

**MSc in
Technology and Innovation Management**

Year : I

Part : I

| Teaching Schedule | | | | Examination Scheme | | | Total | Remark |
|-------------------|-------------|--|-----------|--------------------|-----------|------------|------------|--------|
| S. N. | Course Code | Course Title | Credit | Theory | | | | |
| | | | | Assesment Marks | Final | | | |
| | | Duaration hours | Marks | | | | | |
| 1 | 811 ME | Applied Probability and Statistics | 4 | 40 | 3 | 60 | 100 | |
| 3 | 812 ME | Marketing Management | 2 | 20 | 1.5 | 30 | 50 | |
| 2 | 813 ME | Financial Management | 2 | 20 | 1.5 | 30 | 50 | |
| 4 | 814 ME | Research Design and Methodology | 4 | 40 | 3 | 60 | 100 | |
| 5 | 804 ME | Operations Research/Management Science | 4 | 40 | 3 | 60 | 100 | |
| Total | | | 16 | 160 | 12 | 240 | 400 | |

Year : I

Part : II

| Teaching Schedule | | | | Examination Scheme | | | Total | Remark |
|-------------------|-------------|--------------------------------------|-----------|--------------------|-----------|------------|------------|--------|
| S. N. | Course Code | Course Title | Credit | Theory | | | | |
| | | | | Assesment Marks | Final | | | |
| | | Duaration hours | Marks | | | | | |
| 1 | 861 ME | Technology and Innovation Management | 4 | 40 | 3 | 60 | 100 | |
| 2 | 862 ME | Strategic Management | 4 | 40 | 3 | 60 | 100 | |
| 3 | 863 ME | Elective I: Project Management | 4 | 40 | 3 | 60 | 100 | |
| 4 | 864 ME | Elective II: | 4 | 40 | 3 | 60 | 100 | |
| Total | | | 16 | 160 | 12 | 240 | 400 | |

Year : II

Part : I

| Teaching Schedule | | | | Examination Scheme | | | Total | Remark |
|-------------------|-------------|--|-----------|--------------------|----------------|------------|------------|--------|
| S. N. | Course Code | Course Title | Credit | Theory | | | | |
| | | | | Assesment Marks | Final | | | |
| | | | | | Duration hours | Marks | | |
| 1 | 912 ME | Elective III- Human Resource Management and Managerial Communication | 4 | 40 | 3 | 60 | 100 | |
| 2 | 913 ME | Elective IV | 4 | 40 | 3 | 60 | 100 | |
| 3 | 911 ME | Group Project | 4 | 100 | - | - | 100 | |
| Total | | | 12 | 180 | 6 | 120 | 300 | |

Year : II

Part : II

| Teaching Schedule | | | | Examination Scheme | | | Total | Remark |
|-------------------|-------------|--------------|-----------|--------------------|----------------|----------|------------|--------|
| S. N. | Course Code | Course Title | Credit | Theory | | | | |
| | | | | Assesment Marks | Final | | | |
| | | | | | Duration hours | Marks | | |
| 1 | 961 ME | Thesis Work | 16 | 100 | - | - | 100 | |
| Total | | | 16 | 100 | 0 | 0 | 100 | |

Elective-II

Reliability and risk analysis

Maintenance engineering and management

Note on electives-IV

Student can take 1(one) interdepartmental elective

Areas for group project:

Farming/agriculture

Energy

Social entrepreneurship

Use of various technologies in rural immersion

Technical education for rural mass

Year I Part I:

811 ME: Applied Probability and Statistics (4 Credit)

Basic Probability Concept, Random Variables, Moments Of Random Variables, Special Probability Distributions, Multiple Random Variables, Sampling Theory And Distribution, Estimation Theory, Hypothesis Testing, Curve Fitting.

812 ME: Marketing Management:(2 Credit)

Identifying Opportunities for Growth - Prioritizing Market Targets. Using the Whole Product Concept - Creating a Competitive Product Strategy, Initiating the Marketing Management Process/ Defining a Solution Strategy. Beating the Competition- Listening and communicating to Customers, Achieving Competitive Advantage.

813 ME: Financial Management (2 Credit)

Introduction to financial management & types of firms, capital and financial markets, financial statements and ratio analysis, Capital budgeting techniques, Financial forecasting and strategic financial planning

814 ME: Research Design and Methodology (4 Credit)

Introduction, nature and types of research language of research. Building blocks of research (ontology, epistemology, methodology, methods, sources). Research and criticism, the research process (applied and basic research). Inductive and deductive logic. Introduction and application of various available research methodologies and methods such as Questionnaire and Survey research, Case studies, Experiments, Qualitative Research Strategies, Modeling and Simulation, Historical Interpretive Studies, etc. Appropriate elaborations of Business research methods for Data analysis and interpretations and use of tools in statistical analysis. Research Proposals, Research reports: contents, formats and components, writing approaches, identification of topic, development of research problem, literature review and search, building theory for research, research objectives, research questions and hypotheses, designing methods and procedures, citing and references and referencing systems

804 ME: Operations Research/management Science (4 Credit)

Introduction to Modeling for Decisions; application and benefits of Operations Research; developing Models; analyzing and solving models; interpretation and Use of Model Results, Regression Analysis, Time-series analysis; models with trend components; models for Time-series with Seasonal Components; models for Time-series with Trend and Seasonal Components; selecting the best forecasting methods; forecasting with CB Predictor, Introduction to optimization; linear and Multi-objective Optimization Models; modeling Optimization Problems in EXCEL; Building Linear Programming Models; data envelopment analysis, Network modeling, Interpreting Solver Results and Sensitivity Analysis; solving Multi-objective Models; using Premium Solver for Linear Programming; Integer programming; goal programming & multi-objective programming.

Year I Part II

861 ME: Technology and Innovation Management (4 Credit)

Overview of the innovation and technology management process. Definitions and concepts of product and process innovation, radical versus incremental innovation. Key issues in Technology and Innovation Management. Role of technology in innovation, disruptive technologies, managing the technology life cycle. Strategic Considerations in developing a sustainable framework for Technology and Innovation management. Positioning innovation in competitive environment. Learning from markets. Dynamics of

markets for technological innovation. Developing a Marketing Plan. Identification of target market, product, price, positioning, communication, and distribution decisions. New Product Development Process. Sources of new product ideas, lead user analysis, customer need identification, converting customer needs statements to product specification, concept development, concept screening, and selection. Idea generation, development, application and prototyping. Integrating several existing technologies. Simplifying life by designing human centric interaction rather than machine centric. Reaching out to people in technology and innovation management. How to conceive? How to develop? How to reach out? How to continue growing? Analysis and presentation of the big stories, 1 international and 1 local. Insight into existing rural and urban as well as futuristic solutions and development activities

862 ME: Strategic Management (4 Credit)

Concept and Methods of Strategic Management: Strategic Management, External Environmental Analysis, Internal Environmental Analysis, Competitive Strategy, Strategic Alternatives, Strategic choice, Strategy Implementation, Strategic Control and Evaluation, Global Strategy, Ethics and Corporate Social Responsibility

Cases in Strategic Management: Selected cases, Articles from Harvard Business Review

863 ME: Elective I: Project Management (4 Credit)

Definition, scope, characteristics, elements, life cycle, project phases and importance of project management, PMBOK and PMI Framework (5 Processes, 9 Knowledge Areas), Project structures and frameworks – The project model, Four phases of project management, The 7-S of project management, The project environment, The complexity of projects, Project Integration Management, Project Scope Management, Project Time Management, Project Cost Management, Project Quality Management, Project Communication and Human Resource Management, Project Risk Management, Project evaluation and auditing, Project leadership, Procurement management and Contract, Occupational health and safety, Cultural and ethics in project management, Case studies and seminar presentation.

864 ME: Elective II (4 credit)

Elective II: Reliability and Risk Analysis (4 credit)

Reliability Concept: Reliability function, failure rate, mean time between failures, mean time to failure, a priori and a posteriori concept, mortality curve, useful life availability, maintainability, system effectiveness.

Reliability Data Analysis: time to failure distributions, exponential, normal, and Weibull distributions, ranking of data, probability plotting techniques, hazard plotting.

Reliability Prediction Models: series and parallel systems, reliability based design approach, standby systems, application of Baye's theorem, cut and tie set method, fault tree analysis, limitations.

Risk Analysis: definition and measurement of risk, different types of risk, parts of risk analysis, elements of risk analysis, qualitative and quantitative risk analyses, analysis techniques, risk reduction resources, industrial safety and risk assessment

Elective II: Maintenance engineering and Management (4 Credit)

Introduction to maintenance engineering, evolution in maintenance engineering, Breakdown maintenance, Preventive maintenance, Predictive maintenance, Condition based maintenance, Maintenance tools: fault tree analysis, Failure mode, effect and criticality analysis, Introduction to reliability-centered maintenance, Application of reliability-centered maintenance, Total productive maintenance, Comparison of various maintenance program, Maintenance management, Maintenance of civil, electrical and mechanical components.

Year II Part I

912 ME: Human Resource Management and Managerial Communication (4 Credit)

An Overview of HRM, Job Design and Analysis, Human Resource Planning, Recruitment, Selection and Socialization, Human resource Development, Performance Evaluation and Compensation Management, Industrial Relations and Collective Bargaining, Contemporary Issues in HRM

Understanding the Foundations of Managerial Communication, Understanding Verbal and Non-verbal Communication, Planning, Writing and Completing Reports and Proposals, Writing Letters, memos and e-mails,

911 ME: Group Project (4 Credit)

It is designed to undertake research for informing the definition, approach and design of the proposed problem project. Students could also opt for applied real-world problem solving project and work on its identification, analysis and design of the solution. Simple projects proposing to seek to identify some unstructured Problem/ issues, create potential solutions for them, develop and apply criteria for evaluating those solutions, and generate a recommended solution to the problem/issue may be undertaken

913 ME: Elective – IV (Interdepartmental elective of 4 credit)

Year II Part II

961 ME: Thesis (16 Credit)

Proposal Defense, Mid-Term Defense, Pre-Defense and Final Defense of Research Work, Dissertation/Thesis with New Innovations, Minimum One Research Paper Based on Dissertation (Published/Accepted)

