Theory Teaching Plan

Academic year: 2011 - 2012 Semester: ME (Mfg)-II Subject: 114: Facility Design and Planning
Duration: 16th Jan to 20th April 2012 Target Hours: 40*

Teacher's Name: Dr. P. H. Waghodekar Designation: Advisor (HR), IBS, MIT, A'bad.

List of books/periodicals available in the College Library

Sr.No.	Title	Author/Publisher/Year	Copies/ Accession No.
1	Logistics Engineering and Management, II Ed.	Benjamin B Chard, Pearson Education: Singapore, 2001.	1/28093
2	Purchasing and Supply Chain Management: Analysis, Planning & Practice.	Arjan J Vans Weels, Thomson Learning, Australia, 2003.	1/31486
3	Material Management Hand Book.	T H Allegen P E, McGraw Hill, 1997	1/29297
4	Integrated Material Management Hand Book.	R J Carter & P M Price, Pitman: London, 1995	1/27153
5	Hand Book of Material Management	G Gopalkrishnan, PHI: New Delhi, 1994.	1/20113
6	Logistics: Principles & Application.	Jon W Lang ford, McGraw Hill: New York, 1995	1/17806
7	Production Systems: Planning Analysis and Control, IV Ed	James L Riggs, John Wiley & Sons: New York, 1987	1/23684
8	Just In Time	David Hutchines, Jaico Publishing House: Mumbai, 1998	1/23762
9	Production and Organization Management	N G Nair, Tata McGraw Hill Publishing Co. Ltd.: New Delhi, 1996	-
10	Plant Layout and Material Handling	G K Agrawal, Jain Brothers: new Delhi, 2008	1/073
11	Production and Operations Management, III Ed	S N Chary, Tata McGraw-Hill: New Delhi, 2004	1/010
12	Maynard's Industrial Engineering Hand Book, III Ed	William K Hodson, McGraw Hill: New York, 1992	1/020081
13	Maynard's Industrial Engineering Hand Book, V Ed	Kjall B Z, Mc Graw Hill: New York, 2001	1/2001

(*) 40 hours include both 2 tests, each of one hour to be conducted during regular teaching hours, and one Tutorial/week..

List of books/periodicals to be procured

Sr.No.	Title	Author/Publisher/Year	No. of copies
1	ScienceDirect: IJPR, OR, etc.		
2	Websites will be given as and when required.		
3	Hand books on Quality control, Material Handling, Materials Management, SCM, Facility Management.		

Teaching aids available

Models/Cassettes	Charts/Any other not covered	Transparencies/Slides
ppt files, cassettes		
FDP_CD based on lecture notes available, CII Literature, reprints of a few FDP articles, etc.		

Teaching aids need to be procured: Nil

Models/Cassettes	Charts/Any other not covered	Slides/Slides

Detail Teaching Plan for the Semester: Duration 16th Jan 2012 to 20th April 2012

Week No.	Topics to be covered (hours allotted) **(Target Hours 40) See also Appendix "B"**	Monthly cumulative % of portion	
		Planned	Achieved
1	Plant location & Layout (3)		
2	Plant location & Layout (3)		
3	Plant location & Layout (2), Capacity Planning (1)		
4	Capacity Planning (3)		
5	Stores Management (3)		
6	Stores Management (1), Inventory Management (2)		
7	Inventory Management (2), Material Management (2)		
8	Material Management (3)		
9	Material Management (3)		
10	Material Handling (3)		
11	Material Handling (3)		
12	Material Handling (1), Logistics Management (2)		
13	Logistics Management (3)		
	Total (%)		

Industry visits Planned

Sr. No.	Class/Proposed dates of visit	Name & Address of Industry	Contact Person/ Phone/e-mail	Areas of Interest/ Locations
1	One visit, March/April 2012.			

Expert Lectures

Sr. No.	Class/Proposed dates of talk	Name & Address of Expert	Phone/e-Mail	Topic
1	Two guest speakers, Feb end, April 1st week 2012			

Home Assignments/Quizzes and Tutorials, See Appendix "A"

Assignment No.	Chapter	Assignment/Quiz	Date of Submission	Date of Evaluation
1				

Unit Tests

Sr. No.	Date of Test	Portion	Date of Result	Question Bank given?
1	4th March 2012	Covered up to Feb 2012 end.	06th March 2012	See Appendix "A"
2	8th April 2012	Covered between March and 3rd April 2012	12th April 2012	

The above schedule will be adhered to strictly. Tests-dates/Timings may change if some unavoidable future events are overlapping on the test schedule.

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Appendix "A"

Chapter-I: Plant Location and layout	
Q No	**Question**
1	State the plant layout factors and describe the factors Material Handling, Aisles, Flow Type and Orientation.
2	List the different types of plant layouts. Which layout will you recommend for the following: 1. In door patients wards in hospitals. 2. Big Bazaar 3. Small Scale engineering industry. 4. Large scale industry with diversified product models. 5. Human body Justify your recommendation.
3	What are the factors affecting selection of location for a plant? Discuss Availability of workforce factor.
4	What are the objectives of plant layout? State the criteria for selecting a plant layout. What is SLP?
5	Human body is analogous to plant layout. Comment. How the human body and a plant meet the requirements of building and services?
6	What is constructive and improvement models of plant layout? List the different approaches for plant layout design like transportation, Queuing, etc.
7	What is the importance of work flow in plant design?
8	Only state mathematical formulation (model) of plant layout for: 1. Graph 2. Transportation 3. Distance matrix 4. TCR 5. TFR
9	State the main features of CRAFT, CORELAP and ALDEP
10	What is REL chart? State its use.
11	Explain how the plant layout is affected by the consideration of: 1. Capacity planning 2. Equipment selection 3. Material Handling 4. Logistics 5. Inventory 6. Stores 7. Material Management 8. Lean Manufacturing 9. Safety and Security 10. Building shape and floors 11. Services and utilities 12. Illumination
	Dr. P H Waghodekar Dated: 14.1.2012
Attempt any two as Tutorials.: **Last Date for Submission: 08.2.2012**	

Chapter-II: Capacity Planning	
Q No	**Question**
1	Give the shades of: Capacity, capability, ability, potential constraint, blocking, obstacle and hurdle.
2	What are the ingredients of effective capacity planning? "Capacity planning is essentially resources planning". Do you agree? Justify. List the components of capacity planning, and explain any two of these. What do you mean by process capacity planning? How is it arrived at?
3	What is EPQ? State its role in capacity planning.
4	Differentiate between production balancing and assembly line balancing (ALB)? List the tools and techniques of ALB and explain RPW method of ALB. What is the engineering economics of ALB?
5	Explain the terms: Balance delay, balance loss and line efficiency. What steps would you like to propose as a production manager to improve the balance line efficiency from 60% to 90%?
6	What is normal work area (NWA)? Would like to treat work station as NWA? What are the human factors considerations involved while designing a work station? Work station design means only ergonomics design. Comment.
7	State the importance of selection of machines and plants? How would you like to differentiate: plant, machine, equipment and facility?
8	How is capacity planning related with the followings 1. Fluctuating market (demand). 2. Materials handling. 3. Production flow. 4. Work force. 5. Inventory management. 6. JIT and Lean thinking.
9	State capacity units of the following: ✓ Super fast trains. ✓ Jet airways. ✓ An Engineering College. ✓ A hospital. Dr P H Waghodekar ✓ Road width. January 14, 2012.
Attempt any two as Tutorials.: Last Date for Submission: 20.2.2012	

Chapter-III: Stores and Inventory Management… Materials Management	
Q No	**Question**
1	"Inventory is a grave yard for industry". Comment.
2	List the types of inventory. How do you differentiate between stores and inventory? What is EOQ? State its role in Inventory Management.
3	List the inventory models. ABC analysis is nothing but prioritization. Do you agree? Justify.
4	How does inventory location affect plant layout? What are the considerations for inventory locations?
5	Differentiate between periodic and perpetual inventory. What is the scenario of inventory control in a unit you have visited?
6	Inventory can best be managed through JIT, TPS or Lean thinking. Comment.
7	Illustrate two bin system, and KANBAN. How do standardization and codification affect inventory control?
8	Present a flow diagram for simulating inventory control.

9	Explain: Material Requirement planning, MRP-II & ERP. How will you evaluate ERP package?
10	Zero Inventories leads to "Aparigraha". Comment
11	What is 'make and/or buy decision'? How is it affected by materials management, logistics, and capacity planning? Dr P H Waghodekar Jan 14, 2012
Attempt any two as Tutorials.: Last Date for Submission: 27.2.2012	

Chapter-IV--V: Logistics Management. Materials Handling	
Q No	**Question**
1	What is meant by logistics? What is logistics organization? How is it controlled?
2	What are the various considerations (or elements) you will account for designing a logistics system? Explain any one logistics management model you know.
3	Materials Handling (MH) is like blood circulation in human body. Comment. State the principles of MH.
4	State the objectives of MH. How is MH classified?
5	State the factors affecting the MH system. What is about the engineering economics of MH?
6	How does MH affect plant layout and capacity planning?
7	Security and safety are the two vital elements of MH. Comment
8	What are the human factors involved in MH? How the weight is lifted? Dr P H Waghodekar Jan, 14, 2012.
Attempt any two as Tutorials.: Last Date for Submission: 29.3.2012	

Note: Students are required to practice numerical problems. Numerical problems and notes in the form a CD- containing ppt, and doc-files, published recent international articles- are available with me. Students can bring CD and get material, numerical will be dealt in class and can be taken as home-assignments.

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Appendix "B"

MARATHWADA INSTITUTE OF TECHNOLOGY, AURANGABAD.

Detail MECHANICAL ENGINEERING DEPARTMENT

TEACHING PLAN: Dr. P H Waghodekar, CLASS : ME (Mfg) **PART II 2011-2012**

Facility Design and Planning

TEACHING SCHEME

THEORY : 3 Hrs/Week

TUTORIAL: 1 Hrs/Week

EXAMINATION SCHEME

THEORY : 100 Marks (3 hrs)

TOPIC	CONTENT**	OBJECTIVES	LECT (Hrs)	L NO.	TOPICS TO BE COVERED	REMARK
			SECTION A			
1. Plant location and layout	Plant layout factors and theories, selection criteria for layout, site, factory building and services, transportation model in plant location, design and development of process layout: introduction, spiral analysis, straight line method, travel charting method, load distance chart, optimization of process layout using schematic diagrams, templates, CRAFT, CORELAP and ALDEP	Analytical analysis, reasoning, argument and decision making skills.	5 + 3*	1	P Layout: Importance, factors	L. 1 Notes in advance,
				2	Criteria, types, tools	PPt slides
				3	Tools	Case studies
				4	Computer in Layout	
				5	Computer in Layout	
				6	Computer in Layout*	
				7	Case study: CRAFT*	
				8	Case Study: CORELAP, ALDEP*	
2. Capacity planning	Concept, cost output relationship, economics and diseconomies of scale. EPQ, production and assembly line balancing, empirical method, heuristic method, RPW method, design of workstation, selection of machine and plant.	Critical thinking, creativity, quantitative (optimization) analysis.	3+1	1	Capacity concept, cost effect	L. 2 Notes in advance,
				2	EPQ, Line balancing*	PPt slides
				3	Workstation design	Case studies
				4	Selection machine/plant	
3. Stores Management Inventory Management	Stores Management: Objectives, site and location, goods movement theory, and layout, stores design consideration.	Critical thinking and decision making	3+1	1	Objectives, site and location	L. 3 (a) Notes in advance,
				2	Layout and movement theories	PPT slides
				3	Design consideration	Case studies
				4	Case study*	
	Inventory Management: Priorities, perpetual inventory, system, periodic system, comparison of perpetual and periodic inventory system, peculiarities in India.	Decision making through Pareto analysis	3+1	1	ABC analysis, Pareto tool	L. 3 (b) Notes in advance,
				2	Perpetual inventory	PPT slides
				3	Periodic inventory	Case studies
				4	Numerical*	
					Section A Total : 14 theory + 6 Tutorial	
			SECTION B			
4. Materials Management	Evolution, scope and functions, purchasing procedures, integrated approach, integration with production and sales, material management planning and budgeting, various techniques, ABC analysis, standardization and codification, make and buy decision.	System approach, planning and control skills	5+3	1	Evolution, scope, function	L. 4 Notes in advance,
				2	Integrated approach	PPT slides
				3	Purchase procedure*	Case studies
				4	Planning and budgeting	
				5	Make of buy decision*	
				6	Numerical and 2 case studies*	
5. Material Handling	Objectives and classification, selection of MH system for various applications, like production shop, foundry, etc, factors affecting handling systems, constructing a layout, safety environment, and human factor in MH, safety in industry, dust control, noise control.	Analysis and selection skills	5+2	1	Objective, classification	L. 5 Notes in advance,
				2	MH selection	PPT slides
				3	Applications	Case studies
				4	MH Principles*	

				5	Environment control*	
6. Logistics Management	Genesis of logistics: logistics decision on facility location, inventory policy, transportation, storage and material handling, logistics organization and control.	Logistics thinking, negotiations, numerical and problem handling	4+1	1	Genesis,	L. 6 Notes in advance,
				2	Logistics decision making	PPT slides
				3	Logistics organization	Case studies
				4	Case study*	
				5	Case study*	
					Section B Total: 14 Theory + 6 Tutorials.	

Total Hrs **40: 28 Theory 12 Tutorials**

NOTE:

1. (*) indicates Tutorial hours.
2. (**) Topic title and contents refer to university syllabus.
3. Lecture notes and ppt presentation will be made available as a soft copy well in advance to all students concerned.
4. E-mail will be used extensively; Real-life case studies/examples will be used.
5. Lecture session will be interactive and brainstorming.

Aurangabad
Dated: 14th Jan 2012

Dr. P H Waghodekar
Adviser (HR) and Subject Teacher.

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