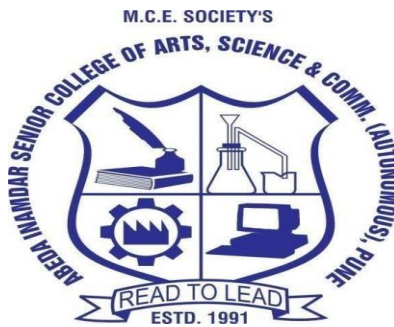


M. C. E. Society's

**Abeda Inamdar Senior College Of Arts, Science
and Commerce (Autonomous), Pune-1**

Affiliated to Savitribai Phule Pune University

NAAC accredited 'A' Grade



Faculty of Commerce & Management

**Bachelor of Business Administration
(Computer Application)**

B.B.A (C.A)

3 Years U.G. Program

(NEP 2023)

**Applicable for the Autonomous
College Affiliated to**

**Savitribai Phule Pune University
With effect from June 2025**

Semester VI					
Course Type	Course Code	Course Name	Credits		Total
			Theory	Practical	
Major/Core Theory	23CBCA61MM	Advance Java	2	-	2
Major/Core Theory	23CBCA62MM	Android Programming	2	-	2
Major/Core Theory	23CBCA63MM	Introduction to Network Security	2	-	2
Major/Core Practical	23CBCA64MM	Lab I- Practical on Advance Java	-	2	2
Major/Core Practical	23CBCA65MM	Lab I- Practical on Android Programming	-	2	2
Major/Core Elective Theory	23CBCA61MEA 23CBCA61MEB	Introduction to Artificial Intelligence OR Fundamentals of Block Chain	2	-	2
Major/Core Elective Theory	23CBCA62MEA 23CBCA62MEB	Software Project Management OR Entrepreneurship Development	2	-	2
Minor Theory	23CBCA61MNA 23CBCA61MNB	Web Analytics OR Predictive Analytics	2	-	2
Minor Practical	23CBCA62MNA 23CBCA62MNB	Lab IV- Practical on Web Analytics OR Lab IV- Practical on Predictive Analytics	-	2	2
On Job Training(OJT)	23CBCA61OJ	On Job Training(OJT)	-	4	4
			12	10	22

Semester 6



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T.Y.B.B.A (C.A) VI- Advance Java
2025-26 (CBCS – Autonomy 2023 Pattern)
Under NEP 2020

Course Title : Advance Java	Semester : VI
Course Code : 23BCA61MM	No. of Credits : 02
Nature of Course : Major	Total Teaching Hours : 30 Hrs

Course Objectives	
1.	To know the concept of Java Programming.
2.	To understand how to use programming in day to day applications.
3.	To develop programming logic.
4.	It aims to train the student to the Advance concepts of the Object oriented programming language.
5.	To understand how to reduce programming effort
6.	To know the concept of Java Programming.

Course Outcome	
1.	Students will know the concepts of JDBC Programming.
2.	Students will know the concepts of Multithreading and Socket Programming.
3.	Students will develop the Web based Application.
4.	Develop and test Java network, search engine, and web framework programs.
5.	Learn how to write, test, and debug advanced-level Object-Oriented programs using Java.

	3. Life cycle of servlet 4. Session Tracking. 5. Servlet with database. JSP 1. Introduction to JSP. 2. JSP Life Cycle. 3. Components of JSP. 4. JSP with Database.	4
		4

Suggested Readings	
1.	Kathy Sierra & Bert Bates ,”Advanced Java Books in 2021”, 2nd Edition.
2.	Bryan Basham, Kathy Sierra, Bert Bates,”Head First Servlets and JSP
3.	Ken Arnold , James Gosling, David Holmes,“The Java Programming Language”,4 th Edition
4.	Benjamin Evans, David Flanagan,“Java in a Nutshell”, 7 th Edition. Joshua Bloch ,“Effective Java”,3 rd Edition

Website Reference Link:

- <https://www.javatpoint.com/what-is-advance-java>
- <https://www.learnvern.com/course/advanced-java-tutorial>
- <https://enos.itcollege.ee/~jpoial/allalaadimised/reading/Advanced-java.pdf>



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T.Y.B.B.A (C.A) VI- Android Programming

2025-26 (CBCS – Autonomy 2023 Pattern)

Under NEP 2020

Course Title : Android Programming	Semester : VI
Course Code : 23CBCA62MM	No. of Credits : 02
Nature of Course : Major	Total Teaching Hours : 30 Hrs

Course Objectives	
1.	To understand the core concepts of Android application development.
2.	To understand Android user interface (UI) design and development principles.
3.	To develop android Application.

Course Outcome	
1.	Students will learn the fundamentals of Android application development
2.	Students will gain an understanding of the components that make up an Android application.
3.	Students will be able to design and implement user interfaces in Android applications by utilizing a variety of views and UI components
4.	Students will learn how to develop mobile applications that store and manage data using SQLite databases.

Syllabus		
Unit I	Introduction to Android Development	04 hours
	1.Introduction of Android 1.1 What is android? 1.2 Features of Android 1.3 Android Architecture	2

	1.4 Basic Building Blocks 2. Setting up the environment. 3.creating first hello world program	1 1
Unit II	Activity , Intent and Layout	08 hours
	1. Introduction to Activity 2. Activity Life Cycle 3.Intent and Types of Intent 3.1 Implicit Intent 3.2 Explicit Intent 4. Layout and its Types 4.1 Linear Layout 4.2 Relative Layout 4.3 Table Layout 4.4 Grid Layout 4.5 Constraint Layout 4.6 Frame Layout	1 1 1 1 4
Unit III	User Interface and Design Elements	08 hours
	1. Button (Push button, CheckBox, RadioButton, ImageButton) 2. Text View / Plain Text 3. Spinner and Toast 4.View (List View, scroll view, ProgressBar View) 5. Dialog Box 5.1 Alert Dialog 5.2 DatePicker Dialog 5.3 TimePicker Dialog	2 1 1 1 1 2
Unit IV	Menus and Fragments	05 hours
	1. Menus 1.1 Option Menu 1.2 Context Menu 1.3 Popup Menu 2. Internal Fragmentation 3. External Fragmentation	3 1 1
Unit V	Content Providers	05 hours
	1. Content Provider 2. SQLite Programming 3. SQLiteOpen Helper 4.SQLite Database	1 1 1 2

Suggested Readings	
1.	John Horton,Android Programming for Beginners, 3rd Edition
2.	Android Programming: The Big Nerd Ranch Guide” by Bill Phillips, Chris Stewart, and Kristin Marsicano
3.	Prof.Kamil Khan (Author),”Android Programming ,1 st Edition 2021, Nirali Publication.

Website Reference Link:

<https://www.geeksforgeeks.org/top-programming-languages-for-android-app-development>

<https://www.javatpoint.com/android-intent-tutorial>

https://www.tutorialspoint.com/android/android_ui_design.html

<https://www.javatpoint.com/android-notification>

<https://developer.android.com/training/data-storage/sqlite>



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T.Y.B.B.A (C.A) VI- Introduction to Network Security
2025-26 (CBCS – Autonomy 2023 Pattern)
Under NEP 2020

Course Title : Introduction to Network Security	Semester : VI
Course Code : 23CBCA63MM	No. of Credits : 02
Nature of Course : Major	Total Teaching Hours : 30 Hrs

Course Objectives	
1.	Understand basic computer networking concepts
2.	Identify common network security threats and their impact
3.	Learn about basic cryptographic and authentication methods

Course Outcome	
1.	Explain the fundamental concepts of computer networks, including network types, devices, and protocols
2.	Identify common network security threats, attacks, and vulnerabilities in both wired and wireless networks.
3.	Describe the principles and techniques of cryptography and authentication used in securing networks.

Syllabus		
Unit I	Basics of Networking	04 Hours
	1. Fundamentals of Networking Definition Benefits of networking	1
	2. Types of Networks LAN (Local Area Network)	1

	MAN (Metropolitan Area Network) WAN (Wide Area Network) PAN (Personal Area Network) 3. Network Components and Devices Routers, switches, hubs, modems, access points Servers and clients 4. Network Topologies Bus, Star, Ring, Mesh, Hybrid	1 1
Unit II	Network Model	06 Hours
	1. Network Models Overview 2. OSI Reference model 3. TCP/IP Reference model Comparison of OSI and TCP/IP Models 4. Introduction to IP Addressing IPv4 vs. IPv6	1 1 2 2
Unit III	Introduction to Computer Security	04 Hours
	1. Introduction 2. Need for security 3. Goals: Confidentiality, Integrity, Availability (CIA) 4. Security threats and attacks 5. Types of attackers (hackers, insiders, nation-states)	1 1 1 1
Unit IV	Cryptography	06 Hours
	1. Introduction 2. Plain Text and Cipher text 3. Encryption and Decryption 4. Substitution Techniques 5. Transposition Techniques 6. Symmetric vs. Asymmetric encryption 7. Steganography	1 2 2 1
Unit V	Symmetric and Asymmetric key Algorithm	05 Hours
	1. Symmetric Key Algorithm Types and Modes Overview of Symmetric key Cryptography Data Encryption Standard(DES) Diffie-Helman Key Exchange Algorithm 2. Asymmetric Key Algorithm Overview of asymmetric key cryptography RSA Algorithm	3

	3. Comparison of Symmetric and Asymmetric Key Cryptography	2
Unit VI	Network Security Firewalls and Virtual Private Networks	05 Hours
	1. Brief Introduction of Firewalls, IP Security, Virtual Private Network(VPN)	2
	2. Intrusion	
	3. User Authentication	3
	Authentication Basics	
	Passwords Authentication	
	Authentication Tokens	
	Biometric Authentication	
	Image-Base Authentication	

Suggested Readings	
1.	“Introduction to Network Security” Matt Bishop, Pearson Education
2.	“Network Security Essentials: Applications and Standards” , William Stallings, Six Edition
3.	Introduction to Computer Security , Michael Goodrich, Roberto Tamassia Pearson New International Edition

Website Links:

<https://www.geeksforgeeks.org/computer-networks/basics-computer-networking/>

<https://www.geeksforgeeks.org/computer-networks/open-systems-interconnection-model-osi/>

<https://www.fortinet.com/resources/cyberglossary/tcp-ip>

<https://www.simplilearn.com/what-is-computer-security-article>

<https://www.geeksforgeeks.org/computer-networks/cryptography-and-its-types/>

<https://www.geeksforgeeks.org/computer-networks/how-does-symmetric-and-asymmetric-key-cryptography-works-together/>

<https://www.eccu.edu/blog/cybersecurity/network-security-firewalls-vpns/>



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T.Y.B.B.A (C.A) VI- Practical on Advance Java
2025-26 (CBCS – Autonomy 2023 Pattern)
Under NEP 2020

Course Title : Practical on Advance Java	Semester : VI
Course Code : 23CBCA64MM	No. of Credits : 02
Nature of Course : Major Practical	Total Teaching Hours : 60 Hrs

Objectives of the Course

Sr. No.	Objectives
1.	To study various collection Framework Interface, Navigation classes
2.	To learn briefly the concept of Multithreading and Networking
3.	To understand Servlet and JSP concept.

Expected Course Specific Learning Outcomes

Sr. No.	Learning Outcome
1.	Explain use of appropriate Interface, classes and navigation
2.	Write programs using Multithreading and socket programming
3.	Students are able to make database connectivity using JDBC
4.	Develop web based application using Servlet and JSP

Best IDE used for Advanced Java:

Sr. No	Name of IDE or Tools	Latest Version
1.	Eclipse	4.3.2
2.	Microsoft Visual Studio Code	1.56
3.	Net Beans	12.4
4.	Notepad	-

Assignment No	Assignment Name	No. of Sessions
1	Assignment based on Collection Framework Interfaces, navigation and classes	1
2	Assignment based on Multithreading	3
3	Assignment based on JDBC	4
4	Assignment based on Server and Client Socket	3
5	Assignment based on Servlet and JSP	4
	Total Number of Sessions	15



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2025-26 (CBCS – Autonomy 2023 Pattern)
Under NEP 2020

Course Title : Practical on Android Programming	Semester : VI
Course Code : 23BCA65MM	No. of Credits : 02
Nature of Course : Major	Total Teaching Hours :60 Hrs.

Aims & Objectives of the Course

Sr.No.	Objectives
1.	To understand Android Architecture
2.	Create user-friendly interfaces using Android's UI components.
3.	Learn how Android apps interact with web services, APIs, and external databases.

Expected Course Specific Learning Outcomes

Sr.No.	Learning Outcome
1.	Students will be able to understand and implement Android Activities.
2.	Students will be able to design and implement Android user interfaces.
3.	Students will gain the ability to handle background tasks and alarms.
4.	Students will be able to work with data in Android, using Content Provider and SQLite database.

Best IDE used for Android programming:

Sr. No	Name of IDE or Tools	Latest Version
1.	Microsoft Visual Studio Code 1.59	Microsoft Visual Studio Code 1.59
2.	Eclipse IDE (with Android plugin)	2023-12
3.	Android Studio	Arctic Fox (2020.3.1)

Assignment No	Assignment Name	No. Of Sessions
1	Assignment on Activities and Intents	4
2	Assignment on Android UI Components	5
3	Assignment on Menus and Fragments	3
4	Assignment on SQLite Database	3
	Total Number of Sessions	15



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T.Y.B.B.A (C.A) VI - Introduction to Artificial Intelligence
2025-26 (CBCS – Autonomy 2023 Pattern)
Under NEP 2020

Course Title: Introduction to Artificial Intelligence	Semester: VI
Course Code: 23CBCA61MEA	No. of Credits: 2 Credits
Nature Of Course: Major/Core Elective Theory	Total Teaching Hours :30 Hrs.

Objectives of the Course

Sr. No.	Objectives
1.	Introduce fundamental AI concepts and technologies.
2.	Explain AI's role and applications in business and commerce.
3.	Develop understanding of AI tools for data-driven decision-making.
4.	Highlight ethical, social, and economic impacts of AI in business.
5.	Introduce fundamental AI concepts and technologies.

Expected Course Specific Learning Outcomes

Sr. No.	Learning Outcome
1.	Understand AI basics, types, and its role in business.
2.	Explain machine learning concepts and their business uses.
3.	Use AI tools for data analysis
4.	Recognize ethical and social issues of AI in commerce.

Syllabus

Unit No	Title with Contents	No. of Lectures
Unit I	Introduction to Artificial Intelligence	07 Hours
	1. Understanding how AI mimics human intelligence 2. Types of AI - Narrow (Weak) AI and General (Strong) AI 3. Early concepts of artificial intelligence 4. Benefits and challenges of adopting AI in business environment	2 2 1 2
Unit II	Basics of Machine Learning	08 Hours
	1. Machine Learning- Supervised, Unsupervised & Reinforcement learning 2. Features, labels, training data, testing data, model performance. 3. Learning Models – Concept of models, training, prediction, and generalization.	3 3 2
Unit III	AI in Business Applications	07 Hours
	1. Automation and Robotics Process Automation (RPA). 2. AI in Marketing- Personalization, targeted advertising, customer behaviour analysis. 3. AI in Finance- Fraud detection, algorithmic trading, credit scoring. 4. AI in Supply Chain and Inventory Management 5. Exploring tools like Power BI, Tableau, and Google Analytics	2 1 1 1 2
Unit IV	Ethics, Privacy, and Social Impact of AI	08 Hours
	1. Ethical Considerations: Bias in AI algorithms, fairness, transparency. 2. Data Privacy Issues: How businesses handle personal data, GDPR, and privacy concerns. 3. Social Impact of AI- Job displacement, AI in developing countries, future implications. Case Study: retail store, a college admission portal , an E-commerce support center (any one from this)	2 2 2 2

Book References:

1. "Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig, and
2. "Life 3.0: Being Human in the Age of Artificial Intelligence" by Max Tegmark
3. "Deep Learning" by Ian Goodfellow, Yoshua Bengio, and Aaron Courville

Website Reference Link:

- <https://www.kaggle.com/learn>
- <https://ai.google/education/>
- <https://learn.microsoft.com/en-us/training/paths/build-machine-learning-models/>
- <https://ocw.mit.edu/>



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T.Y.B.B.A (C.A) VI - Fundamentals of Block Chain

2025-26 (CBCS – Autonomy 2023 Pattern)

Under NEP 2020

Course Title: Fundamentals of Block Chain	Semester: VI
Course Code: 23BCA61MEB	No. of Credits: 2 Credits
Nature Of Course: Major/Core Elective Theory	Total Teaching Hours :30 Hrs.

Objectives of the Course

Sr. No.	Objectives
1	Understand the fundamentals of blockchain technology.
2	Explore different types and structures of blockchain.
3	Apply cryptographic techniques in blockchain.
4	Develop and deploy smart contracts.
5	Understand real-world applications and challenges of blockchain.

Expected Course Specific Learning Outcomes

Sr. No.	Learning Outcome
1	Understand the core concepts of blockchain.
2	Explain and apply cryptographic principles.
3	Develop smart contracts using Solidity.
4	Analyze various consensus mechanisms.
5	Explore real-world blockchain applications and challenges.

Syllabus

Unit No	Title with Contents	No. of Lectures
Unit I	Introduction to Blockchain	07 Hours
	1. Introduction to Blockchain, Definition and Characteristics, History,	1
	2. Layered Architecture of Blockchain	1
	3. Types (Public, Private, Consortium),	1
	4. Advantages and Limitations,	1
	5. Traditional vs Blockchain Systems	
	6. Components of Blockchain	1
	7. Cryptocurrency ,	1
	8. Digital Currency Bitcoin and Ethereum	1
	9. Blockchain Use Cases	1
	10. How Block chain works	

Unit II	Cryptography and Hash Functions	06 Hours
	1. Basics of Cryptography, 2. Public/Private Keys, 3. SHA-256, 4. Immutable Ledger 5. Distributed P2P Network 6. How Mining Works ?(The Nonce and Cryptographic Puzzle) 7. Digital Signatures, 8. Merkle Trees	1 1 1 1 1 1 1
Unit III	Block Chain Structure and Consensus	05 Hours
	1. Blocks and Transactions, 2. Consensus Mechanisms 3. Byzantine Fault Tolerance 4. Mining, Consensus Mechanisms (PoW, PoS), 5. Nodes and Network 6. Block Chain Demo	1 1 1 1 1 1
Unit IV	Smart Contracts and Ethereum	07 Hours
	1. Smart Contracts, Solidity Basics, 2. Ethereum Architecture, 3. Ethereum Virtual Machine 4. Gas and Transactions, 5. Deploying Contracts 6. Hard and Soft Forks 7. Initial Coin Offerings 8. Demo od Smart Contracts	1 1 1 1 1 1 1
Unit V	Applications and Future Trends	05 Hours
	1. Applications in Supply Chain, 2. Healthcare 3. Finance 4. NFTs and Web 3.0 5. Blockchain Challenges 6. Regulatory Landscape	1 1 1 1 1 1

Suggested Readings	
1.	"Blockchain Basics" by Daniel Drescher
2.	Mastering Blockchain" by Imran Bashir
3.	"Blockchain Revolution" by Don and Alex Tapscott

Website Reference Link:

- <https://www.ibm.com/topics/blockchain>
- <https://www.kaggle.com/code/parulpandey/Ethereum/notebook>
- <https://www.geeksforgeeks.org/software-engineering/blockchain/>



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T.Y.B.B.A (C.A) VI- Software Project Management

2025-26 (CBCS – Autonomy 2023 Pattern)

Under NEP 2020

Course Title : Software Project Management	Semester : VI
Course Code : 23CBCA62MEA	No. of Credits : 02
Nature of Course : Major/Core Elective Theory	Total Teaching Hours :30 Hrs.

Course Objectives	
1.	To learn to select and apply project management techniques for process modeling, planning, estimation, process metrics and risk management
2.	To get skills that are required to ensure successful medium and large scale software projects
3.	To study Requirements Elicitation, Project Management, Verification &Validation and Management of Large Software Engineering Projects.

Course Outcome	
1.	Get knowledge to select and apply project management techniques for process modeling, planning, estimation, process metrics and risk management
2.	Understand the concepts, skills, tools, and techniques of software project management.
3.	Examine Requirements Elicitation, Project Management, Verification &Validation and Management of Large Software Engineering Projects.
4.	Learn the skills that are required to ensure successful medium and large scale software projects

Syllabus

Unit No	Title with Contents	No. of Lectures
Unit I	Introduction to Project Management	04 Hours
	1.What is a Project? 2.What is Project management? 3.Project phases and project life cycle 4.Organizational structure 5.Qualities of Project Manager 6.Work Breakdown Structure	2 2
Unit II	Project Management Components	04 Hours
	1. Project Integration Management-Project plan 2. development and execution 3. Change controls and CCB 4. Configuration management	2 2
Unit III	Scope, Time and Cost Management	06 Hours
	1.Strategic planning 2.Scope planning, definition 3.Verification and control 4.Activity planning 5.Schedule development and control 6.GANTT Chart 7.Cost estimation and Control 8.COCOMO model 9 .BASIC COCOMO NUMERICALS	2 2 2
Unit IV	Quality Management and Quality Standards	04 Hours
	1 Quality planning and assurance 2. CMM levels 3 KPA"s 4 PSP/TSP	2 2
Unit V	Human Resource Management and Communication Management	04 Hours
	1 Organizational planning 2 Staff acquisition 3 Information distribution 4 Reporting	1 1 1 1
Unit VI	Risk and Procurement Management	04 Hours
	1 Risk identification 2 Quantification and control .3 Solicitation management and control 4 Contract administration.	1 1 1 1
Unit VII	Stakeholder Management and Software Metrics	04 Hours

	1 Identifying Stakeholders .2 Planning, Managing and Monitoring Stakeholder Engagement 3 The scope of software metrics 4 Size- oriented metrics .5 Function oriented 6 Software metrics data collection 7 Analyzing software data	2 2
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Suggested Readings	
1.	Software Project Management : A Process-Driven Approach by Ashfaq Ahmed
2.	Software Engineering Project Management by Richard Thayer, Edward Yourdon WILEY.
3.	Introduction to Software Project Management by Adolfo Villafiorita CRC Press
4.	Software Engineering by Roger Pressman McGraw-Hill

Website Reference Link:

- https://www.tutorialspoint.com/software_engineering/software_project_management.html
- <https://www.geeksforgeeks.org/software-engineering/software-engineering-software-project-management-spm/>
- <https://www.geeksforgeeks.org/business-studies/project-management/>



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T.Y.B.B.A (C.A) VI- Entrepreneurship Development
2025-26 (CBCS – Autonomy 2023 Pattern)
Under NEP 2020

Course Title : Entrepreneurship Development	Semester : VI
Course Code : 23BCA62MEB	No. of Credits : 02
Nature of Course : Major/Core Elective Theory	Total Teaching Hours: 30 Hrs.

Sr. No	Course Objective
1	Understand the concept and process of entrepreneurship.
2	Identify opportunities and develop innovative business ideas.
3	Learn how to create a business plan and understand funding options.
4	Study the legal and institutional support for entrepreneurs.

Sr. No	Learning Outcome
1	Understand the Fundamentals of Entrepreneurship
2	Demonstrate creativity, critical thinking, resilience, and risk-taking in entrepreneurial decision-making.
3	Identify sources of finance, government support schemes, and incubation services available to entrepreneurs.

Syllabus		
Unit I	Introduction to Entrepreneurship	06 Hours
	1.Introduction to Entrepreneurship and characteristics of entrepreneurship.	2
	2.Types of entrepreneurs	2
	3.Difference between entrepreneur, intrapreneur, and manager	1
	4.Role of entrepreneurship in economic development	1
	5.Qualities and functions of a successful entrepreneur	
Unit II	Entrepreneurial Motivation and Idea Generation	08 Hours

	1. Concept and importance of motivation in entrepreneurship 2. Theories of motivation (Maslow's Hierarchy, McClelland's Theory, Herzberg's Theory) 3. Motivational factors influencing entrepreneurs 4. SWOT analysis for business idea evaluation 5. Case studies of successful entrepreneurs and their motivation stories	1 2 2 1 1
Unit III	Business Planning and Project Formulation	08Hours
	1. Elements of a business plan 2. Steps in project formulation 3. Market survey and demand analysis 4. Technical and financial feasibility 5. Small businesses and startups. 6. Small Businesses and Their Role 7. Entrepreneur vs. Small Business Owner	1 1 2 2 1 1 1
Unit IV	Financing and Managing the Enterprise	08 Hours
	1. Important of financial Planning 2. Capital Requirements of a new venture 3. Sources of finance, Equity, debt, venture capital, angel investors 4. Working capital management 5. Risk management in entrepreneurship 6. Legal aspects (registration, licenses, GST, IPR basics)	2 1 2 1 1 2

Suggested Readings	
1.	<i>Entrepreneurship Development</i> by S.S. Khanka
2.	Poornima M. Charantimath – <i>Entrepreneurship Development and Small Business Enterprise</i>
3.	Timmons & Spinelli – <i>New Venture Creation: Entrepreneurship for the 21st Century</i>
4.	Robert D. Hisrich – <i>Managing Innovation and Entrepreneurship in Technology-Based Firms</i>

Website Reference Link:

- <https://www.pasc.edu.in/wp-content/uploads/2021/04/ENTREPRENEURSHIP-DEVELOPMENT-III-BBA.pdf>
- <https://gitam.ac.in/wp-content/uploads/2024/03/ED-NOTES-MBA-2nd-Semester.pdf>
- <https://www.rccmindore.com/wp-content/uploads/2025/01/Entrepreneurship-2.pdf>
- <https://www.selfstudys.com/books/ncert-old-book/english/12th/business-studies-ii/13-entrepreneurship-development/16596>



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T.Y.B.B.A (C.A) VI- Web Analytics
2025-26 (CBCS – Autonomy 2023 Pattern)
Under NEP 2020

Course Title : Web Analytics	Semester : VI
Course Code : 23BCA61MNA	No. of Credits : 02
Nature of Course : Minor Theory	Total Teaching Hours: 30 Hrs.

Sr. No	Course Objective
1	Understand the role of web analytics in digital marketing.
2	Gain hands-on experience with industry-standard tools such as Google Analytics, Adobe Analytics, and other web analytics platforms.
3	Use web analytics to enhance digital marketing efforts, including SEO, PPC, email marketing, and social media campaigns.

Sr. No	Learning Outcome
1	Students will learn how to gather, analyze, and interpret web data to make informed decisions that enhance online business strategies.
2	Analyze user behavior, web traffic, and conversion patterns to derive actionable insights.
3	Generate actionable recommendations based on web analytics findings to improve website performance, marketing efforts, and user experience.

Syllabus		
Unit I	Introduction to Web Analytics	06 Hours
	1. Overview of Web Analytics	2
	2. Definition and Importance of Web Analytics	
	3. Evolution of Web Analytics	1
	4. Goals of Web Analytics	1
	5. Applications of Web Analytics in Digital Marketing, E-commerce, and User Experience, Understanding the customer journey.	2
Unit II	Data Collection and Implementation	06 Hours
	1. Data Collection Methods	1
	2. Attribution Modeling and its Importance	1
	3. E-commerce Tracking and Funnels	
	4. Implementing Tracking and Tags	1

	5. Google Tag Manager 6. Setting Up Tags for Tracking User Interactions 7. Implementing Conversion Tracking Mobile Analytics, Tracking Mobile Website and App Performance, Mobile Behavior Reports , Measuring Mobile Conversion and Engagement	3
Unit III	Data Analysis Techniques	06 Hours
	1. Analyzing Website Traffic and Visitor Behavior 2. User Flow and Behavior Flow Reports , Audience 3. Segmentation and Targeting , Reporting and Dashboards 4. Custom Dashboards and Reports 5. Benchmarking and Trend Analysis	2 2 2
Unit IV	Web Analytics in Digital Marketing	06 Hours
	1. SEO Analytics, Importance of SEO Analytics, Tracking Organic Search Traffic and Keyword Performance. 2. Social Media Analytics, Tracking Social Media Traffic and Engagement, Integrating Social Media with Google Analytics 3. Data Collection, Analysis, and Reporting	2 2 2
Unit V	Advanced Web Analytics Concepts	06 Hours
	1. Attribution Models and Analysis Multi-Channel Attribution, Understanding Assisted Conversions, 2. Custom dimensions and metrics. Using Google Tag Manager for advanced tracking. 3. Attribution models (First-click, Last-click, Linear, and Time-decay). 4. Measuring and analyzing the effectiveness of different traffic sources.	2 2 2

Suggested Readings	
1.	Avinash Kaushik, “Web Analytics 2.0: The Art of Online Accountability & Science of Customer Behavior
2.	Justin Cutroni, “Google Analytics” ,2nd edition
3.	Alistair Croll & Benjamin Yoskovitz, “Lean Analytics: Use Data to Build a Better Startup Faster”
4.	Neil Patel "The Ultimate Guide to Web Analytics"”.

Website Reference Link:

- https://www.tutorialspoint.com/web_analytics/web_analytics_introduction.htm
- <https://www.simplilearn.com/what-is-data-collection-article>
<https://skillfloor.com/blog/web-analytics-in-digital-marketing>
- <https://amplitude.com/blog/web-analytics>



M. C. E. Society's

Abeda Inamdar Senior College

Of Arts, Science and Commerce, Camp, Pune-1

(Autonomous) Affiliated to Savitribai Phule Pune University

NAAC accredited 'A' Grade

T.Y.B.B.A (C.A) VI- Predictive Analytics

2025-26 (CBCS – Autonomy 2023 Pattern)

Under NEP 2020

Course Title: Predictive Analytics	Semester: VI
Course Code: 23BCA61MNB	No. of Credits: 2 Credits
Nature Of Course: Minor Theory	Total Teaching Hours : 30 Hrs

Objectives of the Course

Objectives	
1.	Understand the principles and applications of predictive analytics.
2.	Prepare and preprocess data for model building.
3.	Build and evaluate predictive models using statistical and machine learning techniques.
4.	Interpret and communicate model results effectively.
5.	Work with real-world datasets to derive actionable insights.

Course Outcomes	
1.	Understand the fundamentals of predictive analytics and its role in data-driven decision-making.
2.	Prepare, clean, and explore datasets for predictive modeling.
3.	Apply statistical and machine learning models to make predictions.
4.	Evaluate and improve the performance of predictive models.
5.	Execute a complete predictive analytics project using real-world data.
6.	Interpret model results and communicate insights effectively to stakeholders.

Syllabus		
Unit I	Introduction to Predictive Analytics	05 Hours
	1. Overview of Predictive Analytics i. Definition and Scope of Predictive Analytics ii. Types of Analytics: Descriptive, Diagnostic, Predictive, and Prescriptive iii. Real-World Applications Across Industries: Healthcare, Finance, Retail, Marketing, etc. iv. Predictive modeling vs traditional statistics	3
	2. Overview of Data Science i. Data Science Lifecycle (CRISP-DM) ii. Introduction to tools: Python, R, RapidMiner, Power BI	2
Unit II	Data Understanding and Preparation	06 Hours
	1. Overview of Data Sources i. Data Import Methods: CSV, SQL, APIs	1
	2. Data Cleaning Techniques: i. Handling Missing Values (mean, median imputation, deletion) ii. Outlier Detection and Treatment (Z-score) iii. Data Type Conversion	2
	3. Feature Engineering: i. Normalization and Standardization ii. Binning and One-Hot Encoding	2
	4. Exploratory Data Analysis (EDA): i. Summary Statistics ii. Correlation Analysis	1
Unit III	Predictive Modeling Techniques	10 Hours
	1. Regression Models: i. Linear Regression ii. Logistic Regression	2
	2. Classification Models: i. Decision Trees ii. k-Nearest Neighbors (kNN) iii. Naïve Bayes iv. Random Forests	8
Unit IV	Model Evaluation & Validation	05 Hours
	1. Confusion Matrix, Accuracy, Precision, ROC Curve	1
	2. Cross-validation	1
	3. Overfitting vs. Underfitting, Bias and Variance	2
	4. Model Tuning (Grid Search, Hyperparameters)	1
Unit V	Capstone Project & Case Studies	04 Hours

	1. End-to-end project (Predict customer churn, credit risk, or sales forecasting) 2. Real dataset analysis	2 2
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Suggested Readings	
1.	<i>Data Science for Business</i> – Provost & Fawcett
2.	<i>Python for Data Analysis</i> – Wes McKinney
3.	<i>An Introduction to Statistical Learning</i> – Gareth James et al.

Website Reference Link:

<https://www.ibm.com/topics/predictive-analytics>

<https://www.kaggle.com/code/parulpandey/missing-data-handling-in-python/notebook>

<https://towardsdatascience.com/exploratory-data-analysis-8fc1cb20fd15>



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T.Y.B.B.A (C.A) IV- Practical on Web Analytics

2025-26 (CBCS – Autonomy 2023 Pattern)

Under NEP 2020

Course Title : Lab IV- Practical on Web Analytics	Semester : VI
Course Code : 23CBCA62MNA	No. of Credits : 02
Nature of Course : Minor Practical	Total Teaching Hours : 60 Hrs.

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To provide learners with an understanding of the principles, techniques, and best practices in web analytics, enabling them to effectively analyze and interpret web data.
2.	To train students in using various web analytics tools (e.g., Google Analytics, Adobe Analytics) and techniques to collect, process, and analyze data for informed decision-making.
3.	To empower students to make data-driven decisions by analyzing web traffic, user behavior, conversion rates, and other metrics to enhance website effectiveness.
4.	To Learn how to track and analyze customer journeys through conversion funnels, identifying bottlenecks, and proposing strategies for increasing conversion rates.

Expected Course Specific Learning Outcomes

Sr. No.	Learning Outcome
1.	Set up and configure analytics accounts, define goals and events, and monitor web traffic and user interactions effectively.
2.	Understand how to set up tracking for e-commerce, lead generation, and other business-specific objectives.

3.	Collect and process data from web traffic, user interactions, and digital campaigns.
4.	Track and measure the effectiveness of digital marketing campaigns (e.g., paid ads, social media, email) using web analytics tools.

Best IDE used for Web Analytics :

Sr. No	Name of IDE or Tools	Latest Version
1.	Google Analytics	2024
2.	Google Tag Manager	-
3.	Google Data Studio	-
4.	Crazy Egg, SEMrush, Ahrefs	-

Assignment No	Assignment Name	No. Of Sessions
1.	Assignment on Google Analytics. & GA4	3
2.	Assignment on Analyzing SEO performance using Google Analytics and Search Console.	3
3.	Assignment on Setting up mobile app analytics and analyzing data	3
4.	Assignment on Mobile Analytics and App Tracking	3
5.	Assignment on Data Visualization with Google Data Studio	3
	Total Number of Sessions	15



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T.Y.B.B.A (C.A) VI- Practical on Predictive Analytics
2025-26 (CBCS – Autonomy 2023 Pattern)
Under NEP 2020

Course Title: Lab-III Practical on Predictive Analytics	Semester: VI
Course Code: 23CBCA62MNB	No. of Credits: 2 Credits
Nature Of Course: Minor Practical	Total Teaching Hours :60 Hrs.

Objectives of the Course

Objectives	
1.	Understand real-world applications of predictive analytics.
2.	Perform data cleaning; handle missing values and outliers effectively.
3.	Build and train regression and classification models.
4.	Apply end-to-end predictive analytics pipeline on real datasets.

Expected Course Specific Learning Outcomes

1.	Define and explain the fundamental concepts of predictive analytics
2.	Demonstrate proficiency in the data science process
3.	Apply various predictive modeling techniques
4.	Use modern analytical tools & Evaluate and validate predictive models
5.	Execute an end-to-end predictive analytics project

Best IDE used for Predictive Analysis:

Sr. No.	Name of IDE or Tools	Latest Version
1.	Python	3.11.x
2.	Jupyter Notebook	7.0.x
3.	R	4.3.x
4.	Microsoft Excel	2025

Assignment No.	Assignment Name	No. of Session
1.	Assignment based on Introduction to Predictive Analytics & Tools Overview, and Importing/Loading Data	1
2.	Assignment based on Data Cleaning and Handling Missing Values	3
3.	Assignment based on Feature Engineering and Exploratory Data Analysis (EDA)	3
4.	Assignment based on Data Splitting and Preparation	2
5.	Assignment based on Building Linear and Logistic Regression Models	3
6.	Assignment based on Decision Trees and k-Nearest Neighbors (k-NN)	3
	Total Number of Session	15