Department of Science and Humanities

List of Institute Electives

2023 curriculum

			Institute Elective I				
Slot	**Category**	**Course code**	**Courses**	**L-T-P-J**	**SS**	**Hours**	**Credits**
E	**IEC**	**23IEL31U**	Numerical Linear Algebra	**3-0-0-0**	**4.5**	**3**	**3**
		23IEL31V	Materials for advanced technologies for Engineering Applications	**3-0-0-0**	**4.5**	**3**	**3**
		23IEL31W	Communication Strategies for Engineering Professionals	**2-1-0-0**	**3.5**	**3**	**3**
			Institute Elective II				
Slot	**Category**		**Courses**	**L-T-P-J**		**Hours**	**Credits**
E	**IEC**	**23IEL42U**	Advanced Numerical Computations	**3-0-0-0**	**4.5**	**3**	**3**
		23IEL42V	Green Chemistry and Technology	**3-0-0-0**	**4.5**	**3**	**3**
		23IEL42W	Financial Management	**3-0-0-0**	**4.5**	**3**	**3**

	Institute Elective I							
Course Code	**Course Name**	**Category**	**L**	**T**	**P**	**J**	**Credit**	**Year of Introduction**
23IEL31U	NUMERICAL LINEAR ALGEBRA	IEC	3	0	0	0	3	**2023**

i) COURSE OVERVIEW:

The objective this course is to understand and develop efficient computational techniques for solving problems involving linear systems, eigenvalue computations, matrix factorizations, and other related tasks. These problems arise in various scientific, engineering, and data-driven fields**.**

ii) COURSE OUTCOMES

After the completion of the course, the student will be able to:

CO 1	Apply the concepts of norm and orthogonality to solve problems	Apply
CO 2	Solve linear system of equations by direct and iterative methods	Apply
CO 3	Compute eigen values using numerical methods	Apply
CO 4	Apply SVD in appropriate applications	Apply
CO 5	Identify the least square solution of inconsistent systems	Apply

iii) SYLLABUS

Direct and iterative methods for linear systems, Matrix factorisations, Singular Value Decomposition, QR decomposition, Conditioning and stability, least square problem, Numerical methods for computing Eigenvalues.

iv) (a) TEXT BOOKS

1. D. Kincaid and W. Cheney, Numerical Analysis: Mathematics of Scientific Computing, 3rd Ed, Brooks/Cole ,2009.

2. Lloyd N. Trefethen and D. Bau, Numerical Linear Algebra, Society for Industrial and Applied Mathematics (SIAM) ,1997

3. V Sundara Pandiyan, Numerical Linear Algebra : PHI Learning Second Edition ,2014.

b) REFERENCES:

1 **.** David C Lay: Linear algebra and its applications(5th Edition) Pearson 2014.

2. Gilbert Strang: Introduction to linear algebra (5th Edition), Wellesley Cambridge Press,2016.

3. James W. Demmel Applied Numerical Linear Algebra(First Edition) SIAM 2018.

4. Gene H. Golub and Charles F. Van Loan “Matrix Computations", 2013.

v) COURSE PLAN

Module	Contents	No. of hours
I	**Introduction to Numerical Linear Algebra** Importance and applications of numerical linear algebra. Review of linear algebra concepts: Matrices, vectors, norms, and condition numbers Inner products and orthogonality. Sources of errors in numerical computation: Round-off errors and their impact on algorithms	**9**
II	**Direct and Iterative Methods for Solving Linear Systems** LU decomposition and pivoting strategies (partial and complete pivoting). Stability and error analysis. Cholesky decomposition for symmetric positive definite matrices. Jacobi and Gauss-Seidel methods: Convergence criteria. Successive Over-Relaxation (SOR).	**9**
III	**Eigenvalue Problems** Power iteration and inverse iteration methods algorithm for eigenvalue computation. Applications of eigenvalues: stability analysis, and principal component analysis (PCA).	**9**
IV	**Singular Value Decomposition (SVD)** Theory and computation of SVD.Applications of SVD: Low-rank approximations. Image compression. Solving ill-conditioned systems.	**9**
V	**Least Squares Problems** Overdetermined systems and normal equations. QR decomposition for least squares. Applications in data fitting and regression analysis.	**9**
	Total Hours	**45**

(vi) ASSESSMENT PATTERN

Continuous Assessment : End Semester Examination – 40 : 60

Continuous Assessment		
Attendance	:	5 marks
Assignments	:	15 marks
Assessment through Tests	:	20 marks
Total Continuous Assessment	:	**40 marks**
End Semester Examination	:	**60 marks**
TOTAL	:	**100 marks**

(vii) CONTINUOUS ASSESSMENT TEST

- No. of tests: 02
- Maximum Marks: 30
- Test Duration: 1 ½ hours
- Topics: 2 ½ modules

(viii) END SEMESTER EXAMINATION

- Maximum Marks: 60
- Exam Duration: 3 hours

Course Code	Course Name	Category	L	T	P	J	Credit	Year of Introduction
23IEL31V	Materials for Advanced Technologies for Engineering Applications	IEC	3	0	0	0	3	2023

i) COURSE OVERVIEW:

Course will help students to understand the fundamental properties and applications of advanced materials in engineering and to explore the synthesis, characterization, and application of functional and nanomaterials .It also emphasize the importance of sustainability and smart materials in modern engineering practices.Computational tools for material simulation and analysis are also introduced.

ii) COURSE OUTCOMES

After the completion of the course, the student will be able to:

CO 1	Explain the classification, properties and applications of smart materials and metamaterials.	Understand
CO 2	Apply the principles of functional and nanomaterials for engineering applications such as sensors, actuators, nanoelectronics, and healthcare systems.	Apply
CO 3	Apply knowledge of green, renewable, and smart materials to address sustainability challenges in construction, energy, and manufacturing sectors.	Apply
CO 4	Explain the fundamental techniques for structural, thermal, mechanical, and electrical/magnetic characterization of materials and their role in assessing material properties.	Understand
CO 5	Apply simulation techniques and machine learning approaches to optimize materials for engineering and technological applications.	Apply

iii) SYLLABUS

Fundamentals of Advanced Materials: Overview of Material Science and Engineering, Classification of Materials, Advanced Properties of Materials, Structure-Property Relationship, Emerging Materials.

Advanced Functional and Nanomaterials: Functional Materials, High-Performance Alloys and Ceramics, Introduction to Nanomaterials, Synthesis Techniques for Nanomaterials, Applications of Nanomaterials.

Sustainable and Smart Materials: Green and Eco-friendly Materials, Renewable Energy Materials, Smart and Responsive Materials, Role of Materials in Achieving Sustainability Goals.

Material Characterization and Testing Techniques: Structural Characterization, Thermal Characterization**,** Mechanical Characterization**,** Electrical and Magnetic Property Measurement**,** Multi-scale Characterization Challenges**.**

Computational Techniques for Material Analysis: Role of Computational Tools in Materials Science, Finite Element Analysis (FEA), Molecular Dynamics (MD) Simulations, Density Functional Theory (DFT), Machine Learning in Material Design.

iv) (a) TEXT BOOKS

1. Callister, W.D., *"Materials Science and Engineering: An Introduction"*, Wiley,2013.
2. Ashby, M.F., *"Materials Selection in Mechanical Design"*, Butterworth-Heinemann, 2016.
3. Hull, D., & Clyne, T.W., *"An Introduction to Composite Materials"*, Cambridge University Press,2019.
4. Narayan, J., *"Introduction to Nanomaterials and Devices"*, Wiley 2012.
5. June Gunn Lee., **"***Computational Materials Science: An Introduction", CRC Press, 2016.*

(b) REFERENCES:

1. Askeland, Donald R. and Wright, Wendelin J., *The Science and Engineering of Materials Askeland, (7th ed.). Cengage Learning, 2015*
2. Reed-Hill, Robert E. and Abbaschian, Reza – *Physical Metallurgy Principles, Cengage Learning, 2009*
3. LeSar, Richard – *Introduction to Computational Materials Science: Fundamentals to Applications, Cambridge University Press, 2013*
4. Smith, William F. – *Principles of Materials Science and Engineering, McGraw-Hill, 1995.*

v) COURSE PLAN

Module	Contents	No. of hours
I	Overview of Material Science and Engineering- Evolution of materials in engineering applications, Role of material science in advanced technologies. Classification of Materials- Metals, ceramics, polymers, composites, and emerging materials. Advanced Properties of Materials -Mechanical: Strength, toughness, and ductility; Thermal: Conductivity, expansion, and resistance; Electrical and Magnetic: Conductivity, dielectric constant, and magnetism; Optical: Transparency, reflectivity, and refractive index. Point defects, dislocations, and grain boundaries, Influence of microstructure on mechanical, thermal, and electrical performance. Applications of Emerging Materials in engineering- Smart materials, metamaterials,	**9**
II	Types of Functional Materials; Applications in sensors, actuators, and adaptive systems. High-Performance Alloys and Ceramics for engineering applications; Introduction to Nanomaterials - Nanostructures: Nanotubes, graphene, quantum dots, and nanoparticles; Size-dependent properties and their engineering significance. Synthesis Techniques for Nanomaterials - Physical methods: Ball milling, sputtering, and plasma synthesis; Chemical methods: Sol-gel, chemical vapor deposition (CVD), and hydrothermal synthesis. Applications of Nanomaterials - Nanoelectronics, nanocoating, and nanocomposites; Nanomaterials in construction and healthcare.	**9**
III	Green and Eco-friendly Materials – Bio based polymers and biodegradable composites, Recycled and waste-derived materials for construction and manufacturing. Renewable Energy Materials - Solar cells: Silicon, perovskite, and organic materials, Thermoelectric materials for energy harvesting, Wind turbine materials: Composite blades and high-strength alloys. Smart and Responsive Materials - Self-healing materials: Mechanisms and applications, Phase-change materials for thermal management. Role of Materials in Achieving Sustainability Goals - Circular economy in material usage, Environmental impact of material production and disposal.	**9**

IV	Structural Characterization -: Crystal structure determination, Lattice Parameter measurements, Phase identification and Defect Analysis using X-Ray Diffraction (XRD); Thermal Characterization - Differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis (TGA), Thermal stability and phase transitions. Mechanical Characterization - Tensile, compression, and hardness testing methods; Fatigue and fracture toughness analysis. Electrical and Magnetic Property Measurement - Conductivity, dielectric constant,	**9**
	and magnetic permeability tests. Multi-scale Characterization Challenges - Combining techniques for comprehensive material analysis.	
V	Role of Computational Tools in Materials Science - Importance of simulation in material design and testing. Finite Element Analysis (FEA) - Applications in analyzing mechanical properties, Stress-strain simulations for structural materials. Molecular Dynamics (MD) Simulations - Atomistic modelling of materials, Examples in nanomaterials and polymers. Density Functional Theory (DFT) - Predicting electronic and optical properties of materials, Case studies in energy materials and semiconductors. Machine Learning in Material Design - Data-driven approaches to material discovery and property prediction, Tools and algorithms for material informatics.	**9**
	Total Hours	**45**

(vi) ASSESSMENT PATTERN

Continuous Assessment : End Semester Examination – 40 : 60

Continuous Assessment		
Attendance	:	5 marks
Assignments	:	15 marks
Assessment through Tests	:	20 marks
Total Continuous Assessment	:	**40 marks**
End Semester Examination	:	**60 marks**
TOTAL	:	**100 marks**

(vii) CONTINUOUS ASSESSMENT TEST

- No. of tests: 02
- Maximum Marks: 30
- Test Duration: 1 ½ hours
- Topics: 2 ½ modules

viii) END SEMESTER EXAMINATION

- Maximum Marks: 60
- Exam Duration: 3 hours

Course code	Course Name	Category	L	T	P	J	Credit	Year of Introduction
23IEL31W	Communication Strategies for Engineering Professionals	**IEC**	**2**	**1**	**0**	**0**	**3**	**2023**

i) COURSE OVERVIEW

This course is designed to enhance the communication skills of third-year engineering students, preparing them for success in both their academic and professional careers. By focusing on technical writing, presentations, email etiquette, interpersonal communication, and teamwork, students will learn how to effectively communicate in diverse engineering contexts.

ii) COURSE OUTCOMES

After the completion of the course, the student will be able to:

CO1	Demonstrate effective verbal and non-verbal communication skills tailored to diverse engineering contexts.	Apply
CO2	Create structured technical presentations using appropriate tools and techniques.	Create
CO3	Create effective, concise, and technically accurate reports, proposals, and documentation.	Create
CO4	Collaborate effectively in teams to solve problems and communicate Engineering specific technical/non-technical information	Apply
CO5	Evaluate communication scenarios and propose strategies for improvement.	Apply
CO6	Create effective resumes and interviews	Create

i) **SYLLABUS**

Introduction to Professional Communication (9 Hours)

Definition and importance of professional communication; Types of professional communication (oral, written, non-verbal); Common communication barriers in engineering environments; Ethical communication in the workplace

Introducing Oneself- one's career goals

Technical Writing Basics

Principles of technical writing; Understanding your audience: Engineers, non-technical stakeholders, etc.; Structure of technical documents: Reports, manuals, proposals, memos; Clarity, conciseness, and coherence in technical writing; Netiquettes; Interpret data in tables and graphs

Presentation Skills for Engineers (8 Hours)

Structure of a professional presentation ; Visual aids; Speaking skills: Clarity, voice modulation, body language; Handling questions and feedback; Tailoring presentations to different audiences

Public Speaking for Engineers: Overcoming public speaking anxiety; Preparing for technical and non-technical audiences

Effective use of visual aids and body language; Delivering complex ideas simply and clearly

Interpersonal and Team Communication (5 Hours)

Active listening and feedback techniques; Building rapport with colleagues and clients

Communication within teams: Collaboration and conflict resolution; Navigating cultural and generational differences in teams

Problem Solving Skills (8 hours)

Problem Solving & Conflict Resolution. Case analysis of challenging case studies

Interview skills and Resume Writing (15 hours)

Identifying job requirement and key skills; Placement/Job Interview, Creating LinkedIn profile, Group Discussions

RESOURCES

- M. Alley, The Craft of Scientific Writing, 4th ed. University Park, PA, Penn State University: 2018.
- Kmiec, D., Longo, B. The IEEE Guide to Writing in the Engineering and Technical Fields. United Kingdom: Wiley, 2017.
- *Pfeiffer*, *William S*. & Adkins, K.E. Technical Communication: A Practical Approach. Pearson Education, 2013.

ASSESSMENT AND GRADING:

- **Written Assignments:** 20% (Reports, proposals, technical documents)
- **Presentations:** 30% (Individual presentations)
- **Participation and Activities:** 20% (Engagement in discussions, role plays, peer reviews)
- **Mock Interview:** 30% (Resume and interview skills)

	Institute Elective II							
Course Code	**Course Name**	**Category**	**L**	**T**	**P**	**J**	**Credit**	**Year of Introduction**
23IEL42U	**Advanced Numerical Computations**	**IEC**	**3**	**0**	**0**	**0**	**3**	**2023**

(i) COURSE OVERVIEW

The objective of the course is to equip the students and enable them to understand the role of approximation theory in engineering problems. Also to familiarize various numerical methods for computation and to make them understand the role of optimization in problem solving.

(ii) COURSE OUTCOMES

After the completion of the course, the student will be able to:

Course Outcomes	Description	Level
CO 1	Solve for the approximate roots of algebraic equations	Apply
CO 2	Solve linear systems using direct and iterative methods	Apply
CO 3	Apply various interpolation techniques in numerical problems	Apply
CO 4	Solve ordinary differential equations using numerical methods	Apply
CO 5	Solve partial differential equations using numerical methods.	Apply

(iii) SYLLABUS

Solution of algebraic equations, direct and iterative methods for solving linear and nonlinear systems Interpolation and approximation, Numerical Integration, Numerical solution of Ordinary differential equations and Partial differential equations.

(iv)(a) TEXT BOOKS

1. Kendall E Atkinson, An Introduction to Numerical Analysis, Wiley Publications,2012.
2. KW Morton and David Mayers, Numerical Solution of Partial Differential Equations, Cambridge Unvty PRESS ,2006.
3. B S Grewal, Numerical methods in Engineering and Science, Khanna Publishers,2018.
4. Sastry S.S., Introductory Methods of Numerical Analysis ,Fifth Edition, PHI, 2012

(b) REFERENCES

1. Howard Anton and Chris Rorres, Elementary Linear Algebra, 11th Edition, Wiley India, 2014

2. P. Kandasamy and K Thilagavathi: Numerical methods: S CHAND Publishers,2006.

3. Stephen Andrilli and David Hecker, Elementary Linear Algebra, 4th edition, Academic Press,2010

4. Stevwn C. Chapra and Raymond R. Canale, Numerical methods for engineer, Seventh Edition, McGraw-Hill, 2015.

(v) COURSE PLAN

Module	Contents	No. of hours
I	Errors- Error in the Approximation of a Function -Error in a Series Approximation - Order of Approximation -Growth of Error-Basic Properties of Equations - Transformation of Equations Synthetic Division of a Polynomial by a Linear Expression Iterative Methods -Rate of Convergence-Bisection Method -Interpolation Method - Secant Method - Iteration Method - Newton-Raphson Method - Muller's Method.	**9**
II	Solution of Linear Simultaneous Equations- Direct Methods of Solution - Iterative Methods of Solution - Ill-Conditioned Equations Solution of Non-Linear Simultaneous Equations	**9**
III	Interpolation: Finite difference operators, interpolation using divided difference. Numerical differentiation: derivatives from difference table (finite difference and divided difference). Evaluation of double integrals Trapezoidal and Simpsons rule.	**9**
IV	Numerical Solution of Ordinary Differential Equations: Picard's method, Taylor's series method, Euler's method, Modified Euler's method, Runge-Kutta method, Predictor-corrector methods. Simultaneous first order differential equations, Second order differential equations. Boundary-value problems, Finite-difference method, Shooting method	**9**
V	Numerical Solution of Partial Differential Equations: Classification of second order equations, Finite-difference approximations, Solution of Laplace's equation and Poisson's equation. Solution of Elliptic equations, Schmidt method- Brende Scmidt method, Crank Nicolson method. Solution of One-dimensional wave equation.	**9**
	Total hours	**45**

(vi) ASSESSMENT PATTERN

Continuous Assessment : End Semester Examination – 40 : 60

Continuous Assessment		
Attendance	:	5 marks
Assignments	:	15 marks
Assessment through Tests	:	20 marks
Total Continuous Assessment	:	**40 marks**
End Semester Examination	:	**60 marks**
TOTAL	:	**100 marks**

(vii) CONTINUOUS ASSESSMENT TEST

- No. of tests: 02
- Maximum Marks: 30
- Test Duration: 1 ½ hours
- Topics: 2 ½ modules

(viii) END SEMESTER EXAMINATION

- Maximum Marks: 60
- Exam Duration: 3 hours

Course Code	Course Name	Category	L	T	P	J	Credit	Year of Introduction
23IEL42V	Green Chemistry and Technology	IEC	3	0	0	0	3	2023

i) COURSE OVERVIEW

The aim of this course is to incite the students to take a more holistic view of different chemical processes in order to minimise their impact on environment. The course highlights and emphasizes the designing of environmental friendly chemical processes that are both economically and technologically feasible.

ii) COURSE OUTCOMES

After the completion of the course, the student will be able to:

CO1	Explain the concept of green chemistry and green chemical strategies for cleaner production	Understand
CO2	Identify cleaner production methods and good operating practices for sustainable development	Apply
CO3	Select suitable green chemical strategies and synthetic medium for the synthesis of various chemicals	Apply
CO4	Outline the use of renewable resources and nanotechnology to minimize the environmental impacts of chemical processes	Understand
CO5	Explain the fundamental concepts of AI enabled green chemistry	Understand

iii) SYLLABUS

Introduction to the Concepts of Green Chemistry, Principles of Green Chemistry, The Cleaner Production Concept, Good Operating Practice, Life cycle analysis for bio-based materials, Green chemical strategies, Flow chemistry, ionic liquids as a synthetic medium, Reactions using energy from renewable resources, biocatalysts for biofuel production, Green Synthesis of Nano Particles, Innovations in green chemistry, AI and ML predictive modelling in chemical reactions

vi) (a) TEXT BOOKS

1. Guttiya Yugantha Jayasinghe, Shehani Sharadha Mahepala, Prabudhi Chathurika Wijekoon, Green productivity and cleaner production, CRC press Pvt. Ltd., 2021.
2. M P Poonia, S.C. Sharma, K Santosh Kumar, Environmental Engineering, Khanna publishing house, 2023.
3. Sankar P. Dey, Nayim Sepay, A Textbook of Green Chemistry, Techno World, 2021.
4. Anastas, P. T., Warner, J. Green Chemistry: Theory and Practice; Oxford University Press: London, 1998.

(b) REFERENCES:

1. George, L.C. Elements of Ecology, Sagwan Press ,2018.
2. James Clarke and Duncan Macquarrie, Hand Book of Green Chemistry and Technology; Blakwell

   Publishing, 2002.
3. V K Ahluwalia, M. Kidwai, New Trends in Green Chemistry, Kluwer Academic Publishers,2012.
4. Sharma, P.D. Ecology and Environment, Rastogi Publications; 13th edition, 2023.
5. Allen D.T. and Shonnard D.R., Green Chemistry-Environmental conscious design of chemical process, Prentice Hall, 2002.
6. Mukesh Doble and Anil Kumar, Green Chemistry and Engineering, Elsevier, 2007.

v) COURSE PLAN

Module	Contents	No. of hours
I	**Introduction to the Concepts of Green Chemistry** Need for Green Chemistry-Goals of Green Chemistry-Obstacles in the pursuit of the goals of Green Chemistry-Principles of Green Chemistry-sustainable consumption of resources-air quality-water quality-ecology-Risk assessment concepts-Risk based environmental laws-chemical process safety-green synthesis process-methodologies, quantitative optimization.	9

II	**Cleaner production** The Cleaner Production Concept-Need for Cleaner Production-Difference with End of Pipe Concept-Cleaner Production and Sustainable Development-Implementation of Cleaner Production-Modifications in Raw Materials and Technology for cleaner production-Good Operating Practice-On-Site Reuse and Recycling- Assessment of environmental impacts of products and processes-Life cycle analysis for bio-based materials	**9**
III	**Green chemical strategies** Reaction mass balance-Atom Economy-Evaluation for Chemical Reaction Efficiency-Green Solvents/Reaction Media-Catalysis and Biocatalysis-Microwave oven as a reactor, Theory of Microwave Heating-Use of supercritical carbon dioxide as a medium in chemical industry-Flow chemistry-efficiency, scalability and safe chemical synthesis-ionic liquids as a synthetic medium, gas-expanded solvents, superheated water -Synthesis of various chemicals from biomass, polycarbonate synthesis and CO_2 fixation, green plastics, green oxidations.	**12**
IV	**Use of renewable resources and nanotechnology** Reactions using energy from renewable resources like solar, wind power, geothermal energy in chemical processes-solar powered water splitting for hydrogen production, green solvents, biocatalysts for biofuel production, Green Synthesis of Nano Particles-Green nanotechnology for designing sustainable nanomaterials to minimize environmental impact-nanocatalyst for carbon dioxide capture and conversion	**9**
V	**AI enabled green chemistry** Innovations in green chemistry-AI and ML predictive modelling in chemical reactions-optimising processes and identifying sustainable pathways- AI driven discovery of new catalysts for sustainable chemical synthesis	**6**
	Total Hours	**45**

(vi) ASSESSMENT PATTERN

Continuous Assessment : End Semester Examination – 40 : 60

Continuous Assessment

Attendance	:	5 marks
Assignments	:	15 marks
Assessment through Tests	:	20 marks
Total Continuous Assessment	:	**40 marks**
End Semester Examination	:	**60 marks**
TOTAL	:	**100 marks**

(vii) CONTINUOUS ASSESSMENT TEST

No. of tests: 02
Maximum Marks: 30
Test Duration: 1 ½ hours
Topics: 2 ½ modules

(viii) END SEMESTER EXAMINATION

- Maximum Marks: 60
- Exam Duration: 3 hours

Course Code	Course Name	Category	L	T	P	J	Credit	Year of introduction
23IEL42W	Financial Management	IEC	3	0	0	0	3	2023

i) COURSE OVERVIEW

The objective of this course is to enable the students to understand the fundamentals of financial management in the context of a corporate entity. It attempts to acquaint them with different dimensions of financial management with a focus on the application of the relevant tools and techniques of financial decision making aimed at shareholder's wealth maximization.

ii) COURSE OUTCOMES

After the completion of the course, the student will be able to:

CO1	Explain basic concepts of financial management and their application in investment, financing, and dividend decisions.	Understand
CO2	Analyze the ratios from the perspective of investors and lenders.	Analyze
CO3	Determine the effectiveness and efficiency of organization's operating and cash cycles.	Evaluate
CO4	Analyze the key finance type related to companies, investors and the interaction between them in the capital markets.	Analyze
CO5	Examine the profitability and financial position of an entity by analyzing the ratios from the perspective of investors, lenders, suppliers and managers	Analyze

iii) SYLLABUS

Introduction to Financial Management Meaning, Objectives, Scope of Financial Management, Sources of Finance, Introduction to Financial Markets

Financial Analysis and Planning Financial Ratio Analysis, Fund Flow Analysis, Cash Flow Analysis

Working Capital Management Working Capital Management - Financing of Working Capital, Inventory Management, Management of Receivables, Determinant of Credit Policy, Evaluation of Credit Policy, Cash Management

Cost of Capital, Capital Structure Theories, Dividend Decisions and Leverage Analysis Meaning of Cost of Capital – Computation of Cost of Capital, Capital Structure Theories, Dividend Policy, Leverage Analysis, EBIT - EPS Indifference Point/Level

Capital Budgeting - Investment Decision Capital Budgeting, Need of Capital Budgeting Decision, Significance of Capital Budgeting Decisions, Process of Capital Budgeting, Control for Capital Expenditure, Investment Criterion - Methods of Appraisal

i) a) **TEXTBOOKS**

1. Khan MY, Jain PK, Basic Financial Management, Tata McGraw Hill, Delhi, 2018.
2. Bhabatosh Banerjee, Fundamentals of Financial Management, PHI, Delhi,2015

b)**REFERENCES**

1. Chandra, Prasanna, Financial Management, Tata McGraw Hill, Delhi. 2022
2. Chandra Bose D, Fundamentals of Financial Management, PHI, Delhi, 2010

ii) **COURSE PLAN**

Module	Contents	No. of hours
I	Introduction to Financial Management Meaning, Objectives, Scope of Financial Management, Sources of Finance, Introduction to Financial Markets	7
II	Financial Analysis and Planning Financial Ratio Analysis, Fund Flow Analysis, Cash Flow Analysis	8
III	Working Capital Management Working Capital Management - Financing of Working Capital, Inventory Management, Management of Receivables, Determinant of Credit Policy, Evaluation of Credit Policy, Cash Management	10
IV	Cost of Capital, Capital Structure Theories, Dividend Decisions and Leverage Analysis Meaning of Cost of Capital – Computation of Cost of Capital, Capital Structure Theories, Dividend Policy, Leverage Analysis, EBIT - EPS Indifference Point/Level	10
V	Capital Budgeting - Investment Decision Capital Budgeting, Need of Capital Budgeting Decision, Significance of Capital Budgeting Decisions, Process of Capital Budgeting, Control for Capital Expenditure, Investment Criterion - Methods of Appraisal	10
	Total	**45**

(vi) ASSESSMENT PATTERN

Continuous Assessment : End Semester Examination – 40 : 60

Continuous Assessment		
Attendance	:	5 marks
Assignments	:	15 marks
Assessment through Tests	:	20 marks
Total Continuous Assessment	:	**40 marks**
End Semester Examination	:	**60 marks**
TOTAL	:	**100marks**

(vii) CONTINUOUS ASSESSMENT TEST

x) No. of tests: 02

xi) Maximum Marks: 30

xii) Test Duration: 1 ½ hours

xiii) Topics: 2 ½ modules

(viii) END SEMESTER EXAMINATION

- Maximum Marks: 60
- Exam Duration: 3 hours