SAVITRIBAI PHULE PUNE UNIVERSITY

FACULTY OF COMMERCE & MANAGEMENT (COMMERCE)

Open Elective or Generic Elective Syllabus

For the Faculty of Science and Technology (Engineering)

Third Engineering, Sem-V

As per National Education Policy-2020

w.e.f. June-2026

(Academic Year 2026-2027)

Contents

Chairman / Coordinator of Board of Studies in the Commerce Faculty

Sr.	Name of the BoS	Name of the Chairman / Coordinator
1	Dean of Faculty	Dr. Dhananjay Mandlik
2	Accountancy	Dr. Manohar Sanap
3	Cost and Works Accounting	Dr. Sunita Dakle
4	Business Administration	Dr. Yashodhan Mithare
5	Marketing	Prin. Dr. Anwar Shaikh
6	Business Practices	Dr. Maruti Kekane
7	Business Laws	Dr. Shivaji Takalkar
8	Banking, Finance and Insurance	Dr. Kishor Nikam
9	Statistics and Computer Applications	Prin. Dr. Nitin Ghorpade

Syllabus Drafting Committee

Sr. No.	Name of the Committee Member
1	Dr. Manohar Sanap, Chairman
2	Dr. Ganesh Pathare, Member
3	Dr. M. G. Mulla, Member
4	Dr. Ramdas Sonawane
5	Dr. Priyadarshini Hapse
6	Dr. Nilesh Uke
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12	Dr. Bhagyashree Dhakulkar
13	Dr. Chandrakant Kadu
14	Dr. Keshav Nandurkar
15	Dr. Somnath Nandi
16	Dr. Kalpana Joshi
17	Dr. Sudeep Thepade
18	Dr. Manmohan Bhoomkar
19	Dr. Pramod Patil
20	Dr. Dipti Patil

SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

FACULTY OF COMMERCE & MANAGEMENT (COMMERCE)

GENERIC / OPEN ELECTIVE COURSES FOR FACULTY OF SCIENCE AND TECHNOLOGY (ENGINEERING)

As per NEP-2020

(GR Dated 20.04.2023 and Changes Pursuant to Letter Dated 13.03.2024 of Higher & Technical Education Department, Government of Maharashtra)

TE Semester-V

w.e.f. Academic Year: 2026-2027

Sr.	Course Code	Name of the Course	Credits
A)	**Board of Studies in Accountancy**		
1		Introduction to Goods and Services Tax	2
2		Introduction to Income Tax Act	2
B)	**Board of Studies in Cost and Works Accounting**		
3		Product Costing for Mechanical Engineering	2
4		Material and Logistics	2
C)	**Board of Studies in Marketing**		
5		Business Marketing	2
D)	**Board of Studies in Business Practices**		
6		Sustainability Development	2
7		Entrepreneurship Development	2
E)	**Board of Studies in Business Laws**		
8		Mercantile Laws	2
9		IPR and Cyber Laws	2
10		The Constitution of India	2
11		Environmental Law	2
12		Construction Law and Contracts	2
F)	**Business Administration**		
13		Human Resource Management	2
14		Business Administration	2
G)	**Board of Studies in Statistics and Computer Applications**		
15		Statistics and Computer Applications	2
16		Digital Personal Data Protection	2
H)	**Board of Studies in Banking, Insurance and Finance**		
17		Agri Business Finance and Banking Operations	2

Savitribai Phule Pune University		
Board of Studies : Accountancy		
Introduction to Goods and Services Tax		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Objectives: The course aims to:

1. To understand the Constitutional Background of GST, Objectives of GST and Pre-GST Indirect Tax Structure in India.
2. To learn Definitions of Basic Concepts under GST.
3. To understand the role of GST Council and their functions, and Authorities under GST
4. To learn the Registration Procedure under GST.

Course Outcomes: After completion of the course, students will be able to:

1. Acquaint the Constitutional Background of GST, Objectives of GST and Pre-GST Indirect Tax Structure in India.
2. Remember the role of GST Council and Authorities under GST.
3. Analyze and interpret various Basic Concepts under GST.
4. Learn the skills for Registration under GST.

Course Contents

Unit I - Preliminary of GST (07 Hours)

Preliminary of GST: Money Bill and Finance Bill: Meaning and its Constitutional Provisions

Taxation Structure in India and Difference between Direct Tax and Indirect Tax, and Pre-GST Indirect Tax Structure in India

Evolution of GST in India, Objectives and Features of GST,

Unit II - (07 Hours)

GST Council: Composition and its Functions, Authorities / Officers under GST

Definitions: Aggregate Turnover, Assessment, Business, Capital Goods, Casual Taxable Person, e-Commerce, e-Commerce Operatory, Export of Goods, Export of Services, Goods, Import of Goods, Import of Services, India,

Input, Input Service, Input Tax, Input Tax Credit, Location of the Recipient of Services, Location of the Supplier of Services, Manufacturer, Output Tax, Person, Place of Business, Place of Supply, Recipient, Services, Supplier,

Taxable Person, Taxable Territory etc.

Unit III -Law Regulating GST (07Hours)

Law Regulating GST: GST on Supply, Dual GST, Intra-State Supply, Inter-State Supply, GST Rates for Supply of Goods, GST Rates for Supply of Services, Compensation Cess, Administration Control, GST not applicable presently on Petroleum Products, Alcoholic Liquor, Tobacco Products, State GST Acts, Union Territory GST Act, Registration, Inter-State Stock Transfer, Distinction between Goods and Services, Consideration, Gift, Small Taxable Persons, Reverse Charge, Time of Payment of GST, Composition Scheme, Tax Invoice, GST is destination based Tax, etc.

Unit IV - Registration under GST (08 Hours)

Significance of Registration, Compulsory Registration , Persons not liable for Registration , Compulsory Registration in few Cases , Procedure for Registration

Deemed Registration, Amendment of Registration, Cancellation or Suspension of Registration, Revocation of Cancellation of Registration, Procedure for Change of Email and Mobile Number of Authorized Signatory by Taxpayers

Verification of Registration of Application, Special provisions relating to Casual Taxable Person and Non-Resident Taxable Person

Learning Resources

Text Books:

1. Students' Guide to Income Tax including GST by Dr. Vinod K. Singhania and Dr. Monica Singhania, Taxmann Publication (P) Ltd., New Delhi
2. GST Acts with Rules/Forms and Notifications, Taxmann Publication (P) Ltd., New Delhi
3. Indirect Tax (GST) by Dr. V. S. Datey, Taxmann Publication (P) Ltd., New Delhi
4. Taxmann's Direct Taxes Law and Practice (Professional Edition) by Dr. Vinod K. Singhania and Kapil Singhania
5. Constitution of India
6. Study Materials of ICAI, ICSI, ICMA
7. Journal of Chartered Accountants, Journal of Cost and Management Accountants and Journal of Company Secretary

Teaching Methodology

The Teacher can use the following Methods as Teaching Methodology:

1. Class Room Lectures
2. Guest Lectures of Professionals, Industry Experts etc.
3. Teaching with the help of ICT tools
4. Visits to various Professionals Units, Companies and Business / Industry Units
5. Group Discussion / Debates
6. Assignments, Tutorials, Presentations, Role Play etc.

7. YouTube Lectures developed by MHRD, UGC, Government of Maharashtra, University etc.

8. Analysis of Case Studies

Savitribai Phule Pune University		
Board of Studies : Accountancy		
Introduction to Income Tax Act		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Objectives: The course aims to:

1. To understand the basic concepts or terms of the Income Tax Act, 2025.
2. To study the basis of charge of income tax and its scope.
3. To perceive and differentiate the Old and New Tax Regime.
4. To study and compute the income under the head Income from Salary.
5.

Course Outcomes: After completion of the course, students will be able to:

1. Remember the basic concepts or terms of the Income Tax Act, 2025.
2. Understand the basis of charge of income tax and its scope.
3. Evaluate the Old and New Tax Regime.
4. Apply the provisions of the Income Tax Act, 2025 for computation of income under the head Income from Salary.

Course Contents

Unit I - Preliminary of Income Tax Act (07 Hours)

Short title, extent and commencement, Definitions: Agricultural Income, Assessee, Assessment, Income, India, Permanent Account Number (PAN), Person, Public Servant, Tax, Total Income, Tax Year etc.

Unit II - Basis of Charge(07 Hours)

Charge of Income Tax, Scope of Total Income, Residence in India, Income deemed to be received and dividend deemed to be income in tax year, Income deemed to accrue or arise in India, Income on receipt of capital asset or stock-in-trade by specified person from specified entity

Unit III - Tax Regime and Heads of Income (07Hours)

Incomes not included in total income
Incomes not included in total income of political parties and electoral trusts
Old and New Tax Regime to all assesses
Heads of Income

Unit IV - Income from Salary (08 Hours)

Provisions relating to Income from Salary

Basic numerical problems on the head Income from Salary or/and Computation of Income under the head Income from Salary

Learning Resources

Text Books:

1. Taxmann's Income Tax Act 2025
2. Students' Guide to Income Tax by Dr. Vinod K. Singhania and Dr. Monica Singhania, Taxmann Publication (P) Ltd., New Delhi
3. Direct Taxes Law and Practice (Professional Edition) by Dr. Vinod K. Singhania and Dr. Kapil Singhania, Taxmann Publication (P) Ltd., New Delhi
4. Constitution of India
5. Bare Act: Income Tax Act 1961
6. Direct Taxes Ready Reckoner by Dr. Vinod K. Singhania, Taxmann Publication (P) Ltd., New Delhi
7. Income Tax Ready Reckoner by CA N. V. Mehta, Shri Kuber Publishing House
8. Study Materials of ICAI, ICSI, ICMA
9. Journal of Chartered Accountants, Journal of Cost and Management Accountants and Journal of Company Secretary

Teaching Methodology

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6. Assignments, Tutorials, Presentations, Role Play etc.
7. YouTube Lectures developed by MHRD, UGC, Government of Maharashtra, University etc.
8. Analysis of Case Studies

Savitribai Phule Pune University		
Board of Studies : Cost and Works Accounting		
Product Costing for Mechanical Engineering		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Prerequisites: Basic knowledge of manufacturing and measurement systems, fundamentals of engineering drawing interpretation, machining and forming processes, materials and their properties.

Course Objectives: The course aims to:

1. To understand the principles and significance of product costing in manufacturing industries.
2. To develop the ability to estimate material, process, labour, and overhead costs of mechanical components.
3. To interpret engineering drawings, BOM, and specifications for cost estimation.
4. To apply process planning, machine hour rate, and cost estimation techniques in real applications. To implement advanced costing methods, design-to-cost, and value engineering for cost optimization.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: UNDERSTAND product costing fundamentals, CLASSIFY different cost elements, and interpret engineering drawings and BOM for cost estimation.
- CO2: ESTIMATE material and manufacturing process costs for various processes such as machining, sheet metal, casting, welding, and plastics.
- CO3: APPLY process planning, labour costing, overhead allocation, and calculate machine hour rate for accurate cost evaluation.
- CO4: ANALYZE and optimize product cost using advanced costing techniques, design-to-cost principles, and industrial practices including quotation and cost reduction.

Course Contents

Unit I : Fundamentals of Product Costing & Engineering Interpretation (06 Hours)

Introduction to Product Costing, Importance and role in manufacturing industry, Costing vs Pricing Vs Estimation, Objectives of Product Costing, Product Life Cycle and cost impact, Introduction to Cost Engineering, Types of manufacturing industries, Elements of Cost (Material, Labour, Overhead), Direct vs Indirect Cost, Fixed, Variable, Semi-variable Cost, Recurring vs Non-recurring Cost, Capital vs Operating Cost, Conversion Cost, Cost Sheet basics, BOM Material specification and Tolerance impact on cost

CCE Activities: Prepare a basic cost sheet from a given simple component drawing

Unit II - Material & Manufacturing Process Costing (06 Hours)

Material Costing

Engineering materials overview, Raw material forms, Density & weight calculations, Material utilization & scrap, Buy-to-Fly ratio, Material yield, Standard sizes, Vendor rate understanding

Manufacturing Costing

Machining: Turning, milling, drilling, grinding costing, CNC machining costing, Machine hour rate basics, Cycle time estimation, Tool change & tool cost

Sheet Metal: Laser cutting, punching, bending, Deep drawing, Nesting efficiency

Casting: Sand casting, die casting, Pattern & core cost, Yield calculation

Welding & Fabrication: Welding cost, Gas/electrode consumption, Fabrication time, Fixture costing

Plastic Parts: Injection moulding cost, Mould cost, Cycle time, Shrinkage & mould life

CCE Activities: Cost estimation of shaft / sheet metal bracket. , Material selection and process costing logic

Unit III - Process Planning, Labour & Overhead Costing (06 Hours)

Process Planning: Process flow development, Routing sheet, Operation sequencing, Setup & standard time, Batch production costing, Volume effect on cost, Capacity utilization

Labour Costing: Direct & indirect labour, Skilled vs unskilled, Labour rate calculation, Efficiency, Shift & overtime costing

Overhead Costing: Factory & administrative overhead, Utility cost allocation, Depreciation, Maintenance, Electricity & facility cost

Machine Hour Rate: Machine cost components, Depreciation calculation, Power consumption, Maintenance allocation, Operator & tooling cost, Idle time, Final MHR formula.

CCE Activities: Case Study on Effect of production volume on cost., Numerical Assignment on Machine Hour Rate calculation

Unit IV - Advanced Costing, Optimization & Industrial Applications (06 Hours)

Tooling & Fixture Costing: Jigs & fixtures costing, Tool life & tool cost allocation, Die & mold costing, ROI of fixtures

Design to Cost (DTC): Cost drivers, Material & thickness optimization, Part reduction, Tolerance optimization, DFMA principles, Value engineering basics

Cost Estimation Techniques: Analogous, parametric, bottom-up, Feature-based costing, Activity-based costing, Target & should costing, Cost benchmarking

Software & Commercial Aspects: Excel costing (formulas, pivot, BOM roll-up), ERP & SAP basics, RFQ & quotation, Profit margin, mark up vs margin, Taxes, freight, packaging, Break-even analysis

Emerging Trends: AI in costing, Additive manufacturing costing, Sustainability & carbon costing

CCE Activities: Mini Project: Complete product costing + cost reduction study, Case study on Machined part costing, Sheet metal / welded assembly, Plastic / casting components, Make vs Buy analysis

Learning Resources

Text Books:

1. Chitale, A.K. and Gupta, R.C., Product Design and Manufacturing, Prentice Hall of India.

2. Ostwald, Phillip F. and McLaren, Timothy S., Cost Analysis and Estimating for Engineering and Management, Pearson.

3. Kalpakjian, Serope and Schmid, Steven, Manufacturing Engineering and Technology, Pearson.

4. Jain, K.K., Cost Accounting and Financial Management for Engineering, Wiley India

Reference Books

1. Hopp, Wallace J. and Spearman, Mark L., Factory Physics, McGraw-Hill.

2. Boothroyd, Geoffrey, Dewhurst, Peter and Knight, Winston, Product Design for Manufacture and Assembly, CRC Press.

3. Park, Chan S., Contemporary Engineering Economics, Pearson.

4. Creese, Robert C., Engineering Economy, McGraw-Hill.

5. Rush, Chris and Roy, Rajkumar, Product Costing in Design and Manufacturing, Springer.

Web References

1. https://enine.digimat.in/nptel/courses/video/112104230/L22.html

2. https://digimat.in/nptel/courses/video/112104265/L35.html

3. https://digimat.in/nptel/courses/video/112107209/L31.html

4. https://digimat.in/nptel/courses/video/112107209/L27.html

5. https://digimat.in/nptel/courses/video/112104301/L12.html

Savitribai Phule Pune University		
Board of Studies : Cost and Works Accounting		
Materials and Logistics		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Prerequisites: Basic knowledge of manufacturing processes, engineering materials and production systems. Understanding of engineering drawing, basic industrial management concepts.

Course Objectives: The course aims to:

1. To understand the principles and functions of materials management in manufacturing industries.
2. To learn purchasing, storage, inventory control, and material handling techniques.
3. To understand logistics systems, warehousing, and transportation management.
4. To apply analytical tools for optimizing material flow and improving supply chain efficiency.
5.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: EXPLAIN the functions and importance of materials management in manufacturing systems.
- CO2: APPLY inventory control and purchasing techniques for efficient material management.
- CO3: ANALYZE logistics operations including warehousing, transportation, and distribution.
- CO4: DEVELOP strategies for efficient material flow and integrated supply chain management.

Course Contents

Unit I : Fundamentals of Materials Management (06 Hours)

Introduction to materials management, Need, objectives and scope in manufacturing industries, Role of materials in production system, Materials planning and materials budgeting, Classification of engineering materials, Functions of material manager, Material Requirement Planning (MRP), Manufacturing Resource Planning (MRP – II), Bill of Materials (BOM), E-BOM, Make or Buy decision, Vendor selection fundamentals, Standardization, simplification and codification, Evolution of logistics towards supply chain management, Logistics costs and informational requirements, Purchasing and Negotiations. Concepts of purchasing vs procurement and cost aspects in materials management.

CCE Activities:

- Preparation of BOM and MRP sheet
- Assignment on make-or-buy decision

Unit II - Purchasing, Stores and Digital Materials Management (06 Hours)

Purchasing Management

Objectives and procedure, Purchase requisition and purchase order, Tendering and comparative statement, Vendor rating and supplier evaluation, Incoming material inspection and quality checking, stores organization and layout, Preservation and handling of materials, Bin card and stores ledger, Issue and receipt procedures.

Digital Materials Management & ERP

Introduction to ERP in materials management, Material master data. BOM and routing in ERP, Procurement cycle in ERP systems, Integration of stores, purchase, and production, Barcode and RFID in inventory tracking, Digital documentation and traceability, Role of SAP in materials and logistics management. E-procurement systems and digital supplier integration.

CCE Activities:

- Preparation of purchase order and vendor comparison sheet
- Case study on ERP-based materials management system.
- Prepare a ERP flow diagram (procurement cycle)

Unit III - Logistics, Warehousing and Transportation Management (06 Hours)

Logistics and Warehousing

Introduction to logistics and supply chain, Inbound and outbound logistics, Physical distribution management, Warehousing objectives and functions, Types of warehouses, Warehouse location and layout design. Logistics performance measures (lead time, fill rate, service level, transportation cost)

Transportation Management

Material handling systems: conveyors, cranes, forklifts, AGVs, Packaging and dispatch planning, Transportation modes: road, rail, air, sea, Route planning and shipment scheduling, Reverse logistics and returnable materials.

Industry 4.0 in Logistics

RFID systems, Barcode systems, GPS tracking, Automated warehouse systems, Smart logistics concepts

CCE Activities:

- Case study on warehouse layout and logistics system.
- Transportation route planning exercise using open source software.

Unit IV - Integrated Supply Chain and Cost Optimization(06 Hours)

Supply Chain Management

Introduction to supply chain management, Supply chain stages and integration, Supplier–manufacturer–dist linkage, Lean material flow concept, Just-In-Time (JIT) system, Kanban concept, Logistics cost components, Material flow analysis, Lead time reduction, Waste minimization in logistics, Value analysis and value engineering, Sustainable and green logistics practices, Supply chain uncertainty and bullwhip effect, Forecasting in supply chain, Industrial case studies on supply chain management.

CCE Activities:

- Mini project on supply chain optimization
- Case study on logistics cost reduction

Learning Resources

Text Books:

1. Gopalakrishnan, P. and Sundaresan, M., Materials Management: An Integrated Approach.
2. Gopalakrishnan, P., Purchasing and Materials Management.
3. Martin Christopher, Logistics and Supply Chain Management.

Reference Books

1. Donald J. Bowersox and David J. Closs, Logistical Management.
2. John J. Coyle et al., A Logistics Approach to Supply Chain Management.
3. Sunil Chopra, Supply Chain Management.
4. Kanishka Bedi, Production and Operations Management.

Web References

1. https://www.youtube.com/watch?v=Z1zi7fMLmV4
2. https://www.youtube.com/watch?v=E1S5zEaP42M
3. https://digimat.in/nptel/courses/video/109105494/L01.html
4. https://digimat.in/nptel/courses/video/109105494/L21.html
5. https://digimat.in/nptel/courses/video/109105494/L48.html
6. https://digimat.in/nptel/courses/video/109105494/L58.html

Savitribai Phule Pune University		
Board of Studies in Marketing		
Business Marketing		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Outcomes: Upon successful completion of this course, students will be able to:

- **CO1:** Understanding the nature and scope of marketing, buyer behavior, relationship and networks
- **CO2:** Understanding the marketing concept between Business to Business
- **CO3:** Understanding customer interaction and its effective utilization.
- **CO4:** Managing the Market, its Dynamics and Price Setting aspects.
- **CO5:** Understanding Supply Chain Management and Advertising Aspects

Course Contents

Unit I - Introduction Business Marketing (07 Hours)

Basic Concepts of Product; Product levels; Elements of Product Mix; Business to Business Markets and Marketing, Buyer Behavior, Inter-firm Relationships and Network, Supply Chain Concept; Competitive Advantages and SC Strategies; SC Drivers and Metrics

Unit II - Business to Business Marketing (07 Hours)

Behaviour and principles in B to B marketing, Responsible Business to Business StrategyResearching Business to Business Markets, Business Market Segmentation.

Unit III - Effective Customer Interactions (08 Hours)

Communicating and Interacting with Customers, Market Communication, Relationship Communication, Relationship Portfolios and Key Account Management.

Unit IV - Managing the Marketing (08 Hours)

Basics of marketing Management, Management Product Offerings, Various Routes Identification and Development, Routes to Market, Price Setting in Business to Business Markets

Learning Resources

Text Books:

1. Jason McDonald, “The Marketing Book”, Marketing (2026- Social Marketing Management By Kotler and Keller (Prentice Hall)
2. Louise Canning , Raymond McDowell, “Business-to-Business Marketing”, Sage Publications (2011)

3. Mahesh M. Bhanushali, Sreenivas Thandava, Komal Saxena, Vemulapalli Sailaja, “Business To Business B2B Marketing”, (2024)

4. V. S. Ramaswamy and S. Namakumari, “Marketing Management”, McMillant Book Co. (2022)

Reference Books:

1. K. K. Havaldar, “Business Marketing: Text and Cases”, 4th Edition, Tata McGraw Hill Publication (2014).

2. Robert P. Vitale, Josepg Gigilerano, Waldemar Pfoertsch “Business to Business Marketing” Pearson India (2010).

3. James C. Anderson, James A. Narus, “Business Market Management”, 3rd Edition, Pearson India (2011).

4. Jakki Mohr, Sanjit Sengupta, and Stanley Slater “Marketing of High Technology & Innovation”, Pearson India (2022).

E books Links: -

1. https://cstn.wordpress.com/wp-content/uploads/2009/10/marketing-your-business.pdf

2. https://ebooks.lpude.in/arts/ba/year_2/DCOM405_DMGT408_MARKETING_MANAGEMENT_DMGT

3. https://sinhvien.dinhtienminh.net/wp-content/uploads/2020/08/Krishna-Havaldar-Business-Marketi Text-and-Cases-MC-GRAW-HILL-INDIA-2015.pdf

MOOC/SWAYAM/NPTEL Courses:

1. https://nptel.ac.in/courses/110107168 Business to Business Marketing (B2B)

2. https://onlinecourses.nptel.ac.in/e-learning/preview/noc24_mg124

Savitribai Phule Pune University		
Board of Studies in Business Practices		
Sustainable Development		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Objectives: The course aims to:

1. Identify principles of sustainable development and environmental impacts of computing systems.
2. Analyze lifecycle sustainability and circular economy in computing infrastructure.
3. Apply green software engineering and sustainable AI techniques.
4. Evaluate sustainability strategies, carbon metrics, and ESG frameworks in IT systems.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: Identify sustainability concepts and environmental impacts of AI and computing systems.
- CO2: Analyze lifecycle impacts and circular economy practices in IT systems.
- CO3: Apply energy-efficient software and sustainable AI design techniques.
- CO4: Evaluate sustainable infrastructure, carbon metrics, and reporting frameworks.

Course Contents

Unit I : Foundations of Sustainable Development and Green Computing (06 Hours)

Sustainable development concepts, SDGs, Role of digital technologies (AI, IoT, Cloud, Data Analytics), Green IT concepts and evolution, Environmental impact of computing systems, Digital carbon footprint, AI/ML energy consumption & Sustainable AI principles, Stakeholders: government, industry, academia

Case Study: AI Model Carbon Footprint Analysis

Unit II - Lifecycle Sustainability of Computing Systems and Circular Economy (06 Hours)

Lifecycle of computing systems (manufacturing $\rightarrow$ usage $\rightarrow$ disposal), Energy consumption (CPU, GPU, IoT, edge devices), Embodied energy in hardware, E-waste management, Circular economy (Reduce, Reuse, Recycle), Sustainable supply chains, Life Cycle Assessment (LCA) methodology, ISO 14040 & ISO 14044

Case Study: Circular Economy and Lifecycle Analysis of a Computing Device.

Unit III - Green Software Engineering and Sustainable Artificial Intelligence (06 Hours)

Energy consumption of software systems, Green software principles (efficient algorithms, optimized coding),Sustainable architectures, Green AI (model compression, pruning, efficient training), Carbon-aware computing & scheduling, Energy-aware data science workflows, Generative AI environmental impact , AI for sustainability (analytics, decision support tools)

Case Study: Energy-Efficient Machine Learning Algorithms and Sustainable AI Model Design.

Unit IV - Sustainable Data Centers, Cloud Infrastructure and Carbon Management (06 Hours)

Sustainable Infrastructure: Green data center design, Cooling technologies & power management, Renewable energy integration, Sustainable cloud computing (virtualization, workload optimization), AI infrastructure optimization (GPU clusters, training pipelines)

Sustainability Metrics & Carbon Accounting: Carbon footprint, CO_2e , GHG- Scope 1, Scope 2, Scope 3 emissions, PUE, CUE, WUE, Energy intensity.

Governance & Reporting: ESG frameworks, BRSR reporting, Carbon credits & carbon markets, MRV (Measurement, Reporting, Verification)

Future Trends: Carbon-neutral data centers , Climate-aware computing, AI-enabled sustainability monitoring

Case Study: Green Cloud Data Center Architecture and Carbon Accounting Practices.

Learning Resources

Text Books:

1. S. Murugesan and G. R. Gangadharan, Harnessing Green IT: Principles and Practices. Hoboken, NJ, USA: Wiley, 2012.
2. L. M. Hilty and B. Aebischer, ICT Innovations for Sustainability. Cham, Switzerland: Springer, 2015

Reference Books:

1. B. Tomlinson, Greening through IT. Cambridge, MA, USA: MIT Press.
2. World Resources Institute and World Business Council for Sustainable Development, GHG Protocol: Corporate Accounting and Reporting Standard. Washington, DC, USA: WRI, 2004.
3. D. J. C. MacKay, Sustainable Energy—Without the Hot Air. Cambridge, UK: UIT Cambridge, 2009.
4. M. Berners-Lee, How Bad Are Bananas? The Carbon Footprint of Everything. London, UK: Profile Books, 2010.
5. E. Masanet et al., "Energy Efficient Computing Systems," Annual Review of Environment and Resources, vol. 45, pp. 457–484, 2020.
6. T. Wiedmann and M. Lenzen, Environmental and Sustainability Accounting. Cham, Switzerland: Springer, 2018.A. Bahga and V. Madisetti, Cloud Computing: A Hands-On Approach. Vijay Madisetti and Arshdeep Bahga, 2014.

Web Links:

1. Green Software Foundation: https://greensoftware.foundation
2. Climate Change AI: https://www.climatechange.ai

3. Google Sustainability: https://sustainability.google

4. AWS Sustainability: https://sustainability.aboutamazon.com

Savitribai Phule Pune University		
Board of Studies in Business Practices		
Entrepreneurship Development		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory: 2 Hour/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Objectives: The course aims to:

1. Introduce the fundamental principles of entrepreneurship, forms of business organizations, and the startup ecosystem.
2. Enable students to identify, evaluate, and select viable business opportunities using structured techniques.
3. Familiarize students with business models, financial planning, and market validation strategies.
4. Expose students to key marketing strategies, customer acquisition techniques, and branding essentials for startups
5. Develop students' entrepreneurial mindset and their ability to communicate and pitch business ideas effectively using structured storytelling techniques

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: **Describe** the role of entrepreneurship in economic growth and the startup ecosystem.
- CO2: **Apply** creative techniques to viable business ideas based on customer needs.
- CO3: **Develop** a basic business model using tools like the Business Model Canvas through market research.
- CO4: **Implement** basic marketing strategies for startups.
- CO5: **Deliver** a concise business pitch using storytelling and effective communication techniques.

Course Contents

Unit I - Introduction to Entrepreneurship (07 Hours)

Entrepreneurship: Definition and evolution, Role of entrepreneurship in economic development , Role in job creation, GDP, and innovation.

Characteristics of an Entrepreneur: Key traits: Risk-taking, innovation, pro-activeness, Leadership, perseverance, and resilience

Types of Entrepreneurships: Startup entrepreneurship, Social entrepreneurship, Intrapreneurship (corporate entrepreneurship), Lifestyle and small business entrepreneurship, Forms of Business Organization – Sole proprietorship, partnership, private limited, public limited.

Entrepreneurial Mindset: Growth mindset and adaptability, Creativity and problem-solving, Opportunity recognition and initiative-taking

Overview of the Startup Ecosystem: Key stakeholders: Incubators, accelerators, angel investors, VCs, Government support schemes (Startup India, Atal Innovation Mission, etc.), Global vs. Indian startup ecosystems

Case Study:

1. Ritesh Agarwal – Founder of OYO Rooms (India)
2. Falguni Nayar – Founder of Nykaa (India)
3. Nandan Nilekani – Co-founder of Infosys & Architect of Aadhaar (India) etc.

Unit II -Idea Generation & Opportunity Recognition (07 Hours)

Creativity Techniques for Idea Generation: Definition and importance of creativity in entrepreneurship. Brainstorming: Rules of effective brainstorming. Individual vs. group brainstorming. Mind Mapping: Visual idea structuring using central themes and branches. Tools (manual and digital) for mind mapping.

Understanding Customer Needs and Pain Points: Customer pain points and their identification, Problem-solution fit: Linking pain points to possible solutions. Observational techniques, user interviews, and empathy mapping.

Evaluating Opportunities: Difference between an "idea" and an "opportunity." Basic filters: Desirability, feasibility, and viability. Tools: SWOT Analysis, Opportunity Matrix, Industry trends, market gaps.

Case Study : Analyzing how "Dunzo" or "BigBasket" identified urban pain points and How "Zerodha" scaled in India with a digital-first approach

Unit III - Business Model Development (08 Hours)

Introduction to Business Model Canvas: Definition and purpose of a business model, Overview of the Business Model Canvas by Osterwalder, Benefits of using BMC for startups.

Key Components of BMC: Value Proposition: Defining what unique value the product/service offers. Addressing customer pain points. Customer Segments: Identifying target customers. Creating customer personas Revenue Models: Direct sales, subscriptions, freemium, licensing, etc.

Basic Market Research for Validation: Importance of market research in early-stage business development. Designing effective surveys and customer feedback forms. Conducting basic interviews and analyzing responses. Introduction to MVP (Minimum Viable Product) and feedback loops.

Case study: Map the BMC for a well-known startup (e.g., Uber or Zomato).

Unit IV - Marketing Strategies & Customer Acquisition (08 Hours)

Basics of Branding and Positioning: Introduction to Brand – Elements of brand identity: name, logo, voice, tone, and values. Positioning – How to create a unique space in the customer's mind. Positioning maps, Value-based positioning vs. competitor-based positioning Startup Branding Challenges – Limited budget, building trust, clarity in messaging.

Costing & Pricing Strategies – Fixed vs. variable costs, break-even analysis.

Introduction to Digital Marketing: Distribution Channels: Traditional vs. digital distribution. Social Media Marketing: Platforms overview (Instagram, LinkedIn, Facebook, X/Twitter) Creating a content strategy and calendar Organic vs. paid reach

Search Engine Optimization (SEO): Basics of how search engines work, Keyword research and content optimization, On-page vs. off-page SEO Importance of Digital Presence – Website essentials, blogs, and analytics tools.

Customer Acquisition Strategies: Understanding the Customer Journey – Awareness, interest, decision, action. Early-Stage Customer Acquisition Tactics: Word-of-mouth & referrals, Influencer marketing (micro-influencers), Email marketing basics, building a landing page and collecting leads

Case Studies :

1. Zomato – Branding & Positioning in a Competitive Market
2. Mamaearth – Digital-First Customer Acquisition
3. Nykaa – Customer Segmentation and Channel Strategy

Learning Resources

Text Books:

1. Bygrave, W.D., Zacharakis, A., & Corbett, A.C. Entrepreneurship, 6th Edition, Wiley, 2025. ISBN: 9781394262809.
2. Drucker, Peter F. Innovation and Entrepreneurship: Practice and Principles, Reprint Edition, Harper Business, 2006. ISBN: 9780060851132.
3. Osterwalder, Alexander & Pigneur, Yves. Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers, 1st Edition, Wiley, 2010. ISBN: 9780470876411.

Reference Books:

1. Ries, Eric. The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses, 1st Edition, Crown Business, 2011. ISBN: 9780307887894.
2. Kawasaki, Guy. The Art of the Start 2.0: The Time-Tested, Battle-Hardened Guide for Anyone Starting Anything, Portfolio (Penguin Random House), 2015. ISBN: 9781591847847.

MOOC / NPTEL/YouTube Links: -

1. Entrepreneurship Essentials By Prof. Manoj Kumar Mondal IIT Kharagpur https://onlinecourses.nptel.ac.in/noc20_ge08/preview
2. Entrepreneurship By Prof. C Bhaktavatsala Rao IIT Madras https://onlinecourses.nptel.ac.in/noc21_mg70/preview
3. https://onlinecourses.nptel.ac.in/noc20_mg35
4. https://www.coursera.org/learn/entrepreneur-guide-beginners

5. https://wadhwanifoundation.org/

YouTube/Video Links

1. https://www.youtube.com/@wadhwani-foundation/videos

Savitribai Phule Pune University		
Board of Studies : Business Laws		
Mercantile Laws		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Objectives: The course aims to:

1. To develop general legal knowledge of the Mercantile Laws
2. To acquire the knowledge about the regulation of business environment

Course Outcomes: Upon successful completion of this course, students will be able to:

- Understand the basic insights of business regulatory framework
- Remember the provisions of Mercantile Laws

Course Contents

Unit I - Indian Regulatory Framework (07 Hours)

Major Regulatory Bodies such as:

- Ministry of Finance
- Ministry of Corporate Affairs
- Securities and Exchange Board of India (SEBI)
- Reserve Bank of India (RBI)
- Insolvency and Bankruptcy Board of India (IBBI)
- Ministry of Law and Justice

Unit II - The Indian Contract Act, 1872 (07 Hours)

- General Nature of Contract
- Consideration
- Other Essential Elements of a Valid Contract
- Performance of Contract
- Breach of Contract
- Contingent and Quasi Contract

Unit III - Other Contracts - The Indian Contract Act, 1872 (08 Hours)

- Contract of Indemnity and Guarantee
- Contract of Bailment and Pledge
- Contract of Agency

Unit IV - The Sale of Goods Act, 1930 (08 Hours)

- Formation of the Contract of Sale
- Conditions and Warranties
- Transfer of Ownership and Delivery of Goods
- Unpaid Seller and his Rights

Learning Resources

Text Books:

1. Business Laws Study Material for CA Foundation Course of ICAI
2. Taxmann's Business Laws by Sushma Arora
3. Avtar Singh's Business Law by Varun Malik
4. Fundamentals of Business Law and Business Communication by Y V Shruthi, Commercial Law Publishers
5. Taxmann's Mercantile & Commercial Laws by Rohini Aggarawal
6. Elements of Mercantile Law by N.D. Kapoor, Sultan Chand & Sons
7. Mercantile Law by M.C. Kuchhal and Vivek Kuchhal, Vikas Publication
8. A Textbook of Mercantile Law by P. P. S. Gogna, S Chand & Co Ltd

Teaching Methodology

The Teacher can use the following Methods as Teaching Methodology:

1. Class Room Lectures
2. Guest Lectures of Professionals, Industry Experts etc.
3. Teaching with the help of ICT tools
4. Visits to various Professionals Units, Companies and Business / Industry Units
5. Group Discussion / Debates
6. Assignments, Tutorials, Presentations, Role Play etc.
7. YouTube Lectures developed by MHRD, UGC, Government of Maharashtra, University etc.
8. Analysis of Case Studies

Savitribai Phule Pune University		
Board of Studies : Business Laws		
IPR and Cyber Laws		
Teaching /scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Objectives: The course aims to:

1. To introduce the fundamental concepts of Intellectual Property Rights (IPR) and their significance in engineering and innovation.
2. To develop understanding of various types of IPR and their protection mechanisms in engineering applications.
3. To familiarize students with legal frameworks related to patents, copyrights, trademarks, and industrial designs.
4. To impart knowledge of cyber laws, cyber security concepts, and legal provisions related to cyber-crimes.
5. To enable students to understand ethical, legal, and professional issues in cyberspace along with data protection and privacy.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1. Explain concepts and importance of Intellectual Property Rights.
- CO2. Differentiate various types of IPR and their applications in engineering.
- CO3. Evaluate patentability of engineering ideas and understand filing procedures.
- CO4. Analyse cyber laws and legal provisions related to cyber-crimes and digital systems.
- CO5. Apply cyber security, privacy, and ethical principles in real-world scenarios.

Course Contents

Unit I : Introduction to IPR (06 Hours)

Meaning and concept of IPR, Need for and importance of IPR in engineering and innovation, Types of Intellectual Property, International organizations: WIPO, WTO, Overview of IPR in India, IPR in engineering design (electronics, electrical systems, software)

Case Study: Novartis AG v. Union of India: Importance of IPR in innovation vs public welfare, Concept of "evergreening" in patents

Unit II - Patents, Copyrights and Trademarks (06 Hours)

Patent: concept, types, procedure (Indian context), rights, Patentability criteria with engineering examples, Copyright: meaning, scope (software, embedded systems), Trademark: registration and protection (industrial branding), Industrial designs and geographical indications

Case Study : Bajaj Auto Ltd. v. TVS Motor Company Ltd.: Patent infringement in engineering (automobile technology), Yahoo! Inc. v. Akash Arora: Trademark protection in digital space

Unit III - IPR Management and Innovation (06 Hours)

IPR commercialization and licensing, Infringement and remedies, Technology transfer and industry collaboration, IPR in startups, entrepreneurship, and innovation ecosystem, Role of IPR in "Make in India" and engineering industries, Basics of patent search (Google Patents, Indian Patent Office)

Case Study: Natco Pharma Ltd. v. Bayer Corporation: IPR commercialization and compulsory licensing, Patent search on: LED technology / solar inverter / EV charging system

Unit IV - Fundamentals of Cyber Laws (06 Hours)

Introduction to cyber laws, IT Act 2000 and amendments, Digital signatures and e-governance, Types of cyber-crimes: hacking, phishing, identity theft, ransomware, Cyber laws in engineering systems (IoT, smart grids basics)

Case Study: Shreya Singhal v. Union of India: Freedom of speech vs cyber law, State of Tamil Nadu v. Suhas Katti: Cybercrime enforcement in India

Learning Resources

Text Books:

1. V.K. Ahuja, Law Relating to Intellectual Property Rights, LexisNexis.
2. P. Narayanan, Intellectual Property Law, Eastern Law House.
3. Nina Godbole & Sunit Belapure, Cyber Security: Understanding Cyber Crimes, Wiley India.
4. Deborah E. Bouchoux, Intellectual Property: The Law of Trademarks, Copyrights, Patents, Cengage Learning.

Reference Books

1. Prabhuddha Ganguli, Intellectual Property Rights: Unleashing the Knowledge Economy, McGraw Hill.
2. Richard Stim, Intellectual Property: Patents, Trademarks, and Copyrights, NOLO.
3. Kumar K, Cyber Laws: Intellectual Property & E-Commerce Security, Dominant Publishers.
4. Vakul Sharma, Information Technology Law and Practice, Universal Law Publishing.

NPTEL/Swayam Links

1. NPTEL: Intellectual Property, https://nptel.ac.in/courses/109106137
2. SWAYAM: Intellectual Property Rights, https://onlinecourses.swayam2.ac.in/
3. NPTEL: Cyber Security and Privacy, https://nptel.ac.in/courses/106106129
4. SWAYAM: Cyber Law, https://onlinecourses.swayam2.ac.in/
5. Indian Patent Office: https://ipindia.gov.in

Savitribai Phule Pune University		
Board of Studies : Business Laws		
Constitution of India		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Objectives: The course aims to:

1. Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
2. To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights.
3. To address the role and functions of local administration.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1. Understand the Principles of the Indian Constitution.
- CO2. Understand and identify the growth of the demand for civil rights in India.
- CO3. Understand the organizations of governance.
- CO4. Understand the role and functions of local administration.

Course Contents

Unit I :History of Making of the Indian Constitution (06 Hours)

History Drafting Committee, (Composition & Working), Philosophy of the Indian Constitution: Preamble, Salient Features Mapping of Course

Unit II - Contours of Constitutional Rights & Duties (06 Hours)

Fundamental Rights, Right to Equality, Right to Freedom, right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, Right to Constitutional Remedies, Directive Principles of State Policy, Fundamental Duties.

Unit III - Organs of Governance (06 Hours)

Parliament, Composition, Qualifications and Disqualifications, Powers and Functions, Executive, President, Governor, Council of Ministers, Judiciary

Unit IV - Local Administration and Election Commission (06 Hours)

District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected representative, CEO of Municipal Corporation. Pachayati raj: Introduction, PRI: Zila Pachayat. Elected officials and their roles, CEO Zila Pachayat: Position and role. Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy. Election Commission: Role and Functioning

Learning Resources

Text Books:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015.
3. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
4. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

Savitribai Phule Pune University		
Board of Studies : Business Laws		
Environmental Law		
Teaching /scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Prerequisite Courses: Foundational understanding of the environment.

Course Objectives: The course aims to:

This course introduces engineering students to the Indian environmental legal framework governing infrastructure development, construction activities, water resources, pollution control, land use, and sustainability. The course emphasizes practical legal compliance, Environmental Impact Assessment (EIA), regulatory approvals, and professional responsibilities relevant to engineering practice in India.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: Explain key environmental principles and constitutional provisions in India.
- CO2: Interpret major environmental statutes and rules affecting infrastructure projects.
- CO3: Evaluate EIA documentation and statutory clearances.
- CO4: Identify environmental compliance obligations in construction practice and Assess environmental liabilities and ethical responsibilities of engineers.

Course Contents

Unit I - Constitutional & Legal Foundations of Environmental Law (07 Hours)

Environmental protection under the Indian Constitution: Article 21 (Right to Life) , Article 48A, Article 51A(g) , Evolution of environmental jurisprudence in India , Principles of Environmental Law: Polluter Pays Principle, Precautionary Principle, Sustainable Development, Public Trust Doctrine, Role of the Supreme Court and High Courts in cases related to Environmental law, Introduction to National Green Tribunal (NGT),

Case Laws: MC Mehta cases, Vellore Citizens Welfare Forum, Oleum Gas Leak case.

Unit II - Environmental Protection Act, 1986 & Regulatory Authorities (07 Hours)

Environment (Protection) Act, 1986, Powers of Central Government , Role of: Ministry of Environment , Forest and Climate Change (MoEFCC) , Central Pollution Control Board (CPCB) , State Pollution Control Board (SPCBs), Environmental standards and notifications, National Green Tribunal Act, 2010, Regulatory approvals for highways, dams, urban infrastructure.

Unit III - Environmental Impact Assessment (EIA) & Water Laws, (08 Hours)

EIA Notification 2006 (latest amendments), Categorization: Category A & B projects, Screening, scoping, public consultation, Environmental Clearance (EC) process, Environmental Management Plan (EMP), Coastal Regulation Zone (CRZ) Notification, Compliance reporting and monitoring, Review of EIA for a highway, metro, dam project. Water (Prevention and Control of Pollution) Act,

1974, Water Cess (abolished but historical context), Consent to Establish (CTE) & Consent to Operate (CTO), Effluent discharge standards, Groundwater regulation (CGWA guidelines), Wetlands Rules, Engineering Application: STP and WTP compliance, Effluent standards for construction projects ,

Unit IV - Air, Noise & Construction Regulation (08 Hours)

Air (Prevention and Control of Pollution) Act, 1981, Noise Pollution (Regulation and Control) Rules, Construction and Demolition (C&D) Waste Management Rules, 2016, Emission norms for construction equipment, Dust control regulations (GRAP in NCR), Solid Waste Management Rules, 2016 , Plastic Waste Management Rules, Hazardous and Other Wastes Rules, E-waste Management Rules (overview), Biomedical Waste (overview for hospital projects), Civil and criminal liability under environmental laws, Corporate Environmental Responsibility (CER), Professional ethics for engineers, Case Study: Bhopal Gas Tragedy (legal consequences and lessons)

Learning Resources

Text Books:

1. Shyam Divan & Armin Rosencranz – Environmental Law and Policy in India
2. P. Leelakrishnan – Environmental Law in India
3. Bare Acts: Environment (Protection) Act, 1986 , Water Act, 1974 , Air Act, 1981, NGT Act, 2010
4. EIA Notification 2006 (latest amendment)
5. CRZ Notification (latest version)
6. CPCB/SPCB Guidelines
7. MoEFCC Office Memoranda
8. National Building Code (environmental provisions)

Savitribai Phule Pune University		
Board of Studies : Business Laws		
Construction Law and Contracts		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Prerequisite Courses, if any :

1. Set theory fundamentals

Course Objectives: The course aims to:

1. Understand the legal framework governing construction projects.
2. Interpret construction contracts and contractual obligations.
3. Analyze rights, duties, liabilities, and remedies of contracting parties.
4. Understand dispute resolution mechanisms in construction.
5. Apply legal principles to practical construction scenarios.
6. Develop awareness of professional ethics and regulatory compliance.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: Explain the basic concepts of construction law, contract formation, and legal obligations in construction projects and Interpret different types of construction contracts, tendering procedures.
- CO2: Apply principles of contract administration, risk allocation, and documentation in construction practice.
- CO3: Analyze construction claims, delays, liabilities, and dispute resolution methods including arbitration and mediation.
- CO4: Evaluate regulatory requirements, professional ethics, and modern developments such as FIDIC contracts and digital construction practice.

Course Contents

Unit I - Introduction to Construction Law and Construction Contract Principles (07 Hours)

Nature and scope of construction law, Sources of construction law, Essentials of a valid contract, Offer, acceptance, consideration, and consent, Rights and obligations of contracting parties, Breach of contract and legal remedies. Types of construction contracts: Lump sum, Item rate, Cost-plus, EPC and Design-Build contracts, Standard contract forms and contract documents, Tendering and bidding procedures.

Unit II - Contract Administration and Risk Management (07 Hours)

Contract administration procedures, Variations and change orders, Time extension and delay management, Payment procedures and certifications, Performance guarantees, insurance, and bonds, Risk allocation and documentation practices.

Unit III Construction Claims and Dispute Resolution -(08 Hours)

Construction claims and liabilities, Delay and disruption claims, Liquidated damages and termination, Dispute prevention techniques, Negotiation, mediation, conciliation, arbitration, and litigation.

Unit IV - Regulatory Framework, Ethics, and Emerging Trends (08 Hours)

Building regulations and statutory compliance, Environmental and labor laws in construction, Health and safety regulations, Professional ethics and negligence, introduction to FIDIC contracts and international construction law, Digital construction, BIM and smart contracts.

Learning Resources

Text Books:

1. Construction Contract Law, Julian Bailey, Informa Law / Routledge Publication
2. Construction Law, Julian Bailey, CRC Press Publication.
3. Engineering and Construction Contracts Management, Joseph T. Bockrath, McGraw-Hill Education.
4. Construction Contracts, Jimmie Hinze, McGraw-Hill, FIDIC Contracts: Law and Practice, Nael G. Bunni, Wiley-Blackwell Publication.

Standards and Professional References:

1. FIDIC, Standard Conditions of Contract
2. American Institute of Architects, Standard Construction Contract Documents
3. International Chamber of Commerce, Arbitration Rules and Guidelines
4. National Building Code (NBC), Bureau of Indian Standards (BIS)
5. Indian Contract Act, 1872, Government of India
6. Arbitration and Conciliation Act, 1996, Government of India.

Savitribai Phule Pune University		
Board of Studies : Business Administration		
Human Resource Management		
Teaching /scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Prerequisite Courses : Foundational understanding of Accounts.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: DEFINE the role of Human Resource Functions in an Organization & UNDERSTAND the emerging trends and practices in HRM.
- CO2: UTILIZE the different methods of HRM in an organization & EXAMINE the use of different HRM Practices in an organization
- CO3: ASSESS the outcome of different HRM functions in an organization
- CO4: DESIGN the HR manual and compensation policy of the organization

Course Contents

Unit I - Human Resource Management & Planning (07 Hours)

Human Resource Management : Concept and Challenges - Introduction, Objectives, Scope, Features of HRM, Role of HRM, Importance of HRM, Policies and Practices of HRM, Functions of HRM, Challenges of HRM.

Human Resource Planning: Definition, Objectives, Need and Importance, HRP Process, Barriers to HRP. Job Analysis Process – Contents of Job Description & Job Specification, Job design, Factors affecting Job design, Job enrichment Vs job enlargement.

Unit II - Recruitment and Retention (07 Hours)

Recruitment Introduction, Sources of Recruitment, Difference between recruitment and selection. Applying IKS principles to recruitment, Process- Recruitment and Selection, concept- Induction and Orientation. Career Planning-Process of career planning, Succession Planning- Process of succession planning, Transfer and Promotion. Retention of Employees: Importance of retention, strategies of retention.

Unit III - Managing Employee Performance and Training (08 Hours)

Performance Appraisal & Performance Management – Definition, Objectives, Importance, Applying IKS principles to Performance and rewards, Appraisal Process and Appraisal Methods.

Training and Development - Definition – Scope, Role of Training in an Organizations, Objectives, Applying IKS principles to Training, Training and Development Process, Training Need Assessment, Types of training, Difference between training and development, E-Learning. Benefits of training, Evaluation of Training Effectiveness: Kirkpatrick model.

Unit IV - Compensation Management (08 Hours)

Concept, Objectives, Importance of Compensation Management, Process, Current Trends in Compensation. Components of salary. Incentives and Benefits – Financial & Nonfinancial Incentive, Fringe Benefits. Employees Separation - Retirement, Termination, VRS, Suspension. Concept- Grievance and grievance redressal procedure.

Learning Resources

Text Books:

1. Human Resource Management, Dr. S.S. Khanka, Sultan Chanda, Delhi.
2. Human Resource Management, Deepak Bhattacharya, Sage Publishing Ltd.
3. Human Resource Management, Arun Monppa, Tata McGraw Hill Publishing Company
4. Human Resource Management, Mirza & Zaiyaddin
5. Human Resource Management, Dr. P. C. Pardeshi, Niramli Publication

Savitribai Phule Pune University		
Board of Studies : Business Administration		
Business Administration		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: Understand business concepts, economic systems, and the business environment.
- CO2: Analyze business ethics and the role of socio-cultural, technological, and ecological factors in business.
- CO3: Explain LPG reforms and evaluate their impact on business and multinational corporations.
- CO4: Identify entrepreneurial opportunities, innovation, and the importance of SMEs.
- CO5: Demonstrate understanding of franchising, outsourcing, e-banking, e-commerce, and customer management systems.

Course Contents

Unit I - Scope & Objectives of Business (07 Hours)

Introduction, what is Business? Evolution of Business, Different business activities, understanding Business, and Emerging markets, Business and Economy, Micro and Macroeconomics, Different types of economic systems, Indian economy and Business today, Dynamics of Business environment, Economic, Political, legal

Unit II - Business Ethics and LPG Models (07 Hours)

Business Ethics and Ethical Behavior, Relationship between Business and society, and Technological, Socio cultural and Ecological Environment

Globalization, definition, Features, Liberalization: Concepts and features, Impact. Privatization: Concepts and features, Benefits, Criticism, Multinational corporation: Definition and Types and features

Unit III - Entrepreneurship & SBM (08 Hours)

Entrepreneurship and Innovation, Process of Innovation and Types, Entrepreneurial opportunities and Challenges, Small Businesses in India and; Importance of SME's and its advantages

Unit IV - Franchising , Outsourcing & E-Banking Services (08 Hours)

Franchising: Types, Challenges. Network Marketing, Practical session ; Outsourcing: BPO's and KPO's, E- Commerce and E- Business, Financial Institution: Systems and Types, Banks ,Types of Business and EBanking, Customer & Marketing and Customer Management

Learning Resources

Text Books:

1. Vijay Kumar Kaul(2011) Business Organization and Management By: (Pearson's Publications)
2. Karen Collins "Exploring Business."
3. Brown & Clow "Introduction to Business"

Savitribai Phule Pune University		
Board of Studies in Statistics and Computer Applications		
Statistics and Computer Applications		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: Apply statistical methods for research data collection, classification, representation, and interpretation using frequency distribution, bar diagrams, and pie charts.
- CO2: Analyze research data using measures of central tendency and dispersion, and interpret statistical parameters such as mean, median, mode, and standard deviation.
- CO3: Use of computer applications and software tools for research data processing and analysis.
- CO4: Demonstrate understanding of ICT applications, mixed methods research, and future opportunities in research methodology.

Course Contents

Unit I -Statistics in Research and Data Representation (07 Hours)

Use of Statistics in Research, Data Types and Data Classification, Frequency Distribution ,Bar Diagram and Pie Chart, Applications and Numerical.

Unit II - Measures of Central Tendency and Dispersion in Statistical Analysis (07 Hours)

Measures of Central Tendency, Mean, Median, Mode, Standard Deviation, Correlation, Pearson and Spearman Correlation Coefficient, Chi Square Test.

Unit III - Computer Applications in Research Methodology (08 Hours)

Computer Application, Brief History of Computers, Types, Generations, Application of Software Techniques in Data Classification and Analysis, e-Methods.

Unit IV - Research Scope, ICT, and Future Opportunities (08 Hours)

Scope and Significance, ICT Applications, Mixed Methods, Manifesto of Social Research (Blaikie), Further Studies and Opportunities.

Learning Resources

Text Books:

1. Amir B. Marvasti (2004) Qualitative Research in Sociology: An Introduction, Sage Publications (London, Thousand Oaks, New Delhi)
2. Bridget Somekh and Cathy Lewin (Editors) (2005) Research Methods in the Social Sciences, Sage Publications (London, Thousand Oaks, New Delhi)

3. Partha Nath Mukherji (Editor) (2000) Methodology in Social Research: Dilemmas and Perspectives, Sage Publication (New Delhi) Ram Ahuja (2018) Research Methods, Rawat Publications (Jaipur/ New Delhi)

4. Jose E Lopez and Garry Potter (Editors) (2001) After Postmodernism: An Introduction to Critical Realism, The Athlone Press (London & New York)

5. N. K. Denzin, & Y. S. Lincoln (2018) The SAGE Handbook of Qualitative Research, Sage Publications

6. S. Okasha (2016). Philosophy of Science. Oxford University Press

Savitribai Phule Pune University		
Board of Studies in Statistics and Computer Applications		
Digital Personal Data Protection		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Objectives: The course aims to:

1. To understand the fundamentals of digital personal data and privacy principles.
2. To study the provisions of India's Digital Personal Data Protection Act (DPDP Act), 2023.
3. To understand responsibilities of organizations and rights of individuals regarding personal data.
4. To explore privacy-preserving technologies, cybersecurity practices, and compliance mechanisms.
5. To analyze real-world data protection issues in emerging technologies such as AI, IoT, cloud, and social media.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1: Explain concepts of digital privacy, personal data, and data protection principles.
- CO2: Interpret provisions of the DPDP Act 2023 and related cyber laws.
- CO3: Identify security and privacy risks in digital systems and applications.
- CO4: Apply privacy-by-design principles and data protection practices in engineering solutions.
- CO5: Analyze ethical and legal implications of data processing in modern technologies.

Course Contents

Unit I - Fundamentals of Digital Personal Data Protection (07 Hours)

Introduction to Data Privacy and Data Protection, Evolution of Privacy Laws in India and Worldwide, Need for Digital Personal Data Protection, Concepts, Privacy Principles, Overview of Right to Privacy, Cybersecurity and Privacy Relationship

Introduction to Global Frameworks:GDPR, OECD Privacy Principles, Indian IT Act and SPDI Rules

Case Study: discussion on social media data misuse and privacy breaches

Unit II - Digital Personal Data Protection Act (DPDP Act), 2023 (07 Hours)

ntroduction to India's DPDP Act 2023, Scope and Applicability of the Act, Important Definitions: Data Principal, Data Fiduciary, Data Processor, Consent Manager

Rights of Data Principals: Right to Access, Right to Correction and Erasure, Right to Grievance Redressal, Right to Withdraw Consent

Duties and Obligations of Data Fiduciaries, Children's Data Protection, Cross-Border Data Transfer, Data Breach Reporting and Penalties

Case Study: Preparation of privacy notices and consent forms for a sample mobile application.

Unit III - Privacy Engineering and Security Practices(08 Hours)

Privacy by Design, Security Safeguards for Personal Data, Data Encryption and Hashing, Authentication and Access Control, Secure Data Storage and Backup
Privacy Issues in: IoT Systems, AI/ML Applications, Social Media Platforms, E-commerce Systems

Case study: designing a secure and privacy-aware web/mobile application.

Unit IV - Ethical, Legal and Industrial Perspectives (08 Hours)

Ethical Issues in Data Collection and Surveillance, Digital Ethics and Responsible Data Usage, Privacy Challenges in Big Data Analytics, AI Ethics and Algorithmic Bias, Compliance Frameworks and Audits Organizational Data Governance Policies

Case Studies: Aadhaar, Social Media Privacy Incidents, Data Leaks and Ransomware Cases

Learning Resources

Text Books:

1. Data Privacy: Foundations, New Developments and the Big Data Challenge – Vicente Matellan, Springer.
2. Privacy in the Age of Big Data – Theresa Payton and Ted Claypoole.
3. Information Privacy Engineering and Privacy by Design – William Stallings.
4. Cyber Security and Privacy – Debabrata Samanta, CRC Press.
5. Digital Personal Data Protection Act, 2023 – Government of India Publication.

Reference Books:

1. Guide to the GDPR – Alan Calder.
2. Privacy and Data Protection Issues of Biometric Applications – Els Kindt.
3. Data Protection and Privacy – Ronald Leenes et al., Hart Publishing.
4. Cyber Laws and Information Technology – Talat Fatima.
5. Security, Privacy and Trust in Modern Data Management – Milan Petkovic.
6. The Digital Person – Daniel Solove.
7. Privacy Law Fundamentals – International Association of Privacy Professionals (IAPP).

Savitribai Phule Pune University		
Board of Studies in Banking, Insurance and Finance		
Agri Business Finance and Banking Operations		
Teaching Scheme	**Credits**	**Examination Scheme**
Theory : 02 Hours/Week	02	**CCE** : 15 Marks **End-Semester:** 35 Marks

Course Objectives: The course aims to:

1. To provide fundamental knowledge of agricultural banking and finance systems.
2. To familiarize students with various institutional and non-institutional sources of agricultural finance.
3. To develop understanding of risk, insurance, and financial planning in agribusiness.
4. To introduce financial management principles applicable to agricultural enterprises.
5. To expose students to digital banking tools and agri-fintech applications.

Course Outcomes: Upon successful completion of this course, students will be able to:

- CO1. Explain the concepts and importance of agricultural finance and banking systems.
- CO2. Identify and evaluate different sources of agricultural credit and schemes.
- CO3. Analyze risks in agribusiness and suggest suitable mitigation strategies.
- CO4. Apply financial management techniques in agricultural enterprises.
- CO5. Utilize digital banking tools and agri-fintech platforms effectively.

Course Contents

Unit I : Fundamentals of Agricultural Finance & Banking Systems (06 Hours)

Agricultural Finance: Meaning, definition, nature, scope, Need for and importance of agricultural finance, Types of agricultural finance, Overview of banking systems, Role of banking in modern agriculture

Case Study: Role of State Bank of India in Agricultural Lending, Green Banking Initiative in Punjab National Bank

Unit II - Institutional Sources of Agricultural Finance (06 Hours)

RRBs: origin, objectives, features, NABARD: functions, SHGs and JLGs, Scale of finance and securities, KCC and DIR schemes, NPAs and SARFAESI Act

Case study: NABARD and SHG-Bank Linkage Programme, Kisan Credit Card (KCC) Implementation

Unit III - Risk Management & Insurance in Agribusiness (06 Hours)

Types of risks in agriculture, Risk mitigation strategies, Agricultural insurance, Crop insurance schemes (CCIS, NAIS, UPIS), PM Fasal Bima Yojana

Case Study: Pradhan Mantri Fasal Bima Yojana, Weather-Based Crop Insurance in Rajasthan

Unit IV - Financial Management in Agribusiness (06 Hours)

Financial management concepts, Financial planning, Working capital, Cost-benefit analysis, Role of RBI, IRDAI, SEBI

Digital Banking: Digital payments (NEFT, RTGS, IMPS, UPI), Mobile apps for farmers, Government portals

Case study: Amul Dairy Cooperative Model, Cost-Benefit Analysis of Drip Irrigation in Maharashtra

Learning Resources

Text Books:

1. Bedi, J. (2018). Agricultural Finance in India: Issues and Challenges. New Delhi: Galaxy Publishing House.
2. Sethi, Binodini., Rout, R.K., & Das, S. (2021). Financial Management in Agribusiness. New Delhi: AkiNik Publications.
3. Verma, P.K., & Banafar, K.N.S. (2017). Agri-Business and Finance Management. New Delhi: Narendra Publishing House.
4. Meena, G.L., Burark, S.S., Pant, D.C., & Sharma, R. (2015). Fundamentals of Agribusiness Management. Udaipur: Agrotech Publishing Academy.

Reference Books

1. Reddy S S, Agricultural Finance and Management, Oxford and IBH Publication, Delhi.
2. Dr. Binodini Sethi, Dr. Rajendra Kumar Rout & Dr. Simly Das, Financial Management in Agri-Business, New Delhi (AkiNik Publications), Delhi
3. John B, Introduction to Agricultural Economics, Pearson India, Delhi
4. Pandey, Financial Management, Vikas Publications, New Delhi
5. Sharma Anil, Kisan Credit Card Scheme: Impact, Weakness and Further Reforms, National Council of Applied Economics Research, New Delhi

NPTEL

1. Indian Agricultural Development Institutional development in agriculture: cooperatives, institutional finance, storage/marketing, agrarian resources, agriculture development and structure in India.
    - https://onlinecourses.swayam2.ac.in/e-learning/preview/nou25_ag09
2. Agricultural Economics - Covers economics of agriculture: resource allocation (land, labour, capital, technology), farm-production economics, risk/uncertainty in agriculture, agricultural finance, price, policy, markets.

- https://onlinecourses.swayam2.ac.in/e-learning/preview/nou25_hs28

3. General / Foundational Agricultural Finance & Banking https://youtu.be/D5_0H08r7N8
4. Rural Banking, Institutional Financing & Modern Agri-finance (including Fintech / Agri-banking) https://youtu.be/RnwUBKZW4Y0