

Pandit Deendayal Petroleum University
School of Technology
Course Structure for B. Tech. Industrial Engineering

SEMESTER VIII			B. TECH. INDUSTRIAL ENGINEERING										
Sr. No.	Course Code	Course Name	Teaching Scheme					Exam Scheme					Total Marks
			L	T	P	C	Hrs./Wk.	Theory			Practical		
								MS	ES	IA	LW	LE/Viva	
1	IE 406	Project Management	3	-	-	6	3	30	60	10	-	-	100
2	IE 407	Supply Chain Management	3	-	-	6	3	30	60	10	-	-	100
3	IE 4XX	Department Elective - 3	3	-	-	6	3	30	60	10	-	-	100
4	IE 408	Organizationa Behavior and Human Resources Management	3	-	-	6	3	30	60	10	-	-	100
5	IE 409T	Simulation of Manufacturing and Service Systems (Theory)	3	-	-	6	3	30	60	10	-	-	100
6	IE 409P	Simulation of Manufacturing and Service Systems (Practical)	-	-	2	1	2	-	-	-	25	25	50
7	IE 410	Major Project	-	-	12	6	12	30	60	10	100	50	250
		Total	15	-	14	37	29						800

MS = Mid Semester
LW = Laboratory Work

ES = End Semester
LE = Laboratory Exam

IA = Internal Assessment (like quiz, assignments, etc.)

IE 406 PROJECT MANAGEMENT										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	6	3	30	60	10	--	--	100
<p>UNIT I 9</p> <p>Introduction to Project Management: Justifying Project Management, Projects – Definitions, The Project Management Triangle – Scope, Time and Cost, What is Project Management, Projects & Operations, The Project Life Cycle, Project Stakeholders, Project Management Process Groups, Project Management Knowledge Areas</p> <p>Specification of a Project: The Project Charter, The Project Scope Document, Work Breakdown Structures, Project Contracts – Scope, Delivery, Costs and Risks.</p>										
<p>UNIT II 9</p> <p>Project Planning and Scheduling: Project Network Representations, Activity Parameter Estimation – Time, Cost and Resources, Project Time Schedule, Gantt Charts, CPM and PERT, Activity and Project Crashing, Resources Scheduling.</p>										
<p>UNIT III 12</p> <p>Project Execution Management: Quality Specifications, Quality Control Tools, Resources Procurement and Allocation, Systems and Processes, Communications and Documentation, Managing Teams, Resources Demobilization, Project Simulation and Risk Assessment, Use of IT tools.</p>										
<p>UNIT IV 9</p> <p>Project Monitoring and Control: Project Work Measurement, Performance Measurement, Earned Value Management, Estimate Revision.</p> <p>Project Closure and Review: Performance Evaluation – Scope, Time and Cost, Performance of Teams, Lessons Learnt, Project Closure Report.</p> <p>Integrated Examples/Cases</p>										
APPROXIMATE TOTAL										39
Texts and References										
<ol style="list-style-type: none"> 1. <i>PMBOK® Guide</i>, 4th Edition 2. Mantel Jr., Samuel J., Jack R. Meredith, Scott M. Shafer, Margaret M. Sutton with M. R. Gopalan (2006) <i>Project Management Core Text Book</i>, First Indian Edition, Wiley, New Delhi. 2. Meredith, Jack R., and Samuel J. Mantel, Jr. (2010) <i>Project Management: A Managerial Approach</i>, 7/e, Wiley, New Delhi. 3. Maylor, Harvey (2003) <i>Project Management</i>, 3/e, Pearson, New Delhi. 4. Pinto, Jeffrey K. (2009) <i>Project Management: Achieving Competitive Advantage and MS Project</i>, 1/e, Pearson, New Delhi. 5. Gray, Clifford and Erik Larson (2005) <i>Project Management: The Managerial Process</i>, 3/e, Tata McGraw-Hill, New Delhi. 6. Nicholas, John M. (2008) <i>Project Management for Business, Engineering and Technology: Principles and Practice</i>, 3/e, Elsevier, New Delhi. 										

IE 407 SUPPLY CHAIN MANAGEMENT										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	6	3	30	60	10	--	--	100
<p>UNIT I 10 Understanding the supply chain (SC), decision phases, process view of a SC. SC strategies, supply chain drivers and metrics, strategic issues related to facilities, inventory, transportation, sourcing, pricing, etc. The role of distribution in the SC, factors influencing distribution network design, framework for network design decisions. Models for facility location and capacity allocation.</p> <p>UNIT II 10 Globalization of SC networks, offshoring, uncertainty in global SC operations, the bullwhip effect, risk management in SC, concept of pooling, demand forecasting in a SC. Aggregate planning a SC, use of linear programming models. Cycle inventory in SC – various models.</p> <p>UNIT III 10 Transportation in SC, characteristics of transport modes, tradeoffs in transportation system design, third and fourth party logistics. Sourcing in SC, supplier scoring and assessment, supplier selection – auctions and negotiations. Supply chain contracts, risk sharing. Sourcing planning and analysis.</p> <p>UNIT IV 8 Pricing and revenue management in SC – perishable assets, seasonal demand, bulk and spot contracts. Information technology in SC, IT framework for SC, CRM, SRM. Coordination in SC, effect of lack of coordination on SC performance, vendor managed inventories, CPFR. Case studies in SCM.</p> <p style="text-align: right;">APPROXIMATE TOTAL 38</p>										
Texts and References										
<ol style="list-style-type: none"> Chopra S., Meindl P. and Kalra D. V., Supply Chain Management: Strategy Planning and Operation, 4th edition, Pearson. Simchi-Levi D., Kaminsky P., Simchi-Levi E. and Ravi Shankar, Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies, 3rd edition, Tata McGraw-Hill. Chandrasekaran N., Supply Chain Management: Process, System and Practice, Oxford University Press. Hopp, Wallace J., Supply Chain Science, McGraw-Hill Irwin. Phillips, Robert, Pricing and Revenue Optimization, Stanford University Press. Shah, Janat, Supply Chain Management: Text and Cases, Person Education. 										

IE 409T SIMULATION OF MANUFACTURING AND SERVICE SYSTEMS (THEORY)										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	6	3	30	60	10	--	--	100
<p>UNIT I 10 Principle of Computer Modeling and Simulation: Monte Carlo simulation. Nature of computer-modeling and simulation. Limitations of simulation, areas of applications. System and Environment: Components of a system -discrete and continuous systems, Models of a system -a variety of modeling approaches. Discrete Event Simulation: Concepts in discrete event simulation, manual simulation using event scheduling, single channel queue, multiple server queue, simulation of inventory problem. Demonstration of Monte-Carlo simulation using spreadsheets. Statistical Models In Simulation: Discrete distributions, continuous distributions.</p> <p>UNIT II 10 Random number generation, techniques for generation of random numbers, tests for random numbers. Probability distributions used in simulation. Data collection for simulation experiments, analyzing input data, goodness of fit tests.</p> <p>UNIT III 12 Introduction to simulation languages (like GPSS/H, Simpy or similar). Describing simulation models using blocks, transaction approach, modeling single and multiple server queues using a simulation language, controlling movement and timing. Comparison of simulation languages and simulation software, modeling using simulation software (like Arena or similar).</p> <p>UNIT IV 6 Design and Evaluation of Simulation Experiments: variance reduction techniques – antithetic variables, variables-verification and validation of simulation models. Output analysis of simulation experiments, presentation of results. Selection of simulation software, simulation packages.</p> <p style="text-align: right;">APPROXIMATE TOTAL 38</p>										
Texts and References										
<ol style="list-style-type: none"> 1. Jerry Banks, John S. Carson II, Barry L. Nelson and David M. Nicol, Discrete Event System Simulation, 4th edition, Prentice Hall India 2. Averill Law and David Kelton, Simulation Modeling and Analysis, 3rd edition, McGraw Hill 3. David Kelton, Randall Sadowski and Nancy Swets, Simulation with Arena, 5th edition, Tata McGraw Hill 4. Schriber, T. J., An Introduction to Simulation Using GPSS/H, Wiley 										

IE 409P SIMULATION OF MANUFACTURING AND SERVICE SYSTEMS (PRACTICAL)										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
0	0	2	1	2	--	--	--	25	25	100
<p>LIST OF EXPERIMENTS 8</p> <ol style="list-style-type: none"> 1. Building a basic simulation model with a spreadsheet 2. Building a basic simulation model with a simulation language 3. Simulation of single server queuing systems 4. Simulation of multiple server queuing systems 5. Simulation of travel of multiple categories of products/customers through a system 6. Building advanced simulation models with simulation software 7. Visualization/animation of simulation models 8. Output analysis 										

IE 408 ORGANIZATIONAL BEHAVIOUR & HR										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	--	6	3	30	60	10	--	--	100
UNIT-I					10 Hours					
<p>The Foundations of Organizational Behavior: Historical Background, Research Methodology, Theoretical, Frame works. OB in global context, Role of Information Technology, TQM, Learning Organizations.</p>										
UNIT-II					10 Hours					
<p>Individual Behavior: Biographical Characteristics, Ability, Personality, Learning, implications for Performance and Satisfaction. Perception and Individual Decision –Making Values, Attitudes and Job Satisfaction.</p>										
UNIT III					10 Hours					
<p>Basic Motivation Concepts: Work Motivation Approaches – Content and Process Theories of Work Motivation – Contemporary Theories of Work Motivation – Motivation through Job Design, Quality of Work Life, Goal Setting.</p>										
UNIT IV					10 Hours					
<p>Foundations of Group Behavior: Communication and Group Decision Making – Leadership Styles and Skills – Power and Politics – Conflict and Inter – group behavior. Organization Culture: Organizational Change – Organizational Development Organizational Climate – Work Stress.</p>										
Approximate Total					40 Hours					
Text books and References										
<ol style="list-style-type: none"> 1. Organizational Behavior – Fred Luthans – McGraw Hill – 1997. 2. Human Behavior at work– Keith Davis – Prentice Hall India – 2007. 3. Organizational Behavior – Stephen. P. Robbins – Prentice Hall, India. - 9th edition2001. 4. Organizational Psychology – Robin, Kolb, etc – 1996. 										

IE 416 BUSINESS PROCESS & ERP										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	--	6	3	30	60	10	--	--	100
UNIT-I ERP AND TECHNOLOGY										10
Introduction – Related Technologies – Business Intelligence – E-Commerce and EBusiness – Business Process Reengineering – Data Warehousing – Data Mining – OLAP – Product life Cycle management – SCM – CRM										
UNIT-II ERP IMPLEMENTATION										10
Implementation Challenges – Strategies – Life Cycle – Pre-implementation Tasks – Requirements Definition – Methodologies – Package selection – Project Teams – Process Definitions – Vendors and Consultants – Data Migration – Project management – Post Implementation Activities.										
UNIT III ERP IN ACTION & BUSINESS MODULES										10
Operation and Maintenance – Performance – Maximizing the ERP System – Business Modules – Finance – Manufacturing – Human Resources – Plant maintenance – Materials Management – Quality management – Marketing – Sales, Distribution and service										
UNIT IV ERP MARKET										10
Marketplace – Dynamics – SAP AG – Oracle – PeopleSoft – JD Edwards – QAD Inc – SSA Global – Lawson Software – Epicor – Intutive,Enterprise Application Integration – ERP and E-Business – ERP II – Total quality management – Future Directions – Trends in ERP.										
Approximate Total										40 Hours
Text books and References										
1. Alexis Leon, "ERP DEMYSTIFIED", Tata McGraw Hill, Second Edition, 2008.										
2. Mary Sumner, "Enterprise Resource Planning", Pearson Education, 2007.										
3. Jim Mazzullo,"SAP R/3 for Everyone", Pearson,2007.										
4. Jose Antonio Fernandz, " The SAP R /3 Handbook", Tata McGraw Hill, 1998.										
5. Biao Fu, "SAP BW: A Step-by-Step Guide", First Edition, Pearson Education, 2003.										