

INDUSTRIAL AND MANAGEMENT ENGINEERING

PROFESSORS

| | | |
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| Sinha Arun P | asinha | 7782 |
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ASSOCIATE PROFESSOR

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ASSISTANT PROFESSORS

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VISITING FACULTY

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|------------------|-------------------|----------|------|
| Convenor, DUGC : | Sri. Vanamalla V. | vanamala | 6608 |
| Convenor, DPGC : | Veena Bansal | veena | 7743 |
| Faculty : | | | |
| Counsellor | | | |

Set up in 1974, the Department of Industrial and Management Engineering (IME) at IIT Kanpur was one of the first in the country to recognise the strength of combining the training of engineers with management education. Today, the Department is engaged in a diverse set of activities that include teaching, academic research, industry consulting, regularly held management development programmes, and public sector projects.

The curriculum comprises state-of-the-art techniques to plan, design, implement and manage integrated systems of men, materials, capital, information and technology. The subjects taught provide a well-rounded coverage of the methods to manage and improve productivity, customer satisfaction and profitability of industrial, information and infrastructural (service) systems. In today's competitive era, these methods have rapidly become relevant to engineers in all disciplines, Consequently, fresh engineering

graduates as well as practicing professionals in fields ranging from computer science to aerospace engineering and architecture to electronics engineering regularly enrol in IME's postgraduate programmes.

Current areas of research include Operations Research, Operations Management, FMS/CIMS, TQM, Manufacturing Policy, Information Management, and Information Technology, Knowledge Management, Service Management, Strategic Management, Infrastructure Regulation and policy, Infrastructure project financing Energy Modelling and Management, Financial Management, Risk Modelling and Management, Revenue and Yield Management, Technology Management, IPR, Marketing of Services, Marketing Science, International Marketing, Consumer behaviour, Personnel Management and Industrial Relations, Management of Change and Organisation Restructuring.

The Department offers M. Tech., MBA and Ph. D. degrees in Industrial and Management Engineering. A bachelor's degree in any branch of engineering is the minimum requirement for admission to M. Tech./MBA. A Master's degree in Management/Industrial Engineering/Operations Research is required for admission to Ph. D. The process of admission to M. Tech. and Ph. D. programmes includes a written test and a personal interview.

The Department has started a 2 year MBA programme beginning July 2001. Open to engineering graduates of any branch, the programme consists of four semesters of course work with the intervening summer to be spent on a summer internship project in a host industry. Admission is through a combined all-IIT MBA entrance test and Personal Interview/Group discussion.

Specialisation offered in MBA includes sectorial areas of Service infrastructure and Manufacturing and Functional areas of Operations and Systems.

COURSE DESCRIPTION

UNDERGRADUATE OPEN ELECTIVES

POST GRADUATE (M.Tech./Ph.D.) COURSES

IME602 PROBABILITY AND STATISTICS

L-T-P-D-[C]

3-0-0-0-[4]

Axioms of probability, Conditional probability, Discrete and Continuous random variables, Functions of random variables, Expectations of random variables. Jointly distributed random variable. Descriptive and inferential Statistics, Estimation of Parameters, Test of Hypothesis, Analysis of Variance, Regression

Analysis, Introduction to statistical Packages.

IME 603

L-T-P-D-[C]

2-0-3-0-[4]

INTRODUCTION TO COMPUTING

Computing Computer Organization, Data Representation, Data Structures such as Arrays, Stacks, Queues and Trees, Algorithms for Searching and Sorting, Complexity, File Processing, Structured Programming, Lab exercises on Data Structure, Algorithms and File Management using any appropriate programming language.

IME 605

L-T-P-D-[C]

3-0-0-0-[4]

OPERATIONS RESEARCH FOR MANAGEMENT

Introduction, Mathematical Modeling, Linear programming Formulation, solution procedures, Duality, Sensitivity, Applications, Network methods Max Flow, Min cost, Shortest path, Dynamic programming Sequential decisions, Principle of optimality, Applications Integer Programming Formulation, Nonlinear Programming Applications and solution methods.

IME 611

L-T-P-D-[C]

3-0-0-0-[4]

FINANCIAL ENGINEERING

Basic Elements of Financial Systems and Financial Management, Mathematical Background: Introduction to Stochastic Calculus, Numerical procedures, Options and Futures Markets, Financial Risk Management: Different types of risk, approaches to risk management, history of bank regulation, Greek letters: Definitions and how they are used.

IME 624

L-T-P-D-[C]

2-0-0-0-[4]

COMPUTER AIDED DECISION SYSTEMS

Prereq. IME 605 or equiv.

System Analysis: Information System Analysis and Design, Decision Support System, Database Management Systems, Query Languages, Emerging Areas like communication network distributed systems and knowledge based systems, Simulation; Methodology Approaches Programming Considerations, Languages and Data Structures, Statistical Considerations, Validation, Simulation Languages, Applications.

IME625

L-T-P-D-[C]

3-0-0-0-[4]

INTRODUCTION TO STOCHASTIC PROCESSES AND THEIR APPLICATIONS

Introduction to stochastic process, Random walks, Markov chains, Markov processes, Poisson process; Application of Stochastic processes in (i) Queuing Theory, (ii) Scheduling, (iii) Manufacturing (iii) Finance, (vi) Marketing, etc.

IME 634

L-T-P-D-[C]

3-0-0-0-[4]

MANAGEMENT DECISION ANALYSIS

Multi-objective decisions, Decisions under uncertainty, Statistical Decision Trees, Applications from Quality Control and Production Control.

IME 636

L-T-P-D-[C]

3-0-0-0-[4]

INTRODUCTION TO GAME THEORY

Description of Game Theory, Representation of games in extensive form, Normal form and Coalition form, Concept of preferences and utility, Introduction to solution concepts for normal form games, Description of different solution concepts: Dominance, Nash equilibrium, correlated equilibrium, applications; Static model of oligopoly, extensive form games of perfect and imperfect information, refinements of Nash equilibrium, finite and infinite horizon, alternating bargaining models, games with incomplete information; Bayesian games, Bayes Nash equilibrium as a solution concept, finitely and infinitely repeated game; Trigger strategies, mechanism design, Properties of mechanism and implementation

IME 641

L-T-P-D-[C]

3-0-0-0-[4]

DESIGN OF PRODUCTION SYSTEMS

Production systems : concepts and integrated view, Policy Decisions, Capacity planning, Product development, Plant location, Plant layout, Materials handling, Assembly line balancing, Work design, Methods engineering, Human Factors engineering, Project Management and Network models, Recent trends.

IME 642

L-T-P-D-[C]

3-0-0-0-[4]

OPERATIONS MANAGEMENT

Overview of Manufacturing Planning and Control; Forecasting; Smoothing Methods, Time Series Analysis, Decomposition Methods. Autoregressive and Box Jenkins Models. Qualitative Models; Aggregate Production Planning, Master Production Scheduling. Capacity Planning. Demand Management. Scheduling; Performance Measures, Single Machine Models, Flow Shop and Job Shops, Dynamic Scheduling, Evaluation of Heuristics and Dispatching Rules.

IME 671

L-T-P-D-[C]

3-0-0-0-[4]

MANAGING SOFTWARE PROJECTS

This course will cover the techniques for managing software projects. It is intended to give the students both knowledge about, and practical experience in, the design and development of production quality software. The techniques taught in the class will be applied to a substantial team project.

Course topics will be as follows: Software Process; Software Configuration Management, CMM Levels, Software Project Planning and Costing; Requirements Engineering; Software Project Design; Testing; Software Metrics; Quality, Software Project Management; Human Factor.

IME 672

L-T-P-D-[C]

3-0-0-0-[4]

DATA MINING & KNOWLEDGE DISCOVERY

Data Preparation for Knowledge Discovery-Data understanding, Data cleaning, Date transformation, Discretization, False "predictors" (information leakers), Feature reduction, leaker detection, Randomization, Learning with unbalanced data.

Introduction: Machine Learning and Data Mining- Data Flood, Data Mining Application Examples, Data Mining and Knowledge Discovery, Data Mining Tasks Machine Learning and Classification- Machine Learning and Classification, Examples, Learning as Search.

Concepts, instances, attributes

Knowledge Representation

Classification: Decision Trees- Top-Down Decision Trees, Choosing the Splitting Attribute, Information Gain and Gain ratio, Handling Numeric Attributes (Finding Best Split), Dealing with Missing Values, Pruning(Pre-pruning, Post-Pruning, Estimating Error Rates), From Trees to Rules

Evaluation and Credibility- Introduction Classification with Train, Test, and Validation sets(Handling Unbalanced Data), Parameter Tuning, *Predicting Performance, Evaluation on "small data": Cross-validation, *Bootstrap, Comparing Data Mining Schemes, *Choosing a Loss Function.

Clustering- Introduction, Partitioned, Hierarchical, Density Based.

Associations- Transactions, Frequent itemsets, Association rules, Applications.

IME 684

SIMULATION & SCHEDULING OF MANUFACTURING

L-T-P-D-[C]

0-0-0-0-[0]

Manufacturing System Models: Single Machines, Parallel Machines, Flow/Job/Open Shops, Mathematical Models, Computer Integrated Manufacturing Systems, Flexible Manufacturing Systems, Material Handling Systems etc.; Systems Simulation: Discrete Event Simulation Concepts, Resources, Queues and Queuing Disciplines, Simulation Events, Event Calendar, Activities, Simulation Clock, Random Number Generators, Deterministic and Stochastic Simulation, Generating Random Variates, Model Validation and Verification, Performance Measures, Output Analysis, Comparing Alternate System Configurations, Sensitivity Analysis and Optimization, Implementing Queuing Models of Different Manufacturing Systems in C++/Arena, Other Simulation Software; SIMAN, SIMSCRIPT etc.; Scheduling: Deterministic/Stochastic Scheduling, Scheduling Objectives, Job Sequencing, Sequence Dependent Setup Times, Job Routing, Scheduling Heuristics; EDD, COVERT, SPT, LPUL, SWPT, CR, Johnson's Rule, COMSOAL, Search Algorithms; Branch and Bound, Breadth First, Depth First, Local Search; GRASP, Simulated Annealing, Tabu Search, Genetic Algorithms, Reactive Search, etc., Implementing Algorithms in C++, Robust Scheduling, Time Tabling, Project Scheduling, Workforce Scheduling, Intelligent Scheduling, etc.

IME 692

ADVANCED STATISTICAL METHODS FOR BUSINESS ANALYTICS

Prereq.

Instructor's Approval

L-T-P-D-[C]

0-0-0-0-[4]

The course is designed to train students on understanding research problems and situations requiring multivariate approaches, selecting appropriate multivariate techniques of data analysis, interpreting the results of analysis, and applying the techniques to business and research problems. The course includes topics dealing with multiple non-interdependence techniques (such as Factor Analysis, Cluster Analysis, Multidimensional Scaling), multiple dependence techniques (such as Multiple Regression Analysis, Discriminant Analysis, Path analysis, Multivariate Analysis of Variance), and nonparametric techniques of data analysis.

IME 697
L-T-P-D-[C]
0-0-0-0-[4]

INDUSTRIAL PROJECT

A 6-8 week industrial project for M Tech students during the period intervening the II and III semesters on a problem of practical relevance completed in an industrial or service organization. The student will study, analyze and then solve the problem and prepare its implementation details, under the supervision and guidance of an officer/executive of the host organization. On completion of the summer project the student will submit a written report and give a seminar to the IME Department.

IME 698
L-T-P-D-[C]
3-0-0-0-[4]

SEMINAR, 0-0-0-0

IME 699

M. Tech. THESIS

IME 700
L-T-P-D-[C]
3-0-0-0-[4]

RESEARCH METHODOLOGY

Introduction to Social Science Research Perspective, Different Approaches to Social Research, Approaches to Theory Building, Sampling , Measurement Issues & Scale construction, Research Design , Qualitative Research, Experimental Research, Survey Research, Quantitative Data Analysis Techniques , Research Writing and Presentation, Research Evaluation and Critique, Issues in Current Research Practice.

IME 797
L-T-P-D-[C]
3-0-0-0-[4]

INDEPENDENT STUDY

This course is designed for Ph.D. students of the IME Department with the goal of enriching their curriculum to provide deeper insights and broader perspective in specialized and/ frontier areas - of critical relevance to their research field. The objective of this course is not to duplicate what has already been covered in graduate level courses but to introduce special topics to Ph.D. students to raise awareness, broaden perspective, enhance understanding and impart practical/analytical skills needed for conducting high quality research.

Each course is custom-designed by a faculty instructor to be of special value to at least one if not a few Ph.D. students. The course title and the special topic will be decided by the faculty instructor. This course may involve class-room teaching and augmented by self-study assignments that include but are not limited to - literature analysis, white space identification, in-depth case studies, field research, project work and evaluation of different perspectives in a specialized area. The self-study assignments are decided by the faculty instructor with inputs from the student, while the original work generated by the student will be supervised by the instructor. A student of this course will be required to put in time and effort that are comparable to any regular graduate level course. The faculty instructor will meet the student at least once a week throughout the semester to ensure and monitor the progress and quality.

There will be a mid-term evaluation that may carry a weight of 25%. At the conclusion of the course, the Ph.D. student is required to prepare and submit a detailed summary report and/a presentation that describes the accomplished work and key learning or an exam vis-à-vis set goals. The faculty instructor along with a committee will evaluate. The faculty instructor will assign a letter grade based on comprehensive evaluation of student's work.

Since many special topic titles may be offered in a given semester by different faculty instructors to several Ph.D. students under the same course number, the following steps are recommended:

- The faculty instructor submits a formal course proposal for IME 797 to DPGC convener prior to commencing instruction. This course proposal specifies the following information: special topic to be covered, course plan, student(s) to be enrolled and evaluation method.
- Following completion of the course, the faculty instructor will submit letter grade(s) to the DPGC convener based on evaluation of student's overall achievement.

IME 799

Ph. D. THESIS

MASTER OF BUSINESS ADMINISTRATION PROGRAMME

MBA 601 ACCOUNTING FOR MANAGEMENT

L-T-P-D-[C]

3-0-0-0-[4]

Balance sheet, profit and loss concepts, accounting principles and mechanics, Inventory Valuation and Depreciation accounting, Ratio and Fund flow analysis. Introduction to cost Accounting. Various methods of cost determination and cost accounting systems such as activity based costing systems and responsibility accounting. Use of costing systems in decision making. Extensive case studies will employed in this course.

MBA 606 ECONOMIC ANALYSIS FOR MANAGEMENT

L-T-P-D-[C]

3-0-0-0-[4]

Basic concepts in business economics, Economics of Market, Utility theory, Determination of Price, Production Function, Theories of Competition, Theory of Supply and Demand, Micro Level Firm Behaviour, Market Structure and Price, Concept of GDP, Theories of Money Supply, theory of Macro Economics. National Income and domestic product. Keynesian theory of income determination, Monetary approach, Inflation, balance of Payments, Structure of Indian economy, Indian economic growth and development.

MBA 607 FINANCIAL MANAGEMENT

L-T-P-D-[C]

3-0-0-0-[4]

Fund and Cost Flow Analysis, Working capital management, Determination of capital structure of the firm, Cost of Capital, Capital asset pricing models, Leverages, Investment Analysis, Portfolio Management, Debt Management, Dividend Policy, Concept of Financial Strategy, Course will be based on case study and journal articles.

MBA 610 INVESTMENT VALUATION AND REAL OPTIONS

L-T-P-D-[C]

3-0-0-0-[4]

Investment Valuation Estimating Cost of Equity and Cost of Capital, Option Pricing Theory, Option Pricing Applications in Valuation Real Options in Managerial Decision Making Binomial Tree Method for Valuing Real Options, Option to Delay, Option to Expand Option to Abandon, Valuing Natural Resources Using Real Options, Appraising Projects with Real Options.

MBA 611

L-T-P-D-[C]

3-0-0-0-[4]

ORGANIZATION STRUCTURE AND DESIGN

Introduction to Organizations, Organization Goals, Organizations and Markets, Organization Structures and Systems, Strategy, Structure & Technology, Organization Environment and Culture, Various Design Options, Power and Politics, Organization Conflict, Change and Restructuring, Growth and Evolution, Learning Organizations and organization Effectiveness, Service Organizations, Organizations as Networks. State-of-art research papers and case studies will be used for the selected topics.

MBA 616

L-T-P-D-[C]

3-0-0-0-[4]

HUMAN RESOURCES MANAGEMENT

Meaning of Work and Humans as Resource, Human Resource Planning and Selection, Motivation and Compensation Management, Performance Appraisal, Career Management, Training and HRD, Group Dynamics and Leadership, Trade Unions and Industrial Disputes, Public Policy and Collective Bargaining, Due Process, Empowerment and Participation, Technology & HRM, Japanese HRM.

MBA 617

L-T-P-D-[C]

3-0-0-0-[4]

SOCIAL POLITICAL AND LEGAL ENVIRONMENT OF BUSINESS

Industrial revolution and industrialization, Political economy of underdevelopment, Sociology of development, Indian rural and urban society, Influence of religion and karma, Multiplicity of languages, cultures, castes, Feudalism, Work ethic, Constitution of India, Party system, Fundamental rights, Local self government, Directive principles of state policy, Welfare state and Civil society, Social stratification, Environmental issues and legislation, and social movements, Corporate social responsibility and business ethics, Judicial system, Business law, Contract act, Arbitration, Companies Act, Sale of goods act, partnership act, negotiable instruments act, Income tax Act, Environmental legislation.

MBA 618

L-T-P-D-[C]

3-0-0-0-[4]

GLOBALISATION STATE & CORPORATIONS

The role of corporations as drives of the contemporary wave of globalization, the changing role of State, especially in the framework of state - corporation

relations, both in the context of the developed economies as well as the third world, the significance of global institutions like the IMF and the WTO in the Corporation vs. State debate on the one hand and the tension between the interests of the developed countries and the third world on the other, historical understanding of the present wave of globalization by delving in to the evolution of capitalism from its early mercantilist phase, to the industrial phase to its present finance capitalism phase, the contradictions of globalization - prosperity vs. poverty growth vs. underdevelopment and the underlying reasons for the same, some alternate forms of globalization, which have the possibility of going beyond the problems of the current form of globalization.

MBA 621

L-T-P-D-[C]

3-0-0-0-[4]

MANAGERIAL COMMUNICATION

the Manager, Interpersonal Communication, Ongoing Communication Process and flow, Organizational Managerial Communication, Personal Language, use and Communication System, The Media and Tools of Communication Climate, Low Structure: One to One Communication, High Structure: One to One Communication, Meetings and Conferences, Interactional Presentation, Keys to Functional Writings, Formats for Business letters and Memos, Exposure to e-Communication, Planning and Producing Effective Business Reports, Business and Managerial Communication Research. There will be at least one case/exercise in each class.

MBA 622

L-T-P-D-[C]

3-0-0-0-[4]

MANUFACTURING STRATEGY

Product and factory life cycle, strategic dimensions of technology, characteristics of job shops and flow shops, learning curve effects, economies of scale, resolution of conflicts between manufacturing and marketing, concept of PWP, design of organization structure of manufacturing divisions, interactions of design department with manufacturing, marketing, service and purchasing. Concept of aligning of manufacturing and the corporate strategy.

MBA 623

L-T-P-D-[C]

3-0-0-0-[4]

STRATEGIC MANAGEMENT

General Management Function, Introduction to the corporate strategy, concept of organizational purpose, environmental scanning and formulation of objectives,

strategy for growth such as concentric growth and diversification, role of values in strategy formulation and evaluation, managing diversity and growth, choice of organizational structure and designing control systems to support the implementation of the strategy. Role of implementation issues in strategy formulation. Impact of organizational culture, structure, systems in strategy implementation and Merger and Acquisitions.

MBA 624

L-T-P-D-[C]

3-0-0-0-[4]

CORPORATE INNOVATION & ENTREPRENEURSHIP

In the first module this course will take an applied approach to learn the imperatives of lateral thinking and accelerated innovation in large organizations under relentless pressure of discontinuity. It will explore integrative framework for individuals, virtual teams, using CPC and other rapid development/deployment IT tools for accelerating targeted innovation and new product concept to market processes.

In the second module this course will develop from theories of entrepreneurship an applied approach for managing disruptive innovation to create new high growth businesses. The crafting approach to finance, operations and other entrepreneurial strategies, real time monitoring and adaptive control systems for small businesses and the role of clusters, community of practitioners for strategic flexibility will be some of the emerging paradigms covered in this course.

MBA 626

L-T-P-D-[C]

3-0-0-0-[4]

MANAGEMENT OF TECHNOLOGY

Policy – Technology Choice: Linkage; National Technology Policies; Technology, Competition and Industrial Structure; formulating the technology strategy, Technology Development and Acquisition process; Managing Technologies, Technology in Indian Industries, Strategic R&D management and Technological Consortia; Licensing and joint Ventures, Managing Technology Spillovers; Justification of new technology; management accounting and technology; Integration of New with Old technology, Assimilation of Technology; Intellectual Property Rights and their Implications for Industry Policy and Technology Management.

MBA 628

L-T-P-D-[C]

3-0-0-0-[4]

INTERNATIONAL BUSINESS MANAGEMENT

The global business environment, strategic opportunities and competeness for internationalising, design and marketing of appropriate products and services, and key aspects in operationalising the strategy – through organization structure, human resource, international coordination and leadership, businesses that originate or operate in India/Asia, Governance relationships of investors from developed countries that affect their businesses in less developed ones. Cultural patterns as well as the Regulatory environment in different countries, organizations may, through business “without borders”, stretch their capacities, and develop new competences and relationships.

MBA 629

L-T-P-D-[C]

3-0-0-0-[4]

MANAGEMENT IN A GLOBAL ECONOMY : AN INDIAN PERSPECTIVE :

The purpose of this course is to acquaint students with the current global market trends, issues of global governance and emerging debates about new technologies and corporate ethics. The expectation is to add value in the making of students worldviews on economy and society and provide a conceptual framework for the managerial tasks of diagnosing predicting and responding to changes in the world economy.

MBA 630

L-T-P-D-[C]

3-0-0-0-[4]

ECONOMICS OF BUSINESS POLICY :

In this context, Economics of Business Policy seeks to provide management students an introduction to the interface between industrial organization theory and strategic management theory. It uses the business- related tenants of economics (old and new) to develop a coherent analytical basis for the formulation and evaluation of the external and internal strategies of the firm. This is true with respect to both a firm’s external market environment and its internal organization. The course emphasizes practical managerial applications of topics from industrial economics and strategy: economics of scale and scope, industry analysis market structure commitment dynamic competition entry/exit the economics of competitive advantage incentives in firms internal labour markets and executive remuneration.

MBA 631**MARKETING MANAGEMENT**

L-T-P-D-[C]

3-0-0-0-[4]

Marketing Environment, Company analysis (strength, weaknesses, opportunities and threats), the concept of marketing mix., four P's of marketing, and the concept of marketing strategy. The concept of market segmentation and differentiation, product positioning and its applications in demand forecasting. Consumer Behaviour and Marketing Research. International marketing. Marketing economy and public policy issues. E-marketing. In this course concepts will be elaborated by the use of cases and research papers.

MBA 632**E-MARKETING**

L-T-P-D-[C]

3-0-0-0-[4]

Marketing Fundamentals (environment, competition, consumer behaviour segmentation, Targeting, and positioning, 4P's – product, price, promotion, place), Marketing strategy, Digital marketing Opportunities, E-Paradigm, Internet Networking, Enterprise Middleware, Right Enterprise Applications, operational challenges – web sales and marketing, web services, ASP and other financial choices, Real-time Analytic, Frontline Access, Miscellaneous Emerging opportunities.

MBA 633**MARKETING RESEARCH**

L-T-P-D-[C]

3-0-0-0-[4]

Nature and scope of Marketing research: (a) the Marketing Research Process, (B) Research design and Implementation, Data collection : (a) Secondary Sources of Marketing Data, (b) Standardized Sources, (c) Information Collection: Qualitative and Observational Methods, (d) Information from Respondents, (e) Attitude Measurement, (f) Experimentation, (g) Sampling fundamentals, Data Analysis: (a) Hypothesis Testing: Basic concepts and tests of Associations, (b) Correlation Regression Analysis, (c) Discriminant and Canonical Analysis, (d) Factor and Cluster Analysis, (e) Multidimensional Scaling and Conjoint Analysis, (f) Presenting the results.

MBA 634**CONSUMER BEHAVIOUR**

L-T-P-D-[C]

3-0-0-0-[4]

Consumers in the Market place: (a) An introduction to Consumer Behaviour, Consumers as individuals: (a) Perception, (b) Learning and Memory, (c) Motivation, Values and Involvement, (d) Attitudes, (e) Attitude change and Persuasive Communication, (f) Self, Consumers as decision Markers: (a) Individual decision Making, (b) The Purchase Situation, Postpurchase Evaluation and Product

Disposal, (c) Group Influence, Opinion Leadership, (d) Organizational and Household Decision Making, Consumers and Sub Cultures: (a) Income and Social Class, (b) Ethic, Racial and Religious Subcultures, Consumers and Cultures: (a) Cultural Influences on Consumer Behaviour, (b) Lifestyles and Global Culture, (c) Sacred and Profane Consumption.

MBA 635

L-T-P-D-[C]

3-0-0-0-[4]

MARKETING OF SERVICE

Service businesses today are global from inception yet needs intricate localization. Managing 'on line' 'on demand' multiplicity makes marketing of services challenging. Service marketing is a thriving area of academic pursuit and excellent textual as well as research findings will support this course. Strategic Marketing of Services: Segmentation and Targeting of Service; Positioning. Service Marketing as a Process: Service Product, Service Delivery, Service scapes

MBA 637

L-T-P-D-[C]

3-0-0-0-[4]

BUSINESS TO BUSINESS MARKETING

This course will emphasize the interrelatedness of concepts such as multifunctional teams, strategic alliance environmental sensitivity, inter-organizational trust, organizational learning and adherence to ethical principles. Furthermore, with the advent of relationship and network theories, this course emphasises that business marketer must learn not only to create value, but also to equitably share value with customer firms. Understanding of business buying and marketing behaviour within the context of relationship/network theories is the central learning from this proposed elective. Given this background, the overall objectives of this course are to create an understanding of the current state-of-art of organizational buying behaviour and business-to-business marketing.

MBA 639

L-T-P-D-[C]

3-0-0-0-[4]

STRATEGIC MARKETING - CONTEMPORARY ISSUES

Successful Marketing in highly competitive global markets of today needs breakthrough concepts, socially responsible and innovative execution. And mastering that blend entails participatory, immersive learning. This practice oriented course will be based on integrative and investigative projects to consolidate the learning from foundations courses.

Course Plan and Modules: 1) Market opportunity recognition and evaluation 2) Generating business models 3) Green and sustainable marketing scenarios 4) Contextual strategies for products, services & brands 5) Emerging perspectives on marketing practices and corporate reputation.

MBA 640 **INTELLECTUAL PROPERTY MANAGEMENT, VALUE CREATION AND VALUE CAPTURE**

L-T-P-D-[C]
3-0-0-0-[4]

Module-I: Intellectual Property Management. Market Capitalization, Intellectual Capital (IC), Components of Intellectual Capital, Tangible and Intangible Assets of Firms, Goodwill, Linkage between IC, Corporate Strategy, and Profits, Relationship between Intellectual Capital and Intellectual Property, Knowledge Economy and the need for Intellectual Property Management, Various Types of Intellectual Property – trademarks, Copyrights, Patents, Trade Secrets, and Industrial Design, International IP Treaties/Agreements on IP Rights, Types of Patents, Patenting Advantage, Offensive and Defensive IP Strategies, Global Innovation Index and IP Management, Intellectual Property Strategies in Indian Context – Universities, CSIR and Commercial Firms

Module-II: The Dynamics of Value Creation and Value Capture. Mapping of Intellectual Performance Drivers, Seven Primary Phases in the IP Audit for Growing Industries, Intellectual Assets, Market Valuation of Intellectual Property, Marketing of IP, Angel and Venture Capital Decision Models for IP, Value Creation and Value Capture

Module-III: Patent Mapping. Demonstration of Patent Search, Patent Analysis and Patent Landscaping to identify Technology Trends and Gaps in a field of commercial interest

MBA 641 **COMPUTING FOR MANAGEMENT**

L-T-P-D-[C]
3-0-0-0-[4]

Computers and Management Function, Introduction to an appropriate high level language, Introduction to Data Structures, Computer Organization, System Configuration, Introduction to data base management, management information systems, decision support systems and simulation.

MBA 643 **SIMULATION OF BUSINESS SYSTEMS**

L-T-P-D-[C]
3-0-0-0-[4]

Simulation Philosophy and Methodologies, Review of Basic Probability and Statistics, Random number Generation, Programming Considerations, Languages and Data Structures, Verification and Validation, Simulation Languages, Animation, Design and Execution of Simulation Experiments, Applications: Case Flow and Risk Analysis by Simulation Using Spreadsheets, Simulation of Production System – Inventories, Queues and Production Scheduling.

MBA 644

L-T-P-D-[C]

3-0-0-0-[4]

KNOWLEDGE STRATEGIES & KNOWLEDGE SYSTEMS

Successful knowledge management requires strategic management of information system and organizational culture. Hence this course will focus on process as well as technology systems for anticipation, creation and use of knowledge as a strategic resource for competitive advantage. Harnessing tacit knowledge using the SECI and other models deal with people issues of learning, sharing and integrating knowledge. Strategies for managing explicit knowledge deal with technologies and systems for storage, retrieval, recombination and analytics of modules in a global organization. Students will design Knowledge Management Systems for functional applications in different industry domains using various tools like document management, content management, search and pattern analysis, groupware, BI & EIP.

MBA 645

L-T-P-D-[C]

3-0-0-0-[4]

MANAGEMENT INFORMATION SYSTEMS

Foundation Concepts: Basic information systems concepts about the components and the operations, managerial, and strategic roles of information systems; Technology: Major concepts, developments, and managerial implications involved in computer hardware, software, telecommunications and database management: technologies; Applications How the Internet, intranets, extranets and other information technologies are used in modern information systems to support electronic commerce, enterprise collaboration, business operations, managerial decision making, and strategic advantage; Development Developing information system solutions to business problems using a systems approach to problem solving and variety of business application development methodologies; Management The challenges of managing information systems technologies, resources, and strategies, including global IT management, strategic IS planning and implementation, and security and ethical challenges.

MBA 646

L-T-P-D-[C]

3-0-0-0-[4]

ENTERPRISE INTEGRATION WITH INFORMATION TECHNOLOGY

Prereq. MBA 645 or # Need for integration, Evolution of ERP, Components of ERP, Enterprise evaluation, Business process mapping, Business Process Re-engineering ,Understanding and evaluating ERP packages, Technology evaluation, Networking issues, ERP implementation, Human resource issues and change management, SAP system, Project on SAP system, Case studies

MBA 647 BUSINESS PROCESS MANAGEMENT

L-T-P-D-[C]

3-0-0-0-[4]

Introduction to Business Process Management (BPM); History; Importance of improving business processes; Drivers and triggers of BPM; Stakeholders; Importance of organizational strategy and process architecture; Selling BPM technology; Critical success factors in a BPM project. Critical implementation aspects for a BPM solution; Importance of a structured approach to implementing BPM; The BPM implementation framework: Organizational strategy phase, process architecture phase, Launch pad phase, Understand phase, Innovate phase, People phase, Develop phase, Implement phase, Realize phase, Sustainable performance phase; Project management; People change management; Leadership. BPM maturity; Embedding BPM within the organization; Methods, tools and techniques of business process modelling, analysis and design. BPM Process Patterns: Basic control patterns, Advanced branching and synchronization patterns, Structural patterns, Multiple instance patterns, State based patterns, cancellation patterns; Business Process Languages. Best practices in BPM; BPM in eBusiness, eCommerce and eGovernment; BPM case studies.

MBA 648 SOFTWARE QUALITY MANAGEMENT

L-T-P-D-[C]

3-0-0-0-[4]

Introduction, Software Quality Practices, Software Quality Benchmarks, Software Quality Economics, Software Quality and the Cost of Ownership, Software Quality and the Cost to Developers, Software Quality and Profitability, Calculating Return on Investment

Software Product Quality, Role of Metrics in Software Quality, Software Quality Attributes, Software Reliability, Software Maintenance, Software Reuse, Software Verification and Validation, Software Inspections: Effectiveness and Efficiency, Unit Analysis and Testing, Intellectual Property Protection for Software

Software Process Quality: Need, Models and Frameworks, Structure, Classification, Automation, Improvement, Measuring Software Process, Software Development Process Audits, Agile Software Development Quality Assurance, Agile & Iterative Software Development, Agile Software Methods: State of-the-Art Requirements Specification using User Stories in Agile Software Development, Handling of Software Quality Defects in Agile Software Development, Agile Quality Assurance Techniques for GUI-Based Applications, Software Configuration Management in Agile Software Development, Improving Quality by Exploiting Human Dynamics in Agile Methods, Software Quality and Culture, Sustaining Quality, Software Technical Review Process, Case Studies

MBA 649 E-COMMERCE

L-T-P-D-[C]

3-0-0-0-[0]

e-Business Models, Building e-commerce infrastructure, e-Business challenges, Supply-chain, Data exchange standards, Returns, Customer Service, e-Payments, security and frauds, Out-sourcing, Laws pertaining to e-commerce.

MBA 651
L-T-P-D-[C]
3-0-0-0-[4]

QUANTITATIVE METHODS FOR DECISION MAKING

Introduction to decision analysis and process. Elementary probability theory, conditional probability, Bayesian decision analysis, EVPI, moment generating functions, the central limit theorem, Descriptive and deductive statistics, Hypothesis testing and Regression

MBA 652
L-T-P-D-[C]
3-0-0-0-[4]

STATISTICAL MODELLING FOR BUSINESS ANALYTICS

The objective of this course is to understand various econometric, statistical, and forecasting tools for making informed business decisions in the current dynamic and uncertain global business environment. This is an applied econometrics course. The course will include hands-on model building using the open source statistical software - R. It is expected that by taking this course students will gain skills and experience in data analysis, economic modeling and interpretation of analytical results.

MBA 654
L-T-P-D-[C]
3-0-0-0-[4]

INNOVATION FOR SUSTAINABLE BUSINESS ADVANTAGE

Module-I: Innovation Concepts and Principles. Historical Perspectives, Innovation Myths and Realities, Challenges, Triggers and Sources for Creativity and Innovation, Innovation by individuals, communities and Corporations, Innovator's Profile, Innovation Cycle, Phases of Innovation Cycle, Differences between Structured and Unstructured Innovation, Link between Corporate Vision, Strategy and Innovation, Components of Strategic Innovation, Organizational Architecture for Strategic Innovation, The Role of Government Policy in Innovation, The Roles of Venture Capitalists and Business Angels in Innovation, Eight Barriers to Innovation, Twelve Principles for Breaking Innovation Barriers, Innovation Principles for Sustainable Competitive Advantage and Generation of Wealth and Value

Module-II: Innovation Approaches and Frameworks. Incremental, Breakthrough and Disruptive Innovation, Design based Innovation, Open vs. Closed Innovation; Kotler's Four Levels of Innovation: Business Model Innovation, Process Innovation, Market Innovation and Product/Service Innovation; Innovation Frameworks: Hansen-Birkinshaw, Tracy-Wiersema, Sawhney-Wolcott; Reverse Innovation, Essential Principles and Practice of

Reverse Innovation, Changing the Mind and the Management Model; Jugad Innovation, Essential Principles and Practice of Jugad Innovation, Jugad Innovation's Future for Emerging Markets, Illustrative commercial examples for Innovation

Module-III: Innovation Project. A practical project that illustrates the Innovation principles

MBA 661
L-T-P-D-[C]
3-0-0-0-[4]

PRODUCTION AND OPERATIONS MANAGEMENT

Concepts, Context and Decision Process in Production System; Manufacturing and Service Systems; Policy Decisions; Product Decisions; Process Decisions; Forecasting Methods, Product Design and Process Selection in Manufacturing and Service; Value Analysis; Facilities Location and Layout, Capacity Planning; Job Design and Work Measurement, Learning Curves, Production Planning Models– Lot Sizing and Aggregate Planning; Line Balancing; Inventory Systems – Costs, EOQ, Continuous and Periodic Review Models, Stochastic Models and Safety Stock; Inventory Systems for Dependent Demands – Material Requirements Planning; Operations Scheduling; Quality Control; Integration – JIT and Kanban Systems.

MBA 663
L-T-P-D-[C]
3-0-0-0-[0]

TOTAL QUALITY MANAGEMENT

Total Quality Management, quality management Philosophies, Leadership, Employee involvement and customer Value Evaluation, Kaizin, Problem Solving and Quality Management, problem solving Fundamentals, Problem Identification, Definition,Diagnosis, Alternative Generation and Evaluation, Elementry concepts related to 7 Old and 7 New Tools for quality Assurance, Basic Statistical Concepts, Control of Accuracy and Precision, Process Capability, SPC, Acceptance Sampling, MIL- STD-105D. Quality Management Systems, ISO 9000, Quality Engineering, Quality Function Development, Introduction to Design of Experiments, Process Optimization and Robust Product Design, Steps to Six Sigma, Management of Service Quality, Management of Software Quality, Course will include projects and industry case studies.

MBA 664
L-T-P-D-[C]
3-0-0-0-[0]

SUPPLY CHAIN MANAGEMENT

Strategic Framework for Supply Chain, Materials Management Functions, Forecasting and market Analysis, Purchasing and Procurement, Physical Supply, Managing Inventories, MRP and Capacity Planning, Inventory Valuation, Logistical Management – Materials Handling, Warehousing/Storage and Retrieval, Transportation and Distribution, IT and Role of E-Business, Financial Evaluation.

MBA 665
L-T-P-D-[C]
3-0-0-0-[4]

MANUFACTURING PLANNING AND CONTROL

Framework of Manufacturing Planning, Forecasting Models, Hierarchical Planning System, Facility Location and Layout, Resource Scheduling, Flexible Manufacturing-analysis, design and Planning, Just-in-Time Manufacturing, Simulation and Performance Evaluation, Lean and Agile Manufacturing.

MBA 666
L-T-P-D-[C]
3-0-0-0-[4]

PROJECT MANAGEMENT

Characteristics of Projects, Project Economics, Screening and Selection, Evaluation, Structuring – Organizational and Work Breakdown, Scheduling, Budgeting, Resource Management, Life-Cycle Costing, Project Control, R&D Projects, Computer Supports, Project Termination.

MBA 671
L-T-P-D-[C]
3-0-0-0-[4]

MANAGING SERVICE OPERATIONS

Service as Product, Design of Service Systems, Location and Layout of Service Facilities, Service Engineering including Work Design, Human Factors, Automation and Communication, Productivity and Service Effectiveness, Network Planning including Queuing Networks, Manpower and Resource Scheduling and Distribution Planning. Professional Service: Achieving differentiation through knowledge and relationship, Service and Competitive Strategy; Service delivery systems and IT applications; IT enabled services and Technology Convergence; Managing for World Class; Service Quality and Service Level best practices for call centers and related services, Cross Cultural issues; Pricing and Transfer Pricing of Connected Services, Project Implementation, Learning,

Innovation and Knowledge Management in the Service based business.

MBA 675

L-T-P-D-[C]

3-0-0-0-[0]

INFRASTRUCTURE REGULATION, POLICY AND FINANCE

Role of Infrastructure in Economic Development, Natural Monopoly and Economics of Infrastructure Regulation, Rate of Return Regulation, Performance Based Regulation, Pricing for Infrastructure Sector, Role of Subsidies, Reforms in the Infrastructure Sector (Power, Telecom, Roads, Ports, Urban Services) Restructuring and Privatisation in Infrastructure Sector, Reform Acts, Competition in Infrastructure Sector (Bulk Power, Telecom, Transportation), Issues in Infrastructure Finance, Modes of Project Financing, Risks in Infrastructure Sector, Development of Infrastructure Projects —BOO, BOOT, BOLT etc.

MBA 676

L-T-P-D-[C]

3-0-0-0-[0]

SECURITY ANALYSIS, DERIVATIVES AND PORTFOLIO MANAGEMENT

Financial Markets, Investment Alternatives, Risk and Return, Portfolio Theory and Capital Asset Pricing, Capital Asset Pricing Theory and Arbitrage Pricing Theory, Efficient Market Hypothesis, Security Analysis and Valuation, Valuation of equity and Fixed-income securities, Fundamental Analysis, Technical Analysis, Investment Strategies, Derivatives, Options, Futures, Swaps, Black-Scholes model, Value at risk, Estimating volatility and correlations, Hedging and Portfolio Management.

MBA 677

L-T-P-D-[C]

3-0-0-0-[0]

PROJECT FINANCING AND MANAGEMENT

Generation and Screening of Project Ideas, Project Appraisal and Evaluation, Financial Projections, Investment Criteria, Cost Benefit Analysis, Project Finance, Financing Infrastructure Projects, Sources of Finance, Multilateral Project Financing, Consortium Financing, Venture Capital, Risk Analysis, Project Life Cycle, Techniques for Project Management.

MBA 678

L-T-P-D-[C]

3-0-0-0-[0]

MANAGEMENT OF RISK IN FINANCIAL SYSTEM

Concept of Risk and Risk Management., Different types of Risks like Systematic Risk, Interest Rate Risk, Liquidity Risk, Operational Risk, Regulatory Risk, Market

Risk, Foreign Exchange Risk, Commodity Price Risk, Industry Concentration Risk, Environmental Risk, Counter party Risk, Credit Risk, Legal Risk, Regulatory Risk etc. Methods of identifying and measuring different types of risks. Use of Risk Models. Methods of Risk control and Management, i.e., requirement of active Risk Management techniques through use of VaR model; monitoring of ALM (Asset Liability Management); use of derivatives like currency swaps, interest rate futures, forward rate agreements etc.

MBA 679

COMMERCIAL BANKING, RISK MODELING & RISK MANAGEMENT

**Prereq.MBA601;
MBA607L-T-P-D-[C]**

3-0-0-0-[0]

The course will deal with the theory, tools and techniques necessary for efficient modeling and management of risk in financial services with emphasis on commercial banking. At the macro level emphasis is placed on the effect of regulatory and country specific factors on the functioning and the adherent risk in the operation of a commercial bank. At the micro level various facets of risk management which include interest rate, credit and market risk are covered in sufficient depth. The course also covers related topics in derivative pricing and hedging and application of option valuation models in modeling and managing the above risk. The course does not have a specific text book and consists of prescribed readings provided by the instructor.

MBA 680

Entrepreneurial Finance

L-T-P-D-[C]
3-0-0-0-[0]

Aims to introduce students to raise and manage financial resources from the point of view of a start-up venture. The course is aimed at would be entrepreneurs. It includes basic introduction to accounting both financial and managerial along with capital budgeting and valuation. The course also provides inputs to various sources for financing a new venture. Once the student is familiar with the basics in accounting, the course proceeds with identifying an opportunity and subsequently making financial projections in terms of capital budgeting to finally arrive at the valuation. It includes an introduction to advanced valuation techniques with increasing complexity. After this various financing options are visited as well as selection of an appropriate financing avenue for the business in question is elaborated upon. Deal structuring is also elaborated in depth. A linkage between the business model used and appropriate funding source is discussed. An attempt would be made to demystify the ways of

funding agencies in terms of their requirements and the decision making process involved. IPO process for both debt and equity issues including the cost involved and discuss the decision parameters involved before going for the same.

MBA 681 Financial Modelling

Prerequisite: MBA601; MBA607; MBA676; MBA643

L-T-P-D-[C]

3-0-0-0-[0]

The course intends to provide students an introduction to various techniques drawn both from Operations as well as Information systems with specific application to financial modelling. This involves search and optimization techniques like genetic algorithms, artificial neural networks and fuzzy logic. This course starts with providing the technical knowledge of building financial models in Excel and VBA in corporate finance and then moves forward to advanced modelling and simulation of the same using the above techniques. The aim is to bridge the gap between financial theory and practice. The course includes term structure modelling, distributions of financial asset prices and simulation methods, finance application area of Option pricing, valuation, portfolio selection, default adjusted expected bond returns and risk modelling using Value at Risk (VaR) and bootstrapping. The course does not aim to teach finance models taught in other finance courses but aims to introduce to the students the various tools and techniques available to them from other management areas like systems and operations. The course would be an interdisciplinary course with a focus on the financial applications. This is an advanced level course where the students are expected to have reasonable proficiency in finance and operations.

MBA 682 ENERGY & CARBON MARKETS: ECONOMICS POLICY & REGULATIONS

Prereq. A course on micro-economics/managerial economics recommended.

L-T-P-D-[C]

3-0-0-0-[0]

Energy and Economic Development: National and International Perspective, Structure of Energy Demand and Supply,, Energy Value Chain and Energy Accounting, Economics of Energy and Exhaustible Resources , Energy Security, Energy Policy and Planning, Modelling for Energy Markets: Applications in General Algebraic Modelling System (GAMS), International Markets for Energy: Oil, Coal, Natural Gas and Uranium, Indian Energy Markets: Oil & Gas, Coal and Electricity, Private Investment in Energy Sectors: NELP, Coal Policy, Power Policy, Regulation of Indian Energy Sectors - Electricity, Oil & Gas and Coal Sectors,

Pricing in Energy Markets: Electricity, Coal, Oil and Natural Gas, Functioning of Power Exchange and Commodity Exchanges (Energy), Cross Border Energy Cooperation, Energy and Environment, Climate Change, UNFCC, Kyoto Protocol and beyond, Clean Development Mechanism and its Process, International Carbon Markets and Carbon Finance, National Action Plan on Climate Change, Renewable Energy: Technology, Economics and Policy, Market for Renewable Energy Certificates, Energy Conservation, Market for Energy Efficiency: ESCO and Market for Ecerts (White Certificates).

MBA 697 **SUMMER PROJECT**

L-T-P-D-[C]

3-0-0-0-[0]

During the summer after first two semesters, each student will take up a summer project in an industrial or service organization for 8-10 weeks. During this period, the student will work under the guidance of an executive of the host organization, complete the assignment, prepare a written report, and make a presentation during the third semester.

MBA 698 **SEMINAR**

L-T-P-D-[C]

3-0-0-0-[0]

MBA 699 **SPECIAL STUDIES/PROJECT**

L-T-P-D-[C]

3-0-0-0-[0]

In this course, each student will take up a management project or management topic under the guidance of a specific faculty. Towards the end of the semester, the student will present a final report of the project.