

I SEMESTER

ORGANIZATIONAL BEHAVIOUR AND DESIGN			
Course Code	MTM101	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03
<p>Course Objectives: This course will enable the students</p> <ul style="list-style-type: none"> · To understand theories and models of Management and OB. · To classify and differentiate between various methods of problem solving. · To compile an adept framework for solving the problems at the workplace. · To acquaint the students with industry relevant skill sets. 			
Module-1 (8 Hours)			
<p>Introduction: Meaning, Objectives, Differences between Administration and Management, Levels of Management, Kinds of Managers, Managerial roles, History of Management, Recent trends in Management.</p>			
Module-2 (9 Hours)			
<p>Planning: Importance, Process, Benefits of Planning, Types of Plans, Planning tools and techniques. Organising: Meaning, Types of Organisation structures, Traditional structures, Directions in organisation structures. Leading: Meaning, Nature, Traits and Behaviour, Contingency approaches to Leadership, Transformational leadership. Controlling: Meaning, Importance, Steps in the control process, Types of Control.</p>			
Module-3 (9 Hours)			
<p>Organisational Behaviour: Introduction, Meaning, History of Organisational Behaviour, Organisational effectiveness, Organisational learning process, Stakeholders, Contemporary challenges for Organisations.</p>			
Module-4 (9 Hours)			
<p>Behavioural Dynamics: MARS Model of individual behaviour and performance, Types of Individual behaviour, Personality in Organisation, Values in the work place, Types of values, Perception, Meaning, Model of Perceptual process. Emotions in work place, Types of emotions, Circumplex Model of Emotion, Attitudes and Behaviour, Work-related stress and its management. Motivation, Meaning, Maslow's Hierarchy of Needs, Four Drive Theory of Motivation.</p>			
Module-5 (9 Hours)			
<p>Teams: Advantages of Teams, Model of Team Effectiveness, Stages of Team Development. Power , Meaning, Sources, and Contingencies of Power, Consequences of Power.</p>			
Module-6 (7 Hours)			
<p>Culture: Meaning, Elements of Organisational Culture, Importance of Organisational Culture. Organisational Change , Meaning, Resistance to change, Approaches to Organisational Culture, Action Research Approach, Appreciative Inquiry Approach, Large Group Intervention Approach, Parallel Learning Structure Approach, and Ethical issues of Organisational Behaviour.</p>			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

1. MGMT ,Chuck Williams & Manas Ranjan Tripathy, 5/e, Cengage Learning, 2013.
2. Organizational Behavior,Steven L. McShane & Mary Ann Von Glinow, 6/e, McGraw Hill Education, 2015.
3. Management & Organisational Behaviour , Laurie J. Mullins, 7/e, Prentice Hall, 2005.
4. Essentials of Management , Koontz, McGraw Hill, 8/e, 2014.
5. Management, John R. Schermerhorn, Jr., 8/e, Wiley India, 2010. 6.
- Organizational Behaviour, Fred Luthans, 12/e, McGraw Hill International, 2011.

Web links and Video Lectures (e-Resources):

- https://onlinecourses.nptel.ac.in/noc22_mg104/preview
- https://onlinecourses.nptel.ac.in/noc22_mg78/preview
- https://learninglink.oup.com/access/king-lawley3e-student-resources#tag_all-chapters
- <https://openstax.org/details/books/organizational-behavior>
- <https://www.classcentral.com/course/introduction-organisational-behaviour-11892>

Skill Development Activities Suggested

- Visit an Organisation and note the various functions discharged in a day.
- Conduct a professional event in the department and try to understand the various roles played by students in relation to Team and Organisational environment.
- Develop questions, interact with people in the Organisation and try to observe personality traits.
- Meet any Leader / HoD / Dean and observe the Management of various departments and record the changes in administrative pattern.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Gain practical experience in the field of Management and Organisational Behaviour.	L1

CO2	Acquire conceptual knowledge of management, various functions of Management and theories in OB.	L2
CO3	Comprehend and apply management and behavioural models to relate attitude, perception and personality	L3
CO4	Analyse the recent trends in Management and OB models.	L4

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	

STATISTICS FOR MANAGEMENT

Course Code	MTM102	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Objectives: This course will enable the students

1. To facilitate the students to compute the various measures of central tendency and dispersion using descriptive statistics.
2. To enhance the skills to visualize and estimate the relationship between variables using correlation and regression analysis.
3. To equip with the skills of decision-making using probability techniques.
4. To empower with the knowledge of trend analysis.
5. To make the students understand the procedure of hypothesis testing using appropriate parametric and non-parametric tests.
6. To familiarize the students with analytical package SPSS.

Module-1 (8 Hours)

Introduction to Statistics: Meaning and Definition, Importance, Types, Measures of Central Tendency -Arithmetic mean, Geometric mean, Harmonic mean, Median, Quartiles, Deciles, Percentiles, Mode. Measures of Dispersion -Range, Quartile deviation, Mean deviation, Standard deviation, Variance, Coefficient of Variation. (Theory and Problem).

Module-2 (9 Hours)

Correlation and Regression: Correlation - Significance, Types, and Methods, Scatter diagram, Karl Pearson correlation, Spearman's Rank correlation, Regression, Significance, Linear Regression Analysis, Types of regression models, Lines of Regression. (Theory and Problem).

Module-3 (9 Hours)

Probability Distribution: Concept of probability, Counting rules for determining number of outcomes - Permutation and Combination, Rules of probability- Addition and Multiplication, Baye's Theorem. Concept of Probability Distribution, Theoretical Probability Distributions - Binomial, Poisson, Normal (Problems only on Binomial, Poisson and Normal). (Theory and Problem).

Module-4 (9 Hours)

Time Series Analysis: Objectives, Variations in Time Series. Measurement of Trend, Graphic Method, Moving Average Method, Semi-Average Method, Least Square Method. Measurement of Seasonal Variations- Method of Simple Averages, Ratio to Trend Method-Ratio to Moving Average Method, Link Relative Method. (Theory and Problem).

Module-5 (9 Hours)

Hypotheses Testing: Definition, Types, Procedure for testing, Errors in hypotheses testing. Parametric and Non-Parametric Tests -t-test, z-test, f-test, Chi-square test, u-test, K-W Test (problems

on all tests). Analysis of Variance (theory only).

Module-6 (7 Hours)

Computer lab for Statistics: SPSS: Overview of SPSS, Creating, saving and editing files, Importing files from other formats. Transforming Variables - Compute, Multiple responses. Organization and Presentation of Information - Measures of Central Tendency and Variability, Frequency Distributions. Charts and Graphs, Hypotheses testing using means and cross-tabulation, Paired t, Independentsample t, Chi-square. Correlation, Regression Analysis, Linear, Logistic, Analysis of Variance- One Way ANOVA, ANOVA in regression.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- Tests (for 25Marks) and
- Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

1. S C Gupta (2018), Fundamentals of Statistics, 7th edition Himalaya Publications.
2. J K Sharma (2020), Business Statistics 5th edition Vikas Publishing House.
3. S P Gupta (2021), Statistical Methods 46th edition Sultan Chand Publications.
4. C R Kothari (2015), Research Methodology- Methods and Techniques, Viswa Prakasam Publications.
5. William E. Wagner, III (2015), Using IBM SPSS- Statistics for Research Methods and Social Science Statistics 5th edition Sage Publications.

Web links and Video Lectures (e-Resources):

☑ Students should opt Swayam NPTEL Course on Business Statistics offered by Prof. M.K.Barua Dept. of Management studies IIT Roorkee.

☑ YouTube Videos are also available of the same
<https://www.youtube.com/watch?v=VDLyk6z8uCG>

☑ Swayam NPTEL Course on Business Statistics by Dr. P. M. Shiv Prasad, Department of Commerce, Teresian College, Mysuru.

Skill Development Activities Suggested

- Role Play Techniques
- Quizzes
- Field Surveys
- Assignments

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand how to organize, manage, and present the data	L2
CO2	Use and apply a wide variety of specific statistical tools	L3
CO3	Understand the applications of probability in business	L4
CO4	Effectively interpret the results of statistical analysis	L5
CO5	Develop competence of using computer packages to solve the problems	L6

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5	2	3							

ECONOMIC ANALYSIS FOR BUSINESS

Course Code	MTM103	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Objectives: This course will enable students to:

- To introduce the fundamentals, tools and theories of managerial economics.
- To provide an understanding of the application of Economics in Business
- To learn the basic Micro and Macro-economic concepts.
- To understand Demand, Production, Cost, Profit and Market competitions with reference to firm and industry.

Module-1 (7 Hours)

Introduction: Managerial Economics: Meaning, Nature, Scope & Significance, Uses of Managerial Economics, Role and Responsibilities of Managerial Economist.

Theory of the Firm: Firm and Industry, Objectives of the firm, alternate objectives of firm.

Managerial theories: Baumol's Model, Marris's model of growth maximization, Williamson's model of managerial discretion.

Module-2 (9 Hours)**Demand Analysis**

Law of Demand, Exceptions to the Law of Demand, Elasticity of Demand, Classification of Price, Income & Cross elasticity, Promotional elasticity of demand. Uses of elasticity of demand for Managerial decision making, Measurement of elasticity of demand. Law of supply, Elasticity of supply.

Demand forecasting: Meaning & Significance, Methods of demand forecasting. (Problems on Price elasticity of demand, and demand forecasting using Time-series method).

Module-3 (9 Hours)**Cost Analysis & Production Analysis**

Concepts of Production, production function with one variable input - Law of Variable Proportion, Laws of returns to scale, Indifference Curves, ISO-Quants & ISO-Cost line, Economies of scale, Diseconomies of scale. Types of cost, Cost curves, Cost – Output Relationship in the short run and in the long run, Long- Run Average Cost (LAC) curve

Break Even Analysis—Meaning, Assumptions, Determination of BEA, Limitations, Margin of safety, Uses of BEA In Managerial decisions (Theory and simple Problems).

Module-4 (9 Hours)
<p>Market structure and Pricing Practices Perfect Competition: Features, Determination of price under perfect competition, Monopolistic Competition: Features, Pricing Under monopolistic competition, Product differentiation. Oligopoly: Features, Kinked demand Curve, Cartels, Price leadership. Monopoly: Features, Pricing under monopoly, Price Discrimination. Descriptive Pricing Approaches: Loss leader pricing, Peak Load pricing, Transfer pricing.</p>
Module-5 (9 Hours)
<p>Indian Business Environment Nature, Scope, Structure of Indian Business Environment, Internal and External Environment. Political and Legal Environment, Economic Environment, Socio– Cultural Environment, Global Environment. Private Sector, Growth, Problems and Prospects, SMEs, Significance in Indian economy, challenges and prospects. Fiscal policy and Monetary Policy: Meaning of Fiscal policy, three main types of fiscal policy – neutral policy, expansionary, and contractionary. Monetary policy: Meaning, Objectives of monetary policies: Controlling inflation, Managing employment levels, and Maintaining long-term interest rates. (Theory only)</p>
Module-6 (7 Hours)
<p>Indian Industrial Policy : New industrial policy 1991, Production Linked Incentive (PLI) scheme for Promoting manufacturing of Telecom & Networking Products in India, New economic initiatives proposed by Indian government for economic growth Private Sector-Growth- like Atma Nirbhar Bharath Abhiyan.</p>
<p>Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p> <p>Continuous Internal Evaluation: There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.</p> <p>CIE Marks shall be based on: a) Tests (for 25Marks) and b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.</p> <p>Semester End Examination: The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.</p> <ul style="list-style-type: none"> · The question paper will have 8 full questions carrying equal marks. · Each full question is for 20 marks with 3 sub questions. · Each full question will have sub question covering all the topics. · The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.
<p>Suggested Learning Resources: Books 1. Managerial Economics by Geethika, Ghosh & Choudhury, McGrawHill 2/e, 2011 2. Managerial Economics by Dominick Salvatore, Oxford Publishers, 2e, 2016 3. Managerial Economics by D.M Mithani, HPH publications, 2016 4. Managerial Economics by Samuelson & Marks, Wiley, 5/e, 2015 5. Managerial Economics by Maheshwari K. L., Varshney R.L., Sultan Chand & Sons.</p>
<p>Web links and Video Lectures (e-Resources):</p> <ul style="list-style-type: none"> • https://www.edx.org/learn/managerial-economics • https://www.indiabudget.gov.in/

- https://onlinecourses.swyam2.ac.in/imb19_mg16/preview
- <https://www.youtube.com/watch?v=ZXDKdJO3V6Y>

Skill Development Activities Suggested

- Assessment of Demand Elasticity–Price, Income and Cross
- Demand Forecasting: Application of qualitative and quantitative methods of demand forecasting to various sectors (Automobile, Service, Pharmaceutical, Information Technology, FMCG, Hospitality etc.) in India. Students are expected to assess the impact of advertisement or sales promotion on the demand of a product
- An in-depth study of economic indicators on the growth rate and presentation on the same
- Analyze the impact of the Union Budget on different sectors of the Indian economy, fiscal discipline and disinvestment proposals of the GOI and presentation on the same
- A study on the effect of monetary policy on banking and NBFCs. A debate can be held on the pros and cons of the monetary policy.
- Use of MS Excel in the above-mentioned activities should be encouraged.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	The student will understand the application of Economic Principles in Management decision making.	L1
CO2	The student will learn the microeconomic concepts and apply them for effective functioning of a Firm and Industry.	L2
CO3	The student will be able to understand, assess and forecast the demand.	L3
CO4	The student will apply the concepts of production and cost for optimization of production	L4

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	3		1			3			
CO2	3	2		1			3		
CO3	2				1			1	
CO4	2		3		1				1

BUSINESS RESEARCH METHODS

Course Code	MTM104	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03

Course Objectives:

1. To understand the basic components of research design.
2. To Gain an insight into the applications of research methods.
3. To equip students with various research analytical tools used in business research.
4. To equip students with necessary critical thinking skills using excel.

Module-1 (7 Hours)

Business Research: Meaning, types, process of research- management problem, defining the research problem, formulating the research Hypothesis, developing the research proposals, research design formulation, sampling design, planning and collecting the data for research, data analysis and interpretation. Research Application in business decisions, Features of good research study.

Module-2 (9 Hours)

Business Research Design : Meaning, types and significance of research design. Exploratory and Conclusive

Research Design. Exploratory Research: Meaning, purpose, methods- Literature search, experience survey, focus groups and comprehensive case methods. Conclusive Research Design - Descriptive Research - Meaning, Types – Cross sectional studies and longitudinal studies. Experimental Research Design – Meaning and classification of experimental designs- formal and informal, Pre experimental design, Quasi-experimental design, True experimental design, statistical experimental design.

Module-3 (9 Hours)

Sampling: Concepts- Types of Sampling - Probability Sampling – simple random sampling, systematic sampling, stratified random sampling, cluster sampling -Non Probability Sampling –convenience sampling- judgemental sampling, snowball sampling- quota sampling - Errors in sampling.

Module-4 (9 Hours)

Data Collection:Meaning of Primary and Secondary data, Primary data collection methods - observations, survey, interview and Questionnaire, Qualitative Techniques of data collection, Questionnaire design – Meaning - process of designing questionnaire. Secondary data -Sources – advantages and disadvantages. Measurement and Scaling Techniques: Basic measurement scales-Nominal scale, Ordinal scale, Interval scale, Ratio scale. Attitude measurement scale - Likert's Scale, Semantic Differential Scale, Thurstone scale, Multi Dimensional Scaling. Case Study as per the chapter needs.

Module-5 (9 Hours)

Data Analysis and Report Writing: Editing, Coding, Classification, Tabulation, Validation Analysis and Interpretation- Report writing and presentation of results: Importance of report writing, types of research report, report structure, guidelines for effective documentation.

Module-6 (7 Hours)

Advanced Excel and real time application: V Look Up, H Look up, Sort and filter, concatenate, Conditional Formatting,, Pivot Table, If statement, Nested If, Charts. Statistical tests and how to interpret statistical outputs.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- Tests (for 25Marks) and
- Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

- Research Methodology: Methods and Techniques** by C.R. Kothari and Gaurav Garg
- Business Research Methods** by Donald R. Cooper and Pamela S. Schindler
- The Craft of Research** by Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams
- Research Design: Qualitative, Quantitative, and Mixed Methods Approaches** by John W. Creswell and J. David Creswell.

Web links and Video Lectures (e-Resources):

• [Coursera: Understanding Research Methods](#)

• edX: Data Analysis for Life Sciences

• [Khan Academy: Statistics and Probability](#)

Skill Development Activities Suggested

- Design and conduct a small research project on a topic of interest.
- Develop and administer a questionnaire for data collection.
- Analyze collected data using statistical software and interpret the results.
- Write a detailed research report and present findings to the class.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the fundamentals of research methodology and its importance.	L1
CO2	Differentiate between various research designs and methodologies.	L2
CO3	Develop skills for data collection, analysis, and interpretation.	L3
CO4	Gain insights into ethical considerations in research.	L4
CO5	Write and present research reports effectively.	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2				3

TECHNOLOGY MANAGEMENT LAB

Course Code	MTM105	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03

Course Objectives: This course will enable students to:

- Understand the principles and practices of technology management.
- Develop skills in managing technology in organizations.
- Gain knowledge on strategic technology planning and implementation.
- Learn about the role of innovation and R&D in technology management.
- Enhance practical skills through lab-based exercises and projects.

Module-1 (8 Hours)

Introduction to Technology Management: Definition, Need, and Importance
 Technology Life Cycle: Phases, Implications for Management
 Role of Technology in Business: Competitive Advantage, Strategic Use of Technology

Module-2 (9 Hours)

Technology Forecasting: Techniques, Importance, Applications
 Strategic Technology Planning: Process, Alignment with Business Strategy
 Technology Roadmapping: Steps, Benefits, Tools and Techniques

Module-3 (9 Hours)

Innovation Management: Definition, Types, Models
 R&D Management: Role, Process, R&D Strategies
 Open Innovation: Concepts, Benefits, Challenges

Module-4 (9 Hours)
Technology Transfer: Meaning, Process, Mechanisms Intellectual Property Rights (IPR): Importance, Types, Management Commercialization of Technology: Strategies, Challenges, Success Factors.
Module-5 (9 Hours)
Emerging Technologies: Definition, Examples, Impact Adoption and Diffusion of Technology: Models, Factors Influencing Adoption Technology Risk Management: Identifying, Assessing, Mitigating Risks
Module-6 (7 Hours)
Case Studies in Technology Management: Analysis, Lessons Learned Lab Exercises: Hands-on activities related to technology assessment, forecasting, and planning Project Work: Group projects on real-world technology management scenarios
Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together. Continuous Internal Evaluation: There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE. CIE Marks shall be based on: a) Tests (for 25Marks) and b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same. Semester End Examination: The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50. · The question paper will have 8 full questions carrying equal marks. · Each full question is for 20 marks with 3 sub questions. · Each full question will have sub question covering all the topics. · The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.
Suggested Learning Resources: Books 1. Technology Management by Robert Szakonyi, IEEE Press, 1999 2. Strategic Management of Technology and Innovation by Robert A. Burgelman, Clayton M. Christensen, Steven C. Wheelwright, McGraw-Hill Education, 6th Edition, 2016 3. Managing Innovation: Integrating Technological, Market and Organizational Change by Joe Tidd, John Bessant, Wiley, 6th Edition, 2018 4. Technology Ventures: From Idea to Enterprise by Richard C. Dorf, Thomas H. Byers, Andrew J. Nelson, McGraw-Hill Education, 5th Edition, 2020
Web links and Video Lectures (e-Resources): <ul style="list-style-type: none"> • NPTEL Technology Management Course • MIT OpenCourseWare on Technology Strategy • Coursera: Innovation Management • EdX: Strategic Management of Technological Innovation
Skill Development Activities Suggested Visit an organization to observe technology management practices, conduct a mini-project to develop a technology roadmap for a given technology, interview professionals in R&D departments to understand

innovation management processes, participate in a technology forecasting exercise using various techniques.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Gain practical experience in the field of Information Technology.	L1
CO2	Acquire conceptual knowledge of IT, various functions of IT systems.	L2
CO3	Comprehend and apply IT models to relate data, information, and systems.	L3
CO4	Analyze the recent trends in IT and emerging technologies.	L4

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	

EXPONENTIAL EMERGING TECHNOLOGIES

Course Code	MTM106	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Objectives: This course will enable students to:

- To understand and evaluate the impact of exponential technologies on various industries.
- To explore the principles, applications, and implications of emerging technologies.
- To analyze the strategic and ethical considerations associated with these technologies.
- To develop insights into the future trends and opportunities in exponential technologies.

Module-1 (8 Hours)

Introduction to Exponential Technologies: Definition and characteristics of exponential technologies, The concept of technological singularity, Overview of disruptive innovations, Historical perspective on technological advancements.

Module-2 (9 Hours)

Artificial Intelligence and Machine Learning: Fundamentals of AI and ML, Key algorithms and models, Applications in business and industry, Challenges and ethical considerations, Case studies on AI-driven transformations.

Module-3 (9 Hours)

Blockchain and Cryptocurrencies: Principles of blockchain technology, Applications beyond cryptocurrencies, Smart contracts and decentralized applications (DApps), Impact on financial systems and supply chains, Current trends and future outlook.

Module-4 (9 Hours)

Internet of Things (IoT) and Smart Systems: Overview of IoT technologies, Smart devices and networks, Applications in smart cities, healthcare, and industry, Data privacy and security issues, Future developments in IoT.

Module-5 (9 Hours)

Quantum Computing and Advanced Computing Technologies: Basics of quantum computing, Comparison with classical computing, Potential applications and implications, Current state and future prospects, Case studies on quantum research and development.

Module-6 (7 Hours)

Ethical and Strategic Implications of Exponential Technologies: Ethical considerations and societal impacts, Strategic planning for technology adoption, Regulatory and policy issues, Strategies for leveraging technology for competitive advantage, Case studies on ethical dilemmas and technology management.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

1. **Designing for Emerging Technologies: UX for Genomics, Robotics, and the Internet of Things**Follett, J., O'Reilly Media, 2014
2. **Emerging Technologies for Emerging Markets**Vong, J., & Song, I., Springer Singapore, 2014
3. **Disruption: Emerging Technologies and the Future of Work**Del Rosal, V., Emtechub, 2015
4. **Emerging Internet-Based Technologies**Sadiku, M. N. O., CRC Press, 2019
5. **Digital Economy: Emerging Technologies and Business Innovation**Mohamed Anis Bach Tobji, Rim Jallouli, Yamen Koubaa, Anton Nijholt, 2018
6. **Virtual & Augmented Reality for Dummies**Paul Mealy, 2018
7. **Augmented Reality and Virtual Reality: Empowering Human, Place and Business**Timothy Jung, M. Claudia tom Dieck, 2019

Web links and Video Lectures (e-Resources):

- [Introduction to Emerging Technologies](#)
- **Emerging Technologies and Trends**
- **TED Talks: The Future of Technology**
- **MIT OpenCourseWare: Emerging Technologies**
- [YouTube: Emerging Technologies Explained](#)

Skill Development Activities Suggested

- Conduct a Technology Trend Analysis
- Develop a Prototype Using Emerging Technologies
- Case Study on Technological Disruptions
- Participate in a Hackathon
- Create a Strategic Technology Plan

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand emerging technologies and their applications	L2
CO2	Apply concepts of emerging technologies to real-world scenarios	L3
CO3	Analyze the impact of emerging technologies on various industries	L4
CO4	Evaluate and design innovative solutions using emerging technologies	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2				3

II SEMESTER**PRODUCTION AND OPERATIONS MANAGEMENT**

Course Code	MTM201	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Objectives: This course will enable students to:

- To understand fundamental concepts of programming and problem-solving techniques.
- To classify and differentiate between various programming constructs.
- To compile and execute programs to solve real-world problems.
- To acquaint the students with industry-relevant programming skills and best practices.

Module-1 (8 Hours)

Introduction to Production and Operations Management: - Definition of Production and Operations Management, evolution of Production Management as Operations Management.- Role of Operations Management in total management System- Interface between the operation systems and systems of other functional areas.

Module-2 (9 Hours)

Production Planning and Control: Basic functions of Production Planning and Control, Production Cycle - characteristics of process technologies. Project, Job Shop, Assembly and Continuous - Inter Relationship between product life cycle and process life cycle. Scheduling and control of production operations-control procedures and devices. Product sequencing- Sequencing of products in multi- product multi-stage situations – Plant Capacity and Line Balancing - Plant layout - Different types of layouts. Location and the factors influencing location.

Module-3 (9 Hours)

Maintenance Management: Objectives – Failure Concept, Reliability, Preventive and Breakdown maintenance, Replacement policies and Quality control – standards and specifications, Quality Assurance and Quality Circles – Statistical Quality Control – Control Charts for average. Range fraction defective and number of defects - Total Quality Management. ISO certification improvement of productivity: Work Study, various techniques in the Methods Study for identifying the most appropriate method. Work measurement - its uses and different methods, computation of allowance and allowed time.

Module-4 (9 Hours)

Materials Management:- Need use and importance of Material management-Materials

requirement planning-Materials Budgeting- Techniques for prioritization of materials-Source of Supply of Materials -Selection ,evaluation and Performance of suppliers-make or buy decisions and its implications under various circumstances -Vendor rating - determinants of vendor rating

Module-5 (9 Hours)

Structures and Unions: Definition, Declaration, Accessing Structure Members, Nested Structures, Arrays of Structures, Structures and Functions, Unions, Difference between Structures and Unions. **File Handling:** Introduction, Types of Files, File Operations, File Handling Functions, Reading and Writing Files, Random Access to Files.

Module-6 (7 Hours)

Stores Management – Objectives of Stores Management – Requirements for efficient Management of Stores - Safety stock - Inventory Control - Types of Inventory. Costs - Systems of inventory control – ABC, VED and FNSD analyses. Different Systems of Inventory Control - Value Analysis – Importance in cost reduction – concepts and procedures.

Assessment Details (both CIE and SEE)

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Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

1. **Production and Operations Analysis** by Steven Nahmias
2. **Operations Management: Processes and Supply Chains** by Lee J. Krajewski, Manoj K. Malhotra, and Larry P. Ritzman
3. **Production and Operations Management** by S. Anil Kumar and N. Suresh
4. **Manufacturing Planning and Control for Supply Chain Management** by F. Robert Jacobs, William L. Berry, D. Clay Whybark, and Thomas E. Vollmann
5. **Operations Management for Competitive Advantage** by Richard B. Chase, F. Robert Jacobs, and Nicholas J. Aquilano
6. **Production and Operations Management: Concepts, Models, and Behavior** by Everett E. Adam Jr. and Ronald J. Ebert
7. **The Goal: A Process of Ongoing Improvement** by Eliyahu M. Goldratt and Jeff Cox

Web links and Video Lectures (e-Resources):

Coursera: Operations Management <https://www.coursera.org/learn/wharton-operations-management>

edX: Introduction to Operations Management <https://www.edx.org/learn/operations-management/indian->

institute-of-management-bangalore-operations-management

MIT OpenCourseWare: Operations Management <https://ocw.mit.edu/courses/15-760a-operations-management-spring-2002/>

YouTube: Operations Management Videos <https://www.youtube.com/watch?v=tdZOjBODtE4>

NPTEL: Production and Operations Management https://onlinecourses.nptel.ac.in/noc20_mg06/preview

Skill Development Activities Suggested

- Conduct a Market Basket Analysis
- Develop a Classification Model
- Perform Clustering Analysis
- Analyze Social Network Data
- Create a Report on Ethical and Privacy Issues

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Gain practical experience in production and operations processes.	L1
CO2	Acquire conceptual knowledge of operations management techniques and their applications.	L2
CO3	Comprehend and apply operations management strategies to optimize business processes.	L3
CO4	Analyze and evaluate operational performance to improve efficiency and effectiveness.	L4
CO5	Address and resolve issues related to operations management, including supply chain and inventory management.	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2		3		

MARKETING MANAGEMENT

Course Code	MTM202	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Learning objectives:

- To make students understand the fundamental concepts of marketing and environment in which marketing system operates.
- To gain knowledge on consumer buying behaviour and influencing factors
- To describe major bases for segment marketing, target marketing, and market positioning.
- To develop a Conceptual framework, covering basic elements of the marketing mix.
- To understand fundamental premise underlying market driven strategies and hands on practical approach.

Module-1 (7 Hours)

Introduction to Marketing: Importance of marketing, Definitions of market and marketing, Types of Needs, Elements of Marketing Concept, Functions of Marketing, evolution of marketing,

Marketing V/s Selling, Customer Value and Satisfaction, 4P's of Marketing, Marketing Environment, Techniques used in environment analysis, Characteristics (Micro and Macro), Marketing to the 21st century customer.

Module-2 (9 Hours)

Analysing Consumer Behaviour: Meaning and Characteristics, Importance of consumer behaviour, Factors influencing Consumer Behaviour, Consumer characteristics influencing buying behaviour personal factors and cultural factors. Consumer Buying Decision Process, Buying Roles, Buying Motives. The black box model of consumer behaviour. Psychological factors consumer.

Module-3 (9 Hours)

Product management and Pricing: Importance and primary objective of product management, product levels, product hierarchy, Classification of products, product mix, product mix strategies, Managing Product Life Cycle. New Product Development, packing as a marketing tool, Role of labeling in packing. Concept of Branding, Brand Equity, branding strategies, selecting logo, brand extension- effects. Introducing to pricing, Significance of pricing, factor influencing pricing (Internal factor and External factor), objectives, Pricing Strategies-Value based, Cost based, Market based, Competitor based, Pricing Procedure.

Module-4 (9 Hours)

Distribution and Promotion: Roles and purpose of Marketing Channels, Factors Affecting Channel Choice, Channel Design, Channel Management Decision, Channel Conflict, Designing a physical Distribution System. Promotions- Marketing communications- Integrated Marketing Communications (IMC)-communication objectives, steps in developing effective communication. Advertising: Advertising Objectives, Advertising Budget, Advertising Copy, AIDA model, Traditional Vs Modern Media- Online and Mobile Advertising, social media for Advertising. Push-pull strategies of promotion.

Module-5 (9 Hours)

Market segmentation, Targeting and Brand Positioning: Concept of Market Segmentation, Benefits, Requisites of Effective Segmentation, Bases for Segmenting Consumer Markets, Market Segmentation Strategies. Types of Segmentation. Targeting - Bases for identifying target Customer target Marketing strategies, Positioning - Meaning, Tasks involved in Positioning. Monitoring brands performance and positioning. Product Differentiation Strategies.

Module-6 (7 Hours)

Emerging Trends in Marketing: Marketing Planning. Concepts of B2B marketing, Service Marketing, Digital and social media Marketing, Green Marketing, Event Marketing, Marketing Audit, Sponsorship, Cause Related Marketing, Marketing for Non-Profit Organizations, Relationship marketing, Marketing Strategies for Leaders, Challengers, Followers and Startups. Social Responsibility of marketing, Neuro Marketing, Sensory Marketing, societal marketing concept, premiumization.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Books**

1. Marketing Management- Indian Context, Global Perspective by Ramaswamy & Namakumari by SAGE publication, 6th Edition.
2. Marketing Management: A South Asian Perspective by Kotler, Keller, Koshy & Jha by Pearson publication, Latest Edition.
3. New Product Management by Merle Crawford and Anthony Di Benedetto by McGraw-Hill, Latest Edition.
4. Advertisement Brands & Consumer Behaviour by Ramesh Kumar by Sage Publications, 2020.
5. Marketing in India: Text and Cases by Neelamegham S by Vikas publication, Latest edition.
6. Marketing by Lamb, Hair, Mc Danniel by Cengage Learning, Latest edition.
7. Fundamentals of Marketing Management, Etzel M J B J Walker & William J Stanton by Tata Macgraw Hill, Latest edition.

Web links and Video Lectures (e-Resources):

- <https://youtu.be/5fdx5Laavkc>
- <https://youtu.be/Ule8n6GgE1g>
- <https://youtu.be/ob5KWs3I3aY?t=131>
- <https://youtu.be/U1VWUHLhmdk>
- <https://youtu.be/iWuYUhSHXHg>
- https://youtu.be/IErR_YYfP3Y
- <https://youtu.be/mLV7MASrDIQ>

Skill Development Activities Suggested

- Sensitise the students to the market dynamics by visiting super markets and regulatory markets like APMC, etc.
- Students to study the buying pattern based on demographics of consumers.
- Students to draft advertising copy.
- Students to take any FMCG product and study the PCL of that product.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Comprehend the concepts of Marketing Management.	L1
CO2	Gain knowledge on consumer behaviour and buying process	L2
CO3	Understand concept of Product and Brand Management, Branding and Pricing strategies	L3
CO4	Identify marketing channels and the concept of product distribution, techniques of sales promotion	L4
CO5	Simply ideas into a viable marketing plan for various modes of marketing	L4

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2	1		2				2		
CO3				3				2	
CO4		2		2					3
CO5		2			2				

HUMAN RESOURCE MANAGEMENT

Course Code	MTM203	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Objectives: The student will be able to

- Recite the theories and various functions of Human Resources Management
- Describe and explain in her/his own words, the relevance and importance of Human Resources Management at workplace
- Apply and solve the workplace problems through Human Resources Management intervention
- Compare and contrast different approaches of HRM for solving the complex issues and problems at the workplace
- Design and develop an original framework and model in dealing with the problems in the organization.

Module-1 (7 Hours)

Introduction HRM: Introduction, meaning, nature, scope of HRM, Importance and Evolution of the concept of HRM, Major functions of HRM, Principles of HRM. Human Resource Management and Personnel Management, Models of Human Resource Management, HRM in India, The Factors Influencing Human Resource Management, The HR Competencies, Human Resource Management and Firm Performance.

Module-2 (9 Hours)

HR Planning: Importance of HR Planning, Manpower Planning to HR Planning, Factors Affecting HR Planning, Benefits of HR Planning, HRP Process, Tools for Demand Forecasting, Attributes of an Effective HR Planning, Barriers to HR Planning, The Challenges for HR, Process of Job Analysis,

Job Description and Job Evaluation.

Recruitment and Selection: Importance of Recruitment, Recruitment Policies, Factors Influencing Recruitment, Recruitment Process, Sources, Evaluation of Recruitment Process, Recruitment

Strategy, Future Trends in Recruitment; Selection Process; Selection Tests; Factors Influencing Selections.

Module-3 (9 Hours)

Performance Management and Appraisal: Objectives of Performance Management, Performance Management and Performance Appraisal, Common Problems with Performance Appraisals, Performance Management Process, Types of Performance Rating Systems, Future of Performance Management.

Compensation and Benefits: Introduction, Definitions, Total Compensation, Total Rewards System, Forms of Pay, External and Internal Factors, Establishing Pay Rates, Employee Benefits.

Industrial Relations: Decent Workplace, International Labour Organisation, Industrial Relations, The Objectives of Industrial Relations, Approaches of Industrial Relations Systems, The Actors in Industrial Relations, Indian Context, Industrial Relations and Human Resource Management.

Module-4 (9 Hours)

Human Resource Management in Small and Medium Enterprises: Introduction to SMEs, The Difference in Adoption of Human Resource Management, SMEs and Large Firms, Indian Experience, Impact of Weak Adoption of Human Resource Management in SMEs,

Human Resource Management in the Service Sector: Introduction, The Emergence of the Services Sector, Implications for Human Resource, Management Function, Differences Between Services Sector and the Manufacturing Sector, Difference in Human Resource Management in Services and Manufacturing Sectors, Human Resource Management and Service Quality Correlation, Trade Unions in Services Sector, Models of Union Strategies.

Module-5 (9 Hours)

Human Resource Management and Innovations: Factors Affecting the Innovation Process in organisations, Current Trends in Human Resource Management, Innovative Human Resource Management Practices in India, Sustainable and innovative Human Resource Management.

Module-6 (7 Hours)

Future trends in Human Resource Management: Hybrid work model, Employee skill development, Internal mobility, Diversity and inclusion in workforce, People analytics, Employee well-being, Multi-generational workforces and All-in-One HR tools.

Assessment Details (both CIE and SEE)

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Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

1. Human Resource Management: Concepts authored by Amitabha Sengupta by Sage Publication India Pvt. Ltd. 2019 edition
2. Human Resource Management: Theory and Practices authored by R. C. Sharma, Nipun Sharma by Sage Publication India Pvt. Ltd., 2019 edition.
3. Leadership: Theory and Practices authored by Peter G. Northouse by Sage Publication, 2016 edition.
4. Human Resources Management authored by T.P Renuka Murthy by HPH, 2015 edition.
5. The HR Scorecard: Linking People, Strategy, and Performance by Brian Becker, Dave Ulrich, and Mark A. Huselid by Harvard Business School Press, 2001 edition.
6. The HR Answer Book: An Indispensable Guide for Managers and Human Resources Professionals by Shawn Smith and Rebecca Mazin by AMACOM publishers, 2011 edition.
7. Performance Management and Appraisal Systems HR Tools for Global Competitiveness by T. V. Rao, First edition 2004.
8. Human Resource Management by Appasaba L.V and Kadakol A M by College Book House, 2016 edition.
9. Human Resource Management by V.S.P Rao, 2014 edition.

Web links and Video Lectures (e-Resources):

- <https://youtu.be/hHE4ilceiXs>
- <https://youtu.be/d5QMwLC19Y>
- <https://youtu.be/uMQMDQI7Hpk>
- https://youtu.be/vXgt9yASs_k
- <https://youtu.be/pqtYQb9nbRk>
- <https://youtu.be/e1F3xnF5LKg>
- <https://youtu.be/4Kr0VpM14LI>

Note: The aforesaid links and study material are suggestive in nature, they may be used with due regards to copyrights, patenting and other IPR rules.

Skill Development Activities Suggested

- Make students visit an organization and know the various HR roles in the organization
- Conduct mock interviews.
- Role play for acquainting and addressing HR challenges.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand and gain practical experience in the field of Human Resource Concepts, functions and theories.	L1
CO2	Acquire conceptual insight of Human Resource and various functions of HR..	L2
CO3	Apply personnel, managerial and welfare aspects of HR.	L3
CO4	Perceive greater understanding about HR practices.	L4
CO5	Perceive knowledge about the future trends in HRM	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2	1		2				2		
CO3		2		3				2	
CO4	1	2		2					3
CO5		2			2				

FINANCIAL MANAGEMENT

Course Code	MTM204	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03
Course Learning objectives: <ul style="list-style-type: none"> • To familiarise the students with basic concepts of financial management and financial system. • To understand the concept of time value of money and its implication. • To evaluate investment proposals. • To understand the management of working capital in an organization. • To analyse the capital structure and dividend decision of an organisation 			
Module-1 (7 Hours)			
Introduction: Financial Management: Definition and scope- objectives of Financial Management role and functions of finance managers. Interface of Financial Management with other functional areas. Indian Financial System: Structure-types-Financial markets- Financial Instruments -Financial institutions and financial services- Non-Banking Financial Companies(NBFCs). Emerging areas in Financial Management: Risk Management- Behavioural Finance- Financial Engineering- Derivatives (Theory).			
Module-2 (9 Hours)			
Time value of money: Time value of money –Future value of single cash flow & annuity – Present value and discounting-present value of single cash flow, annuity & perpetuity. Simple interest & Compound interest - Capital recovery factor & equated annual instalments. (Theory & Problem).			
Module-3 (9 Hours)			
Long term sources of Finance & Cost of Capital: Shares- Debentures- Term loans and deferred credit-Lease financing- Hybrid financing- Venture Capital-Angel investing- private equity- Crowd funding (Theory Only). Cost of Capital: Basic concepts-Components and computation of cost of capital- Cost of debentures- cost of term loans- cost of preferential capital-cost of equity (Dividend discounting and CAPM model) - Cost of retained earnings - Determination of Weighted average cost of capital (WACC) (Theory & Problem).			
Module-4 (9 Hours)			
Capital structure and Dividend Decisions: Capital structure– Planning the capital structure optimum capital structure- determination of capital structure- Governance of Equity and Debt- Leverages- EBIT and EPS analysis-Return of Investment (ROI) &Return on Earnings (ROE) analysis.(Theory & Problem). Dividend decisions & policies – Factors affecting the dividend policy – types of Dividend Policy forms of dividend-bonus issue-stock split (Theory only)			
Module-5 (9 Hours)			
Long term Investment Decisions (Capital Budgeting): Need and importance of capital budgeting and its process-Techniques of capital budgeting – [Payback period, time adjusted payback period, accounting rate of return , Net present value, Internal rate of return, Modified internal rate of return, Profitability index method,). Capital Rationing. Estimation of cash flows for new projects and replacement projects. (Theory & Problem).			
Module-6 (7 Hours)			

Assessment Details (both CIE and SEE)

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Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Suggested Learning Resources:****Books**

1. Financial Management: Text, Problems & Cases M.Y. Khan & P.K. Jain, TMH, 7/e, 2017
2. Financial Management: Theory and Practice, Prasanna Chandra, TMH, 10/e, 2019
3. Financial Management Dr. G. Nagarajan & Dr. Binoy Mathew, Jayvee Digital Publishing, 2/e, 2022
4. Financial Management, Prahlad Rathod, Babitha Thimmaiah and Harish Babu, HPH, 1/e, 2015.
5. Financial Management, I.M. Pandey, Vikas Publishing, 11/e.

Web links and Video Lectures (e-Resources):

- <https://www.pdfdrive.com/financial-management-and-analysis-workbook-step-by-step-exercises-and-tests-to-help-you-master-financial-management-and-analysis-e158595305.html>
- <https://www.pdfdrive.com/fundamentals-of-financial-management-concise-sixth-edition-e20229517.html>
- https://www.youtube.com/watch?v=CCQwz_Gwo6o
- <https://www.digimat.in/nptel/courses/video/110107144/L01.html>

Note: The aforesaid links and study materials are suggestive in nature, they may be used with due regards to copy rights, patenting and other IPR rules.

Skill Development Activities Suggested

- Identifying the small or medium sized companies and understanding the Investment evaluation techniques used by them.
- Using the annual reports of selected companies, students can study the working capital management employed by them. Students can also compare the working capital management of companies in the same sector.
- Students can choose the companies that have gone for stock split and Bonus issue in the last few years and study the impact of the same on the stock price.
- Students can study any five companies capital structure
- Students can do Company analysis for select companies using profitability and liquidity ratios.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the basic financial concepts	L2
CO2	Apply time value of money	L3
CO3	Evaluate the investment decisions	L5
CO4	Estimate working capital requirements	L4
CO5	Analyze the capital structure and dividend decisions	L3

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2			2				2		
CO3				3				2	
CO4		2		2					3
CO5	1				2	3			

SOFTWARE PROJECT AND QUALITYMANAGEMENT

Course Code	MTM205	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03

Course Objectives: This course will enable students to:

- Understand the fundamental concepts and techniques of software project management and quality assurance. • Apply project management techniques to software development projects.
- Utilize software quality models and tools for project evaluation.
- Interpret and evaluate the results of software project audits and reviews. • Address ethical and legal issues in software project management and quality assurance.

Module-1 (7 Hours)**INTRODUCTION** - Software Projects, Projects Planning, Process models, Waterfall, RAD, V, Spiral, Incremental, Prototyping, Agile, Project Tracking.**Module-2 (9 Hours)****SOFTWARE METRICS** - Goal, Question, Metric (GQM) model, Product Quality metrics, In process Quality metrics, Metrics for software maintenance and testing, Complexity Metrics.**Module-3 (9 Hours)****SOFTWARE PROJECT ESTIMATION** - Effort and Cost Estimation - Expert Judgment, LOC, Function Points, Extended Function Points, Feature Points, Object Points, COCOMO-81, COCOMO-II; Risk Management.**Module-4 (9 Hours)****SOFTWARE QUALITY** - Quality Management Systems, Software Quality Models- FURPS, McCalls Models, Applying seven basic quality tools in software development, Measuring Quality, Gilb, CoQUAMO, Lean software development.**Module-5 (9 Hours)****SOFTWARE QUALITY ASSURANCE** - Software Reliability models-Rayleigh model, Weibull model; Defect Removal Effectiveness; Quality standards- ISO 9000 models and standards for process improvement, ISO/IEC 9126-1 to 9126-4, SQuaRE, ISO/IEC 25000, ISO/IEC 25010, CMM, PCMM, CMMI, SPICE.**Module-6 (7 Hours)**

Software Project Monitoring and Control: Project tracking and control, earned value analysis (EVA), performance management, project closure, project audit and review, project metrics, software maintenance, legal and ethical issues in software project management.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

1. Roger S. Pressman, Software Engineering A Practitioners Approach, McGraw Hill International Edition, New Delhi, 7th Edition, 2010.
2. Stephen Kan, Metrics and Models in Software Quality Engineering, Pearson Education Asia, 8th Impression 2009.
3. Walker Royce, Software Project Management – A unified framework, Pearson Education Asia, New Delhi, 2000.
4. Alan Gillies, Software Quality – Theory and Management, Thomson Learning, 2011.
5. Bob Hughes and Mike Cotterell, Software Project Management, Tata McGraw Hill, 5th Edition, 2010.
6. Robert T. Futrell, Donald F. Sahefer and Linda I. Shafer, Quality Software Project Management, Pearson Education Asia, 2002.
7. Richard H. Thayer, Software Engineering Project Management, John Wiley, 2007

Web links and Video Lectures (e-Resources):

- <https://www.coursera.org/learn/software-project-management>
- <https://www.edx.org/course/software-development-capstone-project>
- <https://www.youtube.com/watch?v=Qg2rZ4KSLjg>

Skill Development Activities Suggested

- Conduct a software project planning and scheduling workshop.
- Develop a risk management plan for a software project.
- Perform software quality audits and present the findings.
- Create a software configuration management plan.
- Analyze a case study on software project failure and suggest improvements.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the fundamental concepts and techniques of software project management and quality assurance.	L2
CO2	Apply project management techniques to software development projects.	L3
CO3	Utilize software quality models and tools for project evaluation.	L4
CO4	Interpret and evaluate the results of software project audits and reviews..	L5
CO5	Address ethical and legal issues in software project management and quality assurance	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2			2			
CO3				3		3		2	
CO4	2		2			1		2	
CO5	2			2	3		2	3	

Data Mining and Business Applications

Course Code	MTM206	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03

Course Learning objectives:

- Understand the fundamental concepts and techniques of data mining.
- Apply data mining techniques to solve business problems.
- Utilize data mining tools and software for analysis.
- Interpret and evaluate the results of data mining processes.
- Address ethical and privacy issues related to data mining.

Module-2 (9 Hours)

Data Mining Techniques: Association Rule Mining, Apriori Algorithm, FP-Growth Algorithm, Market Basket Analysis, Case Studies on Association Rule Mining.

Module-3 (9 Hours)

Classification Techniques: Decision Trees, Naïve Bayes Classifier, k-Nearest Neighbors (k-NN), Support Vector Machines (SVM), Case Studies on Classification Techniques.

Module-4 (9 Hours)

Clustering Techniques: k-Means Clustering, Hierarchical Clustering, DBSCAN, Evaluation of Clustering, Case Studies on Clustering Techniques.

Module-5 (9 Hours)

Advanced Data Mining Techniques: Web Mining, Text Mining, Social Network Analysis, Big Data Analytics, Case Studies on Advanced Data Mining Techniques.

Module-6 (7 Hours)

Business Applications of Data Mining: Customer Relationship Management (CRM), Fraud Detection, Market

Segmentation, Predictive Maintenance, Ethical and Privacy Issues in Data Mining, Case Studies on Business Applications of Data Mining.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

- **Data Mining: Concepts and Techniques** by Jiawei Han, Micheline Kamber, Jian Pei
- **Introduction to Data Mining** by Pang-Ning Tan, Michael Steinbach, Vipin Kumar
- **Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner** by Galit Shmueli, Nitin R. Patel, Peter C. Bruce
- **The Elements of Statistical Learning: Data Mining, Inference, and Prediction** by Trevor Hastie, Robert Tibshirani, Jerome Friedman

Web links and Video Lectures (e-Resources):

• [Coursera: Data Mining Specialization](#)

- edX: Data Mining and Analysis

• [Khan Academy: Data Mining](#)

Skill Development Activities Suggested

- Conduct a market basket analysis using real-world retail data.
- Develop a classification model for predicting customer churn.
- Perform clustering analysis on customer data for market segmentation.
- Analyze social network data to identify key influencers.
- Create a report on ethical and privacy issues in data mining.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the fundamental concepts and techniques of data mining.	L1
CO2	Apply data mining techniques to solve business problems.	L2
CO3	Utilize data mining tools and software for analysis.	L3
CO4	Interpret and evaluate the results of data mining processes.	L4

CO5	Address ethical and privacy issues related to data mining.							L5	
Mapping of COs and POs:									
SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2				3

III SEMESTER

Applied Operations Research Lab			
Course Code	MTM301	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03
Course Objectives:			
<ul style="list-style-type: none"> • To apply operational research techniques to real-world problems. • To use software tools for solving complex optimization problems. • To interpret and analyze the results of operations research models. • To develop and present solutions based on operations research methodologies. • To address practical challenges in various business and industrial scenarios. 			
Module-1 (7 Hours)			
INTRODUCTION TO LINEAR PROGRAMMING (LP) - Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases.			
Module-2 (9 Hours)			
LINEAR PROGRAMMING EXTENSIONS - Transportation Models (Minimizing and Maximizing Cases) – Balanced and unbalanced cases – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel’s approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Cases of degeneracy. Transshipment Models. Assignment Models (Minimizing and Maximizing Cases) – Balanced and Unbalanced Cases. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.			
Module-3 (9 Hours)			
INTEGER LINEAR PROGRAMMING AND GAME THEORY - Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions.			
Module-4 (9 Hours)			
INVENTORY MODELS, SIMULATION AND DECISION THEORY - Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Application of simulation techniques for decision making.			
Module-5 (9 Hours)			
QUEUING THEORY AND REPLACEMENT MODELS - Queuing Theory - single and Multi-channel models – infinite number of customers and infinite calling source.			

Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

Module-6 (7 Hours)

Project Management: Introduction, Construction of networks, Structure of projects, phases of project management-planning, scheduling, controlling phase, work breakdown structure, project control charts, network planning (**Theory only**)

Critical path method to find the expected completion time of a project, determination of floats in networks, PERT networks, determining the probability of completing a project, predicting the completion time of project; Cost analysis in networks. (Theory and Problems)

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

1. Paneerselvam R., Operations Research, Prentice Hall of India, Fourth Print, 2008.
2. Natarajan AM, Balasubramani P and Tamilarasi A, Operations Research, Pearson Education, First Indian Reprint, 2012.
3. Hamdy A Taha, Introduction to Operations Research, Prentice Hall India, 9th Edition, Third Indian Reprint 2010.
4. Sankara Iyer P, Operations Research, Tata Mcgraw Hill, 2008.
5. Frederick & Mark Hillier, Introduction to Management Science – A Modeling and case studies approach with spreadsheets, Tata Mcgraw Hill, 3rd edition, 2007.
6. Gupta P.K, Hira D.S, Problem in Operations Research, S.Chand and Co, 2010.
7. Kalavathy S, Operations Research, 3rd Edition, Vikas Publishing House, 2013.
8. Richard Broson, Govindasamy & Naachimuthu, Operations Research, Schaum's outline series, II Edition, 2000.

Web links and Video Lectures (e-Resources):

- [Khan Academy: Operations Research](#)
- **MIT OpenCourseWare: Operations Research**
- [Coursera: Introduction to Operations Research](#)
- **NPTEL: Operations Research**
- [YouTube: Operations Research Tutorials](#)

Skill Development Activities Suggested

- Conduct Optimization Analysis
- Develop Simulation Models
- Analyze Case Studies
- Implement Decision Support Systems
- Use Operations Research Software

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand and apply fundamental concepts of operations research..	L1
CO2	Develop and solve optimization models for various business problems.	L2
CO3	Utilize simulation techniques to analyze complex systems.	L3
CO4	Analyze and interpret results from decision support systems.	L4
CO5	Evaluate and implement operations research solutions in real-world scenarios.	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2			2				2		
CO3				3				2	
CO4		2		2					3

E-BUSINESS MANAGEMENT LAB

Course Code	MTM302	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03

Course Objectives: This course will enable students to:

- Understand the fundamental principles and practices of e-commerce management.
- Analyze data and make data-based decisions for e-commerce strategies.
- Develop leadership skills focusing on value creation in e-commerce environments.
- Understand, analyze, and communicate global, economic, legal, and ethical aspects of e-commerce.
- Lead teams effectively in achieving organizational goals in e-commerce settings.

Module-1 (7 Hours)

Introduction to E-commerce: Definition, Evolution, Types of E-commerce, Benefits and Challenges. **E-commerce Business Models:** B2C, B2B, C2C, C2B, B2G, G2B, G2C, G2G Models, Case Studies.

Module-2 (9 Hours)

Technological Foundations: Internet Technologies, Mobile Commerce, Cloud Computing in E-commerce. **E-commerce Platforms:** Introduction to E-commerce Platforms (Shopify, WooCommerce, Magento), Selection Criteria.

Module-3 (9 Hours)

Data Analytics for E-commerce: Importance of Data in E-commerce, Data Collection and Analysis Techniques, Business Intelligence Tools. **Decision Support Systems:** Role of DSS in E-commerce, Predictive Analytics, Customer Segmentation.

Module-4 (9 Hours)

Legal and Ethical Issues: Legal Frameworks for E-commerce, Consumer Protection Laws, Cybersecurity and Privacy Issues. **Global E-commerce:** Cross-border E-commerce, International Trade Regulations, Cultural Considerations.

Module-5 (9 Hours)

Leadership in E-commerce: Value-based Leadership, Strategic Leadership Practices, Team Building and Motivation

in E-commerce. **Strategic Management:** Strategic Planning for E-commerce Ventures, Competitive Analysis, SWOT Analysis.

Module-6 (7 Hours)

Innovation and Future Trends: Innovations in E-commerce Technologies (AI, Blockchain), Future Trends in E-commerce. **Case Studies and Industry Practices:** Analysis of Successful E-commerce Ventures, Best Practices in E-commerce Management.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- Tests (for 25Marks) and
- Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

- **E-commerce 2025: 11 Key Trends Impacting Online Retailers** by Bora Chung
- **E-commerce for Dummies** by Don Jones and Mark D. Scott
- **Electronic Commerce: A Managerial Perspective** by Efraim Turban et al.
- **E-commerce: Business, Technology, Society** by Kenneth C. Laudon and Carol Guercio Traver.

Web links and Video Lectures (e-Resources):

• [Coursera: E-commerce Essentials](#)

- edX: E-commerce and Digital Business

• [Khan Academy: Internet Basics](#)

Skill Development Activities Suggested

- Develop a business plan for an e-commerce startup including market analysis and financial projections.
- Conduct a usability study on an existing e-commerce platform and propose UX/UI improvements.
- Analyze data from an e-commerce site to optimize product recommendations using machine learning techniques.
- Participate in a simulation exercise to manage an online store during peak sales periods.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the fundamental principles and practices of e-commerce management.	L1
CO2	Analyze data and make data-based decisions for e-commerce strategies.	L2

CO3	Develop leadership skills focusing on value creation in e-commerce environments.	L3
CO4	Understand, analyze, and communicate global, economic, legal, and ethical aspects of e-commerce.	L4
CO5	Lead teams effectively in achieving organizational goals in e-commerce settings.	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2				3

ENTERPRISE RESOURCE PLANNING

Course Code	MTM303	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Learning objectives:

- To understand the fundamental concepts of Enterprise Resource Planning (ERP).
- To explore the different modules of ERP and their applications.
- To analyze the ERP implementation process and its challenges.
- To learn about the latest trends and technologies in ERP.
- To evaluate the impact of ERP on business performance.

Module-1 (7 Hours)

Introduction to ERP: Definition and evolution of ERP, Benefits and limitations, ERP systems and enterprise integration, ERP architecture, ERP and related technologies (Business Process Reengineering, Data Warehousing, Data Mining, OLAP, SCM, CRM).

Module-2 (9 Hours)

ERP Modules and Applications: Overview of ERP modules (Finance, Sales and Distribution, Human Resource, Production Planning, Materials Management, Quality Management, and Plant Maintenance), Cross-functional integration and process automation, Case studies on ERP module applications.

Module-3 (9 Hours)

ERP Implementation: ERP implementation lifecycle, Pre-implementation tasks (requirements analysis, project planning), Implementation strategies (big bang, phased, parallel, hybrid), Post-implementation activities (training, maintenance, upgrades), Critical success factors in ERP implementation, ERP project management.

Module-4 (9 Hours)

ERP and Business Process: Business process reengineering and ERP, Alignment of ERP with business processes, Change management in ERP implementation, Impact of ERP on organizational structure and culture, Business process improvement with ERP..

Module-5 (9 Hours)

Advanced ERP Topics: Cloud-based ERP solutions, Mobile ERP, ERP and Internet of Things (IoT), Artificial Intelligence and ERP, Blockchain in ERP, Future trends in ERP systems..

Module-6 (7 Hours)

ERP Case Studies and Applications: Case studies on successful and failed ERP implementations, Lessons learned from ERP case studies, ERP in various industries (manufacturing, retail, healthcare, education, public sector), Emerging trends in ERP applications.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Books**

- Enterprise Resource Planning by Alexis Leon
- ERP Demystified by Alexis Leon
- Concepts in Enterprise Resource Planning by Ellen Monk and Bret Wagner
- Modern ERP: Select, Implement, and Use Today's Advanced Business Systems by Marianne Bradford
- ERP: Making It Happen: The Implementers' Guide to Success with Enterprise Resource Planning by Thomas F. Wallace and Michael H. Kremzar

Web links and Video Lectures (e-Resources):

- <https://www.coursera.org/specializations/erp>
- <https://www.edx.org/course/enterprise-systems>
- <https://www.youtube.com/watch?v=QUaQ9Gm8uN4>
- <https://www.digimat.in/nptel/courses/video/110105083/L01.html>

Skill Development Activities Suggested

- Analyzing the ERP implementation process in a real organization.
- Comparing different ERP solutions available in the market.
- Developing a project plan for ERP implementation.
- Studying the impact of ERP on business processes in an organization.
- Exploring the latest trends and technologies in ERP systems.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the fundamental concepts of ERP.	L1
CO2	Explore the different modules of ERP and their applications.	L2
CO3	Analyze the ERP implementation process and its challenges.	L3
CO4	Learn about the latest trends and technologies in ERP.	L4
CO5	Evaluate the impact of ERP on business performance.	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2			2			
CO3				3		3		2	
CO4	2		2			1		2	
CO5	2			2	2		2	3	

TECHNOLOGICAL INNOVATION & IPR			
Course Code	MTM304	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03
Course Objectives:			
<ul style="list-style-type: none"> • To understand the fundamental concepts of technological innovation and intellectual property rights (IPR). • To explore the processes involved in managing technological innovation. • To examine the role of IPR in protecting and commercializing innovations. • To analyze case studies of successful technological innovations and IPR management. • To address ethical and legal issues related to technological innovation and IPR. 			
Module-1 (7 Hours)			
Introduction to Technological Innovation and IPR: Definition and importance of technological innovation, Types of innovation, Stages of innovation, Overview of intellectual property rights (IPR), Types of IPR, Importance of IPR in innovation.			
Lab Component: Case study analysis of technological innovation, Introduction to patent databases.			
Module-2 (9 Hours)			
Innovation Management Process: Idea generation and creativity, Screening and evaluation of ideas, Research and development (R&D) management, Product development and commercialization, Innovation diffusion and adoption.			
Lab Component: Group projects on idea generation and evaluation, R&D simulation exercises.			
Module-3 (9 Hours)			
Strategic Management of Technological Innovation: Innovation strategy, Technology forecasting and assessment, Technology roadmapping, Open innovation and collaboration, Managing innovation portfolios.			
Lab Component: Developing a technology roadmap, Analysis of innovation portfolios using software tools.			
Module-4 (9 Hours)			
IPR Management: Patents, Trademarks, Copyrights, Trade secrets, Licensing and commercialization of IPR, Patent infringement and litigation.			
Lab Component: Patent search and analysis, Case studies on IPR litigation			
Module-5 (9 Hours)			
Emerging Trends in Innovation and IPR: Digital innovation, Green innovation, Social innovation, Role of IPR in emerging technologies (AI, blockchain, IoT), Ethical and legal considerations in innovation and IPR.			
Lab Component: Research project on emerging trends in innovation, Ethical analysis of case studies.			
Module-6 (7 Hours)			
Business Applications of Technological Innovation and IPR: Innovation in different industries (IT, healthcare, manufacturing, etc.), Role of IPR in business strategy, Case studies of successful technological innovations and IPR management, Challenges and opportunities in managing technological innovation and IPR.			
Lab Component: Industry analysis project, Case study presentations on business applications of innovation and IPR.			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Books**

- Managing Innovation: Integrating Technological, Market and Organizational Change by Joe Tidd and John Bessant
- Strategic Management of Technological Innovation by Melissa Schilling
- Intellectual Property Rights: Unleashing the Knowledge Economy by Prabuddha Ganguli
- Innovation and Entrepreneurship by Peter F. Drucker
- The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail by Clayton M. Christensen

Web links and Video Lectures (e-Resources):

- <https://www.coursera.org/specializations/innovation>
- <https://www.edx.org/course/intellectual-property-law-and-policy>
- <https://www.khanacademy.org/economics-finance-domain/microeconomics>

Skill Development Activities Suggested

- Conduct a market analysis to identify emerging technological trends.
- Develop an innovation strategy for a chosen company.
- Analyze a case study on patent infringement and litigation.
- Create a report on the role of IPR in digital innovation.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the fundamental concepts of technological innovation and IPR.	L1
CO2	Explore the processes involved in managing technological innovation.	L2
CO3	Examine the role of IPR in protecting and commercializing innovations.	L3
CO4	Analyze case studies of successful technological innovations and IPR management..	L4
CO5	Address ethical and legal issues related to technological innovation and IPR.	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2			2			
CO3				3		3		2	
CO4	2		2			1		2	
CO5	2			2	3		2	3	

INTERNATIONAL BUSINESS MANAGEMENT			
Course Code	MTM305	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03
Course Learning objectives:			
<ul style="list-style-type: none"> To explore and offer knowledge on Global Business Environment. To explore knowledge on International Institutions involved in global business. To assist the students to develop a truly Global Perspective. To understand the contemporary issues in global business that illustrates the unique challenges faced by managers in the IBE 			
Module-1 (7 Hours)			
Introduction to International Business: Evolution, Meaning, Importance, Nature and Scope of International Business, Characteristics of International Business, Factors affecting International Business, Changing scenario of International Business, Advantages of International Business, challenges in International business, Modes of entry into International Business, Internationalization Process.			
Module-2 (9 Hours)			
International Business Environment: Introduction, Meaning and Components of International Business Environment, Political Environment, Legal Environment, Economic Environment, Technological Environment, Socio and Cultural Environment, Ethics in International Business and CSR in International Business.			
Module-3 (9 Hours)			
Theories of International Business: Introduction, Mercantilism, Theory of absolute cost advantage, Comparative cost advantage theory, Comparative cost advantage with money, Relative factor endowment theory, Product life cycle theory, Global strategic rivalry theory, Porter's National Competitive Advantage Theory.			
Module-4 (9 Hours)			
International Institutions: UNCTAD- Introduction, Principles and achievements, IMF-Role and objectives, WTO-Role and advantages, TRIMS, TRIPS Features, Economic Integration-Introduction, Levels of Economic Integration, Regional Economic Integration in Europe, USA, ASEAN, SAARC, SAPTA.			
Module-5 (9 Hours)			
Multi-National Corporations: Definition and Meaning, factors that contributed to positive growth of MNCs, Importance of MNCs, Advantages and disadvantages of MNCs, MNCs in India, Organizational structure of MNCs, Transfer of Technology, Global Competitiveness, Indicators of competitiveness, Technology of Global competitiveness.			
Module-6 (7 Hours)			
Basics of International Marketing- Environment and cultural dynamics of global markets, functions of International Marketing, determining International Marketing strategies, Major actors in International Marketing, Competitive Global Marketing Strategies.			
Global HRM- Characteristics, Nature and factors of IHRM, Functions of IHRM,			
Global Finance- Features of Global Capital Market, Growth of Global Capital Market, Global equity market.			
International Production Management- Coordinating Global Manufacturing System.			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Books**

1. The International Business Environment: Anant K. Sundaram/ J. Stewart Black-Prentice Hall.
2. International Business environments and Operations John D Daniel, Lee H Radebaugh, Daniel P Sullivan- Pearson Education, 10th edition, 2004.
3. International Business (text and cases): P Subba Rao, HPH, 4/e, 2017.
4. The International Business Environment Janet Morrison Mac Millan Palgrave, 2004
5. International Business Environment by Francis Cherunilam- Himalaya Publishing House, 2004.
6. International Business: competing in the global market place, Charles W L Hill, Tata McGraw-Hill., 5th Edition, 2005.

Web links and Video Lectures (e-Resources):

- <https://www.pdfdrive.com/international-business-environment-e56594187.html>
- <https://www.pdfdrive.com/business-environment-e54194142.html>
- https://ebooks.lpude.in/commerce/mcom/term_3/DCOM501_INTERNATIONAL_BUSINESS.pdf
- <https://www.yumpu.com/en/document/view/63865501/pdf-download-international-business-case-studies-for-themulticultural-marketplace-full-online>
- <http://elibrary.gci.edu.np/bitstream/123456789/681/1/BM727%20The%20International%20Business%20Environment%20Challenges%20and%20Changes%20by%20Jamie%20Weatherston.pdf>
- <https://www.taylorfrancis.com/books/edit/10.4324/9780080511306/international-business-case-studies-robertmorandavid-braaten-ph-john-walsh>
- https://www.youtube.com/watch?v=3hMNnvd_HbQ
- https://onlinecourses.nptel.ac.in/noc20_mg54/preview
- <https://www.coursera.org/learn/international-business>

Skill Development Activities Suggested

- Identify the companies and study the factors affecting their business at international level.
- Study the advantages and disadvantages of various companies operated in different countries.
- Study the various ethical practices adopted by various companies and also issues faced by them.
- Students must study role of corporate social responsibility (CSR) in international business practice.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Defining international business and describe how it differs from domestic business with respect to laws, regulations and taxation.	L3
CO2	Identify and describe factors and forces that affect an organization's decision to internationalize its business.	L3
CO3	Describe and compare strategies for internationalization.	L3,L2
CO4	Identify and analyze challenges in working, communicating and negotiating in a cross-cultural context.	L3,L4
CO5	Discuss the role of corporate social responsibility (CSR) in international business practice	L6

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2				3

STRATEGIC MANAGEMENT

Course Code	MTM306	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Learning objectives:

1. To provide insights into the core concepts of strategic management.
2. To evaluate various business strategies in dynamic market environments.
3. To gain insights into various strategic management models.

Module-1 (7 Hours)**OVERVIEW OF STRATEGIC MANAGEMENT**

Meaning of strategy and strategic management, Stages of strategic management, the strategic management model, benefits of strategic management, key terms in strategic management, Competitive advantage, strategists, vision, mission, long term objectives, strategies, annual objectives and policies.

Module-2 (9 Hours)

The process of performing an external audit, Nature of an external audit, key external forces, industry analysis, competitive forces, competitive analysis-porter's five forces model, key success factors.

Module-3 (9 Hours)**INTERNAL ASSESSMENT**

Nature of internal audit, key internal forces, the process of performing internal audit, Resource Based View(RBV), Integrating strategy and culture, SWOT analysis, Value chain analysis, Bench marking, Internal factor evaluation matrix.

Module-4 (9 Hours)**STRATEGY FORMULATION**

The business vision and mission, process of developing vision and mission, importance of vision and mission statement, characteristics of mission statement, long term objectives, types of strategies,

levels of strategies, integration strategies, intensive strategies, diversification strategies, defensive strategies, Porters generic strategies, Blue Ocean Strategy.

Module-5 (9 Hours)

STRATEGY IMPLIMENTATION

Nature of strategy implementation, annual objectives, policies, resource allocation, managing conflicts, restructuring, reengineering and e-engineering, linking performance and pay to strategies, creating a strategy-supportive culture, operations concerns in implementing strategies.

Module-6 (7 Hours)

STRATEGY EVALUATION

The process of evaluating strategies, strategy evaluation framework, balanced score card, characteristics of an effective evaluation system, contingency planning, 21st century challenges in strategic management.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

Books

1. Strategic Management Fred R. David Prentice Hall India Publication.
2. Crafting and Executing Strategy: The Quest for Competitive Advantage – Concepts and Cases Arthur A. Thompson Jr. Margaret A. Peteraf John E. Gamble, A. J. Strickland III, Arun K. Jain, McGraw Hill Education, 16/e 2016
3. Contemporary Strategy Analysis, Robert M. Grant, Wiley India, 10e

Web links and Video Lectures (e-Resources):

- https://www.youtube.com/watch?v=uY_ywciZUnM
- <https://www.youtube.com/watch?v=qGU-etCqbtQ>
- <https://www.youtube.com/watch?v=TzcuoTOkPKg>
- <https://www.youtube.com/watch?v=mgY864U-OH0>
- <https://www.youtube.com/watch?v=MIOLtFPYfsE>
- <https://www.youtube.com/watch?v=d2GoZDOXzzw>
- <https://www.youtube.com/watch?v=ZmRK9wc3hjI>
- <https://www.youtube.com/watch?v=tyUw0h5i9yI>
- <https://www.youtube.com/watch?v=FQLIrmmsHeo>
- <https://www.youtube.com/watch?v=EvvnoNAUPSO>
- <https://study.com/academy/topic/strategic-management-overview.html>
- <https://www.cascade.app/blog/strategic-management-process>

Skill Development Activities Suggested

- Analyzing the Mission and Vision statements of selected Indian companies.
- Applying Michael Porter’s model to an industry (Retail, Telecom, Infrastructure, FMCG, Insurance, Banking etc.
- Internal Analysis & Strategies of a listed company in the form of the report to be submitted.
- Pick a company that has performed very badly compared to its competitors. Collect information on why the company failed. What were the issues in strategy and execution that were responsible for the company’s failure in the market; analyze the internal and external factors.
- Conduct SWOT analysis of companies around your campus.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Students should get clear idea about the concept of Strategic Management, its relevance, Characteristics, process nature and purpose.	L1
CO2	Student to acquire an understanding of how firms successfully institutionalize a strategy and create an organizational structure for domestic and overseas operations and gain competitive advantage.	L2
CO3	To give the students an insight on strategy at different levels of an organization to gain competitive advantage	L3
CO4	To help students understand the strategic drive in multinational firms and their decisions in different markets.	L4

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2			2				2		
CO3				3				2	
CO4		2		2					3

**GUIDELINES FOR INTERNSHIP 22MBA IN 307
(BETWEEN 2ND AND 3RD SEMESTER MBA)**

INTERNSHIP			
Course Code	22MBAIN307	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	0:8:0	SEE Marks	50
Total Hours of Pedagogy	00	Total Marks	100
Credits :	04	Exam Hours	00
<p>OBJECTIVE</p> <p>To expose the students to understand the working culture of the organization and apply theoretical concepts in real life situation at the work place for various functions of the organization.</p> <p>STRUCTURE</p> <p>The Internship shall consist of study of an organization for 4 credits for 4 weeks.</p> <p>GENERAL GUIDELINES</p> <ul style="list-style-type: none"> • The Internship shall be for a period of 4 weeks immediately after the completion of 2nd Semester Examinations but before the commencement of the 3rd semester classes • The Course code of the Internship shall be 20MBA IN 307 and shall be compulsory for all the students. • No two students of an institute shall work on the same organization. • The student shall seek the guidance of the internal guide on a continuous basis, and the guide shall give a certificate to the effect that the candidate has worked satisfactorily under his/her guidance. Student need to identify an external guide (Working in the organization) and seek guidance from him/her. <p>SUBMISSION OF REPORT</p> <p>Students shall submit one hard copy of the report to the college with hard bound color of royal blue and a soft copy in PDF file (Un-editable Format).</p> <p>EVALUATION</p> <p>Internal evaluation will be done by the internal guide.</p> <p>Viva-Voce / Presentation: A viva-voce examination shall be conducted at the respective institution where a student is expected to give a presentation of his/ her work. The viva –voce examination will be conducted by the respective HOD or Senior Professor or Internal Guide of the department and The external guide will be from the industry/ faculty from the other PG centres of VTU as examiner for the viva voce of Internship.</p> <p>The affiliated institutions can have the external guide from the industry/ faculty from other VTU affiliated institutions/ VTU PG Centres. Viva-Voce on internship shall be conducted at the college and the date of Viva-Voce shall be fixed in consultation with the external Guide. The Examiners shall jointly award the Viva - Voce marks. In case of non availability of industry professional, a senior professor or a faculty with more than 10 years of experience may be invited to conduct the viva-voce examination. Internship carries 100 marks consisting of 50 marks for Internship report (evaluated by internal guide) and 50 marks for viva-voce examination.</p>			

CONTENTS OF THE INTERNSHIP REPORT

- Cover page
- Certificate from the Organization (scanned copy)
- Certificate from the guide, HOD and Head of the Institution (scanned copy) indicating bonafide performance of Internship by the student.
- Declaration by the student (scanned copy)
- Acknowledgement
- Table of contents
- List of tables and graphs

Executive summary

Chapter 1: Introduction about the Organisation & Industry.

Chapter 2: Organization Profile

- i. Back ground,
- ii. Nature of business,
- iii. Vision mission, quality policy
- iv. Workflow model
- v. Product/service profile
- vi. Ownership pattern
- vii. Achievements/awards if any
- viii. Future growth and prospects

Chapter 3: Mckensy's 7S framework and Porter's Five Force Model with special reference to Organization under study.

Chapter 4: SWOT Analysis

Chapter 5: Analysis of financial statements

Chapter 6: Learning experience.

Bibliography

Annexure relevant to the Internship such as figures, graphs, photographs, Financial statements etc.,

FORMAT OF THE INTERNSHIP REPORT

Report shall be prepared using the word processor viz., MS Word, Times New Roman font sized 12, on a page layout of A4 size with 1" margin all sides (1.5" on left side due to binding) and 1.5line spacing. The Internship report shall not exceed 60 pages.

RUBRICS FOR INTERNSHIP 22MBAIN 307

Sl.No.	Evaluation Type	Particulars	Marks
1	CIE	Assessment by the Guide- Interaction with the student by Seminars, etc.,	25
2	CIE	Report Evaluation by the Guide	25
3	SEE	Viva-Voce Examination to be conducted by the Guide and an External examiner from the Industry/Institute	50
Total			100

MARK SHEET FOR VIVA VOCE EXAMINATION (SEE)

Visvesvaraya Technological University
Name of the Institution
Name of the Department
Course Code: 22MBA IN 307 and Course Title: Internship

Sl.No.	Aspects	Marks
1	Introduction and Understanding the Industry	5
2	Understanding the Corporate Functions/Company profile	10
3	Mckensy's 7S framework and Porter's Five Force Model	10
4	SWOT/SWOC analysis justification	10
5	Financial statement analysis	5
6	Learning experience	10
Total		50

Marks Sheet for Internship Viva Voce examination

Sl.No.	USN	1	2	3	4	5	6	Total
1								
2								
3								
4								
5								

Signature of Internal Examiner
Name and Designation with affiliation

Signature of External Examiner
Name and Designation with affiliation

IV SEMESTER

DEEP LEARNING			
Course Code	MTM401	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03
<p>Course Learning objectives:</p> <ul style="list-style-type: none"> • Learn deep learning fundamentals through a cognitive science approach. • Understand the prerequisites for hands-on deep learning, such as data manipulation, Perceptron, vectors and matrices, Backpropagation, and feedforward neural networks. • Understand the concepts and techniques in artificial neural networks, including modifications and extensions to a Feed-Forward, L1 and L2 Regularization. • Gain proficiency in deep learning toolkits like Keras and PyTorch. • Have hands-on experience with artificial neural networks, regularizations, hyperparameter tuning, and advanced deep learning models. 			
Module-1 (8 Hours)			
<p>Deep Learning Fundamentals: Deep Learning fundamentals, The beginnings of Artificial Neural Networks, From cognitive science to Deep Learning, Neural networks in the general AI landscape, Math for deep learning explained Lab:Introduction to neural networks using Python and Keras</p>			
Module-2 (9 Hours)			
<p>Artificial neural network intuition – Perceptron, Feedforward neural networks, Representation of network components with vectors and matrices, Basic concepts and terminology for neural networks, Neural network topology, Lab:Building and training feedforward neural networks using Keras</p>			
Module-3 (9 Hours)			
<p>Deep Learning Techniques: Gradient descent - Learning Rate, Momentum and Dropout, Problems for multiple hidden layers: Vanishing and exploding gradients, Backpropagation, Modifications and extensions to a Feed-Forward neural network - L1 and L2 Regularization, ANN applications - Overfitting and underfitting and methods to overcome them in deep neural networks Lab:Implementing regularization techniques in neural networks, Hyperparameter tuning for deep learning models</p>			
Module-4 (9 Hours)			
<p>Advanced Deep Learning Models:Recurrent Neural Networks (RNN) Intuition, Long Short-Term Memory (LSTM), Sequence-to-Sequence models and Attention, Generative Adversarial Neural Networks (GANN), Autoencoders & Boltzmann Machines Lab: Building RNNs and LSTMs using Keras, Creating GANs for data generation</p>			
Module-5 (9 Hours)			
<p>Deep Learning Applications:Introduction to GPUs and Google Collab, Building deep learning models with PyTorch, How to set up optimal hyper-parameters for deep models, Trends in Deep Learning Applications Lab: Implementing deep learning projects on GPUs using Google Collab, Developing and deploying models using PyTorch</p>			
Module-6 (7 Hours)			
<p>Trends and Future Directions in Deep Learning: Self-driving cars and autonomous systems, Voice-activated assistants and voice search, Neural networks for brain cancer detection, Neural networks in finance, Internet of Things (IoT) applications. Lab:Implementing deep learning solutions for real-world problems, Exploring current research and future directions in deep learning</p>			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Books**

- Deep Learning with Python: Learn Best Practices of Deep Learning Models with PyTorch, 2nd Edition, Nikhil Ketkar, Apress, 2021.
- Deep Learning: Concepts and Applications for Beginners Guide to Building Intelligent Systems, Mark Howard, 2018.
- Deep Learning Fundamentals: An Introduction for Beginners, Chao Pan, AI Sciences LLC., 2018.
- Deep Learning with PyTorch: A practical approach to building neural network models using PyTorch, Vishnu Subramanian, Packt Publishing, 2018.
- Advanced Deep Learning with Python: Design and implement advanced next-generation AI solutions using TensorFlow and PyTorch, Ivan Vasilev, Packt Publishing, 2019.

Web links and Video Lectures (e-Resources):

- <https://www.youtube.com/playlist?list=PL-wATfeyAMNrtbkCNsLcpoAyBBRJZVlnf>
- <https://www.coursera.org/specializations/deep-learning>
- <https://www.udacity.com/course/deep-learning-nanodegree--nd101>

Skill Development Activities Suggested**Course Outcome:**

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand deep learning fundamentals through a cognitive science approach.	L1
CO2	Evaluate deep learning using data manipulation, Perceptron, vectors and matrices, Backpropagation, and feedforward neural networks.	L2
CO3	Apply the concepts and techniques in artificial neural networks, including modifications and extensions to a Feed-Forward, L1 and L2 Regularization.	L3
CO4	Create predictions using deep learning toolkits like Keras and PyTorch.	L4
CO5	Create deep learning algorithms using artificial neural networks, regularizations, hyperparameter tuning, and advanced deep learning models.	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2				3

ADVANCED DATA ANALYTICS LAB			
Course Code	MTM402	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03
Course Learning objectives:			
<ul style="list-style-type: none"> • Understand advanced data analytics techniques and their applications. • Gain hands-on experience with data preprocessing and visualization. • Learn to apply machine learning algorithms for predictive analytics. • Explore advanced topics like natural language processing and time series analysis. • Develop skills in using data analytics tools and software. 			
Module-1 (8 Hours)			
Data Preprocessing and Visualization: Introduction to data preprocessing, handling missing data, data normalization, and standardization, data visualization techniques and tools. Lab: Data preprocessing using Python libraries (Pandas, NumPy), visualizing data using Matplotlib and Seaborn.			
Module-2 (9 Hours)			
Predictive Analytics: Regression analysis (Linear and Multiple), decision trees and random forests, model evaluation metrics. Lab: Implementing regression models using Python, building decision trees and random forests with Scikit-learn.			
Module-3 (9 Hours)			
Clustering and Association Analysis: K-means clustering and hierarchical clustering, association rule learning (Apriori, Eclat). Lab: Clustering techniques using Python, association rule mining with Python.			
Module-4 (9 Hours)			
Natural Language Processing (NLP): Text preprocessing techniques, sentiment analysis and topic modeling, word embeddings and advanced NLP models. Lab: Text processing with NLTK and SpaCy, implementing sentiment analysis and topic modeling.			
Module-5 (9 Hours)			
Time Series Analysis: Introduction to time series data, decomposition, smoothing, and forecasting techniques, ARIMA and other advanced time series models. Lab: Time series analysis using Python (Pandas, Statsmodels), building forecasting models.			
Module-6 (7 Hours)			
Advanced Analytics and Big Data: Introduction to big data technologies (Hadoop, Spark), using advanced analytics tools (Tableau, Power BI), case studies and real-world applications. Lab: Exploring big data with PySpark, data visualization and analytics with Tableau/Power BI.			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:

- **Books**
 - Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking, Foster Provost and Tom Fawcett, 2013.
 - Python Data Science Handbook: Essential Tools for Working with Data, Jake VanderPlas, O'Reilly Media, 2016.
 - Practical Statistics for Data Scientists: 50 Essential Concepts, Peter Bruce and Andrew Bruce, O'Reilly Media, 2017.

Web links and Video Lectures (e-Resources):

- 🔗 [Coursera - Applied Data Science with Python](#)
- 🔗 Udacity - Data Analyst Nanodegree
- 🔗 [YouTube - Data School](#)

Skill Development Activities Suggested:

- Hands-on projects and assignments
- Case study analysis
- Participation in data analytics competitions
- Development of a portfolio showcasing analytics projects

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand advanced data analytics techniques and their applications.	L2
CO2	Gain proficiency in data preprocessing and visualization.	L3
CO3	Apply machine learning algorithms for predictive analytics.	L4
CO4	Implement NLP techniques for text analysis.	L5
CO5	Develop forecasting models for time series data.	L6

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1	2	3			2			
CO2		3		2		3			
CO3		2		3			2		
CO4			2		3			2	

CO5			3		2				3
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BIG DATA MANAGEMENT AND SECURITY			
Course Code	MTM403	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03
Course Learning objectives: <ul style="list-style-type: none"> • Understand the core concepts of Big Data and high-performance analytics. • Learn to leverage social media as a source of Big Data. • Analyze cyber-attacks and implement mitigation tools. • Evaluate strategies for Big Data management. • Understand Autonomous Artificial Intelligence Systems and data processing stages. 			
Module-1 (8 Hours)			
Introduction to Big Data: Concept of Big Data, core concepts, applications, and the revolution it brings to various sectors. The impact of military applications on Big Data. Lab: Introduction to Big Data tools and platforms. Hands-on with data collection and preprocessing using tools like Hadoop and Spark.			
Module-2 (9 Hours)			
Big Data Characteristics and Challenges: The Five V's of Big Data: Volume, Velocity, Variety, Veracity, and Value. Challenges in Big Data processing, including data integration and management issues. Lab: Practical exercises in handling different types of Big Data using Python and SQL. Addressing challenges related to data storage and retrieval.			
Module-3 (9 Hours)			
Big Data in Law Enforcement and Real Use Cases: Applications of Big Data in law enforcement, case studies on real-world use cases. Tools and technologies for Big Data implementation and concerns in autonomous AI systems. Lab: Case study analysis and implementation of data solutions for law enforcement scenarios using big data platforms.			
Module-4 (9 Hours)			
Streaming Analytics and Advanced Data Processing: Streaming data analysis, time series data, and advanced data processing techniques. Managing data sources and analytics for real-time decision-making. Lab: Implementing streaming analytics and time series analysis using tools like Apache Kafka and Spark Streaming.			
Module-5 (9 Hours)			
Cybersecurity in Big Data Environments: Understanding cyber-attacks, their types, and tools for mitigation. Attack classification and parameters used in facilitating attacks. Strategies for securing Big Data environments. Lab: Hands-on with cybersecurity tools and techniques for Big Data. Simulating cyber-attacks and implementing security measures.			
Module-6 (7 Hours)			
Future Trends and Challenges in Big Data Management: Exploration of future trends in Big Data management and security, including emerging technologies and challenges. Case studies on critical infrastructure protection and the role of Big Data in national security. Lab: Research and analysis of current trends and future directions in Big Data management. Practical exercises on developing strategies for emerging challenges.			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Books**

- “Handbook of Big Data Privacy” edited by Kim-Kwang Raymond Choo and Ali Dehghantanha, Springer, 2020.
- “Combating Security Challenges in the Age of Big Data” edited by Zubair Baig and Al-Sakib Khan Pathan, Springer, 2020.
- “Big Data Analytics for Cyber-Physical Systems” edited by Shiyang Hu and Bei Yu, Springer, 2020.
- “Application of Big Data for National Security” by Babak Akhgar, Gregory B. Saathoff, and Hamid Arabnia, Butterworth-Heinemann, 2015.

Web links and Video Lectures (e-Resources):

- <https://www.coursera.org/learn/big-data>
- <https://www.edx.org/course/big-data-management>
- <https://www.udacity.com/course/intro-to-big-data--ud620>

Skill Development Activities Suggested:

- Developing and securing Big Data applications.
- Participating in Big Data and cybersecurity challenges.
- Creating dashboards and reports for Big Data analysis.
- Collaborating with industry experts on Big Data projects.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the core concepts of Big Data and high-performance analytics	L1
CO2	Apply social media data as a source of Big Data	L2
CO3	Analyze cyber-attacks and implement mitigation strategies	L3
CO4	Evaluate Big Data management strategies	L4
CO5	Assess Autonomous Artificial Intelligence Systems and data processing stages	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5				2				3	

CLOUD COMPUTING			
Course Code	MTM404	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03
Course Learning objectives:			
<ul style="list-style-type: none"> Understand the fundamentals of cloud computing and its architecture. Learn about various cloud service models and deployment models. Gain hands-on experience with cloud platforms and services. Develop skills to deploy and manage cloud-based applications. Explore advanced topics in cloud computing, including security and scalability. 			
Module-1 (8 Hours)			
<p>Introduction to Cloud Computing: Overview of cloud computing, its evolution, benefits, and key characteristics. Understanding cloud computing architecture and service models: IaaS, PaaS, SaaS.</p> <p>Lab: Introduction to cloud platforms (e.g., AWS, Azure). Setting up a basic virtual machine and exploring cloud services.</p>			
Module-2 (9 Hours)			
<p>Cloud Deployment Models and Service Models: In-depth study of different cloud deployment models (Public, Private, Hybrid) and service models (Compute, Storage, Network). Examining real-world use cases for each model.</p> <p>Lab: Deploying services on different cloud models. Hands-on with cloud storage and compute services.</p>			
Module-3 (9 Hours)			
<p>Cloud Computing Architecture and Virtualization: Detailed understanding of cloud computing architecture, including virtualization technologies, containerization, and orchestration. Key components and their roles in cloud environments.</p> <p>Lab: Setting up and managing virtual machines. Introduction to containerization using Docker and orchestration with Kubernetes.</p>			
Module-4 (9 Hours)			
<p>Cloud Security and Compliance: Exploring cloud security best practices, data protection, and compliance issues. Understanding common security challenges and mitigation strategies in cloud environments.</p> <p>Lab: Implementing security measures on cloud platforms. Configuring access controls, encryption, and monitoring tools.</p>			
Module-5 (9 Hours)			
<p>Advanced Cloud Services and Scalability: Introduction to advanced cloud services like serverless computing, machine learning, and Big Data solutions. Understanding scalability and performance optimization techniques in cloud environments.</p> <p>Lab: Working with serverless functions and integrating machine learning models in the cloud. Scaling applications and monitoring performance.</p>			
Module-6 (7 Hours)			
<p>Future Trends in Cloud Computing: Exploring emerging trends and technologies in cloud computing, including edge computing, multi-cloud strategies, and advancements in cloud infrastructure.</p> <p>Lab: Researching and presenting on future trends in cloud computing. Developing a project that incorporates recent advancements and best practices.</p>			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Books**

- "Cloud Computing: Principles, Systems and Applications" by Lizhe Wang, et al., Springer, 2011.
- "Architecting the Cloud: Design Decisions for Cloud Computing Service Models (SaaS, PaaS, and IaaS)" by Michael J. Kavis, Wiley, 2014.
- "Cloud Computing: Concepts, Technology & Architecture" by Thomas Erl, et al., Prentice Hall, 2013.
- "Mastering Cloud Computing: Foundations and Applications Programming" by Raj, et al., McGraw-Hill Education, 2017.

Web links and Video Lectures (e-Resources):

- [AWS Training and Certification](#)
- [Microsoft Azure Learning Pathways](#)
- [Coursera Cloud Computing Specialization](#)

Skill Development Activities Suggested

- Developing and managing cloud-based applications.
- Implementing and securing cloud services.
- Utilizing cloud tools for scalability and performance optimization.
- Engaging in hands-on projects and case studies to solve real-world problems using cloud technologies.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the fundamentals and architecture of cloud computing	L1
CO2	Apply different cloud service and deployment models	L2
CO3	Implement virtualization and containerization technologies	L3
CO4	Assess and apply cloud security best practices	L4
CO5	Explore advanced cloud services and scalability techniques	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2				3

TECHNOLOGY FORECASTING AND ASSESSMENT			
Course Code	MTM405	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	02:02:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03
Course Learning objectives:			
<ul style="list-style-type: none"> Understand the principles and methodologies of technology forecasting and assessment. Learn to apply various forecasting models and techniques to predict technological advancements. Develop skills to evaluate the impact and strategic implications of emerging technologies. Gain hands-on experience with tools and methods for technology assessment and scenario planning. Explore trends in technology and their potential impacts on industries and societies. 			
Module-1 (8 Hours)			
Introduction to Technology Forecasting and Assessment: Overview of technology forecasting and assessment, importance, and applications. Key concepts and terminologies. Introduction to forecasting methodologies and their relevance to strategic decision-making.			
Lab: Using basic forecasting tools to analyze historical technology trends and make simple predictions.			
Module-2 (9 Hours)			
Quantitative Forecasting Techniques: Study of quantitative forecasting methods such as time series analysis, regression models, and extrapolation. Understanding statistical tools and software for forecasting.			
Lab: Implementing time series analysis and regression models using statistical software (e.g., R, Python).			
Module-3 (9 Hours)			
Qualitative Forecasting Techniques: Exploring qualitative forecasting methods such as Delphi method, expert panels, and scenario planning. Understanding how to gather and analyze expert opinions and qualitative data.			
Lab: Conducting a Delphi study and scenario planning exercise with a focus on emerging technologies.			
Module-4 (9 Hours)			
Technology Assessment and Evaluation: Introduction to technology assessment, impact analysis, and evaluation methods. Evaluating the strategic implications of technological advancements and their potential impact on industries and society.			
Lab: Assessing real-world technologies using evaluation frameworks and tools. Case studies on technology impact assessment.			
Module-5 (9 Hours)			
Emerging Technologies and Trends: Exploring current and emerging technologies, their trends, and potential future developments. Understanding the factors driving technological change and their implications for business and society.			
Lab: Researching and presenting on emerging technologies and their future trends. Analyzing case studies of recent technological innovations.			
Module-6 (7 Hours)			
Strategic Implications and Scenario Planning: Understanding the strategic implications of technology forecasts and assessments. Developing and analyzing different scenarios based on technology trends.			
Lab: Creating and analyzing strategic scenarios for various technology forecasts. Simulation of technology adoption and its impacts on business strategy.			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Books**

- "Technology Forecasting and Management" by Robert R. Raines, Wiley, 2014.
- "The Future of Technology: How to Anticipate Technology Trends and Make Business Decisions" by Daniel S. Greenberg, Routledge, 2019.
- "Scenario Planning for Business: Developing Strategies in an Uncertain World" by Gill Ringland, Wiley, 2006.
- "Techno-Capitalism: A New Technological Paradigm" by John W. Houghton, Springer, 2017.

Web links and Video Lectures (e-Resources):

- [MIT Technology Review](#)
- [Coursera - Technology Forecasting and Planning](#)
- [Future of Technology YouTube Channel](#)

Skill Development Activities Suggested:

- Conducting technology forecasting and assessment using various methods.
- Analyzing and interpreting technology trends and their implications.
- Engaging in scenario planning exercises to prepare for future technological changes.
- Researching and presenting on emerging technologies and their potential impact.

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the principles and methodologies of technology forecasting and assessment	L1
CO2	Apply quantitative forecasting techniques and tools	L2
CO3	Implement qualitative forecasting methods and gather expert opinions	L3
CO4	Evaluate the strategic implications and impacts of emerging technologies	L4
CO5	Develop and analyze strategic scenarios based on technology trends	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2				3

MANAGING TECHNOLOGICAL INNOVATION			
Course Code	MTM406	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	04:00:00	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03
Course Learning objectives:			
<ul style="list-style-type: none"> • Understand the principles and processes of managing technological innovation. • Learn to identify, evaluate, and implement innovative technologies within organizations. • Develop strategies for fostering innovation and managing technological change. • Gain practical experience in applying innovation management tools and techniques. • Explore case studies of successful and unsuccessful technology innovations. 			
Module-1 (8 Hours)			
Introduction to Technological Innovation Management: Overview of technological innovation, its importance, and its role in organizational success. Understanding innovation management principles, processes, and challenges.			
Module-2 (9 Hours)			
Innovation Strategies and Models: Study of various innovation strategies and models such as disruptive innovation, open innovation, and incremental innovation. Understanding how organizations can leverage these models to drive technological advancement.			
Module-3 (9 Hours)			
Innovation Processes and Tools: Exploring the processes and tools used to manage innovation, including idea generation, concept development, prototyping, and commercialization. Understanding the role of technology scouting and technology transfer.			
Module-4 (9 Hours)			
Organizational Culture and Innovation: Understanding how organizational culture affects innovation and the ways to create a culture that fosters technological innovation. Exploring leadership roles and change management in innovation.			
Module-5 (9 Hours)			
Innovation Metrics and Evaluation: Introduction to metrics and evaluation methods for measuring innovation performance and impact. Understanding key performance indicators (KPIs) and tools for assessing the success of innovation initiatives.			
Module-6 (7 Hours)			
Case Studies and Future Trends: Analysis of real-world case studies of technological innovations, both successful and unsuccessful. Exploring future trends in technology and their potential impact on innovation management.			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

- a) Tests (for 25Marks) and
- b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources:**Books**

1. Mark Dodgson, David Gann, and Ammon Salter, The Management of Technological Innovation, Oxford University Press, 2008.
2. Scott Shane, Handbook of Technology and Innovation Management, John Wiley & Sons, 2009.
3. Frederick Betz, Managing Technological Innovation, John Wiley & Sons, Third Edition, 2011.
4. Edited by Michael Tushman and Philip Anderson (The Second Edition, 2004) Robert Szakonyi, Managing Strategic Innovation and Change: A Collection of Readings, Handbook of Technology Management – Viva Books Private, Limited, 2006.
5. Twiss B & Goodridge, M. Pitman, Managing Technology for Competitive Advantage: Integrating Technological and Organizational Development from Strategy to Action, 1989.

Web links and Video Lectures (e-Resources):

- [Harvard Business Review - Innovation](#)
- MIT OpenCourseWare - Managing Technological Innovation
- [Coursera - Innovation Management](#)

Skill Development Activities Suggested:

- Developing and implementing innovation strategies and processes.
- Using innovation management tools to prototype and commercialize new technologies.
- Assessing and enhancing organizational culture to support innovation.
- Analyzing case studies to understand successful and unsuccessful innovation practices

Course Outcome:

At the end of the course the student will be able to:

SL. NO.	DESCRIPTION	BLOOMS LEVEL
CO1	Understand the principles and processes of managing technological innovation	L1
CO2	Apply innovation strategies and models to drive technological advancement	L2
CO3	Implement innovation management tools and processes in real-world scenarios	L3
CO4	Evaluate the impact of organizational culture on innovation and develop	L4

	improvement plans	
CO5	Analyze case studies and future trends to inform innovation management practices	L5

Mapping of COs and POs:

SL. NO.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	1				2	3			
CO2		2	2				2		
CO3				3		3		2	
CO4		2		2		1		2	
CO5					2				3

Capstone Project Guidelines for MBA in Technology Management

Project Report Components:

- Certificate from the guide, HOD, and Head of the Institution (scanned copy) indicating bonafide performance of Project by the student.
- Declaration by the student (scanned copy).
- Acknowledgement.
- Table of contents.
- List of tables and graphs.
- Executive summary.

Chapter 1: Introduction

- Introduction.
- Industry profile and company profile: Promoters, vision, Mission & Quality Policy.
- Products/services profile, areas of operation, infrastructure facilities, competitor's information.
- SWOT Analysis, Future growth and prospects, and Financial Statement.

Chapter 2: Conceptual Background and Literature Review

- Theoretical background of the study.
- Literature review with research gap (minimum 20 literature reviews).

Chapter 3: Research Design

- Statement of the problem.
- Need for the study.
- Objectives.
- Scope of the study.
- Research methodology.

- Hypotheses.
- Limitations.
- Chapter scheme.

Chapter 4: Analysis and Interpretation

- Analysis and interpretation of the data collected with relevant tables and graphs.
- Results obtained by using statistical tools must be included.

Chapter 5: Findings, Conclusion, and Suggestions

- Summary of findings.
- Conclusion and Suggestions/Recommendations.

Bibliography:

- Books, Articles names, etc., to be mentioned as per APA style.

Annexure:

- Relevant to the project such as figures, graphs, photographs, etc.
-

Project Report Evaluation:

- **Internal Evaluation:** Done by the internal guide.
- **External Valuation:** Conducted by a faculty member from other PG centers or other institutes with a minimum of 10 years of experience.
- **Viva-Voce/Presentation:** Conducted at the respective Institution. It involves the respective HOD/Senior faculty and an external expert from an affiliated institute.
- **Project Work Marks:** Total 100 marks (50 marks internal, 50 marks external, and 25 marks for viva-voce). Minimum passing marks is 50% in each component.

Report Format:

- **Length:** Not to exceed 100 pages.
- **Submission:** Electronic data format (PDF file, Un-editable Format) only.
- **Plagiarism:** Not more than 25% allowed; must consist of 75% original content.
- **Publication of Research Findings:** Students are encouraged to present findings in Seminars/Conferences or publish in journals.

Content of the Internship Report:

- Cover page.
 - Certificate from the Organization (scanned copy if applicable).
 - Acknowledgement.
 - Executive Summary.
-

Guidelines for 6-Week Capstone Project Work for MBA in Technology Management (Between 3rd and 4th Semester)

Project Report:

- **Course Code:** Tmpr407
- **Teaching Hours/Week:** 0:12:0
- **Credits:** 6
- **Marks:** CIE 50, SEE 50 (Total 100)
- **Objective:** To understand the working of the organization/company/industry and take up an in-depth study of an issue/problem in the area of specialization.

Structure:

- Study of any organizational problem based on specialization for 6 credits over 6 weeks.

General Guidelines:

- Project work shall be conducted over 6 weeks after the 3rd semester classes.
- The course code of the project report shall be Tmpr407.
- Two copies of the project report to be submitted to the concerned Regional Office before the 4th semester exams.
- Select research problems from business organizations or as a freelance basis.
- Continuous guidance from the internal guide is required.
- On completion, the report must be prepared in MS Word with New Times Roman, 12 font size.
- Reports should be printed in A4 size with 1" margin on all sides and hard bound with royal blue color.

Project Report Format:

- **Cover Page:** Title of the project, student's details.
- **Certificate:** From guide, HOD, and Head of the institution.
- **Undertaking:** By the student that the work is independently carried out.
- **Content:** As specified in the project report components above.

This format ensures thorough preparation and evaluation of the capstone project, providing a comprehensive understanding of the student's practical and theoretical knowledge in technology management.

