, 2009
2. Panneerselvam, R. "Production and Operation Management, PHI Learning Private Limited, New Delhi (India)." (2011).

Suggested Topics for Mini Projects (group or Individual):

1. Developing a QFD for a service
2. Developing a QFD for a product development
3. Implementing 5S in class room and a Visual Management tool
4. Developing a Poka-Yoke operation
5. Develop TQM Posters for campus improvement
6. Detail an existing process using process flow diagram and identify an alternative flow with significant improvements
7. Develop an FMEA chart with details for a new product
8. Develop an FMEA chart with details for a new service
9. Complete an iteration of a significant Improvement in class room using QCC and Participate in QCFI competition.
10. Case Study of an organization-wide Quality Initiative in educational institution
11. Case Study of an organization-wide Quality Initiative in manufacturing/service organisation

Numerical Assessment: Cost of Quality, Taguchi Loss Function, Control charts, MTTF, MTBF.

Internal Components:

Class Participation	– 5 marks
Surprise Test	- 5 marks
Mini Project	- 15 marks
Cycle Test	- 10 marks
Model Test	- 15 marks

Course Coordinator

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**MB 13OM02 RESOURCE MANAGEMENT TECHNIQUES**

**L T P C**  
**2 2 0 3**

**LESSON PLAN (2014 -2015)**

**COURSE OBJECTIVES:**

After studying this course the learner will be able to understand the different types of decision making environments and the appropriate decision making approaches and tools to be used and to develop critical thinking and objective analysis of decision problems.

SESSION NUMBER	TOPIC	STUDENT PREPARATION /INPUT	PROCESS	LEARNING CONCEPT/OUTPUT	FEEDBACK/ MEASUREMENT
1	<b>UNIT - I</b> LINEAR PROGRAMMING MODEL FORMULATION	STRUCUTURE OF LP MODEL, ADVANTAGES AND LIMITATIONS OF LPPR <sub>1</sub> :PAGE NUMBER28-32	DISCUSSION	APPLICATION AREAS OF LP, LP MODEL FORMULATION – GUIDELINES.	QUIZ
2,3	GRAPHICAL METHOD	FEASIBLE SOLUTION, INFEASIBLE SOLUTION BASIC SOLUTION R1: PAGE NUMBER 72	SOLVING PROBLEMS	OPTIMAL SOLUTION, UNBOUNDED SOLUTION, EXTREME POINT SOLUTION	MCQ
4,5	SIMPLEX METHOD	STANDARD FORM OF AN LPP,SIMPLEX ALGORITHM R1: 104-108	APPLYING CONCEPTS	OPTIMAL SOLUTION OF LPP HAVING 3 OR MORE DECISION VARIABLES	TEST
6	CASE STUDY	CASE: GOLDING GROW	DISCUSSION		CASE PARTICIPATION
7,8	<b>UNIT – II</b> TRANSPORTATION PROBLEM	FEASIBLE SOLUTION, INITIAL SOLUTION BY VAM R1: 260-265	APPLICATIONS	FINDING INITIAL SOLUTION FOR A TRANSPORTATION PROBLEM	MCQ
9,10	OPTIMAL SOLUTION TO TRANSPORTATION PROBLEM	MODI METHOD R1: 269	EXERCISES	TESTING THE INITIAL SOLUTION FOR OPTIMALITY	QUIZ
11,12	SPECIAL CASES	R1: 283-297		UNBALANCED TP, DEGENERACY IN TP, ALTERNATE SOLUTION	TEST
13	CASE STUDY : SHIPPING WOOD TO MARKET	R5: CASE 8.1, PAGE 372.	DISCUSSION		CASE PARTICIPATION
14,15	ASSIGNMENT PROBLEM	HUNGARIAN PROCEDURE R1: 314-315	APPLYING THE	OPTIMAL ALLOCATION OF RESOURCES TO	QUIZ

			ALGORITHM	ACTIVITIES	
16,17	TRAVELLING SALESMAN PROBLEM	R1: 337	SOLVING PROBLEMS	OPTIMAL TRAVEL ROUTE	MCQ
18	<b>UNIT – III</b> NETWORK ANALYSIS	EVENT, ACTIVITY, DUMMY ACTIVITY, TIME ESTIMATES FOR VARIOUS ACTIVITIES IN A PROJECT R1: 426-432	CONSTRUCTING NETWORK	CONSTRUCTING NETWORK DIAGRAM FOR A GIVEN PROJECT	ASSIGNMENTS
19,20	CPM	CACULATION OF EARLIEST START TIME, EFT, LST, LFTR1: 436-438	EXERCISES	CALCULATION OF PROJECT DURATION AND FLOATS(TF,FF,IF), IDENTIFYING CRITICAL ACTIVITIES	QUIZ
21,22	PERT	OPTIMISTIC TIME, PESSIMISTIC TIME, MOST LIKELY TIME R1: 445-446	PROBLEMS	ESTIMATING PROJECT DURATION FOR R&D PROJECTS	TEST
23,24	CRASHING	DIRECT COST, INDIRECT COST, CRASH COST, COST SLOPE R1: 453-454	APPLICATION	TIME-COST TRADE-OFF	MCQ
25	CASE : KAUSHIK MILLS Pvt. Ltd	CASE 13.1 PAGE NUMBER 481			CASE PARTICIPATION
26	<b>UNIT – IV</b> GAME THEORY	COURSES OF ACTION, STATES OF NATURE, SADDLE POINT, PURE STRTEGY, PAY-OFF, R1: 392 – 395	LECTURE	DECISIONS UNDER CONFLICT SITUATION	QUIZ
27	DOMINANCE RULE	MIXED STRATEGY GAME R1: 399-400	DISCUSSION	GAMES WITHOUT SADDLE POINT	
28,29	GRAPHICAL METHOD	R1: 412	SOLVING PROBLEMS	MX2 GAMES AND 2XN GAMES	MCQ
30	<b>UNIT – V</b> SIMULATION	DISTINCTION BETWEEN ANALYTICAL AND SIMULATION MODELS, GENERATING RANDOM NUMBERS R1: 688-693	EXAMPLES	MONTE-CARLO SIMULATION PROCEDURE	
31,32	SIMULATION IN QUEUING	R1: 703	APPLYING CONCEPTS	AVERAGE WAITING TIME OF A CUSTOMER, IDLE TIME OF THE SERVER	MCQ
33,34	SIMULATION IN INVENTORY	R1:695	SOLVING PROBLEMS	CALCULATION OF SIMULATED DEMAND, INVENTORY COST	TEST
35	CASE: COUNTY BEVERAGE DRIVE - THRU	R4: CASE3, PAGE 632.	DISCUSSION		CASE PARTICIPATION

### INTERNAL ASSESSMENT

COMPONENT	MARKS
CYCLE TEST	10
SURPRISE TEST	5
MODEL EXAM	15

MINI PROJECT PRESENTATION	15
CLASS PERFORMANCE	5
TOTAL	50

**REFERENCES:**

1. J.K. SHARMA, OPERATIONS RESEARCH, THEORY AND APPLICATIONS, 4<sup>TH</sup> EDITION, MACMILLAN INDIA LIMITED, 2011.
2. R.PANNERSELVAM, OPERATIONS RESEARCH, PRENTICE HALL INDIA PRIVATE LIMITED, 2011.
3. HAMDY A.TAHA, OPERATIONS RESEARCH, PEARSON EDUCATION, 2009.
4. ANDERSON, SWEENEY, WILLIAMS, AN INTRODUCTION TO MANAGEMENT SCIENCE, 11e, CENGAGE LEARNING, 2011.
5. FREDERICK S. HILLIER, GERALD J. LIBERMAN, INTRODUCTION TO OPERATIONS RESEARCH, EIGHTH EDITION, THE McGraw – Hill COMPANY, 2006.

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**LESSON PLAN**

MB13OMO7	SUPPLY CHAIN MANAGEMENT	L	T	P	C
		2	2	0	3

**Objectives: To enable students to understand the principles, practices and areas of application in SCM in various industries**

**Pedagogy: Lectures, Class room discussions, Student presentations, Case analysis, Mini Projects**

SESSION	TOPIC	STUDENT	METHODOLOGY	LEARNING	MEASUREMENT/
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/UNIT		PREPARATION (Input)		OUTCOME	ASSESSMENT (Output)
1,2/Unit-I	SCM-overview	T1, Pg no 18 – 36	Class Room discussion	-Broad perspective of Supply Chain -How SC impacts a share holder	Quizzes, Snap Test
3,4/Unit -I	Supply Chain Technology	T1, Pg no 153 – 179	Student presentation and class room discussion	Converting SC technology into business technology	Discussions and presentation
5,6/Unit-I	Global dimensions of Supply Chain	T1, Pg no 74 - 81	PPT presentations, Mini Project	Adaption of SC to various global economies with special thrust to Asian region	Assessment
7/Unit-I	Case study on Nestle's Supply Chain Technology	Printed material	Case discussion and student preparation	Application of Supply chain technology	Case Analysis
8,9,10/ Unit-II	Demand Management	T1, Pg no 182-190	Class Room discussion	-Balancing supply and Demand for Supply chain -Outsourcing	Quizzes
11,12,13/ Unit-II	Transport Management	T1, Pg no 214 -232	Student presentation and class room discussion	Managing the flow of SC -understand the strategic dimensions of transportation system in supply chain perspective	Discussion and presentation
14,15,16/ Unit-II	Transshipment	<a href="http://howtoexportimport.com/Transshipment-A-redefinition-475.aspx">http://howtoexportimport.com/Transshipment-A-redefinition-475.aspx</a> , <a href="http://www.itintl.com/what-is-transshipment.html">http://www.itintl.com/what-is-transshipment.html</a>	Student presentation and class room discussion	Modes of transportation	Assignment Problem analysis
17/ Unit-II	Case study on VolksWagen	Printed material	Case discussion and student preparation		Case Analysis
18,19,20/ Unit-III	Warehousing	T1, Pg no 321- 341	Class Room discussion	Optimum utilization of distribution in SC	Snap tests
21,22,23/ Unit-III	Facility Location	T1, Pg no 365-375	Student presentation and class room	Understand the major location	Prepare modeling techniques for

			discussion	determinants	various logistics location
24,25/ Unit-III	Procurement	T1, Pg no 410 – 413	Class room discussion	Understand the role of procurement in value chain perspective	Assignments and snap test
26,27/ Unit-III	Pharmaceutical case study in warehousing	Printed Material	Case discussion and student preparation		Case Analysis
28,29/ Unit-IV	Reverse Supply Chain	T1, Pg 439 - 448	Guest lecture and student interaction	Understand the critical role of reverse logistics in achievement of supply chain objectives	Assignments
30,31/ Unit-V	Challenges in SCM	T1, Pg no 452 - 459	Student presentation and class room discussion	Overcome the difficulties of SCM and overcome them	Assignments

#### REFERENCES

1. John J. Coyle, A logistics approach to Supply Chain Management, Cengage Learning India private limited 2009.
2. Janatshah, Supply Chain Management, Pearson Education India private limited, 2009.
3. Amit Sinha and Herbert Kotzab, Supply Chain Management, Tata McGraw Hill, 2011.
4. Surendra M.Gupta, Reverse Supply Chains: Issues and Analysis, CRC Press, 2013.
5. David Blanchard, Supply Chain Management Best Practices, Wiley Publications, 2010.

