NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
DEPARTMENT OF PRODUCTION ENGINEERING
M. Tech (Industrial Engineering and Management)
Total Credits: 60
(operative for students of 2011-2012 admission)

CODE	Semester 1	L	T	P	C	CODE	Semester 2	L	T	P	C
MA611	Data Analysis for Management & OM lab I	2	0	2	3	PR652	Quality & Reliability Engineering	3	0	0	3
PR 651	Operations Research	3	0	0	3	PR654	Modeling and Simulation & Simulation lab	2	0	2	3
PR 653	Analysis and Control of Manufacturing Systems & OM lab II	2	0	2	3	PR656	Supply chain management & SCM lab	2	0	2	3
PR 655	Human Resource management	3	0	0	3	PR658	Financial Management	3	0	0	3
PR 657	Systems Engineering	3	0	0	3		Elective II	3	0	0	3
	Elective I	3	0	0	3		Elective III	3	0	0	3
		16	0	4	18			16	0	4	18

CODE	Semester 3	L	T	P	C	CODE	Semester 4	L	T	P	C
PR697	Project Work-Phase-I	0	0	24	12	PR 698	Project Work-Phase-II	0	0	24	12
		6	0	24	12			0	0	24	12

LIST OF ELECTIVES

CODE	INDUSTRIAL ENGINEERING STREAM	L	T	P	C	CODE	MANAGEMENT STREAM	L	T	P	C
PR661	Scheduling Algorithms	3	0	0	3	PR662	Information Management	3	0	0	3
PR663	Computer-Aided Process Planning and Control	3	0	0	3	PR664	International Business Management	3	0	0	3
PR665	Design & Analysis of Flexible Manufacturing Systems	3	0	0	3	PR666	Project Management	3	0	0	3
PR667	Research Methodology	3	0	0	3	PR668	Marketing Management	3	0	0	3
PR 669	Design and Analysis of Experiments	3	0	0	3	PR670	Total Quality Management	3	0	0	3
PR 671	Reliability safety and maintenance	3	0	0	3	PR672	Technology Management	3	0	0	3
PR 673	Enterprise Resource Planning	3	0	0	3	PR674	Decision Support Systems	3	0	0	3
PR 675	Design and Analysis of Algorithms	3	0	0	3	PR676	Knowledge Management	3	0	0	3
PR 677	Lean and Agile Manufacturing	3	0	0	3	PR678	Product Life Cycle Management	3	0	0	3
PR 679	Facilities Planning and Design	3	0	0	3						
PR 681	Production Management Systems	3	0	0	3						
PR 683	Advanced optimization techniques	3	0	0	3						

Semester I

MA611 Data Analysis and Management & OM Lab1   L 2T 0P 2   Credits 3
(This course is application based and SYSTAT Package is used for analysis part. Theory content is evaluated for 70 marks and Practical input is evaluated for 30 Marks)
Data modeling and its role in planning and policy analysis. Review of probability, linear algebra, matrix manipulations and fundamental concepts in statistics. Introduction to SYSTAT, exploratory data analysis. Introduction to simple and multiple regression. Multiple regression and regression diagnostics. Model fitting and measures of fit. Gauss-Markov Condition. Testing and General Linear Hypothesis. Indicator Variables; Analysis of Variance. Heteroscedasticity and weighting. Outlier Detection. Polynomial Models, splines, broken line regression, transformations including Box-Cox/Box-Tidwell transformations Nonlinear Least Squares Multicollinearity. Principal Components, Factor Analysis and ANOVA. Qualitative, Limited Dependent Variable and Count models. Understanding statistical concepts, Analysis of data.

References:
1. *Richard Johnson, Miller & Freund's Probability and statistics for Engineers, 7th Edition, Prentice –Hall of India, Private Ltd., New Delhi (2007).*
2. *Richard A.Johnson and Dean W, Wichern, Applied Multivariate Statistical Analysis, 5th Edition, Pearson Education, Asia (2002).*
3. *Gupta, S.C and Kapoor, V.K. "Fundamentals of Mathematical Statistics, Sultan and Sons, New Delhi (2001).*
4. *Dallas E Johnson, Applied multi variate methods for data analysis, Duxbury Press (1998)*
5. *Richard I Levin, Statistics for Management, PHI (2000)*

PR651 Operations Research   L 3 T 0 P 0   Credits 3
Linear programming- methods- Simplex method – Big M method – Two phase method – Special cases - Goal programming. Duality analysis-sensitivity analysis-changes in right- hand side constants of constraints- changes in objective function co-efficient-adding a new constraints-adding a new variable. Dual simplex method- Cutting plane algorithm- Branch and Bound technique-Zero-one implicit enumeration algorithm - applications of dynamic programming – Cargo loading model – Work force size model – Equipment replacement model – Inventory model. Shortest path model – Maximal flow problem - Crashing of project network – Resource leveling & Resource allocation technique. Unconstrained nonlinear algorithms-Constrained algorithms- Separable programming -Quadratic programming-Geometric programming-Stochastic programming.

References:
1. *Handy M.Taha, Operations research, an introduction, 7th edition, PHI, 2003.*
2. *Don T.Phillips, A.Ravindran & James Solberg, Operations Research: Principles and practice, John Wiley, India, 2006.*
3. *G.Srinivasan , Operations Research Principles and Applications, ,PHI 2008*
4. *Panneerselvam ,R, "Operations Research", Prentice – Hall of India, New Delhi,2002*

PR653 Analysis and Control of Manufacturing Systems & OM Lab2 L2 T0 P2 Credits 3
(This course is application based and CPlex and GAMS Package is used for analysis part. Theory content is evaluated for 70 marks and Practical input is evaluated for 30 Marks)
Production system –Forecasting and its types – Forecasting errors and tracking signals - Inventory costs Terminology of Inventory systems – Inventory policies –Analysis of Static Deterministic Inventory Models-Aggregate Production Planning - Value stream management for lean office Introduction to material requirements planning - Lot sizing – MRP Versus MRP II – Re planning frequency in MRP Introduction to Job Sequencing – n Jobs, One machine – n Jobs, Two machines – n Jobs, Three machines – n jobs - Two Jobs , M Machines – n jobs, M Machines – sequencing Jobs on Parallel Machines – Minimization of Setup costs - Travelling Salesman problem –Job shop scheduling – Assembly line balancing

References:
1. *Elsayed A. Elsayed and Thomas O. Boucher , " Analysis and Control of Production Systems,Printice Hall Publn., 1994.*
2. *Monks J.G., " Operations Management, John Wiley, 1992.*
3. *Buffa,E.S. andSarin, R.K. ," Modern production /Operations Management", John Wiley & Sons, 1994.*
4. *Seetharama L.Narasimhan, Dennis W.McLeavey, Peter J.Billington,"Production Planning and Inventory Control" , PHI, 2002.*
5. *Panneerselvam,R. Production and operations management, PHI, 2005.*
6. *Lee J.Krajewski, Larry P.Ritzman, "Operations Management", Pearson Education, 2000*

PR 655 Human Resource Management L3 T0 P0 Credits 3
Individual Behavior-Personality –Attribute – Perception –Motivation Theories-Group Behavior-Group Dynamics, Group decision making, Inter personal Relations-Dynamics of Organizational Behavior- Organizationl Climate–Organizational change –the Change Process & Change Management-Human Resources Planning–HR audit, Recruitment-Selection-Interviews -Human Resources Development-Employee Training -Career Development-Performance Appraisal-Compensation-safety and Health-Employee Relation-Management Development.

References:
1. *Stephen R. Robbins, "Organizational Behavior", PHI, 1998.*
2. *David A. Decenzo & Stephen R. Robbins, "Personnel/Human Resources Management", PHI, 1997.*
3. *Fred Lutherans, "Organizational Behavior", Oxford University Press, 2000.*
4. *Cary dessler "Human resources Management" Printia Hall of India 9th edn.2003*
5. *K. Ashwathappa "Human resoursces & personal Management" Text & Cases Tata McGraw Hill & Co 3rd edn.2002.*

PR 657 Systems Engineering L3 T0 P0 Credits 3
Systems theory, Life-Cycle phases, Systems Engineering processes, Seven-phase and twenty-two phase life cycle for systems acquisition. Problem or Issue identification, Formulation of issues with an example –Requirements statement, Generation of Alternatives or System synthesis, Feasibility studies. Analysis of systems with uncertain and imperfect information, structural modeling – trees, causal loops, and influence diagrams, system dynamics models, Economic models, Reliability models, discrete event models. Interpretation of alternative courses of action, Formal Decisions – prescriptive and normative decision assessments, Methods for systems Engineering Management

References:
1. *Introduction to Systems Engineering, Andrew P Sage and James E Armstrong, Wiley Series (2000)*
2. *George J Klir, Facets of Systems Science, Kluwer Publishers, 2001*
3. *Analysis and Design of Information systems, Arthur M. Langer, Springer 2001*
4. *Systems Analysis and Design, Kendall and Kendall, Prentice hall, 2004*
5. *Analysis and Design of Information systems, V. Rajaraman, PHI, 2006*

Semester II

PR 652 Quality & Reliability Engineering L 3 T 0 P 0 Credits 3

Basics of quality – process capability analysis – quality gurus and their philosophies – Quality standards – ISO 9000 series and 14000 series Design of experiments – Anova analysis – Reliability – MTBF – MTTR Acceptance sampling by variables and attributes – ASN – ATI – AOQL - IS2500 plans – MIL STD 105E Control charts for variables and attributes - Taguchi methods, cases Concurrent engineering Quality function deployment – FMEA – Quality circles - Total quality management –Kaizen

References:

1. *Douglas, C. Montgomery, Introduction to Statistical Quality Control, IInd Edition, John Wiley & Sons, 2001.*
2. *Smith, D.J. "Reliability Maintainability and Risk; Practical methods for engineers", Butterworth-Heinemann, New Delhi, 2001*
3. *Grant, E.L. and Leavenworth, R.S., Statistical Quality Control, TMH, 2000.*
4. *E.L. Trant, and Leavensworth, Statistical Quality Control, Mcgraw Hill,1984.*

PR654 Modeling and Simulation&Simulation Lab L2 T0 P2 Credits 3

(This course is application based and SIMQUICK, ARENA, WITNESS, QUEST and GPSS Packages are used for modeling and analysis of manufacturing systems. Theory content is evaluated for 70 marks and Practical input is evaluated for 30 Marks)

Introduction to systems and modeling - discrete and continuous system - Monte Carlo Simulation. Random number generation Random variable generation – Testing -Analysis of simulation data - Input modeling – verification and validation of simulation models – output analysis for a single model. Simlation languages and packages Laboratory : General system modeling and simulation with ARENA,QUEST, GPSS ,WITNESS, SIMQUICK and in C LANGUAGE

References:

1. *Jerry Banks and John S.Carson, Barry L Nelson, David M.Nicol, P.Shahabudeen, Discrete event system simulation, Pearson Education, 2007.*
2. *Law A.M, Simulation Modelling and Analysis, Tata Mc Graw Hill,2008*
3. *Thomas J.Schriber, Simulation using GPSS, John Wiley, 1991.*
4. *Kelton, W. David, Simulation with Arena ,McGraw-Hill,2006*

PR656 Supply Chain Management and SCM Lab L 2T 0 P 2 Credits 3

(*This course is application based and theory content is evaluated for 70 marks and Practical input is evaluated for 30 Marks)*

Introduction to logistics – factors affecting logistics-network design. Supply process – distribution management – factors of supply chain – Product life cycle management in SC – supply chain redesign. Logistics organization-logistics information systems-topology of SC. Collaborative product commerce – supply chain optimization-Decision making in SC. Applications of SCM – ware house management system – product data management – E –Commerce – Reverse logistics – Cases in Paper industry – Furniture industry.

References:

1. *Supply Chain Management, Strategy, Planning, and operation – Sunil Chopra and Peter Meindl- PHI, Second edition, 2007*
2. *Logistics, David J.Bloomberg, Stephen Lemay and Joe B.Hanna, PHI 2002*
3. *Logistics and Supply Chain Management –Strategies for Reducing Cost and Improving Service. Martin Christopher, Pearson Education Asia, Second Edition*
4. *Modeling the supply chain, Jeremy F.Shapiro, Thomson Duxbury, 2002*
5. *Handbook of Supply chain management, James B.Ayers, St.Lucle Press, 2000*

PR658 Finance management: L 3 T 0 P 0 Credits 3

Financial management – Nature, Scope, Objectives, Decisions -Management of current asset - Short and intermediate financing-Capital investment and evaluation-Long term financing

References:

1. *Bhattacharya, S.K. and John Deardon, "Accounting for Management – Text and Cases", Vikas Publishing House, New Delhi, 1996.*
2. *Charles, T.Horn Green – "Introduction to Management Accounting", Prentice Hall, New Delhi, 1996.*
3. *James, C.Van Horne, "Fundamental of Financial Management", Pearson Education, 12th Edition, 2002.*
4. *Pandey, I.M., "Financial Management", Vikas Publishing House, New Delhi, 8th Edition, 2004.*
5. *Prasanna chandra, "Financial Management theory and practice", TMH, Vth edition, 2001.*

Electives

Industrial Engineering stream

PR661 Scheduling algorithms   L 3   T 0   P 0   Credits 3

Scheduling function and theory –sequencing – performance measures, SPT, EDD sequence – branch and bound algorithm –assignment model. Parallel machine models - Flow shop models - Johnson's problem –Jackson's method – algorithm – Palmer's method. Job shop models – dynamic job shop simulation. Scheduling of intermittent production:– Giffler Thomson algorithm –Scheduling of continuous production - Line balancing

References:
1. Kenneth R.Baker, "Introduction to sequencing and scheduling", John Wiley & Sons, New York, 2000.
2. Richard W. Conway, William L.Maxwell and Louis W. Miller,"Theory of Scheduling", Dover Publications, 2003.

PR663 Computer Aided Process Planning and Control   L 3   T 0   P 0   Credits 3

Process Planning - Engineering design – design drafting –CAD input/output devices – Geometric modeling for Process planning. Group technology coding and its types Process engineering – experiment based planning – machinist handbook –decision trees –. Variant process planning– data base structure – search procedure – plan editing – parameter selection. Generative approach – forward and backward planning – artificial intelligence.

References:
1. Tien-Chien Chang and Richard A.Wysk, 'Introdution to automated process planning system', Prentice – Hall, 2005.
2. Mikell, P. Groover, 'CAD/CAM', Prentice – Hall, 2007.
3. Khabal Taraman, 'CAD/CAM integrates and innovation', Computer and Automated systems association of SME, 2001.

PR665 Design and analysis of flexible manufacturing systems   L3 T0 P0   Credits 3

Flexible manufacturing system and its Subsystems - Group technology - Decision models for the design of a FMS - Routing optimization - Capacity optimization - Equipment optimization FMS – Batching - assignment of operations and machines: The whitney and Gaul approach–The Bastos approach –A hierarchical approach – The Kuhn approach – Integrated batching and operation / machine assignment

References:
1. Horst Templelmeier and Heinrich Kuhn, "Flexible Manufacturing Systems", John Wiley & Sons, inc., 1993.
2. Visvanathan Narahari, "Performance modeling of Automated manufacturing systems", PHI, New Delhi, 1996.
3. Andrew Kusiak, "Intelligent Manufacturing Systems', Prentice Hall, 1990.

PR667 Research methodology   L3   T0   P0   Credits 3

Introduction- Multi criteria decision making-Simple Additive Weighting (SAW) Method-Weighted Product Method (WPM)- Analytic Hierarchy Process (AHP) Method-Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) Method-(VIKOR)-OUTRANKING – PROMETHEE-ELECTRE-Multi objective optimization-classical weighted sum, goal programming-non traditional-Multi objective GA, MOPSO, Intelligent decision making tools ANN, Fuzzy-Introduction to Matlab, C++

References:
1. Etter, D. Kuncicky, M, Hull, D. Introduction to Matlab7 Prentice Hall, 2004
2. Donald H.McBurney, Research Methods, Thomson Asia Pvt. Ltd, Singapore , 2002
3. Belton, V., Stewart, T.J. 2003. Multiple Criteria Decision Analysis: An Integrated Approach, Kluwer Academic Publishers, Dordrecht.
4. Deb. K. Multi objective optimization using evolutionary algorithms Wiley , 2001

PR669 Design and analysis of Experiments: L3   T0   P0   Credits 3

Steps –Single Factor Experiments- ANOVA- Factorial Experiments- 2^k deigns with Two and Three factors- Confounding, blocking, nested, Fractional factorial designs - Taguchi Techniques-Quality Loss function, orthogonal designs, application to Process and Parameter design.

References:
1. Montgomery, D.C., Design and Analysis of experiments, John Wiley and Sons, 2003.
2. Nicolo Belavendram, Quality by Design; Taguchi techniques for industrial experimentation, Prentice Hall, 1995.
3. Phillip J.Rose, Taguchi techniques for quality engineering, McGraw Hill, 1996.

PR671 Reliability safety and Maintenance: L3   T0   P0   Credits 3

Reliability- Mean Time between Failures (MTBF)-Mean Time To Failure (MTTF), Failure data analysis, Reliability of One-Item Structure, Series-Parallel Structures, Systems with Complex Structure, Reliability Allocation, Failure Mode Analysis, Design Guidelines for Reliability – Maintenance -Maintainability – types of maintenance- Design Guidelines for Maintainability-Safety - Importance - Laws, and Regulations - Workers' Compensation-Electrical Safety –Safety in Materials Handling - Fire Protection and Prevention -Explosions and Explosives **-**Performance in Safety **-** Managing Safety and Health Safety Management **-** Risk Management - System Safety **-** Safety Analyses and Management Information **-** Safety Plans and Programs

References:
1. Smith, D.J. "Reliability Maintainability and Risk; Practical methods for engineers",Butterworth-Heinemann, New Delhi, 2001
2. Dhillon,B.S. "Maintainability, Maintenance and Reliability for Engineers", CRC Press 2006
3. Pha, H. " Handbook of Reliability engineering", Springer Publication, 2003.
4. Dhillon,B.S "Engineering maintenance; a modern approach", CRC Press, 2002
5. Mobley, R.K. "Maintenance Fundamentals", 2nd Edition, Butterworth-Heinemann, 2004
6. Brauer, R.L. "Safety and Health for Engineers", John Wiley Sons, 2006
7. Reliability Maintenance and Risk, Elsevier Science and Technology Books, 1997

PR673 Enterprise Resource Planning   L3   T0   P0   Credits 3

ERP: An Overview - Benefits of ERP - ERP and Related Technologies - Business Process Reengineering (BPR), Data Warehousing - Data Mining, ERP Implementation - ERP Implementation Lifecycle, Business Modules in an ERP Package - ERP Market, Enterprise Integration Applications (EIA) - ERP and E-Commerce - ERP and Internet - Future Directions in ERP.

References:
1. Alexis Leon, ERP Demystified, Tata McGraw–Hill Publishing company limited, New Delhi, 2002
2. Brady, Enterprise Resource Planning, Thomson Learning, 2001
3. S.Sadagopan, ERP: A managerial Perspective, Tata McGraw-Hill publishing company Limited, New Delhi 1999.

PR675 Design and analysis of algorithms   L3   T0   P0   Credits 3

Algorithms, basic steps in development-Basic Tools-Top down, Structured programming, networks, data structure-Methods of Design-Sub goals, hill climbing and working backward, heuristics, back track programming, Branch and bound recursion process, program testing, documentation, Meta heuristics-Application-Development of sorting, searching, algorithms-combinatorial problems, shortest path, probabilistic algorithms.

References:
1. John R Hubbard, Fundamentals of Computing with C++, , Tata Mc Graw Hill,2000.
2. Goodman S.F. & Headtruemu, S.T.,Introduction to the design and analysis of algorithms, Mcgraw Gill, 2000.
3. Elias Horowitz, Sartaj Sahani, Sanguthevar Rajasekaran, Fundamentals of Computer Algorithms, Galgotia Publications, 2003
4. Dromey, "How to solve in by computers, Prentice Hall, 1982.
5. Panneerselvam.R,Design and Analysis of Algorithms, Prentice Hall of India,2008.

PR677 Lean and Agile Manufacturing L3 T0 P0 Credits 3

Inventory strategies-Lean manufacturing model-implementation of lean approaches 5S, kanban, kaizan Agile manufacturing produciton system-agile practice for product development-design for manufacture tools-product development time reduction-agile technology-flexibility of the facilities dysfunctional impacts of cost accounting-role of manager in agile organization-performance appraisal system.

References:
1. *Montgomery, J.C and Levine, L. O., "The transition to agile manufacturing" – Staying flexible for competitive advantage, ASQC Quality Press, Wisconsin.,1996.*
2. *Goldman, S.L., Nagal, R.N and Preiss, K,. "Agile competitors and virtual organizations", Van Nostrand Reinhold, New York,1995.*
3. *Hobbs, D.P. "Lean Manufacturing Implementation", Narosa Publisher, 2004.*
4. *Meyers, F.E. and Stewart, J.R. "Motion and Time study for lean manufacturing", Prentice Hall Publishers, 2002.*

PR679 Facilities planning and design L3 T0 P0 Credits 3

Facilities requirement - need for layout and its types. Plant location analysis –simple problems in single facility location models, network location problems. Layout design - Design cycle – computer algorithms – ALDEP, CORELAP, and CRAFT. Group technology – Production Flow analysis (PFA), ROC (Rank Order Clustering) – Line balancing Material handling design - handling equipment types , selection and specification, containers and packaging.

References:
1. *Tompkins, J.A. and J.A.White, "Facilities planning", John Wiley, 2003.*
2. *Richard Francis.L. and John A.White, "Facilities Layout and location - an analytical approach", PHI., 2002.*
3. *James Apple, M.Plant layout and "Material Handling", John Wiley, 1977.*
4. *Pannerselvam,R, "Production and Operations Management", PHI,2007*

PR681 Production Management Systems L3 T0 P0 Credits 3

Productivity-productivity measurement models-role of work study-work measurement techniques-ergonomics-CIM and Production Management Systems- MRP I, MRP II Lot sizing in MRP-Lot for lot, economic order quantity-periodic order quantity-part period balancing-introduction to optimized production technology-KANBAN-types of KANBAN- value engineering (VE) - approaches of value analysis and engineering –Effective organization for value work, function analysis system techniques-FAST

References:
1. *Parker,D.E.," Value Engineering Theory", Sundaram publishsers, 2000.*
2. *Panneerselvam,R. Production and operations management, PHI, 2005.*
3. *Miles, L.D., "Techniques of Value Engineering and Analysis", McGraw Hill Book Co., 2002*
4. *Tufty Herald, G."Compendium on Value Engineering", The Indo American Society, 1st Edn., 1983.*
5. *ILO-Introduction to workstudy,Geneva 1974*

PR683 Advanced optimization techniques L3 T0 P0 Credits 3

Optimal problem formulation, Single value and multi-variable optimization algorithms-Elimination & search methods. Non-linear programming - One-dimensional minimization - Kuhn-Tucker conditions, constrained and unconstrained optimization techniques Integer linear and non-linear programming, Geometric programming. Multi criteria mathematical programming problems Non-traditional optimization - Genetic algorithms, PSO, Simulated annealing

References:
1. *Kalyanmoy Deb, Optimization for Engineering design – algorithms and examples. PHI, New Delhi, 1995.*
2. *Singiresu S.Rao, "Engineering optimization – Theory and practices", John Wiley and Sons, 1998.*
3. *Garfinkel, R.S. and Nemhauser, G.L., Integer programming, John Wiley & Sons, 1972.*

Electives

Management stream

PR662 Information Management   L3   T0   P0   Credits 3

Information and Management - Information Systems analysis overview, Information gathering – sources -System Requirements specifications, Feasibility analysis, Data flow diagrams – logical and physical DFDs, Process specification methods, Decision tables-Logical database design – ER model, Normalizing relations; Data input methods; Database Management Systems – database design, Object oriented systems modeling-Designing outputs, Security of Information systems, E-commerce-System design example: Document and data flow diagrams, Feasibility of the system, System specifications, Database design, Control, audit and test plan

References:

> *O'Brien LA "Management information Systems" 4 Ed Tata McGraw Hill, New Delhi, 2005*
> *Laudon & Laudon, "Management Information Systems" 10 Ed. Pearson publishing company, New Delhi, 2007*

PR664 International Business Management   L3   T0   P0   Credits 3

The Nature of Intercultural Communication-Universal Systems-Contrasting Cultural Values-Cultural Shock-Language-Oral and Nonverbal Communication Patterns-Written Communication Patterns-Global Etiquette-Business and Social Customs-Intercultural Negotiation Process-Intercultural Negotiation Strategies-Laws Affecting International Business and Travel

References:

> *Anil Kumar Sundaram and J Stewart Black International Business Environment Prentice Hall 1995*
> *Betty Jane Punnett Experiencing International Business and Management E-book 2010*

PR666 Project Management   L3   T0   P0   Credits 3

Project Management Concepts Project Organizational Structures Project Organizational Behaviors Applied Project Planning Resource Allocation Cost Estimating and Budgeting Project Performance Measurement and Control Project Evaluation and Termination Laboratory Excercises on Project modeling, Simulation, resource allocation, crashing etc.,

References:

> 1. *Prasanna Chandra, 'Projects Planning, analysis, Financing , Implementation and*
> 2. *ReviewManagement', V Edition Tata McGraw Hill, 2004.*
> 3. *Wysocki 'Effective Project Management W/Cd' John Wiley 2nd edition 2000*
> 4. *Choudhury, S.,'Project management', Tata McGraw Hill, 27th reprint 2007.*
> 5. *Project Management – A Managerial Approach, by Jack R. Meredith, and Samuel J. Mantel Jr., John Wiley and Sons, 2006*
> 6. *Project Management – A Systems Approach to Planning, Scheduling and Controlling, by Harold Kerzner, John Wiley and Sons, 2006*

PR668 Marketing Management   L3   T0   P0   Credits 3

Concepts in Marketing - Marketing Process, Marketing concepts, Environment-Buying Behaviour and Market Segmentation-factors, Motives, Types, Buying Decision, Segmentation factors, Demographic, Psychographic and Geographic Segmentation, Process, Patterns-Product Pricing and Marketing Research- Pricing, Decisions and Pricing Methods, Pricing Management-Marketing Planning and Strategy Formulation-Portfolio Analysis, BCG, GEC Grids-Advertising, Sales Promotion and Distribution-Impact, Goals, Types, Sales Promotion – Point of purchase, Unique Selling propositions, Characteristics, Wholesaling, Retailing, Channel Design, Logistics Modern Trends in Retailing.

References:

> 1. *Kotler Philip, Kevin Lane Keller'Marketing Management', 13th Ed., Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2007.*
> 2. *Zikmund d Amico, "The power of Marketing" , 7th edition, Sowth Western , Thomson Learning Publications, 2006.*
> 3. *Michael J. Etzel, Bruce J. Walker, William J. Stanton, Ajay Pandit, "marketing – concepts and cases", special Indian edition, McGraw Hill*

PR670 Total Quality Management   L3   T0   P0   Credits 3

Quality systems - The total quality management system –The task of quality organization - organizing principles – Structural total quality organization- Introduction to ISO9000 standards - ISO 9000 series – quality cost-Quality audit – policies and objectives- audit of quality plans – audit of execution Vs plans – product auditing – audit methodology – quality rating – audit reporting- Vendor relations –vendor qualification process – vendor quality surveys – Vendor quality improvement – vendor quality rating and evaluation.

References:
1. *Dale H.Besterfiled, "Total Quality Management", Pearson Education Asia, (Indian reprint 2002)*
2. *Rose, J.E. Total Quality Management, Kogan Page Ltd. 1993.*
3. *John Bank, The essence of total quality management, PHI 1993.*
4. *Greg Bounds, Lyle Yorks et al, Beyond Total Quality Management, McGraw Hill, 1994.*
5. *Takashi Osada, The 5S's The Asian Productivity Organisation, 1991.*
   Masaki Imami, KAIZEN, McGraw Hill, 1986.

PR672 Technology Management   L3   T0   P0   Credits 3

Definition-scope-components -Issues in managing new technology, Life cycle approach to technology management-Approaches to forecasting, Technology performance parameters. Use of Experts in technology forecasting, planning technological process, Morphological analysis of a Technology system-Techno-Economic feasibility study, Application of multi-criteria decision making techniques in technologies evaluation and selection-AHP, fuzzy AHP-Modes of global technology transfer-Technology–Human Interface-Organization structures and Technology Implementation issues in new technology.

References:
1. *Joseph M. Putti, Management – A Functional Approach, McGraw Hill, 1997*
2. *Kenneth C. Lauden , MIS: Organisation and Technology, Prentice Hall, 1995*
3. *James A.Senn, Information technology in Business, Prentice Hall, 1995*
4. *Ronald J. Jordan, Security analysis and Portfolio Management, Prentice Hall, 1995*
5. *Irvin M. Rubin, Organisational behavior an experimental approach, Prentice*
6. *Hall, 1995*
7. *Gerard H. Gaynor, Handbook of Technology Management, McGraw-Hill Professional, 1996*
8. *Richard C. Dorf, Technology Management Handbook, CRC, 1999*

PR674 Decision Support Systems   L3   T0   P0   Credits 3

DSS components- Data warehousing, access, analysis, mining and visualization-modeling and analysis-DSS development -Group support systems- enterprise DSS- supply chain and DSS-knowledge management methods, technologies and tools-Artificial intelligence and expert systems- Representation in logic and schemas, semantic networks, production rules and frames, inference techniques.

References:
1. *Efraim Turban and Jay E Aronson, Decision Support and Intelligent Systems, Pearson education Asia, Seventh edition, 2005.*
2. *Elain Rich and Kevin Knight, Artificial intelligence, TMH, 2006.*

PR676 Knowledge management   L3   T0   P0   Credits 3

Knowledge society- Drivers of knowledge management-Intellectual capital- KM and learning organizations-Strategic alignment- Evaluation and strategic alignment-Infrastructural development and deployment- Role of CKO-Analyzing business environment-knowledge audit and analysis – designing KM team, system–Technology components- Intranet and Groupware solutions- tools for collaborative intelligence- Social networking-package choices- knowledge security-Integrating with web -based and internal operational & support systems- change management- reward systems- continuous improvement

References:
1. *Guus Schreiber, Hans Akkermans, Anjo Anjewierden, Robert de Hoog, Nigel Shadbolt, Walter Van de Velde and Bob Wielinga, "Knowledge Engineering and Management", Universities Press, 2004.*
2. *Elias M.Awad & Hassan M. Ghaziri, "Knowledge Management", Pearson Education, 2004.*

PR678 Product Lifecycle Management   L3   T0   P0   Credits 3

New Product Development, Introduction to PLM, Product Data Management (PDM), Views of PLM, PLM Strategies and its Development, Product Design Modeling and simulation in product design. Integration of PLM with other applications, Technology, Forecasting, Virtual product development tools, Product structures

References:

1. *Antti Saaksvuori, Anselmi Immonen, " Product Lifecycle Management", Springer, 2005*
2. *John Stark, " Product lifecycle management: 21st century paradigm for product realization", Springer 2006*
3. *Michael Grieves, "Product lifecycle management: Driving the next generation of lean thinking", McGraw-Hill, 2006*