



Mahatma Education Society's
Pillai HOC College of Arts , Science & Commerce,
Khalapur HOC Colony Rd, Rasayani
(Autonomous)
NAAC Accredited with "A+" Grade in Cycle II

Affiliated to University of Mumbai

**NAAC Accredited with "A+" Grade in cycle II
ISO 9001:2015 Certified**

**Pillai HOCL Educational Campus,
Rasayani Taluka -Khalapur Dist.
Raigad -410207 Maharashtra, India**

**Institutional Programme Outcomes, Programme Specific
Outcomes**

&

Course Outcomes of Each Programme

Academic Year 2025-26

Institutional Programme Outcomes (POs)

PO. No.	PO Title	POs in brief
PO1	Fundamental Knowledge Acquisition	Graduates will demonstrate a comprehensive and foundational knowledge of their chosen discipline along with an awareness of interdisciplinary connections.
PO2	Critical Thinking and Analytical Reasoning	Graduates will be able to analyse complex problems, synthesize data from multiple sources (qualitative and quantitative), and employ logical reasoning to formulate well-supported conclusions and arguments.
PO3	Effective Communication	Graduates will exhibit proficiency in both written and oral communication, articulating ideas clearly, persuasively, and ethically to diverse audiences
PO4	Problem Solving	Graduates will possess the ability to identify, formulate, and design solutions for real-world problems in their professional or social contexts, applying relevant theoretical knowledge and practical skills.
PO5	Information and Digital Literacy	Graduates will demonstrate the capability to locate, evaluate, and effectively use information from various sources, and utilize modern tools and Information and Communication Technology (ICT) for professional and academic tasks.
PO6	Research Skills and Scientific Temperament	Graduates will develop a sense of inquiry and research methodology, including the ability to design experiments (where applicable), collect and analyse data, and interpret results while maintaining scientific rigor and intellectual honesty.
PO7	Ethical Reasoning and Professional Integrity	Graduates will recognize ethical dilemmas, commit to professional and academic ethics, and demonstrate an understanding of moral and social responsibilities in their personal and professional conduct.
PO8	Employability and Professional Skills	Graduates will acquire the necessary job-ready skills, managerial competencies, and professional values to secure gainful employment or pursue advanced education in their respective fields.
PO9	Environmental and Sustainability Consciousness	Graduates will understand the importance of environmental conservation and sustainable development, displaying responsibility toward ecological challenges and advocating for healthy environmental practices.
PO10	Life-Long Learning	Graduates will develop the capacity for independent and self-directed learning to continuously upgrade their knowledge and skills, enabling them to adapt to rapid technological and societal changes.

PO11	Civic and Social Responsibility	Graduates will act as responsible citizens with an informed awareness of constitutional values, engaging proactively in community development and addressing social needs.
PO12	Empathy and Social Intelligence	Graduates will be able to cultivate and demonstrate affective, interpersonal, social and emotional intelligence.

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Program: Bachelor of Arts
Pillai HOCL Educational Campus, Rasayani
Taluka -Khalapur Dist. Raigad -410207
Maharashtra ,India

Programme -BA- Bachelor of Arts

Programme Specific Outcomes (PSOs)

PSOs. No.	PSO Title	PSOs in brief
PSO1	Disciplinary Knowledge & Interpretation	Students will demonstrate comprehensive knowledge of English literature, Economic theories, and Historical developments, enabling them to interpret texts, analyse socio-economic patterns, and understand historical processes with clarity, depth, and critical insight.
PSO2	Analytical, Critical & Research Skills	Students will develop the ability to critically evaluate literary works, economic data, and historical sources, using appropriate analytical tools and research methods. They will be able to construct coherent arguments, interpret evidence, and draw logical conclusions across all three disciplines.
PSO3	Communication, Expression & Professional Competence	Students will strengthen their communication skills—written, verbal, and digital—allowing them to express ideas clearly, creatively, and persuasively. They will be equipped with competencies relevant to careers in teaching, research, writing, public service, media, policy analysis, and heritage studies.
PSO4	Social Awareness, Ethics & Lifelong Learning	Students will develop awareness of cultural diversity, socio-economic issues, and historical contexts, fostering responsible citizenship and ethical sensitivity. They will be prepared for lifelong learning and adaptable to evolving academic, professional, and societal demands.

Course Outcomes

Semester I

Course: Introduction Literature: Drama and Short Stories	
C01	Students will be able to identify and explain the essential elements of short stories and dramatic forms.
C02	Students will demonstrate the ability to interpret and analyze literary themes, characters, and stylistic features in selected short stories across cultures.
C03	Students will critically evaluate the play A Doll's House in the context of social structure, gender roles, and personal identity, and reflect on its contemporary relevance.

Course: Introduction to Microeconomics-I	
C01	To discuss the meaning and scope of Microeconomics
C02	To apply the 10 principles of economics to real life situations
C03	To evaluate consumer's equilibrium given their budget constraints
C04	To explain the optimization problem of a producer
C05	To derive the cost and revenue curves necessary for understanding the market

Course: History –I: Ancient India: From Earliest Times to 6th BCE	
C01	Identify and interpret diverse sources of Ancient Indian history including archaeological, literary, and foreign accounts.
C02	Comprehend the key features of early Indian social, religious, and political developments.
C03	Understand and relate with the cultural legacy of early Indian civilization.
C04	Appreciate the multireligious roots and philosophical diversity of ancient Indian culture.

Course: Creative Writing	
C01	Able to distinguish between the literary genres.
C02	Critically appreciate various forms of literature.
C03	Seek employment in various creative fields.

Course: Communication Skills in English	
C01	Students must be able to understand and apply the core principles of business communication in diverse professional contexts.
C02	Students must be able to demonstrate enhanced English language proficiency across Listening, Speaking, Reading, and Writing (LSRW) skills.
C03	Students must be able to communicate effectively and confidently in professional settings by applying acquired functional English language skills.

Course : Artistic and Cultural Heritage of India	
C01	Students will be able to articulate the fundamental principles of IKS and their relevance to the

	study of Indian arts and literature.
C02	Students will be able to critically analyze artistic and literary works using the framework of classical Indian aesthetic and literary theories.
C03	Students will demonstrate an understanding and appreciation of the diverse artistic and literary traditions of India, including their historical context and contemporary relevance within the scope of IKS.

Course: Fundamentals of Social and Emotional Skills	
C01	Learners will be able to define and Identify values and life skills required in personal and professional life.
C02	Learners will develop awareness of the self and apply well- defined stress and emotional management strategies.
C03	Learners will be able to apply creative and critical thinking and emotional intelligence to address challenges in life

Course: Marketing Mix 1	
C01	Learner will understand the basic concepts of marketing mix
C02	Students will understand the key concepts and components of product and price mix strategies.
C03	Learner will understand thoroughly the place as a marketing mix variable to solve marketing problems.

Course: Fundamentals of Information and Communication Technology	
C01	Understand the fundamental concepts of ICT and its role in various sectors like education, health, governance, and business.
C02	Identify and describe the core components of a computer system including hardware, software, and operating systems
C03	Demonstrate proficiency in using word processing, spreadsheets, and presentation tools for academic and professional tasks.
C04	Apply internet tools, email, and social media responsibly for information gathering and communication.
C05	Utilize cloud-based storage and collaboration platforms for file sharing, real-time teamwork, and virtual communication.

Course : ह दि ी भाषा:व्याव ारिक प्रयोग	
<u>Course Outcomes</u>	
C01	ववद्यावर्थयों कल हाजभाषा वहदं ी का ज्ञान प्राप्त हलगा, एवंदक्षता प्राप्तहलगी
C02	ववद्यावर्थयों कल हाजभाषा वहदं ी के व्याकहवणक प्रयलग की जानकाही प्राप्त हलगी

C03	वद्यवर्थों कल वहदं ी-संज्ञा आवद का ज्ञान प्राप्तहलनेकेसार् भाषा केिद्धु, व्यावहारहक रूप का ज्ञान हलगा
C04	वद्यवर्थों कल काहकों, वाक्य होना एवंभावषक वोहों आवद का ज्ञान प्राप्तहलगा

Semester II

Course 1: Introduction to Novel and Poetry	
C01	Students will be able to define and distinguish between various poetic forms and explain the key structural and narrative elements of a novel.
C02	Students will be able to interpret and analyze poems for their form, content, tone, and literary devices, demonstrating awareness of poetic themes and styles.
C03	Students will be able to critically examine the selected novel (Pride and Prejudice or The Namesake), focusing on its plot, characters, narrative techniques, and sociocultural relevance.

Course 2: Microeconomics II	
C01	To examine the various objectives of a firm
C02	To discuss the characteristics of the different market structures
C03	To analyses the pricing mechanisms under the different market structures
C04	To study Meaning, importance, features and objectives of capital budgeting.
C05	To comprehend steps involved in capital budgeting.

Course 3: History of Medieval India (Mid 350 BCE to 1200 CE)	
C01	Understand the political history of Ancient India
C02	Comprehend beginning and development of taxation system and various organs of state institutions during Ancient Indian History.
C03	Become aware about the chronological political evolution in Ancient Indian History.
C04	Teach the transitional events from Ancient to Medieval History of India.

Course 4: English at Workplace	
C01	Learners will be able to use English required at workplace with accuracy and fluency
C02	Learners will have an improved pronunciation, vocabulary and grammar.
C03	Learners will demonstrate the ability to communicate effectively in situations including meetings, negotiations, telephoning skills, presentations etc.

Course 5: Effective Communication Skills	
C01	Learners will be able to apply effective listening strategies by practicing active listening
C02	Learners will be able to communicate effectively and appropriately in English during a range of contexts such as meeting and greeting, self-introduction, group discussions, and

	interviews.
C03	Learners will be able to analyze and interpret various types of written texts, including news reports, advertisements, online content, poems, and essays for academic and real-world applications.
C04	Learners will be able to produce clear and structured written communication such as emails, resumes, notices, meeting agendas/minutes, paragraphs

Course 6: Environmental Mindfulness and Sustainable Living	
C01	Learners will be able to provide overview on the concept of environment, ecosystems, biodiversity and reflect on environmental values
C02	Learners will develop awareness global environmental concerns, issues, and impacts and need for action to address these challenges
C03	Learners will be able to identify the applications of sustainable development and environmental management strategies

Semester III

Course: Introduction to Literatures in English - Drama I	
C01	Understand drama as a literary form and a performing art
C02	Critique Indian drama from ancient to modern times
C03	Evaluate drama from the West
C04	Analyse the drama form as a commentary on various aspects of human life
C05	Read/ watch a play and write a review on it

Course: Introduction to Literatures in English - Drama I	
C01	Understand different types of drama and its influence on literature as a whole
C02	Identify key themes and techniques used in different historical periods and regions through prescribed texts
C03	Discuss dramatic forms and characters unique to the dramatic period and critically engage with both original and translated dramatists and their contributions to the development and growth of drama within the broader tradition of theatre

Course: Macroeconomics- I	
C01	The learner will be able to learn the impact of macroeconomics issues like unemployment, inflation on the economy.
C02	The learner will be able to know the output determination with unemployment in the Keynesian system
C03	The learner will be able to understand behaviour of consumption and Savings at various income levels
C04	The learner will be able to Recognise the Modern measures of money and its velocity in circulation

C05	The learner will be able to identify the factors affecting the demand for money.
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Course: English for Competitive Examinations	
C01	Understand sentences, phrases and clauses to identify their components.
C02	Demonstrate improved spelling accuracy and contextual vocabulary application.
C03	Compose and construct grammatically accurate sentences in various contexts.

Course: Cyber and Digital Security	
C01	Understand key concepts in cyber security and differentiate between threats and risks.
C02	Apply safe browsing practices and protect their digital identity across platforms.
C03	Identify and avoid common cyber scams, phishing attacks, and fake news.
C04	Safeguard personal devices, use secure communication tools, and manage passwords.
C05	Understand the ethical concerns and emerging trends in AI-driven cyber threats.

Course: Basics of Financial Services	
C01	Learners will develop proficiency for personal and family financial planning.
C02	Learners will develop the ability to analyse banking and insurance products.
C03	Learners will Apply the concept of investment planning.

Course: National Service Scheme	
C01	Students will be able to analyze the contributions of key Indian social reformers such as Mahatma Gandhi, Swami Vivekananda, Mahatma Phule, Rajshri Shahu Maharaj, Baba Amte, and others, and explain their impact on the development of social work in India.
C02	Students will demonstrate improved soft skills and life skills, including communication, problem-solving, empathy, self-awareness, and interpersonal skills, enabling them to participate more effectively as NSS volunteers in community-based activities.

Course: Field Project	
C01	Apply concepts learned in classrooms to real-world socioeconomic conditions enhancing their understanding and skills.
C02	Show insights into the challenges, opportunities and culture of socioeconomic diversity, preparing them for future role as responsible citizens.
C03	Demonstrate evidence of research aptitude and skills of critical thinking, analytical skills and ethical research conduct in field work.
C04	Display problem-solving abilities in making informed decisions in complex scenarios through practical situations.
C05	Work in teams and collaborate to achieve common goals in the work field environments

through collaborative efforts.

Course : हिंदी भाषा: व्याकरणिक प्रयोग

CO1	व्यवहारिक कौशल हाजिरी वही का ज्ञान प्राप्त होगा, एवं क्षमता प्राप्त होगी
CO2	व्यवहारिक कौशल हाजिरी वही के व्याकरणिक प्रयोग की जानकारी प्राप्त होगी
CO3	व्यवहारिक कौशल वही-संज्ञा आवेद का ज्ञान प्राप्त करने के सार भाषा के विद्वान, व्यावहारिक रूप का ज्ञान होगा
CO4	व्यवहारिक कौशल काहको, वाक्य होना एवं भाषिक वही आवेद का ज्ञान प्राप्त होगा

Semester IV

Course: Introduction to Literatures in English - Novel I

CO1	Identify and explain key elements of the novel, such as plot, character, setting, narration, and structure, and apply them to analyze novels.
CO2	Demonstrate understanding of the historical development of the novel, with the ability to distinguish between major types and periods such as the epistolary, picaresque, gothic, Victorian, and modern novels.
CO3	Critically assess narrative techniques and theoretical concepts, including the distinctions between narrative voices, points of view, and character models.
CO4	Produce informed and coherent critical responses to literary texts, reflecting awareness of genre, structure, and thematic complexity.

Course: Introduction to Literatures in English - Novel II

CO1	Be able to describe and analyze the development of the Novel since the 18th Century
CO2	Be able to explain or describe various elements and narrative techniques in the Novel.
CO3	Be able to describe and distinguish different types of Novels
CO4	To map the growth of the novel and demonstrate an understanding of the Contemporary trends in the Novel.

Course: Macroeconomics II

CO1	Students will be able to comprehend and explain key macroeconomic concepts such as inflation, hyperinflation, depression, stagflation, and external sector dynamics, along with their causes, effects, and relevance in developing economies.
CO2	Students will be able to analyze and evaluate monetary and fiscal policies, including their objectives, instruments, limitations, and role in addressing macroeconomic issues like inflation, stagflation, and balance of payment disequilibrium.

CO3	Students will be able to apply macroeconomic models such as the IS-LM framework and balance of payment analysis to understand the interactions between goods, money, and foreign exchange markets, and to assess the impact of policy measures on the economy.
CO 4	Students will be able to critically evaluate macroeconomic issues and policy responses, interpret economic indicators, and make informed recommendations for stabilizing economies, particularly in the context of developing countries.

Course: Communication Skills in English -II	
CO1	Understand and interpret any text they are reading from different perspectives.
CO2	Arouse the interest of learners in listening to and watching good quality audio and visual media.
CO3	Acquire proficiency in listening, speaking, reading and writing skills that will help them meet the challenges of the world.
CO 4	Develop good oral and written skills of communication in the English language.

Course: NSS	
CO1	Students will be able to analyze the contributions of key Indian social reformers such as Mahatma Gandhi, Swami Vivekananda, Mahatma Phule, Rajshri Shahu Maharaj, Baba Amte, and others, and explain their impact on the development of social work in India.
CO2	Students will demonstrate improved soft skills and life skills, including communication, problem-solving, empathy, self-awareness, and interpersonal skills, enabling them to participate more effectively as NSS volunteers in community-based activities.

Semester V

Course: INDIAN LITERATURE I	
CO1	Analyse the thematic concerns of Indian Literature in English.
CO2	Explore Indian Literature in English in various ways.
CO3	Find different literary techniques employed in Indian Literature in English understand Indian society and issues.
CO4	Find various research topics in Indian literature in English.

Course: Literary Theory & Criticism -I	
CO1	After studying the Course, the learner will realize the basics of literary criticism.
CO2	After studying the Course, the learner will come to know about the critical approaches and literary theories.
CO3	After studying the Course, the learner will understand the techniques of close reading of literary texts.

Course: Contemporary British literature- I	
CO1	Be equipped with a comprehensive understanding of literary genres, trends and movements in contemporary British Literature.
CO2	Understand the valuable co –relation between the socio- cultural, economic and historical contexts; behind the literary production.
CO3	Acquire the discipline to become reflective and imaginative thinkers through a close, critical and analytical reading of the prescribed texts.
CO4	Understand the contemporary reaction to literary and cultural structures and concepts.

Course: Contemporary American Literature- I	
CO1	Understand literary genres, trends and movements in Contemporary American literature
CO2	Interpret socio-political and cultural dimensions of Contemporary American Literature
CO3	Appreciate tenets and themes of Contemporary American Literature.
CO4	Formulate various perspectives pertaining to Contemporary American Literature.

Course: Teaching Methods for English -I	
CO1	Display an awareness of the scope of teaching English.
CO2	Demonstrate an understanding of language and its usage for pedagogical purpose
CO3	Explicate key approaches, methods and techniques in teaching English
CO4	Use various strategies, skills, tools, and techniques in teaching LSRW skills, Grammar, vocabulary and pronunciation
CO5	Manage reference material and utilize it for effective teaching.

Semester VI

Course: INDIAN LITERATURE II	
CO1	Analyse the thematic concerns of Indian Literature in English.
CO2	Explore Indian Literature in English in various ways.
CO3	Find different literary techniques employed in Indian Literature in English understand Indian society and issues.
CO4	Find various research topics in Indian literature in English.

Course: Literary Theory & Criticism -II	
CO1	After studying the Course, the learner will realize the basics of literary criticism.
CO2	After studying the Course, the learner will come to know about the critical approaches and literary theories.

CO3	After studying the Course, the learner will understand the techniques of close reading of literary texts.
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Course: Contemporary British literature- II	
CO1	Be equipped with a comprehensive understanding of literary genres, trends and movements in contemporary British Literature.
CO2	Understand the valuable co –relation between the socio- cultural, economic and historical contexts; behind the literary production.
CO3	Acquire the discipline to become reflective and imaginative thinkers through a close, critical and analytical reading of the prescribed texts.
CO4	Understand the contemporary reaction to literary and cultural structures and concepts.

Course: Contemporary American Literature- II	
CO1	Understand literary genres, trends and movements in Contemporary American literature
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CO4	Use various strategies, skills, tools, and techniques in teaching LSRW skills, Grammar, vocabulary and pronunciation
CO5	Manage reference material and utilize it for effective teaching.

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Programme -BAMMC- Bachelor of Arts in Multimedia and
Mass Communication

Programme Specific Outcomes

PSOs. No.	PSO Title	PSOs in brief
PSO1	Media Theory and Critical Analysis	Graduates will be able to apply mass communication theories, media ethics, and laws to critically analyse media content, its societal impact, and contemporary media issues.
PSO2	Multimedia Content Creation	Graduates will be able to create, edit, and produce professional-quality multimedia content (text, audio, video, graphics, and animation) using industry-standard tools for print, broadcast, digital, and social media platforms.
PSO3	Strategic Communication and Campaigning	Graduates will be able to design, execute, and evaluate integrated communication campaigns in advertising, public relations, corporate communication, and digital marketing with a focus on audience behaviour and branding.
PSO4	Journalism and Emerging Media Practices	Graduates will be able to demonstrate journalistic excellence and technical proficiency in producing credible, engaging, and ethical content across traditional and emerging platforms including OTT, podcasts, short-form video, and immersive storytelling.

Course Outcomes

Semester I

Fundamentals of Mass Communication	
CO1	To understand the development of Mass Communication models.
CO2	To introduce students to the history, evolution and the development of Mass Communication in the world with special reference to India.
CO3	To study the evolution of Mass Media as an important social institution.

INTRODUCTION TO JOURNALISM	
CO1	Analyze the Evolution of Journalism in India
CO2	Understand the News Production Process
CO3	Apply Core Journalistic Principles and Formats
CO 4	Develop Practical Journalism Skills

MASS MEDIA	
CO1	Develop an understanding of the basic concepts in Content Writing
CO2	To review essential grammar rules, punctuation, and writing style guidelines.
CO3	Develop the ability to write content and edit it suitably

Introduction to Multimedia	
CO1	Students will be able to identify and explain the key elements and applications of multimedia in everyday life and media industries.
CO2	Students will be able to demonstrate basic proficiency in using multimedia tools such as Canva, CapCut, and PowerPoint for content creation.
CO3	Students will be able to create and present a basic multimedia project by integrating text, images, audio, and video.

Communication Skills in English-I (AEC)	
CO1	Students must be able to understand and apply the core principles of business communication in diverse professional contexts.

CO2	Students must be able to demonstrate enhanced English language proficiency across Listening, Speaking, Reading, and Writing (LSRW) skills.
CO3	Students must be able to communicate effectively and confidently in professional settings by applying acquired functional English language skills.

Artistic and Cultural Heritage of India	
CO1	Students will be able to articulate the fundamental principles of IKS and their relevance to the study of Indian arts and literature.
CO2	Students will be able to critically analyze artistic and literary works using the framework of classical Indian aesthetic and literary theories.
CO3	Students will demonstrate an understanding and appreciation of the diverse artistic and literary traditions of India, including their historical context and contemporary relevance within the scope of IKS.

Fundamentals of Social and Emotional Skills	
CO1	Learners will be able to define and Identify values and life skills required in personal and professional life.
CO2	Learners will develop awareness of the self and apply well- defined stress and emotional management strategies.
CO3	Learners will be able to apply creative and critical thinking and emotional intelligence to address challenges in life

Fundamentals of Information Communication Technology	
CO1	Understand the fundamental concepts of ICT and its role in various sectors like education, health, governance, and business.
CO2	Identify and describe the core components of a computer system including hardware, software, and operating systems
CO3	Demonstrate proficiency in using word processing, spreadsheets, and presentation tools for academic and professional tasks.
CO4	Apply internet tools, email, and social media responsibly for information gathering and communication.
CO5	Utilize cloud-based storage and collaboration platforms for file sharing, real-time teamwork, and virtual communication.

National Service Scheme	
CO1	Students will be familiar with NSS fundamentals and history, particularly as they pertain to

	social work
CO2	. Students will recognize NSS and its ongoing operations.
CO3	Students will learn social work skills (such as Voter Awareness, Campus Cleanup, Tree Plantation, and Rallies)

Semester -II

Introduction to New Media (Major DI)

CO1	To familiarize students with the concept of new media and its significance in the field of multimedia mass communication.
CO2	To analyze the characteristics, functions, and uses of various new media platforms.
CO3	To examine the impact of new media on society, culture, and communication.

INTRODUCTION TO ADVERTISING

CO1	Demonstrate foundational knowledge of advertising principles.
CO2	Analyze and apply advertising and IMC strategies across various media.
CO3	Develop creative advertising content using key design and messaging elements.

INTRODUCTION TO EVENT MANAGEMENT

CO1	To provide a comprehensive understanding of the fundamental principles, processes, and practices involved in event management.
CO2	To equip students with the knowledge and practical skills necessary to plan, coordinate, and execute various types of events effectively.
CO3	To understand critical thinking and problem-solving abilities in students, enabling them to handle event challenges, from concept creation to post-event evaluation.

Introduction to Photography (SEC)

CO1	To help the learner understand that media photography is a language of visual communication and is far beyond just point and shoot fun moments.
CO2	To develop the base of visualisation among learners in using pictures in practical projects.
CO3	To help learners work on a given theme or the subject into making a relevant picture or photo feature.

Effective Communication Skills (AEC)	
CO1	Learners will be able to apply effective listening strategies by practicing active listening
CO2	Learners will be able to communicate effectively and appropriately in English during a range of contexts such as meeting and greeting, self-introduction, group discussions, and interviews.
CO3	Learners will be able to analyze and interpret various types of written texts, including news reports, advertisements, online content, poems, and essays for academic and real-world applications.
CO4	Learners will be able to produce clear and structured written communication such as emails, resumes, notices, meeting agendas/minutes, paragraphs

National Service Scheme	
CO1	Students will be familiar with NSS fundamentals and history, particularly as they pertain to social work
CO2	Students will recognize NSS and its ongoing operations.
CO3	Students will learn social work skills (such as Voter Awareness, Campus Cleanup, Tree Plantation, and Rallies)

Semester-III

ELECTRONIC MEDIA	
CO1	Learners will be able to identify and explain various electronic media formats and their functions across radio, television, and digital platforms.
CO2	Learners will demonstrate the ability to plan, produce, and edit basic audio-visual content for media applications.
CO3	Learners will critically analyze the societal impact of electronic media and apply industry relevant skills to pursue roles in content creation, broadcasting, and digital communication.

IKS IN COMMUNICATION & MEDIA	
CO1	Students will be able to identify and explain core concepts of IKS and their historical relevance in Indian communication systems.
CO2	Students will analyze and apply traditional communication methods within modern media contexts to create culturally rooted content.

CO3	Students will develop an appreciation for indigenous narratives and demonstrate the ability to integrate IKS into media planning, storytelling, and advocacy.
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FILM COMMUNICATION - I	
CO1	Learners will be able to demonstrate an understanding of film as a medium of visual communication and its evolution across genres, styles, and cultures and they also will be able to analyze the components of film language—such as shot composition, editing, sound, and lighting—to interpret meaning and emotion.
CO2	Learners will be able to critically evaluate films using established theories and frameworks from media, communication, and cultural studies and they will be able to apply cinematic techniques and storytelling methods in the conceptualization and production of short films or media content.
CO3	Learners will be able to explore the role of film in shaping public opinion, culture, and identity, and its impact on contemporary media and communication practices.

Introduction to Advertising	
CO1	Describe the purpose, types, and components of advertising in various contexts.
CO2	Discuss the ethical, legal, and cultural considerations involved in advertising practices.
CO3	Identify and explain the tools and techniques used in integrated marketing communication.
CO4	Create basic advertising content such as ad copy, storyboards, slogans, and campaign ideas.

Basics of Copywriting	
CO1	Identify the role and responsibilities of a copywriter, advertising ideas.
CO2	Explain basic concepts and techniques in copywriting and creative thinking.
CO3	Use various methods like brainstorming, imagination, and observation to generate effectively.
CO4	Write a compelling copy that aligns with different brand voices and tones. Develop a creative mindset and discover the “Big Idea” behind successful ad campaigns.
CO5	Develop a creative mindset and discover the “Big Idea” behind successful ad campaigns.
CO6	Use storytelling and emotional appeals to influence target audiences.

Introduction To Photography	
CO1	Learners will be able to demonstrate a fundamental understanding of camera operations, exposure settings, and composition techniques.
CO2	Learners will be able to apply visual storytelling principles to capture meaningful and aesthetically effective photographs across various genres.
CO3	Learners will be able to analyze and critique photographic work using technical, artistic, and conceptual frameworks.

ह दि ी भाषा:व्याव ारिक प्रयोग	
CO1	ववद्यावर्थियों कल हाजभाषा वहदं ी का ज्ञान प्राप्त हलगा, एवंदक्षता प्राप्तहलगी
CO2	ववद्यावर्थियों कल हाजभाषा वहदं ी के व्याकहवणक प्रयलग की जानकाही प्राप्त हलगी
CO3	ववद्यावर्थियों कल वहदं ी-संज्ञा आवद का ज्ञान प्राप्तहलनेकेसार् भाषा केिद्धु, व्यावहारहक रूप का ज्ञान हलगा
CO4	ववद्यावर्थियों कल काहकों, वाक्य होना एवंभावषक वोहों आवद का ज्ञान प्राप्तहलगा

SEMESTER IV

MASS MEDIA RESEARCH	
CO1	To introduce students to debates in Research approaches and equip them with tools to carry on research
CO2	To understand the scope and techniques of media research, their utility and limitations

INDIAN LEGAL ENVIRONMENT & ETHICS	
CO1	To provide the learners with an understanding of laws that impact the media.
CO2	To sensitize them towards the social and ethical responsibility of the media.

Film Communication II	
CO1	Learners will be able to demonstrate an understanding of film as a medium of visual communication and its evolution across genres, styles, and cultures.
CO2	Learners will be able to analyze the components of film language—such as shot composition, editing, sound, and lighting—to interpret meaning and emotion.
CO3	Learners will be able to critically evaluate films using established theories and frameworks from media, communication, and cultural studies.
CO4	Learners will be able to apply cinematic techniques and storytelling methods in the conceptualization and production of short films or media content.
CO5	Learners will be able to explore the role of film in shaping public opinion, culture, and identity, and its impact on contemporary media and communication practices.

Writing & Editing for Media

CO1	Demonstrate proficiency in writing news stories, features, and other media content with clarity, accuracy, and adherence to journalistic norms.
CO2	Apply editing techniques to improve structure, style, grammar, and factual accuracy in media content.
CO3	Analyze and adapt writing for different platforms and audiences, including print, online, and broadcast media.

Globalization and Advertising

CO1	Explain how globalisation influences advertising strategies, consumer behavior, and brand communication across international markets.
CO2	Identify and apply principles of cross-cultural communication to create culturally sensitive and effective advertising messages.
CO3	Use various methods like brainstorming, imagination, and observation to generate effectively.
CO4	Evaluate international media options and plan media strategies for global advertising campaigns.

Communication Skills in English - I (B.A)

CO1	Understand and interpret any text they are reading from different perspectives.
CO2	Arouse the interest of learners in listening to and watching good quality audio and visual media.
CO3	Acquire proficiency in the skills of listening; speaking, reading and writing that will help them meet the challenges of the world.
CO4	Develop good oral and written skills of communication in the English language.

Community Engagement Projects

CO1	Align classroom learnings with awareness about societal issues.
CO2	Provide students an exposure to societal issues and align their experiences with contemporary problems/ concerns
CO3	Integrating theoretical and practical aspects to create blended learning experience under the guidance of their faculty.

CO4	Enhance research skills including knowledge discovery, analytical tools, methodologies, and ethical conduct.
CO5	Facilitate problem-solving, decision-making, teamwork, and collaboration.
CO6	Foster ability to work in teams, develop social awareness and nurturing of human values in students.
CO7	Create collaboration between Higher Education Institutes (HEIs), social organization, Government and non-government institutes for impactful Community Engagement Projects.

Semester V

Copywriting	
CO1	To familiarize the students with the concept of copywriting as selling through writing.
CO2	To learn the process of creating original, strategic, compelling copy for various mediums
CO3	To train students to generate, develop and express ideas effectively.
CO4	To learn the rudimentary techniques of advertising headline and body copywriting, the economy of words and thought peculiar to this type of writing, and the necessity of creative thinking in written expression.
CO5	In an ad agency, as a copywriter, one cannot “Just be creative and express self” – here one is in a ‘creative professional’, and have to be able to use the power of creativity for a commercial/business reason – as someone is paying you to get a problem solved, using your creativity.

ADVERTISING & MARKETING RESEARCH	
CO1	The course is designed to inculcate the analytical abilities and research skills among the students.
CO2	To understand research methodologies – Qualitative Vs Quantitative
CO3	To discuss the foundations of Research and audience analysis that is imperative to successful advertising.
CO4	To understand the scope and techniques of Advertising and Marketing research, and their utility.

Agency Management	
CO1	To acquaint the students with concepts, techniques and give experience in the application of concepts for developing an effective advertising campaign.
CO2	How an ad agency works and what opportunities exist
CO3	To familiarize students with the different aspects of running an ad agency

CO4	To inculcate competencies thereby enabling to undertake professional work with advertising industry.
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Brand Building	
CO1	To understand the awareness and growing importance of Brand Building
CO2	To know how to build, sustain and grow brands
CO3	To know the various new way of building brands
CO4	To know about the global perspective of brand building.

Globalization and International Advertising	
CO1	To introduce to media students about the concept of Globalization and its impact on Global Media and International Advertising..
CO2	To help the student understand and practice Global Communication.
CO3	To develop media student's understanding on Global Brands
CO4	To introduce to media students about the concept and process of International advertising.
CO5	To help students formulate international advertising campaigns by identifying strategies, barriers, challenges and steps to create international advertising.
CO6	Career opportunities: As Global Brand Managers, Global Content Writer for Ads and Ad Campaigns, Global Market Communicators in Digital Media, career in ad agencies for Global Market.

Consumer Behaviour	
CO1	To understand the sociological & psychological perspective of consumer behaviour
CO2	To introduce students to the complexities of consumer behaviour, its importance in marketing & advertising
CO3	To sensitize students to the changing trends in consumer behaviour.

Semester VI	
Advertising Design	
CO1	Learners shall understand the process of planning & production of the advertisement.
CO2	To highlight the importance of visual language as an effective way of communication

CO3	To provide practical training in the field of advertising & make the learner industry ready.
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Advertising and Sales Promotion	
CO1	Students should be able to demonstrate a thorough understanding of the major sales promotion concepts
CO2	Students should know how to use a framework to make effective sales promotion decisions,
CO3	Students should know how to adopt the necessary skills and point of view of an effective sales promotion campaign

Rural Marketing and Advertising	
CO1	To introduce to Media students about the concept of Rural Marketing and Rural economy.
CO2	To make students understand about Rural Environment and demography of Rural India.
CO3	To help students to understand marketing Mix Strategies for Rural Consumer and Agricultural goods and service.
CO4	To develop communication skills in media students and to understand Rural communication in contemporary society.

Entertainment & Media Marketing	
CO1	To equip students with an understanding of marketing practices, frameworks, and trends in the Entertainment Sector
CO2	Introducing the students to the television industry and film industry.
CO3	Will make students go through different case studies regarding radio marketing skills, Social media marketing skills etc.
CO4	Will help to know the impact of media industry on the viewers, understanding its characteristics

Digital Media	
CO1	Understand digital marketing platform
CO2	Understand the key goals and stages of digital campaigns
CO3	Understand the of use key digital marketing
CO4	Learn to develop digital marketing plans

ADVERTISING IN CONTEMPORARY SOCIETY	
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CO1	To understand the environment of Advertising in Contemporary Society
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CO2	To understand Liberalization and its impact on the economy and other areas of Indian society
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CO3	To compare and analyse the advertising environment of different countries
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ISO 9001:2015 Certified

Program: Bachelor of Commerce(Accounting and Finance)
Pillai HOCL Educational Campus, Rasayani
Taluka -Khalapur Dist. Raigad -410207
Maharashtra ,India



Programme - B.Com (Accounting & Finance)

Programme Specific Outcomes

PSOs. No.	PSO Title	PSOs in brief
PSO1	Foundational Domain Mastery	Demonstrate a comprehensive mastery of core principles in Financial, Cost, and Management Accounting, alongside a robust understanding of Financial Management, Taxation, and Auditing to serve as a strong base for professional practice
PSO2	Analytical & Technological Proficiency	Cultivate advanced analytical and problem-solving skills to interpret complex financial data, and effectively utilize modern digital tools and accounting software for informed business and strategic decision-making.

PSO3	Ethical Leadership & Professional Conduct	Exhibit high standards of professional ethics, integrity, and social responsibility, coupled with strong communication and teamwork skills essential for navigating the corporate environment and promoting sustainable business practices.
PSO4	Global Career & Research Readiness	Be thoroughly prepared for diverse career opportunities in accounting, finance, and entrepreneurship, while possessing the necessary research orientation for pursuing advanced academic studies and professional certifications.

**COURSE OUTCOME
Semester-I**

Financial Accounting I	
CO1	Learners will understand different accounting standards and its practical application
CO2	Learners will learn to prepare the final accounts of a proprietary manufacturing concern
CO3	Learners will understand to employ the principles of departmental accounting involving expenses and interdepartmental transactions while preparing the final accounts of the departmental store

Auditing- I	
CO1	To introduce basics of auditing, principles of auditing, types of audits and types of errors and frauds.
CO2	To enable learners to plan the audit, know the procedures required to conduct an audit and maintenance of required documentation as per SA for audit evidence.
CO3	To examine the internal controls, internal checks basics of a continual improvement process and determine the audit technique, assess the ledger and interpret the transaction.

Preparation of Financial Budgets	
CO1	Design dynamic and flexible budget templates in Excel using formulas and functions
CO2	Convert raw data into understandable formats for decision-making and communicate business insights clearly through visuals.
CO3	Perform reconciliation, reporting, and basic financial analysis and support business decisions through accurate accounting records in Tally.

Vocational Skills in Accounting & Finance I (Introduction to Financial Functions)	
CO1	Understand and apply the core principles of Time Value of Money in financial decision-making.
CO2	Evaluate investment proposals using capital budgeting techniques (NPV, IRR, Payback, PI)

CO3	Demonstrate proficiency in computing depreciation using both manual and software tools.
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IKS IN ACCOUNTING & FINANCE	
CO1	Describe the fundamentals of IKS in relation to accounting and finance.
CO2	Explain indigenous accounting systems and their use in historical and current contexts.
CO3	Demonstrate knowledge of traditional financial instruments and early banking practices.
CO4	Apply selected IKS concepts to modern commerce scenarios through basic presentations or activities.

Communication Skills in English-I (AEC)	
CO1	Students must be able to understand and apply the core principles of business communication in diverse professional contexts.
CO2	Students must be able to demonstrate enhanced English language proficiency across Listening, Speaking, Reading, and Writing (LSRW) skills.
CO3	Students must be able to communicate effectively and confidently in professional settings by applying acquired functional English language skills.

Fundamentals of Social and Emotional Skills (VEC)	
CO1	Learners will be able to define and Identify values and life skills required in personal and professional life.
CO2	Learners will develop awareness of the self and apply well- defined stress and emotional management strategies.
CO3	Learners will be able to apply creative and critical thinking and emotional intelligence to address challenges in life

OE: Business Mathematics	
CO1	Learners will be able to calculate profit, loss, cost price, and selling price accurately, and apply these concepts to solve real-world commercial problems
CO2	Learners will be able to apply fundamental financial mathematics concepts to analyze and solve real-life financial problems involving investments, loans, and asset valuation.
CO3	Learners will be able to compute the derivative of functions and use them to analyze rates of change and optimize business-related functions.

Semester-II

Financial Accounting II	
CO1	Learners will understand the theoretical implications of various types of losses covered under fire insurance. For computing the loss of stock caused by a fire incident and ascertainment of claim amount
CO2	Learners will understand the characteristics of dependent branches and apply specific accounting methods for the preparation of the books of accounts.
CO3	Learners will learn the accounting entries of both the consignor and consignee perspectives and apply the appropriate valuation techniques for the goods under consignment sales.

Introduction to Financial Management - I	
CO1	Understand the fundamental principles and objectives of financial management.
CO2	Analyze the impact of leverage on a firm's capital structure and profitability.
CO3	Compute and interpret the cost of various sources of capital and determine the firm's overall cost of capital.

INTRODUCTION TO TAXATION	
CO1	Understand and Apply Taxation Principles
CO2	Determine Residential Status and Scope of total income.
CO3	Understanding Clubbing of income

Vocational Skills in Accounting & Finance IV (Applied Accounting Techniques with ERP and Excel)	
CO1	Apply payroll rules to calculate employee wages, generate monthly salary sheets and statutory remittances (PF, ESI, TDS) and develop skills to maintain payroll registers and reconciliation.
CO2	Prepare TDS-compliant sales and purchase registers in Excel, use Excel formulas for tax calculations and reconciliation and automate basic TDS reports for filing purposes.
CO3	Configure and operate FrontAccounting ERP for a small business, record day-to-day business transactions in relevant modules and generate accurate accounting and inventory reports.

Communication Skills in English-II (AEC)	
CO1	Learners will be able to apply effective listening strategies by practicing active listening
CO2	Learners will be able to communicate effectively and appropriately in English during a range of contexts such as meeting and greeting, self-introduction, group discussions, and interviews.
CO3	Learners will be able to analyze and interpret various types of written texts, including news reports, advertisements, online content, poems, and essays for academic and real-world applications.
CO4	Learners will be able to produce clear and structured written communication such as emails, resumes, notices, meeting agendas/minutes, paragraphs

Environmental Mindfulness and Sustainable Living(VEC)

CO1	Learners will be able to provide overview on the concept of environment, ecosystems, biodiversity and reflect on environmental values
CO2	Learners will develop awareness global environmental concerns, issues, and impacts and need for action to address these challenges
CO3	Learners will be able to identify the applications of sustainable development and environmental management strategies

SEMESTER III

Financial Accounting III

CO1	The learners will be able to prepare accounting entries and financial statements for amalgamated firms using pooling of interest and purchase methods
CO2	The learners will be able to apply the realisation method to convert a partnership firm into a limited company and prepare the new balance sheet
CO3	The learners will be able to interpret the provisions of the LLP Act, 2008 and prepare final accounts for an LLP
CO4	The learners will be able to calculate pre- and post-incorporation profits/losses and appropriately treat them in financial statements.

Cost Accounting – II

CO1	Learners will be able to compare and contrast cost accounting, financial accounting, and management accounting, and apply activity-based costing (ABC) to solve practical problems.
CO2	Learners will be able to calculate the Economic Order Quantity (EOQ) and demonstrate the preparation of stock ledger accounts.
CO3	Learners will be able to compute employee costs under various wage systems and calculate labour turnover using replacement and separation methods.
CO4	Learners will be able to apply absorption costing methods to allocate overheads in different scenarios.

Fundamentals of Money & Banking

CO1	The learners will be able to analyze the various functions of money in facilitating trade and economic activities.
CO2	The students will critically evaluate a theoretical aspect of demand for money and supply of money and its relevance in modern times.
CO3	The learner will be able to understand the basics of monetary policy, its instruments, and its

	importance to the economy.
CO4	The learners will understand the basic concept of banking, its types, and recent banking sector reforms
CO5	The students will realize the changing dynamics of the banking industry through technical progress in the operational technology and its significance for financial inclusion.

Mutual Fund Distributor – I	
CO1	The learners will be able to assess investment risks, apply risk management strategies, and create suitable asset allocation plans based on individual risk profiles.
CO2	The learners will be able to evaluate various types of mutual funds and prepare investment plan for an individual.

Field Project	
CO1	Apply concepts learned in classrooms to real-world socioeconomic conditions enhancing their understanding and skills.
CO2	Show insights into the challenges, opportunities and culture of socioeconomic diversity, preparing them for future role as responsible citizens.
CO3	Demonstrate evidence of research aptitude and skills of critical thinking, analytical skills, and ethical research conduct in field work.
CO4	Display problem-solving abilities in making informed decisions in complex scenarios through practical situations.
CO5	Work in teams and collaborate to achieve common goals in the work field environments through collaborative efforts.
CO6	Show integrity in their dealings with their work and the people that they interact with by upholding professional; principles and ethical standards.

SEMESTER IV

Financial Accounting IV	
CO1	Learners will understand the different types of companies and statutory requirements for maintaining books of accounts and also able to prepare final accounts of companies as per Schedule III..
CO2	Learners will understand how to pass the Journal entries and prepare ledger accounts for redemption of preference shares.
CO3	Learners will understand how to pass the Journal entries and prepare ledger accounts for redemption of debentures.
CO4	Learners will able to Analyse and interpret financial transactions related to buy-back of shares.

Cost Accounting – II

CO1	The learners will be able to classify costs according to functional categories and prepare comprehensive cost sheets tailored to various business scenarios and decision-making requirements.
CO2	The learners will be able to identify discrepancies between cost and financial accounts and prepare accurate reconciliation statements to align both accounting systems.
CO3	The learners will be able to prepare contract account and other relevant accounting statements.
CO4	The learners will be able to execute process costing calculations and prepare the necessary accounts.

Public Finance

CO1	Evaluate the effects of taxation and public expenditure
CO2	Evaluate the objectives of fiscal policy.
CO3	Analyze the sources of internal and external debt
CO4	Differentiate between the balanced and unbalanced budget

Mutual Fund Distributor – II

CO1	The learners will be able to explain the organizational hierarchy of mutual funds in India and the functions of various stakeholders, including asset management companies (AMCs) and distributors.
CO2	The learners will be able to evaluate the performance of mutual funds.

Business Communication Skills -II (AEC)

CO1	Understand and engage with group communication processes.
CO2	Perform more effectively during interviews and group discussions.
CO3	Participate more efficiently in meetings.
CO4	Write more impactful trade-related communication. Learners will be able to apply effective listening strategies by practicing active listening

SEMESTER-V

Financial Management -II

CO1	Learners will understand how a business makes smart, long-term decisions about money, such as where to invest and how to finance operations, to maximize shareholder wealth.
CO2	Learners will be able to evaluate investment projects using various capital budgeting techniques.
CO3	Learners will understand the theoretical frameworks behind optimal capital structure choices and learn how dividend policy impacts firm value and shareholder wealth.
CO4	Learners will learn how to value bonds using discounted cash flow models and assess the performance and suitability of different types of mutual funds for a given investment objective.
CO5	Learners will be equipped with the skills to analyze and manage a firm's credit policy.

Cost Accounting- III	
CO1	Students will be able to explain the concept and importance of uniform costing, prepare uniform cost manuals, and perform inter-firm comparisons to evaluate efficiency and performance.
CO2	Students will be able to distinguish between integrated and non-integrated accounting systems, record transactions, and prepare integrated ledgers and cost control accounts accurately.
CO3	Students will be able to calculate per-unit cost and pricing of services, and apply operating costing techniques for industries like hospitals, hotels, and passenger/goods transport services
CO4	Students will be able to compute equivalent units of production, value work-in-progress using FIFO and weighted average methods, and account for inter-process transfers at profit.
CO5	Students will be able to implement Activity-Based Costing, identify cost drivers, and compare traditional costing with ABC to allocate overheads more accurately for products and services.

Management- II (Management Applications)	
CO1	Students will understand the core concepts of marketing, including the 4Ps, product development, branding, pricing, distribution, and promotion strategies.
CO2	Students will understand the principles of production management, productivity measurement, quality systems, and inventory control.
CO3	Students will understand HRM functions such as HRP, HRD, performance appraisal, leadership, and motivation theories.
CO4	Students will understand financial management fundamentals, including capital budgeting, capital structure, financial markets, and investment analysis tools.

Indirect Taxes	
CO1	Understand the fundamentals of Indirect Taxation and the conceptual framework of GST.
CO2	Explain the provisions related to levy and collection of GST and apply them to business transactions.
CO3	Interpret the concept of supply under GST and classify transactions accordingly.
CO4	Prepare and interpret GST-related documentation including invoices, debit/credit notes, and e-way bills.
CO5	Compute GST liability accurately using Input Tax Credit provisions.
CO6	Demonstrate understanding of GST registration procedures, compliance requirements, and

	amendments.
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Financial Accounting V	
CO1	Gain knowledge about underwriting of shares and debentures.
CO2	To understand the compliance of conditions including sources, maximum limits and debt equity ratio
CO3	Aware of the accounting treatment in relation to amalgamation, absorption and external reconstruction and the relevant accounting standards.
CO4	To understand the concept of internal reconstruction and pass Journal Entries for the same..

Financial Accounting VI	
CO1	Learners will be able to prepare and interpret final accounts of banking companies as per RBI guidelines.
CO2	Learners will demonstrate the ability to prepare financial statements of General insurance companies.
CO3	Learners will understand financial reporting practices and compliance requirements applicable to NBFCs.
CO4	Learners will accurately compute goodwill and share values for decision-making and corporate restructuring.
CO5	Learners will apply appropriate accounting procedures in maintaining and presenting LLP financial records.

SEMESTER VI

Financial Management -III	
CO1	Describe the dimensions of performance and risk relevant to financial firms.
CO2	Able to understand the concept of business valuation , mergers and acquisition etc.
CO3	Able to understand the practical aspect of lease accounting , hire purchase system and its accounting treatment..
CO4	Able to understand how to calculate the amount of working capital.

Cost Accounting- IV	
CO1	Students will understand and apply budgeting techniques (functional, fixed, flexible, zero-based, performance budgeting) for effective financial planning and budgetary control.
CO2	Students will analyze costs using absorption costing, marginal costing, and CVP analysis to compute break-even point, margin of safety, and evaluate key factor situations.
CO3	Students will use relevant costing principles to make informed managerial decisions such as make-or-buy, sales mix changes, entering new markets, and shutdown decisions.
CO4	Students will calculate and interpret various cost variances (material, labour, overheads, sales, profit) to assess performance and support managerial control.

Management- II (Management Applications)	
CO1	Students will understand modern production environments, advanced manufacturing technologies, value chain concepts, and control mechanisms across different sectors.
CO2	Students will understand analytical tools for managerial decision-making, including incremental ROI, sensitivity analysis, and responsibility budgeting within an organizational hierarchy.
CO3	Students will understand the structure and functioning of responsibility centres along with performance measurement techniques.
CO4	Students will understand transfer pricing concepts and the various methods used to determine internal prices between divisions.
CO5	Students will understand the need, methods, and implications of inflation accounting and how financial reporting is affected by price-level changes.

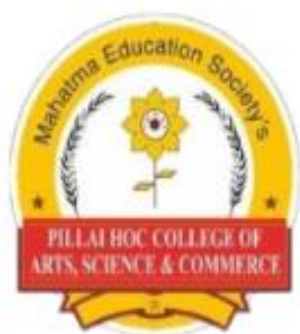
Indirect Taxation Paper IV	
CO1	Understand the provisions related to payment of GST, including methods, timelines and refund mechanisms.
CO2	Explain the various types of GST returns, due dates and compliance requirements.
CO3	Gain knowledge of GST-related accounts, audit procedures, assessment types and statutory record-keeping.
CO4	Understand the basic framework, objectives and key definitions under the Customs Act, 1962.
CO5	Explain and apply the procedures under the Customs Act including import/export documentation, valuation, classification and duty assessment.

Financial Accounting VII	
CO1	Students will be able to prepare the full set of final accounts for an electricity company using the prescribed Double Account System format.
CO2	Students will be able to analyze and correctly classify capital and revenue transactions into the appropriate final account statements
CO3	Students will be able to evaluate the financial performance of an electricity company by correctly interpreting the Disposal of Surplus mechanism.
CO4	Students will be able to demonstrate knowledge of the statutory accounting requirements, including rules for Replacement of Assets and the Contingency Reserve.
CO5	Students will be able to solve practical problems requiring the application of specific Electricity Rules and the preparation of the General Balance Sheet.

Project Work	
CO1	Ability to formulate, structure, and present a project report based on Research Methodology following specified guidelines.
CO2	Ability to conduct a minimum of 20 days/100 hours of Internship and prepare a brief project report covering organizational details, personal role, challenges, and conclusions.
CO3	Demonstrate effective communication skills and in-depth knowledge of the study area during the Viva-voce examination.

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Programme of B.Com(Accountancy)

Programme Specific Outcomes

PSOs. No.	PSO Title	PSOs in brief
PSO1	Financial Expertise	Graduates will be able to apply accounting principles and financial management techniques to prepare, analyze, and interpret financial statements for businesses, organizations, and individuals.
PSO2	Professional Competence and Ethics	Graduates will demonstrate professional integrity, ethical decision-making, and adherence to regulatory standards in accounting, auditing, and taxation practices.
PSO3	Analytical and Problem-Solving Skills	Graduates will develop critical thinking and analytical skills to identify, evaluate, and solve complex financial and business challenges using appropriate accounting tools and techniques.
PSO4	Global and Technological Awareness	Graduates will understand international accounting standards and practices, and effectively use accounting software and digital tools to meet global business requirements and emerging trends in finance and commerce.

Course Outcomes

SEMESTER I

Accountancy & Financial Management I	
CO1	Learners will understand different accounting standards and its practical application
CO2	Learners will learn to prepare the final accounts of a proprietary manufacturing concern
CO3	Learners will understand to employ the principles of departmental accounting involving expenses and interdepartmental transactions while preparing the final accounts of the departmental store

Introduction to Business	
CO1	Learners will recognize the fundamental components of the business and will be able to apply theoretical knowledge to real world scenarios within the Business Environment.
CO2	Learners would understand the concept and importance of project planning and business strategies and would get hands-on through case studies.
CO3	Learners would overview the concept of Entrepreneurship and start-up ventures

Introduction to Business Economics	
CO1	Understand the concept and significance of Business Economics with its basic concepts.
CO2	Analyse demand function, & estimate demand function with forecasting market trends.
CO3	Understand the theory of cost & production with its applicabilities.
CO4	Apply market analytics concepts to analyze real-world business cases, demonstrating practical problem-solving skills.

Business Registration Procedures (Vocational Skills in Accounting)	
CO1	Learners will understand the basic concepts of taxation and business registration in India.
CO2	Learners will learn to describe the legal procedures for registering companies and ensuring employee-related compliances.
CO3	Learners will recognize the importance of start-up registration and compliance under various sector-specific laws.

Indian Knowledge System in Accounting & Finance	
CO1	Describe the fundamentals of IKS in relation to accounting and finance..
CO2	Explain indigenous accounting systems and their use in historical and current contexts.
CO3	Demonstrate knowledge of traditional financial instruments and early banking practices.
CO4	Analyze the importance of ethical values in financial transactions from an Indian perspective.
CO5	Apply selected IKS concepts to modern commerce scenarios through basic presentations or activities.

SEMESTER II

Indian Knowledge System in Accounting & Finance	
CO1	Learners will understand the theoretical implications of various types of losses covered under fire insurance. For computing the loss of stock caused by a fire incident and ascertainment of claim amount
CO2	Learners will understand the characteristics of dependent branches and apply specific accounting methods for the preparation of the books of accounts.
CO3	Learners will learn the accounting entries of both the consignor and consignee perspectives and apply the appropriate valuation techniques for the goods under consignment sales.

Introduction to Service Sector	
CO1	Understand the foundational concepts, scope, and trends in the service sector and its growing importance in India.
CO2	Analyse retailing and e-commerce strategies and evaluate their role in the evolving business landscape.
CO3	Apply core concepts and tools of digital marketing for business promotion and customer engagement. Demonstrate understanding of Customer Relationship Management (CRM) and its applications in digital and retail space.

Economics of Market Behaviour	
CO1	Use the concepts of Market, Competition, and demand curve in different markets.
CO2	Identify and appraise various Markets on the basis of competition. Identify and appraise various models of how markets organization, and how price and output decisions are taken for maximizing profit.
CO3	Identify use of different pricing strategies in business applications.
CO4	Apply market analytics concepts to analyze real-world business cases, demonstrating practical problem-solving skills.

Organizational Records & Documentation (Vocational Skills in Accounting)	
CO1	To understand the role and types of business documents used in daily operations.
CO2	To describe common financial documents and payment instruments used in business transactions.
CO3	To Outline basic procedures and documents used in international trade..

SEMESTER III

Accountancy & Financial Management III	
CO1	The learners will be able to compute and prepare profit or loss statement for the pre and

	post-incorporation periods in a given case study
CO2	The learners will be able to prepare a complete set of financial statements, including the Profit and Loss Statement and Balance Sheet, for a given company based on provided data and in compliance with Schedule III of the Companies Act, 2013.

Management Accounting I

CO1	The learners will apply trend analysis, comparative statements, and common size statements to solve practical problems related to financial statement interpretation.
CO2	The learners will be able to create a comprehensive report summarizing the financial performance of a company based on ratio analysis and Du Pont chart findings.

Introduction to Marketing Management

CO1	To understand the basics of marketing management and the impact of business environmental forces on marketing practices.
CO2	To examine the buying behavior of consumers & understand the marketing strategies
CO3	To explore the marketing mix elements in generating marketing outcomes for a product or service.
CO4	To analyze the emerging trends in marketing management & evaluate the impact of technology on marketing decisions.

Fundamentals of Money & Banking

CO1	The learners will be able to analyze the various functions of money in facilitating trade and economic activities.
CO2	The students will critically evaluate a theoretical aspect of demand for money and supply of money and its relevance in modern times.
CO3	The learner will be able to understand the basics of monetary policy, its instruments, and its importance to the economy.
CO4	The learners will understand the basic concept of banking, its types, and recent banking sector reforms
CO5	The students will realize the changing dynamics of the banking industry through technical progress in the operational technology and its significance for financial inclusion.

Vocational Skills in Accounting – V (Auditing)

CO1	To develop a clear conceptual understanding of auditing principles, procedures, and practices, including the nature, objectives, inherent limitations, and types of audits.
CO2	To equip students with practical skills in audit planning, documentation, and evaluation, enabling them to understand audit working papers, audit programs, fraud risk assessment, and real- world audit processes.

SEMESTER IV

Accountancy & Financial Management IV

CO1	The learners will be able to prepare journal entries and balance sheet to reflect the redemption of preference shares using the appropriate methods and accounting treatment.
CO2	The learners will be able to construct journal entries, ledger accounts, and a partial balance sheet to record the redemption of debentures using different methods

Management Accounting II

CO1	Learners will be able to calculate the operating cycle and estimate the working capital needs of trading and manufacturing firm.
CO2	Learners will be able to solve practical problems related to cash management using various models.

Course Outcomes Retail Marketing

CO1	Students will be able to demonstrate a comprehensive understanding of core retail marketing concepts and analyze the behaviour of retail consumers.
CO2	Students will be able to critically evaluate and formulate strategic decisions regarding retail location selection and merchandise management.
CO3	Students will be able to apply the 4Ps of marketing to develop effective rural retailing strategies and construct robust retail brand.
CO4	Students will be able to analyze and compare various e-retailing business models and assess the strategic role of visual merchandising.

Public Finance

CO1	To understand the learners with the various concepts related to public finance
CO2	To make the learners able to understand the sources of public revenue
CO3	To make the learners understand the tools of fiscal policy.
CO4	To equip the learners with government budget and Intergovernmental Fiscal Relations
CO5	To make the learners understand the classification of public debt

Vocational Skills in Accounting – VI (Auditing)

CO1	Learners will be able to summarize and evaluate the existing financial control system of the firm based on various case studies.
CO2	Learners will be able to identify potential misstatements and ensure compliance with accounting standards.

SEMESTER V

Financial Accounting and Auditing VII - Financial Accounting	
CO1	Learners will be able to prepare corporate final accounts accurately by applying statutory formats, adjustments, and disclosure requirements.
CO2	Learners will be able to record and present accounting entries for internal reconstruction and prepare revised financial statements post-reconstruction.
CO3	Learners will be able to apply appropriate accounting treatments for buyback of shares and evaluate its impact on the company's capital structure
CO4	Learners will be able to prepare investment accounts and apply AS-13 for the recognition, measurement, and reporting of investment-related transactions.
CO5	Learners will be able to demonstrate ethical judgement and professional conduct while performing accounting tasks and handling financial information.

Cost Accounting	
CO1	Learners will understand objectives and scope of Cost Accounting.
CO2	Learners will learn and will be well versed in the fundamentals of cost accounting such as types of cost and material, labour and overheads.
CO3	Learners will understand Classification of Costs and preparation of Cost Sheet.
CO4	Learners will understand how to reconcile Cost and Financial Accounts..

Business Economics-V	
CO1	Students will be able to interpret major macroeconomic indicators and assess India's economic performance.
CO2	Students will develop the ability to explain how monetary and fiscal policies influence economic stability.
CO3	Students will be able to critically analyse current macroeconomic issues in India.
CO4	Students will demonstrate understanding of long-term growth prospects and policy reforms for economic development.

Commerce V	
CO1	Learners will understand concepts like Marketing, marketing research, CRM and MIS
CO2	Learners will learn and understand the marketing management aspect with reference to the decision making process in sales management and supply chain management.
CO3	Learners will be able to create awareness of key marketing dimensions..
CO4	Learners will understand and update about marketing challenges faced by marketing managers in the 21st century.

Direct and Indirect Taxes Paper - I	
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CO1	After successful completion of the course, students are able to create an understanding of the basic concept of Direct Tax and basic definition of Direct Tax and assesses.
CO2	It familiarizes with heads of income with its components
CO3	Students are able to develop insight of the basics of Income Tax Act with special reference to computation of total income.
CO4	Students are able to understand the process and techniques of assessment of tax liability.

Export Marketing-I

CO1	On successful completion of this subject the learners are able to acquire knowledge about basic concepts and global framework for export marketing.
CO2	Students are able to understand the global framework for export marketing.
CO3	Students are acquainted with Foreign Trade Policy.
CO4	Students are able to know basic financial incentives and updates with current trends in export marketing

SEMESTER VI

Financial Accounting and Auditing IX- Financial Accounting

CO1	Learners will be able to apply AS-14 to prepare accounting records for amalgamation, absorption, and external reconstruction in accordance with statutory and accounting guidelines.
CO2	Learners will be able to record and report foreign currency transactions accurately, handling exchange rate fluctuations and their impact on financial statements.
CO3	Learners will be able to prepare liquidation accounts, including liquidator's statement of receipts and payments, and compute payments to creditors and shareholders.
CO4	Learners will be able to compute underwriting obligations, determine firm underwriting, and prepare accounting statements for underwriting of shares and debentures.
CO5	Learners will be able to prepare financial statements for LLPs, interpret their capital structure, profit-sharing mechanism, and comply with relevant accounting norms.

Cost Accounting

CO1	Learners will understand cost control accounts and Subsidiary accounts and preparation of cost control accounts
CO2	Learners will be able to calculate preparation of Process Account and Contract Account.
CO3	Learners will understand Marginal Costing and prepare Material and Labour variance Statement.
CO4	Learners will understand some Emerging Concepts of Cost Accounting and its relevance in industry.

Business Economics-VI	
CO1	Learners will understand the Ricardian Theory of Comparative Cost and the concepts of terms of trade.
CO2	Learners will be able to the difference between free trade and protection.
CO3	Learners will understand the concept of Balance of Payment
CO4	Learners will understand the foreign exchange market and foreign exchange rate management

Commerce VI	
CO1	Students are able to understand the concept of Human Resource Management.
CO2	It acquaints the students with Human Resource Development.
CO3	Students realize the significance of Human Relation at the Workplace.
CO4	Students are able to comprehend various Trends in Human Resource Management.

Direct and Indirect Taxes Paper - II Goods and Service Tax Act	
CO1	Students are able to understand the basic concepts, definitions and terms related to Goods and Service tax (GST). .
CO2	Students comprehend the concept of forward charge mechanism, reverse charge mechanism, composite supply, mixed supply and various exemptions under the new Goods and Service tax regime.
CO3	Students realize the concept of supply along with the rules related to time, place and value of supply.
CO4	Students are able to compute the Goods and Service Tax (GST) payable by a supplier after considering the eligible input tax credit.
CO5	Students acquire knowledge related to the persons liable for registration and the persons not required to obtain registration under the GST law.

Export Marketing-II	
CO1	Apply export product planning strategies, determine appropriate export pricing, and prepare FOB, CIF, and C&F quotations using INCOTERMS.
CO2	Select suitable distribution channels, evaluate logistics components, and apply promotional tools relevant to international markets.
CO3	Identify and execute appropriate methods of export payments, arrange export finance, and coordinate with export financing institutions effectively.
CO4	Complete the end-to-end export procedure, including documentation, customs clearance, shipping formalities, and post-shipment processes for realisation of export proceeds.

**Mahatma Education Society's
Pillai HOC College of Arts, Science & Commerce (Autonomous)
Rasayani**

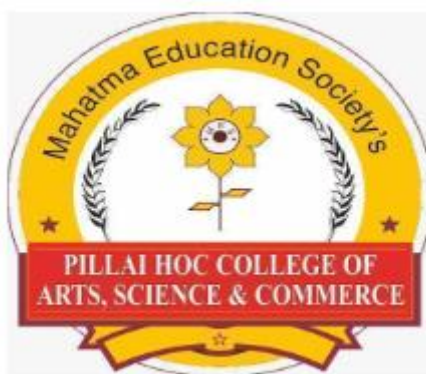
Affiliated to University of Mumbai
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Programme -BMS (Bachelor of Management Studies)

Pillai HOCL Educational Campus, Rasayani

Taluka -Khalapur Dist. Raigad -410207

Maharashtra ,India



Programme -BMS (Bachelor of Management Studies)

Programme Specific Outcomes

PSOs. No.	PSO Title	PSOs in brief
PSO1	Managerial Knowledge and Application	Graduates will develop a strong understanding of key management principles and be able to apply them effectively in organizational settings to support decision-making and operational efficiency.
PSO2	Effective Communication and Interpersonal Skills	Students will be able to communicate clearly and professionally in business environments while demonstrating strong interpersonal, social, and emotional competencies essential for teamwork and leadership.
PSO3	Entrepreneurial and Analytical Competence	Learners will gain foundational entrepreneurial abilities along with analytical and numerical reasoning skills that enable them to identify business opportunities, evaluate challenges, and propose practical solutions.
PSO4	Ethical, Sustainable, and Global Mindset	Graduates will demonstrate ethical behaviour, environmental awareness, and an understanding of global business perspectives, preparing them to act responsibly and sustainably in diverse professional contexts.

Course Outcomes

SEMESTER I

Course	Principles of Management
CO1	Learners will summarize the elementary concepts, principles and theories of management.
CO2	Learners can think critically and strategically about management theories and issues, which will enable them to develop their decision-making and analytical skills
CO3	Learners will evaluate & create a roadmap to derive concrete managerial decisions in order to lead to solutions

Course	Foundation of Human Skills
CO1	Learners will be able to outline perspectives of Human nature: Individual behaviour; personality; attitude. Student will be able to explain, summarize, and give examples of 'Thinking & Learning', IQ/EQ and SQ at work place)
CO2	Learners will be able to break-down group behaviour contexts and student will be able to compare and contrast/ argue / justify organizational processes and role of group.
CO3	Learners will understand and evaluate organizational culture. Analyze the need for organizational change and development.

Course	Introduction to Financial Accounts
CO1	Students will be able to explain fundamental accounting concepts, conventions, standards, and the role of accounting in business.
CO2	Students will acquire the skills to record, classify, and post accounting transactions using journals, ledgers, subsidiary books, and prepare a trial balance.
CO3	Students will be able to differentiate and classify capital/revenue items, identify types of receipts and expenditures, and compute correct profit or loss for a business.

Course	Business Start-up Skills
CO1	Learners will understand the opportunities with regards to Business Start-ups.
CO2	Learners will learn about the survival and growth strategies of start-ups.
CO3	Learners will be encouraged to come up with innovative ideas for start-up enterprises.

Course	IKS-Bhartiya Theory Of Management
CO1	Students will be able to explain the origin, evolution, concepts, and principles of Bhartiya Theory of Management, and distinguish between Bhartiya and Western approaches to leadership and management.

CO2	Students will be able to analyze various Bhartiya management styles and evaluate their influence on contemporary business practices.
CO3	Students will be able to apply traditional Bhartiya principles to address and solve modern business challenges.

Course	Communication Skills in English-I (AEC)
CO1	Students must be able to understand and apply the core principles of business communication in diverse professional contexts.
CO2	Students must be able to demonstrate enhanced English language proficiency across Listening, Speaking, Reading, and Writing (LSRW) skills.
CO3	Students must be able to communicate effectively and confidently in professional settings by applying acquired functional English language skills.

Course	Fundamentals of Social and Emotional Skills (VEC)
CO1	Learners will be able to define and Identify values and life skills required in personal and professional life.
CO2	Learners will develop awareness of the self and apply well- defined stress and emotional management strategies.
CO3	Learners will be able to apply creative and critical thinking and emotional intelligence to address challenges in life

Course	Fundamentals of Information Communication Technology(OE)
CO1	Understand the fundamental concepts of ICT and its role in various sectors like education, health, governance, and business.
CO2	Identify and describe the core components of a computer system including hardware, software, and operating systems
CO3	Demonstrate proficiency in using word processing, spreadsheets, and presentation tools for academic and professional tasks.
CO4	Apply internet tools, email, and social media responsibly for information gathering and communication.
CO5	Utilize cloud-based storage and collaboration platforms for file sharing, real-time teamwork, and virtual communication.

SEMESTER II

Course	Managerial Functions and Practices
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CO1	Students will remember & understand the domains of delegation and control.
CO2	Students will apply & analyse the strategies adopted by successful business leaders
CO3	Students will evaluate & apply evolving management opportunities & challenges.

Course	Global Management Theories and Styles
CO1	Learners will learn about the core values and models of Organisational Development
CO2	Learners will have a clear understanding of the global theories of motivation
CO3	Learners will understand the different Management Styles followed across the globe

Course	E-Commerce
CO1	Students will be able to explain and differentiate various e-commerce business models and analyze the strategic use of digital platforms in business operations.
CO2	Students will be able to evaluate and apply integrated technologies like EDI, CRM, and SCM in designing and managing e-business solutions.
CO3	Students will be able to demonstrate proficiency in using key digital marketing tools, analytics platforms, and e-commerce technology stacks to create and optimise online business strategies.

Course	Introduction to Business Statistics (OE)
CO1	Understand the basic concepts of data, its types, and methods of collection and presentation.
CO2	Apply different measures of central tendency and dispersion to analyze statistical data.
CO3	Examine and interpret relationships between variables using correlation and linear regression techniques.

Course	Communication Skills in English-II (AEC)
CO1	Learners will be able to apply effective listening strategies by practicing active listening
CO2	Learners will be able to communicate effectively and appropriately in English during a range of contexts such as meeting and greeting, self-introduction, group discussions, and interviews.
CO3	Learners will be able to analyze and interpret various types of written texts, including news reports, advertisements, online content, poems, and essays for academic and real-world applications.
CO4	Learners will be able to produce clear and structured written communication such as emails, resumes, notices, meeting agendas/minutes, paragraphs

Course	FOREIGN EXCHANGE MARKET
CO1	Learners will analyse alternative currency translation methods for settlement of goods.
CO2	Students will examine the organization of the Foreign Exchange Market,

CO3	Learners will acquire the information about the derivative market and its operation
CO4	Learners will identify foreign exchange risk and the techniques available to control the same & examine the organization of the Foreign Exchange Market

Course	Environmental Mindfulness and Sustainable Living(VEC)
CO1	Learners will be able to provide overview on the concept of environment, ecosystems, biodiversity and reflect on environmental values
CO2	Learners will develop awareness global environmental concerns, issues, and impacts and need for action to address these challenges
CO3	Learners will be able to identify the applications of sustainable development and environmental management strategies

SEMESTER III

Course	Business Economics
CO1	Students should be able to define and explain the fundamental concepts of business economics such as opportunity cost, marginal analysis, and elasticity for effective managerial decision making.
CO2	Students should be able to analyze and interpret production and cost-related decisions using economic tools like production functions, cost curves, and break- even analysis in both short-run and long-run contexts.
CO3	Students should be able to distinguish between different market structures and evaluate pricing and output decisions under perfect competition, monopoly, monopolistic competition, and oligopoly with practical insights.
CO4	Students should be able to identify and apply various pricing strategies and practices such as cost-plus pricing, marginal cost pricing, and transfer pricing in real-world business scenarios.

Course	Business Law-II :- The Sale of Goods Act 1930
CO1	Learners will gain knowledge of The Sale of Goods Act 1930. (Understand)
CO2	Learners would be able to identify the difference between Sale and agreement to sell and Conditions and Warranties(Analyze)
CO3	Learners will be able to understand the duties of Buyer and Seller towards each other.
CO4	Learners will know the Duties of Buyer and Seller & Rights of Unpaid Seller.
CO5	Learners will be able to understand Suits for Breach of Contract and Remedies.(apply)

Course	Introduction to Finance
CO1	The learners will be able to define and explain the key concepts, scope, and objectives of financial management, and describe the role and responsibilities of the finance manager within an organization.

CO2	The learners will be able to analyze the organizational framework of financial management and understand the relationship between the finance department and other functional areas.
CO3	The learners will be able to explain the concept of capital structure, identify the factors influencing it, and evaluate the different sources of external and internal financing, including shares, debentures, and public deposits.
CO4	The learners will be able to assess the advantages, limitations, and applications of various financing options such as reserves, retained earnings, dividend policies, and depreciation in the context of organizational finance decisions.

Course	Basics of Financial Services
CO1	Student should be able to define and explain the key components, functions, and regulatory framework of the Indian financial system, with a focus on the roles of SEBI and RBI.
CO2	Student should be able to analyze the structure and functions of financial markets, distinguishing between organized & unorganized markets, and explain the roles of major financial intermediaries.
CO3	Student should be able to describe the functions of commercial banks, their investment policies, and asset structures, while also understanding the implications of liquidity, non performing assets, and capital adequacy norms.
CO4	Student should be able to evaluate the roles and functions of the Reserve Bank of India, development banks & other financial institutions like NBFCs, mutual funds, insurance companies, and merchant banking firms.

Course	Equity and Debt Markets
CO1	Student should be able to define and explain the key concepts related to shares, debentures, public deposits, and borrowing from banks, including their advantages, limitations, and role in corporate financing.
CO2	Student should be able to analyze the structure and growth of the equity market, understand the relationship between ownership and management in companies, and evaluate the development of the equity culture in India.
CO3	Student should be able to describe the dynamics of the debt market, including the evolution of debt markets in India, money markets, and regulatory frameworks, and explain the role of various players in the debt market.
CO4	Student should be able to evaluate the functioning of primary and secondary equity markets, including methods like IPO, book building, and rights issues, and understand the role of stock exchanges and indices in the capital market.

Course	Introduction to Human Resource
CO1	Learners can acquire a perspective on the emergence and evolution of human resource management function over a period of time and explore the role of HR in any organization.
CO2	Learners will analyze the effects of leadership styles and employee morale on organizational performance.
CO3	Learners should understand the issues and challenges of human resource management i.e. employee turnover, employee morale, work life balance.

CO4	Learners should be able to assess HRM strategies and develop solutions for managing challenges such as employee diversity and turnover.
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Course	Recruitment and Selection
CO1	Student should be able to describe the importance and centrality of recruitment and selection to an organization's HR System.
CO2	Student should be able to list and describe the sources of recruitment
CO3	Student should be able to describe the techniques of recruitment
CO4	Student should be able to list and explain the steps in developing an effective and valid selection interview.
CO5	Student should be able to describe the various selection tools

Course	Organisational Behaviour and Human Resource Management
CO1	Understand different concepts of Organisational Behaviour and Process involved in managing Human Capital
CO2	Analyse the key elements of Organisational Behaviour i.e., individual, group and the organisation
CO3	Critically analyse the concepts of Human Resource Management
CO4	Describe and design HR Plans, Training Programs, Recruitment functions etc.
CO5	Work upon their own personalities, interpersonal relationships and develop the sense of organisational citizenship behaviour

Course	Introduction to Marketing
CO1	Student should be able to define and explain fundamental marketing concepts, the marketing environment, and the differences between marketing and selling.
CO2	Student should be able to identify and analyze the micro and macro environmental factors influencing marketing decisions and explain the role of marketing research and MIS.
CO3	Student should be able to describe the elements of the marketing mix, including product, price, place, and promotion, and apply these concepts to real-world marketing scenarios.
CO4	Student should be able to understand and apply the principles of segmentation, targeting, and positioning, and evaluate new trends in marketing such as e-marketing, social media marketing, and relationship marketing.

Course	Sales & Distribution Management
CO1	Student should be able to define and explain the concepts, evolution, and structure of sales and distribution management, including the roles and functions of sales departments and intermediaries.

CO2	Student should be able to analyze the integration of sales, marketing, and distribution functions within an organization for effective customer relationship management and internal marketing.
CO3	Student should be able to apply various methods of market analysis, sales forecasting, and sales quota setting to plan and evaluate sales performance.
CO4	Student should be able to describe and demonstrate effective selling processes, strategies, and skills, and distinguish between different types of selling in national and international contexts.

Course	Consumer Behaviour
CO1	Able to explain the basic concepts and models of consumer behavior.
CO2	Able to analyze the effects of psychological, socio-cultural and demographic factors on the consumer decision process with their results
CO3	Able to distinguish the relationship between consumer behavior and marketing practices.
CO4	Able to define the importance of consumer behavior for businesses
CO5	Able to define the importance of group effects in consumer behavior

Course	OE: Cyber & Digital Safety
CO1	Understand key concepts in cyber security and differentiate between threats and risks.
CO2	Apply safe browsing practices and protect their digital identity across platforms.
CO3	Identify and avoid common cyber scams, phishing attacks, and fake news.
CO4	Safeguard personal devices, use secure communication tools, and manage passwords.
CO5	Understand the ethical concerns and emerging trends in AI-driven cyber threats.

Course	CC-NSS
CO1	Students will be able to <i>analyze the contributions of key Indian social reformers</i> such as Mahatma Gandhi, Swami Vivekananda, Mahatma Phule, Rajshri Shahu Maharaj, Baba Amte, and others, and explain their impact on the development of social work in India.
CO2	Students will <i>demonstrate improved soft skills and life skills</i> , including communication, problem-solving, empathy, self-awareness, and interpersonal skills, enabling them to participate more effectively as NSS volunteers in community-based activities.

Course	Field Project
CO1	Apply concepts learned in classrooms to real-world socioeconomic conditions enhancing their understanding and skills.
CO2	Show insights into the challenges, opportunities and culture of socioeconomic diversity, preparing them for future role as responsible citizens.

CO3	Demonstrate evidence of research aptitude and skills of critical thinking, analytical skills, and ethical research conduct in field work.
CO4	Display problem-solving abilities in making informed decisions in complex scenarios through practical situations.
CO5	Work in teams and collaborate to achieve common goals in the work field environments through collaborative efforts.
CO6	Show integrity in their dealings with their work and the people that they interact with by upholding professional; principles and ethical standards.

Course	AEC: व्यावहारिक प्रयोग (Hindi)
CO1	व्यवहारिक कौशल भाषा बहुरी का ज्ञान प्राप्त होगी, एवंदक्षता प्राप्त होगी
CO2	व्यवहारिक कौशल भाषा बहुरी के व्याकरणक प्रयोग की जानकारी प्राप्त होगी
CO3	व्यवहारिक कौशल बहुरी-संज्ञा आवेद का ज्ञान प्राप्त करनेकेसार् भाषा केिद्धु, व्यावहारिक रूप का ज्ञान होगा
CO4	व्यवहारिक कौशल वाक्यों, वाक्य होना एवंभावक वीहों आवेद का ज्ञान प्राप्त होगा

SEMESTER IV

Course	Production & Total Quality Management
CO1	Student should be able to identify and explain basic management decisions related to production and quality management, including the principles of productivity and TQM
CO2	Student should be able to describe material management and explain various inventory control techniques, along with solving numerical problems related to EOQ, lead time, reorder level, and safety stock.
CO3	Student should be able to explain the basics of productivity and Total Quality Management (TQM), and describe various aspects of product and service quality, including the SERVQUAL model..
CO4	Student should be able to explain key quality standards and awards such as ISO 9000, ISO 14000, QS 9000, Malcolm Baldrige Award, National Quality Award, and Deming's Application Prize.

Course	Business Research Methods
CO1	Learner will be able to gain hands on experience and learn business research skills.
CO2	Learner will be able to acquire analytical abilities and research skills.

Course	Business Law-III : The Negotiable Instruments Act 1881 and Amendment 2015
CO1	Learners will gain knowledge of the Negotiable Instruments Act. (Understand)
CO2	Learners would be able to learn the various types of Negotiable Instruments and its application in business.(Apply)
CO3	Learners will know the importance of Promissory Notes and Bills of exchange and cheques in Business.

Course	Human Resource Planning
CO1	Student should be able to demonstrate a clear understanding of key terms, theories, concepts and practices related to Human Resource Planning (HRP).
CO2	Student should be able to apply HRP concepts to develop solutions and address problems in the area of Human Resource Planning.
CO3	Student should be able to describe the HRP process and explain the barriers that hinder its effective implementation.
CO4	Student should be able to understand and explain the key terms, theories, concepts and practices related to Job Analysis, Recruitment and Selection.

Course	Performance Management and Career Planning
CO1	Student should be able to explain performance management process.
CO2	Student should be able to assess performance management approach
CO3	Student should be able to create structure of a performance management system
CO4	Student should be able to explain various aspects of career planning and development process in relation to employee development program

Course	RURAL MARKETING
CO1	Develop understanding of issues in rural markets.
CO2	Categorize issues in rural markets.
CO3	Understanding the Overview and Scenario of rural marketing in India.
CO4	Analyze marketing environment, consumer behaviour, distribution channels, marketing strategies, etc. in the context of rural markets in India.

Course	Tourism marketing
CO1	Student should be able to define and explain the meaning, features, and types of tourism, identify the factors influencing tourism growth, and analyze the adverse effects of tourism.

CO2	Student should be able to describe the key concepts of tourism marketing, including its objectives, importance, and challenges, and explain the segmentation bases and typologies used in tourism marketing.
CO3	Student should be able to analyze the product mix of tourism marketing, including destination life cycle, factors for tourism destination selection, itinerary planning, and the processes involved in tourism product packaging.
CO4	Student should be able to evaluate the components of the 4 'A's of tourism— Attraction, Accommodation, Accessibility, and Amenities—and assess India's position as a tourist destination,

Course	Strategic Financial Management
CO1	Student should be able to explain financial strategy and control of a company.
CO2	Student should be able to describe the relevance of risk and uncertainty in making strategic decisions.
CO3	Student should be able to explain various aspects of capital budgeting.
CO4	Student should be able to apply learning in simple problems of capital budgeting, capital structure, dividend policy.

Course	Risk Management
CO1	Student should be able to list the range of financial and financial related risks facing organisations.
CO2	Student should be able to describe approaches to risk management through risk identification, risk measurement and risk management.
CO3	Risk Management Vs Enterprise Risk Management

Course	Business Communication Skills -II (AEC)
CO1	Understand and engage with group communication processes.
CO2	Perform more effectively during interviews and group discussions.
CO3	Participate more efficiently in meetings.
CO4	Write more impactful trade-related communication. Learners will be able to apply effective listening strategies by practicing active listening

Course	CC-NSS
CO1	Students will be able to analyze the contributions of key Indian social reformers such as Mahatma Gandhi, Swami Vivekananda, Mahatma Phule, Rajshri Shahu Maharaj, Baba Amte, and others, and explain their impact on the development of social work in India.
CO2	Students will demonstrate improved soft skills and life skills, including communication, problem-solving, empathy, self-awareness, and interpersonal skills, enabling them to

	participate more effectively as NSS volunteers in community-based activities.
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Course	Community Engagement Project
CO1	Students are able to understand and analyze basic social, environmental, and community issues at the local level
CO2	Students are able to demonstrate active participation in community-based activities and apply classroom knowledge to real-life situations
CO3	Students are able to develop teamwork, leadership, and communication skills through collaborative fieldwork and outreach programs

Course	OE: Data Analytics
CO1	Work with datasets using spreadsheet tools and Python.
CO2	Apply data cleaning and transformation techniques.
CO3	Generate meaningful visualizations and summaries from data.
CO4	Use tools like Power BI for creating dashboards.
CO5	Derive actionable insights from data in real-life scenarios

SEMESTER V

Course	Logistics and Supply Chain Management
CO1	The learner will be able to explain the fundamental concepts of logistics and supply chain management including customer service and demand forecasting.
CO2	The learner will be able to identify and describe key logistics activities such as transportation, warehousing, material handling, and packaging.
CO3	The learner will be able to apply inventory management techniques and analyze logistics costing and performance measurement in supply chain operations.
CO4	The learner will be able to examine the role of IT, outsourcing, infrastructure and globalization in modern logistics and supply chain management.

Course	Corporate Communication and Public Relations
CO1	Understand the core concepts of corporate communication and its relevance in organisations
CO2	Grasp fundamentals of public relations, various theories, and how PR functions in a business context.
CO3	Appreciate the functional roles of corporate communication & PR — media relations, employee communication, crisis communication, financial communication.

CO4	Recognize the impact of emerging technologies and digital communication tools in modern corporate communication / PR practices.
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Course	Investment Analysis and Portfolio Management
CO1	Students will be able to acquaint the learners with various concepts of finance
CO2	Students will be able to understand the terms which are often confronted while reading newspaper, magazines etc for better correlation with the practical world
CO3	Students will be able to understand various models and techniques of security and portfolio analysis.

Course	Wealth Management
CO1	Students will understand the fundamentals of wealth management, its scope, components, client expectations, code of ethics, and personal financial planning tools including financial statements, cash flow analysis, and life-cycle management.
CO2	Students will understand key economic indicators, insurance principles, calculation of Human Life Value, types of insurance products, investment risk, asset allocation, and goal-based investment strategies.
CO3	Students will gain the ability to apply financial mathematics, understand tax concepts, income tax rules, deductions, exemptions, and estate planning tools such as wills and trusts.
CO4	Students will understand retirement planning concepts, salary components, wealth creation principles, pre- and post-retirement strategies, and various income streams including annuities and tax-saving schemes.

Course	Risk Management
CO1	The Learner will be able to explain fundamental aspects of risk management, measurement and control, and define risk process and key risks such as credit risk, market risk, currency risk, liquidity risk etc.
CO2	The Learner will be able to define risk mitigation techniques and hedging instruments such as forwards, futures, options, arbitrage and swaps, and explain Enterprise Risk Management framework, process, ERM matrix and its applications.
CO3	The Learner will be able to explain risk governance mechanisms, the three lines of defense model, sources and purpose of risk assurance and methods of addressing stakeholder expectations.
CO4	The Learner will be able to explain insurance industry and risk management, role of IRDA, players of insurance business such as life, non-life, reinsurance and bancassurance, and describe claim management procedures.

Course	Direct and Indirect Taxes Paper - I
CO1	Students will understand the concept of Residential Status and Scope of Total Income
CO2	After successful completion of the course, students are able to create an understanding of the basic concept of Direct Tax and basic definition of Direct Tax and assessee.

CO3	It familiarizes with heads of income with its components
CO4	Students are able to develop insight of the basics of Income Tax Act with special reference to computation of total income.

Course	Finance for HR Professionals and Compensation Management
CO1	Students will be able to explain the purpose of compensation systems, differentiate financial and non-financial components, and evaluate the role of HR in compensation planning.
CO2	Students will be able to classify various incentive plans, understand factors behind wage differentials, and apply wage theories in practical HR situations.
CO3	Students will be able to design compensation structures for specialized employee categories and critically evaluate new compensation trends in modern organizations.
CO4	Students will be able to interpret key legal regulations such as the Payment of Wages Act, Bonus Act, Gratuity Act, EPF Act, and apply ethical principles in compensation decision- making.

Course	Strategic HRM & HR Policy
CO1	Students are able to understand human resource management from a strategic perspective.
CO2	Students are able to link the HRM functions to corporate strategies in order to understand HR as a strategic resource.
CO3	Students are able To understand the relationship between strategic human resource management and organizational performance.
CO4	Students will gain information about the theories and concepts relevant to strategic human resource management in contemporary organizations.
CO5	Students will have awareness on the purpose and process of developing Human Resource Policies.

Course	Performance Management and Career Planning
CO1	Explain the concepts, principles, and processes of performance management and understand their role in improving individual and organizational effectiveness.
CO2	Apply appropriate performance appraisal methods, goal-setting techniques, and feedback tools to evaluate employee performance accurately and fairly.
CO3	Analyze employee performance data and identify performance gaps to recommend suitable development strategies and performance improvement plans.
CO4	Demonstrate understanding of career planning and development frameworks by designing career paths, growth plans, and succession planning strategies aligned with organizational objectives..

Course	Stress Management
CO1	To understand the nature and causes of stress in organizations.
CO2	To familiarize the learners with the stress prevention mechanism.
CO3	To understand the strategies that help cope with stress.
CO4	To be able to apply stress management principles in order to achieve high levels of performance.
CO5	To enable learners to adopt effective strategies, plans and techniques to deal with stress.

Course	Services Marketing
CO1	Students will be able to understand distinctive features of services and key elements in services marketing.
CO2	Students will be able to provide insight into ways to improve service quality and productivity.
CO3	Students will be able to understand marketing of different services in Indian context.

Course	E-Commerce and Digital Marketing
CO1	Students will be able to explain and differentiate various e-commerce business models and analyze the strategic use of digital platforms in business operations.
CO2	Students will be able to evaluate and apply integrated technologies like EDI, CRM, and SCM in designing and managing e-business solutions.
CO3	Students will be able to understand Latest Trends and Practices in E-Commerce and Digital Marketing, along with its Challenges and Opportunities for an Organisation

Course	Sales & Distribution Management
CO1	Students will understand the fundamentals of sales management, the role of the sales department, sales organization structures, distribution management, and the integration of sales, marketing, and distribution functions.
CO2	Students will understand sales forecasting methods, sales quotas, territory allocation, selling theories, selling processes, sales closing techniques, and selling skills and strategies.
CO3	Students will understand distribution channel structures, channel partners, channel selection criteria, channel strategy factors, and channel conflict management including methods of conflict resolution.
CO4	Students will understand sales performance evaluation tools, distribution channel performance metrics, control instruments, sales ethics, and emerging trends in sales and distribution management.

Course	Customer Relationship Management
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CO1	Understand the basic concepts of Customer relationship management.
CO2	Understand marketing aspects of Customer relationship management.
CO3	Learn basics of analytical Customer relationship management.
CO4	Understand basics of operational Customer relationship management.

SEMESTER VI

Course	Operation Research
CO1	Students will be able to identify and formulate Operations Research problems from business situations.
CO2	Students will be able to apply OR techniques such as LPP, Assignment, Transportation, CPM, PERT, and Game Theory to solve problems.
CO3	Students will be able to interpret results to determine optimal solutions, feasibility, resource use, and project timelines.
CO4	Students will be able to use OR-based analysis to support effective and efficient managerial decision-making.

Course	Project Work
CO1	Ability to formulate, structure, and present a project report based on Research Methodology following specified guidelines.
CO2	Ability to conduct a minimum of 20 days/100 hours of Internship and prepare a brief project report covering organizational details, personal role, challenges, and conclusions.
CO3	Demonstrate effective communication skills and in-depth knowledge of the study area during the Viva-voce examination.

Course	Innovative Financial Services
CO1	Learners will understand the nature, functions, and regulatory aspects of traditional financial services and their role in financial markets.
CO2	Learners will gain knowledge about issue management, market intermediaries, and securitization mechanisms in the Indian financial system.
CO3	Learners will understand the structure, functioning, and legal aspects of leasing, hire purchase, housing finance, and venture capital.
CO4	Learners will understand consumer finance mechanisms, types of plastic money, and the credit rating process in India.

Course	International Finance
CO1	Students will be able to explain and analyse fundamental issues in International Finance such as BOP and Foreign exchange rate systems
CO2	Students will be able to interpret exchange rate mechanisms and apply derivative instruments in forex markets.
CO3	Students will be able to evaluate global financial markets and investments and apply capital budgeting techniques in international scenarios.

CO4	Students will be able to identify foreign exchange risks, analyse tax implications, and assess international project feasibility.
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Course	Project Management
CO1	Students will understand fundamental concepts of project management and apply appropriate methods for effective project initiation.
CO2	Students will develop the ability to conduct detailed feasibility studies for business projects.
CO3	Students will gain the ability to estimate project costs, prepare budgets, and evaluate project risks effectively.
CO4	Students will understand modern advancements in project management and apply effective control and termination practices.

Course	Indirect Taxes
CO1	To understand the basics of GST
CO2	To study the registration and computation of GST
CO3	To acquaint the students with filing of returns in GST

Course	HRM in Global Perspective
CO1	Students are able to understand the concepts, theoretical framework and issues of HRM in Global Perspective.
CO2	Students understand (insights of) the concepts of Expatriates and Repatriates
CO3	Students are able to Understand understand the impact of cross culture on Human Resource Management.
CO4	Students will gain information about Global Workforce Management.
CO5	Students will have awareness on International HRM Trends and Challenges through this course.

Course	Organisational Development
CO1	Students are able to understand the concept of Organisational Development and its Relevance in the organisation.
CO2	Students study the Issues and Challenges of OD while undergoing Changes.
CO3	Students get an Understanding of Phases of OD Programme.
CO4	Students study the OD Intervention to meet the Challenges faced in the Organisation
CO5	Students get an Insight into Ethical Issues in OD

Course	HRM in Service Sector Management
CO1	Students are able to understand the concept and growing importance of HRM in service sector.
CO2	Students understand how to manage human resources in service sector.

CO3	Students are able to understand the significance of human element in creating customer satisfaction through service quality.
CO4	Students understand the Issues and Challenges of HR in various service sectors.

Course	Human Resource Accounting & Auditing
CO1	To understand the value of human resource in organizations
CO2	To understand the importance of Human Resource Accounting at National and International level
CO3	To familiarize with the Human Resource Accounting Practices in India
CO4	To familiarize the learners with the process and approaches of Human Resources Accounting and Audit
CO5	To understand the significance of Human Resource Auditing as a Tool of Human Resource Valuation

Course	Brand Management
CO1	The learner will be able to define and explain the meaning and significance of Brand Management.
CO2	The learner will be able to Plan, Design and Implement Brand Marketing Programs and brand strategies.
CO3	The learner will be able to define and explain the Brand Value Chain, Young and Rubicam's Brand Asset Valuator
CO4	The learner will be able to define and explain various techniques or methods to measure sources and outcomes of Brand Equity
CO5	The learner will be able to define and explain Brand Extensions, methods or ways to Manage Brands over Time and design or build Global Customer Based Brand Equity.

Course	Retail Management
CO1	Students will be able to familiarize the students with retail management concepts and operations
CO2	Students will be able to provide understanding of retail management and types of retailers.
CO3	Students will be able to develop an understanding of retail management terminology including merchandise management, store management and retail strategy.
CO4	Students will be able to acquaint the students with legal and ethical aspects of retail management
CO5	Students will be able to create awareness about emerging trends in retail management

Course	International Marketing
CO1	Students will be able to demonstrate conceptual knowledge related to international marketing & trade.
CO2	Students will be able to assess global environmental factors affecting business decisions.
CO3	Students will be able to develop strategic marketing mix decisions in an international

	context.
CO4	Students will be able to create basic plans and strategies for global marketing operations.

Course	Media Planning & Management
CO1	Students will be able to understand Media Planning, Strategy and Management with reference to current business scenarios.
CO2	Students will be able to know the basic characteristics of all media to ensure most effective use of advertising budget.
CO3	Students will be able to provide an insight on Media Planning, Budgeting, Scheduling and Evaluating the Different Media Buys.

Mahatma Education Society's
Pillai HOC College of Arts, Science & Commerce
(Autonomous)
Rasayani

Affiliated to University of Mumbai
NAAC Accredited with "A+" Grade in cycle II
ISO 9001:2015 Certified
Program: Bachelor of Science
Pillai HOCL Educational Campus, Rasayani
Taluka -Khalapur Dist. Raigad -410207
Maharashtra ,India



**Programme -B.Sc(Regular)- Bachelor of Science (Physics,
Chemistry & Mathematics)**

Programme Specific Outcomes

PSOs. No.	PSO Title	PSOs in brief
PSO1	Advanced Learning and Research Capabilities for Physical Sciences	To develop analytical skills for real-world problem solving, gain familiarity with recent scientific and technological developments, enhance learning through practical activities and projects, and acquire fundamental knowledge of optics.
PSO2	Holistic Educational Framework for Building Foundational and Professional Competence in	To understand fundamental principles of inorganic, organic, and physical chemistry; foster continuous learning and scientific curiosity; explore career paths in chemistry-related fields; and apply foundational skills to entry-level roles in relevant industries.

	Chemistry	
PSO3	Integrated Framework for Mathematical Knowledge, Analytical Skills, and Global Awareness	To develop a strong understanding of fundamental mathematical principles and methods, and to use them effectively in modelling, solving, and interpreting real-world problems. To build mathematical tools for advanced study across scientific fields, and to enhance overall growth through problem-solving skills, modelling abilities, creativity, and communication. To provide students with exposure to global and local issues related to the mathematical sciences.
PSO4	Teamwork, Project Management & Lifelong Career Growth	Graduates will work effectively both independently and in teams, conduct scientific investigations and research projects efficiently, and pursue continuous learning to excel in higher studies, research, and emerging opportunities in science and technology.

Semester –I

MECHANICS AND MATHEMATICAL PHYSICS	
CO1	Understanding of Newton's Laws to any physical situation and deduce its kinematical behaviour
CO2	Understanding of different frames of references and conservation laws
CO3	Understand and apply the concepts of momentum and its conservation
CO4	Understanding of Vector Algebra and Vector Calculus
CO5	Understand the physical interpretation of gradient, divergence and curl.

BASICS IN PHYSICAL, INORGANIC AND ORGANIC CHEMISTRY I	
CO1	The learner will be able to demonstrate foundational knowledge in physical, inorganic, and organic chemistry with problem-solving skills in real-world chemical contexts.
CO2	The learner will be able to analyze molecular structures using principles from atomic theory, periodicity, and be able to explain the concept of allotropy and compare their uses based on physical and chemical properties.
CO3	The learner will be able to analyze and communicate chemical knowledge effectively, including accurate nomenclature, molecular geometry, and reaction mechanisms.

Algebra I and Calculus I	
CO1	Understand the concept of Functions and Relations

CO2	Understand the real number system, differential equations, the integer and rational number system and illustrate examples of polynomials in $\mathbb{R}[x]$
CO3	Explain the properties and theorems of polynomials with suitable examples and also explain the concepts of modulus, infimum and supremum.
CO4	Verify the concepts related to sequences, like bounded, convergent, divergent, Cauchy, etc. and also to verify the statements of theorems by applying them in problem-solving.
CO5	Construct counter examples related to bounded sets, bounded sequence, Cauchy sequence and convergent sequence.
CO6	Understand the concepts of limit and continuity of functions and various counting techniques which are used to handle problems on finite sets and apply them in day-to-day life.

DIGITAL LITERACY AND ICT APPLICATIONS	
CO1	Understand the fundamental concepts of ICT and its role in various sectors like education, health, governance, and business.
CO2	Identify and describe the core components of a computer system including hardware, software, and operating systems
CO3	Demonstrate proficiency in using word processing, spreadsheets, and presentation tools for academic and professional tasks.
CO4	Apply internet tools, email, and social media responsibly for information gathering and communication.
CO5	Utilize cloud-based storage and collaboration platforms for file sharing, real-time teamwork, and virtual communication.

Content Writing	
CO1	Develop an understanding of the basic concepts in Content Writing
CO2	To review essential grammar rules, punctuation, and writing style guidelines.
CO3	Develop the ability to write content and edit it suitably

Fundamentals of Social and Emotional Skills	
CO1	Learners will be able to define and Identify values and life skills required in personal and professional life.
CO2	Learners will develop awareness of the self and apply well- defined stress and emotional management strategies.
CO3	Learners will be able to apply creative and critical thinking and emotional intelligence to address challenges in life

Communication Skills in English-I (AEC)	
C01	Students must be able to understand and apply the core principles of business communication in diverse professional contexts.
C02	Students must be able to demonstrate enhanced English language proficiency across Listening, Speaking, Reading, and Writing (LSRW) skills.
C03	Students must be able to communicate effectively and confidently in professional settings by applying acquired functional English language skills.

<u>IKS</u>	
C01	The student will understand how chemistry developed in ancient and medieval India and its use
C02	The students will be able to realize the presence of Physics in our ancient ages
C03	Students will be able to apply selected Vedic mathematical techniques for fast and accurate mental calculations and demonstrate an understanding of the historical evolution of key mathematical concepts from India.

Semester –II

WAVE AND ELECTRICITY	
CO1	Understanding of basic of waves and terminology
CO2	Understanding of Simple harmonic motion, periodic motion and loaded spring force
CO3	Understanding the different types of waves and the concept of modes and beats.
CO4	Understanding of origin of electricity, parameters and basic circuit understanding
CO5	Understand the different types of ICs and their applications.

<u>Basics in Physical, Inorganic and Organic Chemistry II</u>	
CO1	Students will be able to apply the fundamental principles of physical chemistry to solve problems related to surface tension, gas behaviour, and thermodynamic laws.
CO2	Students will be able to demonstrate knowledge of qualitative inorganic analysis techniques and bonding theories, and use VSEPR theory and Fajan's rule to predict molecular geometry and bond characteristics.
CO3	Students will be able to identify and differentiate between types of organic reactions and reactive intermediates, and explain how hybridization and molecular orbital overlaps

	influence molecular geometry and reactivity.
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DISCRETE MATHEMATICS AND CALCULUS-II	
CO1	Understand the concepts of limit and continuity of functions and various counting techniques which are used to handle problems on finite sets and apply them in day-to-day life.
CO2	Explain the concept differentiability of a function, addition and multiplication principles, two-way counting, inclusion and exclusion principles.
CO3	Apply the derivatives and obtain maxima/minima of functions and other various applications, also mathematical logic to solve problems.
CO4	Verify existence of limit, continuity and differentiability of a function.
CO5	Find the limits and derivatives and the number of partitions using Sterling numbers.
CO6	Construct counter examples related to continuous and discontinuous functions etc. and design problems based on the pigeonhole principle.

ADVANCED INFORMATION COMMUNICATION TECHNOLOGY	
CO1	Implement and manage real-time collaboration using cloud tools.
CO2	Create advanced spreadsheet models with charts and conditional logic.
CO3	Design multimedia-enhanced, professional presentations.
CO4	Understand and explain emerging trends like AI, IoT, and cybersecurity.
CO5	Apply ethical practices in digital communication, data privacy, and media use.
CO6	Proficiently create, manage, and automate complex documents using advanced Word features (e.g., long document tools, custom styles, macros).

Effective Communication Skills (AEC)	
CO1	Learners will be able to apply effective listening strategies by practicing active listening
CO2	Learners will be able to communicate effectively and appropriately in English during a range of contexts such as meeting and greeting, self-introduction, group discussions, and interviews.
CO3	Learners will be able to analyze and interpret various types of written texts, including news reports, advertisements, online content, poems, and essays for academic and real-world applications.
CO4	Learners will be able to produce clear and structured written communication such as emails, resumes, notices, meeting agendas/minutes, paragraphs

INTRODUCTION TO CAPITAL MARKET OF INDIA	
CO1	Learners will be able to understand the basic concepts of the stock market.

CO2	Learners will evaluate different investment instruments.
CO3	Learners will analyze the various stakeholders of the stock market.
CO4	Learners will be able to apply the basic knowledge of the capital market while making investment decisions.

Environmental Mindfulness and Sustainable Living	
CO1	Learners will be able to provide overview on the concept of environment, ecosystems, biodiversity and reflect on environmental values
CO2	Learners will develop awareness global environmental concerns, issues, and impacts and need for action to address these challenges
CO3	Learners will be able to identify the applications of sustainable development and environmental management strategies

Semester –III

Major-1(Chemistry) Progressive Physical and Analytical Chemistry I	
CO1	Explain and apply concept of Free energy, Chemical potential
CO2	understand the principle of electrolyte conductance, terms associated and experimental technique to determine transport no. of ions
CO3	Explain the difference of ideal and non-ideal solution, partially and immiscible liquid pairs
CO4	Understand the importance of Analytical Chemistry and apply statistical tests to the given data or the data generated in the laboratory to comment on error and minimize it.
CO5	Explain the various terms involved in titrimetric analysis, choose a suitable indicator, standardization and Preparation of standard solutions
CO6	Describe the function of the different components of a colorimeter and spectrophotometer.

Major-2(Chemistry) PROGRESSIVE INORGANIC AND ORGANIC CHEMISTRY I	
CO1	Elucidate the types of bonding and enable them to write the VBT and MOT with respect to examples
CO2	Explain compounds of boron and silicon
CO3	Differentiate between SN1, SN2, SNi, and aromatic substitution mechanisms with stereochemical implications.
CO4	Predict the reactivity of haloalkanes and haloarenes in various nucleophilic substitution contexts.
CO5	Identify and describe methods of preparing aldehydes and ketones different precursors.
CO6	Explain mechanisms and outcomes of reactions involving carbonyl compounds.
CO7	Describe and illustrate the mechanisms of selected name reactions

Skills In Chemistry	
CO1	Formulate various cosmetic products using standard laboratory protocols.
CO2	Perform chemical and physical analyses of cosmetic products.
CO3	Compare foaming abilities of shampoo brands using experimental methods.
CO4	Determine active ingredient concentrations and interpret efficacy.
CO5	Conduct surveys on product labels and ingredient lists.
CO6	Evaluate and compare product performance across brands.

Major-1(Physics) Mathematical Methods For Physics	
CO1	Apply the knowledge of differential equations and solve problems using them.
CO2	Learn the first-order and second-order homogeneous and non-homogeneous differential equations with variable coefficients and constant coefficients.
CO3	Describe the variable separable method and the exact differential equation, Linear Differential equations and Second-order homogeneous differential equations with constant coefficients.
CO4	Solve important partial differential equations in physics, the method of separation of variables. Partial differential equations and their types
CO5	Understand applications of Partial Differential Equations in physics.

Major-1(Physics)Electrodynamics	
CO1	Students understand basic concept Fundamental theorems of Gradient and are able to solve problems using them.
CO2	Students comprehend the Dirac Delta function, electric field, Divergence of E and Curlof E and are able to solve problems using them.
CO3	Understand potential, Poisson's equation and Laplace's equation
CO4	Students understand concept of Electrostatics and Magnetostatics and develops the problem-solving skills
CO5	Students develop quantitative problem-solving skills in all the topics covered.

Major-1(Mathematics) Real Analysis and Linear Algebra-I	
CO1	Understand and remember the concepts such as convergence/ divergence of series, Riemann Integration, beta-gamma functions, rank of matrix and related results.
CO2	Apply the formulae and concepts to solve the examples related to series, Riemann Integral, area between two curves, system of linear equations etc.
CO3	Analyze the convergence and divergence of series and integrability of given function and examine and interpret the conditions of consistency of systems of linear equations, subspaces of vector spaces, and equivalence of row rank and column rank.

CO4	Justify/ check the integrability of function, absolute and conditional convergence of series.
CO5	Construct counter examples related to absolutely convergent/ divergent series, non-integrable functions consistent and inconsistent systems, elementary matrices, subspaces, and related to properties of vector spaces.

Major-2(Mathematics) Indian Mathematics	
CO1	Understand and recall the methods of obtaining square roots and cube roots, results related radius and diameter and the contributions of Indian Mathematicians.
CO2	Explain Pythagorean triplets as appeared in Shulbasootras, impossibility of square root of negative numbers, expressed by Indian mathematicians, Varga-Sankramana, etc.
CO3	Apply Indian ancient methods to find squares and cubes, volume of a sphere given by Bhaskaracharya, volume of pyramid given by Brahmagupta etc.

Minor(Mathematics) Basic Mathematics in Real Life-II	
CO1	Understand and remember the polynomials, polynomial graphs, Fibonacci sequence, platonic solids and Matrices
CO2	Apply the formulas and concepts to solve problems and examples related to quadratic equations recurrence relations, matrices and platonic solids
CO3	Examine and investigate the growth matrices, echelon form of matrices, and Kirchhoff's Law using matrices
CO4	Justify and check the inverse of matrices and applications of the golden ratio
CO5	Design and construct circuits using Kirchhoff's Laws

Minor(Physics) Mechanics	
CO1	Understand the concepts of mechanics & properties of matter & to apply them to solve problems.
CO2	Comprehend work and energy equivalence and its applications through suitable numerical.
CO3	Demonstrate quantitative problem-solving skills in all the topics covered

Java Programming

CO1	Apply Java's basic syntax, control structures, and standard libraries to write and analyze programs effectively.
CO2	Analyze and design Java programs that efficiently handle operations on arrays, matrices, and strings, applying appropriate algorithms for problem-solving.
CO3	Perform object-oriented programming concepts such as encapsulation, inheritance, and polymorphism in Java applications.
CO4	Design interactive applications using Java's built-in libraries by creating and implementing basic graphics and graphical user interfaces.

हिन्दी भाषा : व्यावहारिक प्रयोग	
CO1	वद्यार्थियों कल हाजभाषा वहंदी का ज्ञान प्राप्त हलगा, एवं दक्षता प्राप्त हलगी
CO2	वद्यार्थियों कल हाजभाषा वहंदी के व्याकहवणक प्रयलग की जानकाही प्राप्त हलगी
CO3	वद्यार्थियों कल वहंदी-संज्ञा आवद का ज्ञान प्राप्त हलने के सार् भाषा के िुद्ध, व्यावहारहक रूप का ज्ञान हलगा
CO4	वद्यार्थियों कल काहकों, वाक्य होना एवं भावषक वोहों आवद का ज्ञान प्राप्त हलगा

CREATIVE WRITING FOR ALL	
CO1	Demonstrate an understanding of creative writing techniques and apply them in their own work.
CO2	Compose original pieces in different creative writing genres, including poetry, fiction, and creative non-fiction.
CO3	Critically assess and refine their writing through peer and instructor feedback.

FIELD PROJECT	
CO1	Apply theoretical knowledge and field-specific methodologies to real-world situations through hands-on project work.
CO2	Demonstrate effective problem-solving, project planning, and data collection skills in a field-based environment.
CO3	Communicate project findings through written reports and oral presentations in a clear and professional manner.

Financial Literacy	
CO1	Learners will develop proficiency for personal and family financial planning.
CO2	Learners will develop the ability to analyse banking and insurance products.
CO3	Learners will Apply the concept of investment planning

Semester –IV

Major 1(Chemistry) Progressive Physical and Analytical Chemistry II	
CO1	Demonstrate an understanding about chemical kinetics, reaction mechanism and complex chemical reaction.
CO2	Learn chemical cell, distinguish between reversible/ irreversible cells, types of electrode, use of emf data to calculate equilibrium constant and pH of solution.
CO3	Develop a clear understanding of the criteria for phase equilibrium and apply Gibbs Phase Rule to different systems
CO4	Develop a clear understanding of the principle, technique and application of PC and TLC, Solvent extraction.
CO5	Understand the details of working and application of potentiometer, Conductometer and pH-meter

Major 2(Chemistry) Progressive Inorganic and Organic Chemistry II	
CO1	Discern the position of transition elements, properties and qualitative analysis
CO2	Determine the rules , theories of coordination compounds and their application
CO3	Expound the types of oxides of nitrogen, Sulphur and their impact on environment
CO4	Classify and name five- and six-membered heterocyclic compounds containing one heteroatom.
CO5	Describe and compare synthesis methods and electrophilic substitution reactivity of furan, pyrrole, thiophene, and pyridine.
CO6	Predict conformational preferences and stereochemical behavior of mono- and disubstituted cyclohexanes.
CO7	Identify symmetry elements in organic molecules and relate them to optical activity.
CO8	Explain mechanisms and applications of selected named reactions.

Soil And Water Analysis	
CO1	Identify the quality of soil of the surroundings.
CO2	Develop the environmental control plan for environment pollution problem.
CO3	Classify the various samples of soil according to their purity.

CO4	Discover the various components of soil.
CO5	Analyse the different type of pollutants present in the water samples.
CO6	Bring awareness among the people.
CO7	Provide suggestions to the concerned authorities.

Major 1(Physics) Introduction To Quantum Mechanics and Modern Physics	
CO1	Students understand Blackbody Radiation, Planck's Quantum Theory, Einstein's Photoelectric Effect and being able to solve problems on it.
CO2	Students will develop the knowledge of Einstein's Photoelectric Effect, De-Broglie Hypothesis and be able to solve problems on it.
CO3	Students Comprehend the Schrodinger's Wave Equation, Heisenberg Uncertainty Principle.
CO4	Understand Schrodinger's 1D time dependent wave and time independent wave equation, Physical interpretation of wave function.
CO5	Comprehend Operators in Quantum Mechanics, Eigen Function, Eigen Value, Expectation Values and able to solve problems on it.

Major 2(Physics) Advanced Electronics I	
CO 1	Students gain the basic knowledge of digital electronics and its applications.
CO 2	Students comprehend knowledge about amplification, Transistor Biasing its different methods and its parameters.
CO 3	Students Understand basics of OPAMP, its parameters, feedback concept and its applications.
CO 4	Students will acquire a fundamental understanding of Flip-Flops, counters and registers with its application.

Computer Maintenance	
CO1	Identify and demonstrate the working of various computer hardware components, including internal parts and peripherals.
CO2	Configure storage, cooling, and input/output systems, ensuring efficient and safe computer operation.
CO3	Set up, configure, and troubleshoot basic networking hardware such as routers, switches, and LAN cabling.
CO4	Install and manage operating systems and virtual environments, and perform basic Linux commands for system administration tasks.

Major 1(Mathematics) Multivariable Calculus and Ordinary Differential equations	
CO1	Understand and remember the concepts such as Euclidean spaces, norm, inner product, limit, continuity, derivatives of scalar fields various methods of solving higher order linear ordinary differential equations etc.

CO2	Apply first and second derivative tests to find extreme values of scalar fields and the methods of solving linear differential equations with constant coefficients.
CO3	Verify the relationship between Differentiability and Continuity, directional derivative and continuity etc.
CO4	Check differentiability and continuity of scalar and vector fields and evaluate the complementary function and particular integral of given ordinary linear differential equations
CO5	Create counter examples related to continuity and differentiability, directional derivative and continuity, partial derivatives, total derivative and ordinary differential equation for the given solution etc..

Major 2(Mathematics) Linear Algebra-II

CO1	Understand basis of vector space, linear transformations, kernel, image, rank, nullity, associated matrices, inner product spaces, orthogonality of vectors and diagonalization of matrix.
CO2	Apply the Cayley-Hamilton theorem to find inverse, power of matrix and Gram-Schmidt orthogonalization process to find orthogonal/orthonormal sets.
CO3	Analyse diagonalizable matrices, orthogonally diagonalizable matrices, conic sections, and verify linear isomorphism, rank-nullity theorem for linear transformations, Cauchy Schwarz inequality, triangle inequality
CO4	Evaluate kernel, image, eigenvalues, eigenvectors, algebraic multiplicity, geometric multiplicity, angle between vectors and orthogonal complement of subspace.
CO5	Construct linear isomorphism between given vector spaces, non-diagonalizable matrix, quadratic forms and matrix with given eigenvalues.

Advanced Python

CO1	Apply NumPy, SciPy, Pandas, Matplotlib functions to solve numerical, statistical, optimization problems and System of equations.
CO2	Analyze clear and insightful data visualizations using these packages.
CO3	Perform numerical computations on multi-dimensional arrays using these packages.
CO4	Design programs for effective data manipulation, visualization, and analysis of small

Minor (Mathematics) Basic Mathematics in Real Life-III

CO1	Understand and remember the polynomials, polynomial graphs, Fibonacci sequence, platonic solids and Matrices.
CO2	Calculate and find the inner products, moments, Eigenvalues Eigenvectors and orthogonal vectors
CO3	Analyse the Cauchy-Schwarz inequality and the symmetries of triangles
CO4	Verify the Cauchy-Schwarz inequality

CO5	Construct counterexamples related to inner product spaces
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Minor(Physics) SOUND	
CO1	Understand basic concept of sound
CO2	Understand the basic concept how sound is produced
CO3	Apply knowledge to develop sound modulations

Finance For Beginners	
CO1	Explain basic financial concepts such as budgeting, savings, and investments.
CO2	Apply financial literacy skills to manage personal and small business finances.
CO3	Identify different financial instruments and their risks.
CO4	Evaluate financial decisions using fundamental financial principles. 5. Understand the functioning of financial markets and banking systems

Indian Constitution	
CO1	Learners will be empowered to understand the basic structure, nature of Indian Constitution
CO2	Learners will understand their and other citizens' fundamental rights and duties towards the nation.
CO3	Learners will be equipped with the role of Indian Judiciary in protecting Fundamental Rights of citizens and will be able to describe areas of criminal justice, law and society through a critical analysis of the subject.

Introduction to tourism economics	
CO1	Students can understand the concept and various aspects of tourism..
CO2	To enhance students' understanding regarding the need for infrastructure, facilities, services, and the impact of tourism development.
CO3	Students can understand the applications of strategies for the development of tourism of various forms.
CO4	Students can understand tourism organizations and the assessment of various policies of tourism.

Chemistry Specialization
Semester –V

<u>COURSE 1 - Physical Chemistry</u>	
CO1	Students should understand the concept of spectroscopy.
CO2	Students should understand the concept of Chemical Thermodynamics.
CO3	Students should analyse Chemical Kinetics.
CO4	Students should understand Nuclear Chemistry.
CO5	Student should understand the concept of Surface Chemistry and Colloidal states.

<u>COURSE 2 –Inorganic Chemistry</u>	
CO1	Students should understand the concepts of Molecular Symmetry and Chemical Bonding, Molecular Orbital Theory for hetero nuclear diatomic molecules and polyatomic species.
CO2	Students should understand solid state chemistry and structures of Solids concepts of Superconductivity.
CO3	Students should know properties of f- block elements.
CO4	Students should understand properties of Group-17 elements.
CO5	Student should understand the concept of non aqueous solvents.

<u>COURSE 3 - Organic Chemistry</u>	
CO1	Students are able to understand synthesis and mechanisms of organic reactions. Students able to understand photochemical phenomenon occur in organic compounds.
CO2	Analyze stereochemical outcomes of reactions (stereospecific and stereoselective). Evaluate the advantages and limitations of agrochemical use in agriculture. Understand and explain the electrophilic and nucleophilic substitution reactions of heterocycles.
CO3	Students are able to understand IUPAC nomenclature of organic compounds. Understand the Principles of Green Chemistry and Demonstrate Knowledge of Green Solvents and Reagents
CO4	Students are able to understand the use of UV-visible and mass spectrometry in structure determination.
CO5	Students able to understand chemistry of natural products Identify and classify different types of natural products such as alkaloids, terpenoids

<u>COURSE 4- Analytical Chemistry</u>	
CO1	Students should understand Quality in Analytical Chemistry ,sampling and can do Chemical Calculations .
CO2	Students should know the classical methods of analysis like complexometric titration,redox titrations .
CO3	Students should understand various Optical methods of analysis like Atomic Spectroscopy: Flame Emission spectroscopy(FES) and Atomic Absorption Spectroscopy(AAS), Molecular Fluorescence and Phosphorescence Spectroscopy.
CO4	Students should understand methods of separation technique like Solvent Extraction, Gas Chromatography
CO5	Students should understand the methods like Turbidimetry and Nephelometry.

<u>COURSE 5 - Applied Component (Drugs and Dyes)</u>	
CO1	Demonstrate understanding of drug definitions, sources, and classifications; compare oral and parenteral routes and dosage forms; and analyze the pharmacodynamics of CNS drugs.
CO2	Apply pharmacological principles to select and justify appropriate drug therapies for common clinical conditions considering indications, contraindications, and adverse effects
CO3	Apply knowledge of the dyestuff industry to identify suitable dyes for different fibre types and recommend appropriate dyeing methods based on dye classification and application requirements
CO4	Apply principles of color chemistry and chemical constitution to select appropriate dyes, outline relevant synthetic unit processes, and recognize intermediates used in dye production for various industrial applications

Semester –VI

<u>COURSE 1–Physical Chemistry</u>	
CO1	Students should understand the concept of Electrochemistry.
CO2	Students should understand the concept of Polymers and Phase Equilibria.
CO3	Students should analyse Quantum Chemistry.
CO4	Students should understand ESR-Electron Spin Resonance Spectroscopy.
CO5	Student should understand the concept of NMR -Nuclear Magnetic Resonance Spectroscopy.

<u>COURSE 2– Inorganic Chemistry</u>	
CO1	Students should understand the concept of CFT.

CO2	Students should understand the Molecular orbital Theory and properties of coordination compounds
CO3	Students should explain stability and reactivity of Metal-Complexes and electronic spectra.
CO4	Students should understand Organometallic Compounds of main group metal.
CO5	Student should understand the concept of Metallurgy.

COURSE 3– Organic Chemistry

CO1	Predict stereochemical outcomes in organic reaction mechanisms. Describe the structure, classification, and properties of amino acids. Explain peptide bond formation and protein structures (primary to quaternary). Understand the concepts of isoelectric point and zwitterion formation.
CO2	Explain the mechanisms of key molecular rearrangements. Explain the structure, reactions, and interconversions of glucose and fructose.
CO3	Students will understand structure of the organic compound from spectral data
CO4	They will be able to understand various organic reactions from reagents and catalysts CO 3. Structures and uses Polymers and Nucleic acids

COURSE 4 – Analytical Chemistry

CO1	Students should understand principle and applications of electroanalytical techniques.
CO2	Students should understand various methods of separation like HPLC & HPTLC its applications.
CO3	Students should know the various aspects of food processing and cosmetics analysis.
CO4	Students should know the various thermal methods of analysis and Radio Analytical Methods.

COURSE 5 – Applied Component (Drugs and Dyes)

CO1	Apply principles of drug development, metabolism, and chemotherapy to select and justify appropriate therapeutic agents.
CO2	Apply knowledge of drug actions, indications, and risks to select and justify appropriate therapies.
CO3	Apply knowledge of dye structure and synthesis to identify dye classes, describe their preparation, and recommend safe practices and remediation methods.
CO4	Apply knowledge of dye and pigment applications to recommend suitable colorants for non-textile products.

Physics Specialization

Semester –V

<u>COURSE 1 – Mathematical, Thermal and Statistical Physics</u>	
CO1	Able to apply fundamental probability principles and distributions to analyze and solve real-life and physical science problems.
CO2	Ability to use complex number theory and complex functions for solving mathematical and physical problems involving wave motion, oscillations, and other physical phenomena
CO3	Able to explain the statistical basis of thermodynamic quantities and derive relations using Boltzmann statistics and partition functions.
CO4	Understand and distinguish between classical and quantum statistics, and apply these principles to systems like gases and radiation.

<u>COURSE 2– SOLID STATE PHYSICS</u>	
CO1	Learners will be able to explain the fundamental concepts of crystallography, band theory, and electrical properties to classify different types of materials, including metals, semiconductors, and superconductors.
CO2	Learners can think and analyze semiconductor behavior and superconductivity using Fermi-Dirac statistics, density of states, carrier dynamics, and BCS theory.
CO3	Apply problem-solving skills to quantitatively evaluate material properties across the topics of band theory, semiconductor physics, and superconductivity.

<u>COURSE 3 – ATOMIC AND MOLECULAR PHYSICS</u>	
CO1	The application of quantum mechanics in atomic physics
CO2	The importance of electron spin, symmetric and antisymmetric wave functions and vector atom model
CO3	Effect of magnetic field on atoms and its application
CO4	Learn Molecular physics and its applications.
CO5	This course will be useful to get an insight into spectroscopy

<u>COURSE 4– ELECTRODYNAMICS</u>	
CO1	Understand the laws of electrodynamics and be able to perform calculations using them.
CO2	Understand Maxwell’s electrodynamics and its relation to relativity
CO3	Understand how optical laws can be derived from electromagnetic principles.
CO4	Develop quantitative problem solving skills

COURSE 5– Applied component (Advanced Programing, Introduction to Microcontrollers & Python Programming)

CO1	Analyze and implement advanced 8085 microprocessor instructions, stack and subroutine concepts, and peripheral interfacing using 8255 PP
CO2	Demonstrate knowledge of 8051 architectures, instruction sets, addressing modes, and memory organization for embedded programming.
CO3	Write and execute Python programs using functions, loops, conditionals, strings, and lists for computational and logical problem-solving.
CO4	Integrate concepts of microprocessors, microcontrollers, and Python to design efficient embedded and automation-based applications.

Semester –VI

COURSE 1 –Classical Mechanics

CO1	Analyze Central Force Motion
CO2	Apply the Lagrangian Formalism
CO3	Analyze Motion in Non-Inertial Frames
CO4	Describe Advanced Dynamics

COURSE 2 – Electronics

CO1	Understand the basics of semiconductor devices and their applications.
CO2	Understand the basic concepts of operational amplifier: its prototype and applications as instrumentation amplifier, active filters, comparators and waveform generation.
CO3	Understand the basic concepts of timing pulse generation and regulated power supplies
CO4	Understand the basic electronic circuits for universal logic building blocks and basic concepts of digital communication.
CO5	Develop quantitative problem solving skills in all the topics covered.

COURSE 3 – Nuclear Physics

CO1	Students will be able to explain alpha and beta decay processes, calculate decay energies, and interpret experimental results related to nuclear disintegration.
CO2	Students will be able to describe gamma decay phenomena and apply nuclear models to explain nuclear binding energy, stability, and magic numbers.
CO3	Students will understand the principles of nuclear energy production, distinguish

	between fission and fusion, and explain the operation of major particle accelerators.
CO4	Students will be able to analyze the properties of nuclear forces, discuss meson theory qualitatively, and classify elementary particles based on their interactions and conservation laws.

<u>COURSE 4 – Special Theory of Relativity</u>	
CO1	Able to explain the need for special relativity, derive Lorentz transformations, and apply them to phenomena like time dilation and length contraction.
CO2	Understand the importance of postulates of special relativity, Lorentz transformation equations and how it changed the way we look at space and time, Absolutism and relativity, Common sense versus Einstein concept of Space and time.
CO3	Understand the transformation equations for: Space and time, velocity, frequency, mass, momentum, force, Energy, Charge and current density, electric and magnetic fields.
CO4	Solve problems based on length contraction, time dilation, velocity addition, Doppler effect, mass energy relation and resolve paradoxes in relativity like twin paradox etc.

<u>COURSE 5 – Applied component (Microcontrollers & Python Programming)</u>	
CO1	Develop and execute assembly programs timers, counters, serial communication, and interrupt handling for 8051 microcontrollers .
CO2	Apply Python data structures such as dictionaries and tuples, and perform file operations with proper exception handling.
CO3	Implement Object-Oriented Programming and multithreading in Python to create efficient and modular applications.
CO4	Design interactive GUI-based applications and perform database operations (CRUD) using Python and MySQL integration.

Mathematics Specialization

SEMESTER-V

<u>Course I: Multivariable Calculus-II</u>	
CO1	Understand the multivariable functions and generalization of integration over a general region.
CO2	Understand the parametrization of surfaces.
CO3	Evaluation of Line Integral, Surface and Multiple integrals.
CO4	Understanding the application of Green's, Gauss and Stokes theorem.
CO5	Application of Integration in Real Life.

Course II: Group Theory

CO1	Students will have a working knowledge edge of important mathematical concepts in abstract algebra such as group ,sub group ,order of group etc
CO2	Students understand the concept of group homomorphism and isomorphism
CO3	Students understand the concept of Normal subgroups,Direct Product and Caley's Theorem.
CO4	Students understand the concept of cyclic groups and cyclic subgroups.

Course III: Topology of Metric Spaces

CO1	Students understand the concept of Metric Spaces
CO2	Students understand and apply the concepts of Open Sets, Closed set and their properties.
CO3	Students understand the concept of Sequence and its properties.
CO4	Students understand the basic concept of Complete Metric Spaces and its properties.
CO5	Students understand the concept of Compact Sets.

Course IV: Partial Differential Equations

CO1	Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of numerous power of mathematical ideas and tools and know how to use them by modelling, solving and interpreting.
CO2	Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.
CO3	Enhancing students' overall development and to equip them with mathematical modelling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
CO4	A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

Course V:Computer Programming and System Analysis-I

CO1	Design and implement normalized, constraint-based database schemas using Entity-Relationship models and SQL DDL
CO2	Author complex DML queries with joins, aggregations, and subqueries to manipulate and retrieve data
CO3	Implement business logic and automate database tasks by developing PL/SQL procedures using variables, conditional logic, and loops.

CO4	Construct basic Java applications by applying core OOP principles of classes, objects, methods, and access control.
CO5	Build robust and reusable Java code by implementing inheritance, interfaces, and exception handling.

SEMESTER-VI

<u>Course I: Complex Analysis</u>	
CO1	Students understand the concept of Complex Analysis.
CO2	Students understand and apply the concepts of Cauchy Integral Formula.
CO3	Students understand the concept of Hyperbolic Function, Analytic Function and Mobius Transformations.
CO4	Students understand the basic concept of Power Series and Laurent Series.
CO5	Students understand the concept of Singularities.

<u>Course II: Ring Theory</u>	
CO1	Understand the concept of ring and elementary properties of rings.
CO2	Introduction to unit rings and its properties.
CO3	Introduction to Ideals and special rings.
CO4	Introduction to factorization of irreducible polynomials.

<u>Course III: Topology of Metric Spaces and Real Analysis</u>	
CO1	Introduction to functions defined on various metric spaces.
CO2	Properties and behaviour of functions over compact and complete metric spaces.
CO3	Understanding of Connected and Compact Spaces.
CO4	Introduction to Sequences and Series of real valued functions.
CO5	Understanding the behaviour and properties of Sequences and series of functions.

<u>Course IV: Integral Transforms</u>	
	After successful completion of this course, students would be able to: -
CO1	Students will be able to understand the concept of The Laplace Transform.
CO2	Students will be able to understand the concept of the Fourier Transform.

CO3	Students will be able to understand the concept of integral transforms and their corresponding inversion techniques.
CO4	Students will be able to understand the various applications of integral transforms.

<u>Course V: Computer Programming and System Analysis-II</u>	
CO1	Able to create an applet and give different graphics, fonts and colors to applets.
CO2	Able to understand the basics of python programming.
CO3	Able to use strings, lists and tuples to design functions in python.
CO4	Able to do math using python programming.
CO5	Able to use simply to solve mathematical equations.

Mahatma Education Society's
Pillai HOC College of Arts, Science & Commerce (Autonomous)
Rasayani

Affiliated to University of Mumbai
NAAC Accredited with "A+" Grade in cycle II
ISO 9001:2015 Certified



Programme- B.Sc. - Bachelor in Computer Science

Programme Specific Outcomes

SOs. No.	PSO Title	PSOs in brief
PSO1	Technical Design & System Development	Graduates will be able to design, develop, and implement reliable computer applications and systems across diverse domains such as networking, web technologies, security, cloud computing, IoT, and data science.
PSO2	Application of Computing Principles & Engineering Practices	Graduates will apply core computer science theories, software engineering principles, tools, and technologies to analyze, model, and solve real-world computing problems efficiently.
PSO3	Innovation, Research Mindset & Professional Ethics	Graduates will demonstrate awareness of current technological trends, foster innovation in problem-solving, and uphold ethical standards in computing, Internet usage, and cyber practices.
PSO4	Teamwork, Project Management & Lifelong Career Growth	Graduates will work effectively as individuals and team members, manage software projects efficiently, and pursue continuous learning to excel in higher studies and evolving IT career opportunities.

Course Outcomes

Semester- I

DIGITAL SYSTEM AND ARCHITECTURE
CO1: Students will be able to apply number systems and digital codes in system design. CO2: Students will be able to design and analyze basic combinational and sequential circuits using simulation tools. CO3: Students will be able to understand memory hierarchy and cache coherence strategies. CO4: Students will be able to write and simulate 8085 assembly programs. CO5: Students will be able to explain modern processor trends including RISC, CISC, and embedded system applications.
DATABASE MANAGEMENT SYSTEM
CO1: To appreciate the importance of database design. CO2: Analyze database requirements and determine the entities involved in the system and their relationship to one another. CO3: Write simple queries to MySQL related to String, Math's and Date Functions. CO4: Create tables and insert/update/delete data, and query data in a relational using MySQL commands. CO5: Understand the normalization and its role in the database design process. Handle data permissions. CO6: Create indexes and understand the role of Indexes in optimization search.
DESCRIPTIVE STATISTICS
CO1: Able to organize, manage and present the data. CO2: To understand the use Measures of Central Tendencies and Dispersion. CO3: Able to understand and compute the consistent and inconsistent data CO4: Able to identify the association between variables CO5: Able to understand forecasting techniques and to find cause and effect relationship between variable through regression analysis.
OBJECT ORIENTER PROGRAMMING WITH C++
CO1: Students are able to understand the fundamental principles of object-oriented programming and the structure of C++ programs. CO2: Students are able to develop C++ programs using data types, operators, control structures, arrays, and strings. CO3: Students are able to implement classes, objects, constructors, destructors, and apply appropriate access specifiers. CO4: Students are able to apply advanced concepts such as inheritance, polymorphism, and pointers to build modular programs. CO5: Learners will be able to demonstrate file handling and exception handling mechanisms to develop reliable and efficient applications.
INDIAN ROOTS OF INFORMATION SCIENCE
CO1: Learner will understand and appreciate the rich Indian Knowledge Tradition. CO2: Learner will understand the contribution of Indians in various fields

CO3: Learner will experience increase subject-awareness and self-esteem

COMMUNICATION SKILLS IN ENGLISH

CO 1. Demonstrate an understanding of essential aspects of communication skills.

CO 2. Exhibit the ability to Read a variety of written text using sub skills such as skimming and scanning.

CO 3. Identify and rectify common grammatical errors in English .

CO 4. Show competence in delivering compelling presentations and engage in articulate and effective conversations in English across different contexts.

CO 5. Display advanced formal writing skills in crafting job application letters, CVs, and Statements of Purpose.

FUNDAMENTALS OF SOCIAL & EMOTIONAL SKILLS

CO1: To define, identify and develop values and life skills to improve in personal and professional life

CO2: To develop awareness of the self and apply well- defined stress and emotional management strategies

CO3: To apply creative and critical thinking and emotional intelligence to address challenges in life

BASICS OF MARKETING MIX

CO 1 Students can learn about the various elements of marketing mix

CO 2 Students are able to understand the key concepts and components of product, product development, price mix strategies, pricing decisions and brand positioning

CO 3 Students are able to know about the physical distribution and other marketing control strategies of product

Semester II

DESIGN AND ANALYSIS OF ALGORITHM

CO1: Explain algorithm efficiency using asymptotic notations and runtime analysis.

CO2: Compare algorithm performance using theoretical and empirical analysis.

CO3: Apply data structures like arrays, stacks, and lists to solve problems.

CO4: Implement recursive, greedy, and dynamic programming techniques.

CO5: Solve real-world and classic problems using algorithmic approaches.

PYTHON PROGRAMMING

CO1: Demonstrate the use of variables, data types, and input/output functions in Python programming.

CO2: Apply control statements and operators to implement logical and conditional operations in Python.

CO3: Explain and utilize dictionaries for storing and retrieving data efficiently.

CO4: Develop Python programs using functions and string operations for modular and efficient coding.

CO5: Understand the concept of modules and use standard and custom modules in Python programs.

EXCEL FOR DATA SCIENCE

CO1: Students should be able to use the excel to store and organize data for small to medium-sized datasets.

CO2: Students should be able to design formulas.

CO3: Students should be able to do the formatting of the numeric data.

CO4: Students should be able to work with pivot tables and charts.

CO5: Students should be able to implement basics in case study.

WEB TECHNOLOGY

CO1: Students will be able to create structured HTML documents using HTML 5.

CO2: Students will be able to apply CSS for text and link styling

CO3: Students will be able to implement responsive design with css.

CO4: Students will be able to apply json to enhance user experience.

CO5: Students will be able to use PHP.

EFFECTIVE COMMUNICATION SKILLS

CO1: Learners will be able to apply effective listening strategies by practicing active listening

CO2: Learners will be able to communicate effectively and appropriately in English during a range of contexts such as meeting and greeting, self-introduction, group discussions, and interviews.

CO3: Learners will be able to analyze and interpret various types of written texts, including news reports, advertisements, online content, poems, and essays for academic and real-world applications.

CO4: Learners will be able to produce clear and structured written communication such as emails, resumes, notices, meeting agendas/minutes, paragraphs

ENVIRONMENTAL MINDFULNESS AND SUSTAINABLE LIVING

CO1: To provide overview on the concept of environment, ecosystems, biodiversity and reflect on environmental values

CO2: To develop awareness global environmental concerns, issues, and impacts and need for action to address these challenges

CO3: To identify the applications of sustainable development and environmental management strategies

MARKETING MIX II: MARKETING IN THE DIGITAL AGE

CO1: To introduce students to the fundamental concepts of marketing and market dynamics

CO2: To provide a foundational understanding of how Artificial Intelligence (AI) is applied in modern promotional strategies

CO3: To Understand the basics of digital marketing platforms and tools, and understand the importance of ethical marketing practices.

Semester III(Major)

PRINCIPLES OF OPERATING SYSTEM

CO1 Work with any type of operating system.

CO2 Handle threads, processes, process synchronization.

CO3 Implement CPU scheduling algorithms.

CO4 Understand the background role of memory management.

CO5 Design file system

THEORY OF COMPUTATION

CO1. Students will be able to describe the fundamental concepts and significance of Theory of Computation in Computer Science.

CO2. Students will be able to design deterministic and non-deterministic finite automata for regular languages and prove their equivalence.

CO3. Students will be able to apply regular expressions and grammars to define and generate formal languages

CO4. Students will be able to construct context-free grammars and analyze their ambiguity, simplification, and normal forms.

CO5. Students will be able to differentiate between complexity classes such as P, NP, NP-Complete, and NP-Hard problems.

CO6. Students will be able to identify and analyze undecidable problems.

DATA STRUCTURE

CO1 Students will be able to define and implement various data structures using Abstract Data Types (ADTs) and understand their classifications and use cases.

CO2 Students will be able to apply operations on linked lists, including traversal, insertion, deletion, and use them in practical applications like polynomial manipulations.

CO3 Students will be able to implement stack and queue operations with array and linked representations, and apply them in real-world scenarios like delimiter checking and scheduling.

CO4 Students will be able to design and traverse tree structures including binary trees, BSTs, AVL trees, and understand their applications in encoding and searching.

CO5 Students will be able to implement graph structures, perform traversals using BFS and DFS, and solve shortest path and connectivity problems.

CO6 Students will be able to use heaps and hashing techniques effectively for priority management, efficient searching, and collision handling in various applications.

MAJOR PRACTICAL

CO1. Design and implement solutions using inter-process communication techniques such as shared memory and message passing.

CO2. Apply multithreading, synchronization mechanisms, and scheduling algorithms to solve operating system-related problems.

CO3. Construct and manipulate linear and non-linear data structures using custom implementations.

CO4. Demonstrate effective use of stack, queue, trees, graphs, and hash tables in algorithm development.

CO5. Analyze and evaluate the performance of memory and disk management techniques and abstract data operations.

CO6. Apply practical programming knowledge to develop efficient, real-time, and scalable system-level applications.

INTRODUCTION TO BIG DATA

CO1. learn the tools used in Big Data

CO2. understand scalable computing over the internet

CO3. describe the major types of NOSQL databases and their features.

SCALA FOR DATA SCIENCE

CO1 Students will set up a functional Scala development environment with SBT and execute basic programs for data analysis.

CO2 Students will utilize Breeze for numerical operations, matrix manipulations, and statistical computations such as correlation and frequency distribution.

CO3 Students will create data visualizations using Breeze-viz and implement machine learning models, including regression and clustering, using Breeze.

CO4 Students will work with Apache Spark for large-scale data processing, machine learning pipelines, and time-series analysis to extract meaningful insights.

JAVA PROGRAMMING

CO1 Apply object-oriented programming concepts to develop efficient and maintainable Java applications.

CO2 Implement exception handling and multithreading to build robust and concurrent programs.

CO3 Use Java Collection Framework to store, manipulate, and retrieve data effectively.

CO4 Design user interfaces using Swing components and handle user events in GUI applications.

CO5 Connect Java applications with databases using JDBC and perform CRUD operations.

CO6 Develop dynamic, session-managed web applications using Servlets and JSP.

हिन्दी भाषा : व्यावहारिक प्रयोग

CO1: ववद्यावर्थियों कल हाजभाषा वहंदी का ज्ञान प्राप्त हलगा, एवं दक्षता प्राप्त हलगी

CO2: ववद्यावर्थियों कल हाजभाषा वहंदी के व्याकहवणक प्रयलग की जानकाही प्राप्त हलगी

CO3: ववद्यावर्थियों कल वहंदी-संज्ञा आवद का ज्ञान प्राप्त हलने के सार् भाषा के िुद्ध, व्यावहारहक रूप का ज्ञान हलगा

CO4: ववद्यावर्थियों कल काहकों, वाक्य होना एवं भावषक वोहों आवद का ज्ञान प्राप्त हलगा

EXTENSION WORK

CO1: Provide equal access to quality education for all, supporting national goals for universal literacy and numeracy.

CO2: Offer a flexible, multidisciplinary education focused on conceptual understanding, personality development, critical thinking, and creativity.

CO3: Organize remedial programs to address learning gaps and offer continuous educational opportunities for all ages.

CO4: Create multiple pathways for aspirants to develop practical skills that lead to meaningful employment opportunities.

CO5: Implement programs to disseminate knowledge, provide services, and actively contribute to community development.

FIELD PROJECT

CO1: To Apply concepts learned in classrooms to real-world socioeconomic conditions enhancing their understanding and skills.

CO2: To show insights into the challenges, opportunities and culture of socioeconomic diversity, preparing them for future role as responsible citizens.

CO3: To demonstrate evidence of research aptitude and skills of critical thinking, analytical skills, and ethical research conduct in field work.

CO4: To display problem-solving abilities in making informed decisions in complex scenarios through practical situations.

CO5: To work in teams and collaborate to achieve common goals in the work field environments through collaborative efforts.

CO6: To show integrity in their dealings with their work and the people that they interact with by upholding professional principles and ethical standards.

S.Y. B.Sc. C.S- Semester IV

COMPUTER NETWORKS

CO 1. Describe network architectures, types, models, and the layered approach in data communication.

CO 2. Analyze the working of physical and data link layers including signal transmission, media, error detection, and MAC protocols.

CO 3. Explain the role of switching techniques and multiplexing in efficient communication.

CO 4. Configure and evaluate IPv4/IPv6 addressing schemes and understand packet forwarding and routing algorithms.

CO 5. Compare and contrast TCP, UDP, and SCTP protocols and apply them to real-time applications.

CO 6. Use knowledge of application layer protocols (HTTP, FTP, Email, DNS, etc.) to understand client-server interactions.

OC 7. Assess Quality of Service (QoS) requirements and identify modern network challenges and solutions like 5G, satellite, and secure communication.

SOFTWARE ENGINEERING

CO 1. Explain software process models and apply suitable models to project scenarios.

CO 2. Analyze software requirements and create UML-based system models.

CO 3. Apply design principles and estimation techniques for software development.

CO 4. Plan, schedule, and manage software projects effectively using industry practices.

CO 5. Demonstrate understanding of quality assurance and perform software testing using appropriate methods.

IOT TECHNOLOGIES

CO1: Understand the core concepts, design, and architecture of IoT systems.

CO2 Identify and use various sensors, actuators, and IoT development boards like Raspberry Pi, Arduino, and NodeMCU.

CO3 Apply appropriate protocols for communication and ensure secure data exchange.

CO4 Design simple IoT applications involving data collection, processing, and visualization.

CO5 Analyze IoT use cases and appreciate the role of Edge, Fog, and Cloud in modern applications.

OPERATIONAL RESEARCH II

CO1: Ability to Create Network Diagrams, Identification of Critical Path, and Project Scheduling Skills

CO2: Ability to Formulate Game Theory Problems, Strategic Decision Making and Optimal Strategy Identification

CO3: Analytical Decision-Making Skills, Optimal Decision Identification and Risk and Uncertainty Management

DATA ANALYSIS WITH R

CO1: To Understand the basis of data analytics using a software tool.

CO2: To use data from multiple sources relevant for Data Analytics.

CO3: To Categorize and utilize data for inferential data analytics.

CO4: To integrate the statistical tool with an analytical problem to bring the proficiency.

MOBILE APPLICATION DEVELOPMENT

CO1: Set up Android Studio and develop basic Kotlin applications with UI interaction.

CO2: Apply object-oriented programming concepts using Kotlin for mobile application logic.

CO3: Use core Android components to develop modular and multi-screen applications.

CO4: Create dynamic UIs using layouts, fragments, menus, and handle user interactions efficiently.

CO5: Store and retrieve data using local databases and cloud services like Firebase.

CO6: Integrate media, camera, GPS, and background services into functional applications.

CO7: Package, sign, and deploy Android applications to the Google Play Store.

MAJOR PRACTICAL

CO1: Use network diagnostic and configuration commands effectively on Windows and Linux systems.

CO2: Design and simulate wired and wireless networks using Cisco Packet Tracer with IP configurations and routing protocols.

CO3: Analyze network traffic using Wireshark and identify protocol layers and data flow.

CO4: Configure and test IoT hardware platforms for device communication and data acquisition.

CO5: Implement real-time IoT applications using sensors, actuators, and cloud communication.

CO6: Develop integrated solutions using web technologies, IoT protocols, and dashboarding tools.

INTRODUCTION TO COMMUNICATION SKILLS IN ENGLISH- II

CO1: Understand and interpret any text they are reading from different perspectives.

CO2: Arouse the interest of learners in listening to and watching good quality audio and visual media.

CO3: Acquire proficiency in listening, speaking, reading and writing skills that will help them meet the challenges of the world.

CO4: Develop good oral and written skills of communication in the English language.

FINANCE FOR BEGINNERS

CO1: .Will be able to explain basic financial concepts such as budgeting, savings, and investments.

CO2: Will be able to apply financial literacy skills to manage personal and small business finances.

CO3: Will be able to identify different financial instruments and their risks

CO4: Will be able to evaluate financial decisions using fundamental financial principles.

CO5: Will be able to understand the functioning of financial markets and banking systems.

COMMUNITY ENGAGEMENT PROJECT

CO1 : Will able to apply theoretical concepts learned in classrooms to real-world socio-economic conditions to enhance practical skills

CO2 : Will able to demonstrate deep insights into the challenges, opportunities, and culture of socioeconomic diversity, preparing them for roles as responsible citizens

CO3 : Will able to evidence research aptitude, critical thinking, analytical skills, and ethical conduct during field work

CO4 : Will able to display problem-solving abilities and make informed decisions in complex scenarios through practical field situations

CO5 : Will able to work effectively in teams to achieve common goals within field work environments

CO6 : Will able to maintain high ethical standards and integrity in dealings with both work and the people they interact with

T.Y. B.Sc. C.S- Semester V

ARTIFICIAL INTELLIGENCE

CO1. Demonstrate knowledge of the foundations and key concepts in the field of AI.

CO2. Analyze and design intelligent agents for specific environments.

CO3. Apply problem-solving techniques and algorithms to find solutions to different types of problems.

CO4. Construct knowledge representation models and use reasoning techniques to derive new knowledge.

CO5. Implement machine-learning algorithms and evaluate their performance for classification and regression tasks.

SOFTWARE TESTING AND QUALITY ASSURANCE

CO1. Explain the importance of software testing and its impact on software quality.

CO2. Apply appropriate software testing techniques to identify and mitigate software defects.

CO3. Design and execute test cases to verify the functionality and performance of software systems.

CO4. Understand the principles of verification and validation and their application in software testing.

CO5. Utilize software testing tools and frameworks to automate testing processes and improve efficiency.

INFORMATION AND NETWORK SECURITY

CO1. Analyze and evaluate security trends, attacks, and mechanisms, and propose effective security solutions based on the OSI security architecture.

CO2. Apply classical encryption techniques, such as substitution and transposition ciphers, to encrypt and decrypt messages and analyze their security implications.

CO3. Implement public-key cryptography algorithms, including RSA, and demonstrate the ability to securely exchange keys and establish secure communication channels.

CO4. Design and implement secure authentication mechanisms, including message authentication codes and digital signatures, to ensure data integrity and non-repudiation.

CO5. Evaluate and implement various security measures, such as IP security, web security protocols (e.g., SSL/TLS), intrusion detection systems, and firewall configurations, to protect networks and systems from unauthorized access and attacks.

CYBER FORENSICS

CO1. Demonstrate a solid understanding of the principles and techniques used in computer forensic investigations.

CO2. Apply systematic approaches to acquire, preserve, and analyze digital evidence from various sources.

CO3. Utilize specialized tools and software for conducting effective computer forensics analysis.

CO4. Develop strong skills in investigating network-related incidents, including live acquisitions and network forensics.
CO5. Generate comprehensive and well-written reports that accurately document the findings of computer forensic investigations.

PROJECT MANAGEMENT

CO1. Apply project management principles, processes, and best practices to plan, execute, and control projects effectively.
CO2. Develop project charters, define project scopes, and create work breakdown structures (WBS) to establish project objectives and deliverables.
CO3. Create project schedules, estimate resource requirements, and monitor project progress using appropriate project management techniques.
CO4. Employ quality assurance and control measures to ensure project deliverables meet stakeholder expectations and industry standards.
CO5. Demonstrate effective leadership and teamwork skills, as well as the ability to manage stakeholders, resolve conflicts, and make ethical decisions in project management settings.

T.Y. B.Sc. C.S- Semester VI COURSE

DATA SCIENCE

CO1. Apply data preprocessing techniques to clean and transform raw data, handle missing values and outliers, and merge datasets.
CO2. Implement machine-learning algorithms to perform tasks such as regression, classification, clustering, and ensemble learning.
CO3. Evaluate and compare different machine learning models using appropriate evaluation metrics and cross-validation techniques.
CO4. Create informative and visually appealing data visualizations to communicate insights and patterns in data.
CO5. Understand the principles and practices of data management, including data governance, data quality assurance, and data privacy considerations.

CLOUD COMPUTING AND WEB SERVICES

CO1. Demonstrate a comprehensive understanding of cloud computing concepts, including different types of clouds and their characteristics.
CO2. Implement and utilize web service technologies, such as SOAP and REST, to develop distributed and parallel computing applications.
CO3. Design, deploy, and manage cloud-based applications and services using popular cloud computing platforms such as OpenStack and AWS.
CO4. Apply secure development practices and implement cloud security policies to ensure the confidentiality, integrity, and availability of cloud software solutions.
CO5. Utilize virtualization technologies to create and manage virtualized environments, considering the benefits and drawbacks of virtualization.

INFORMATION RETRIEVAL

CO1. Explain the key components and principles of information retrieval systems.
CO2. Apply indexing, storage, and retrieval techniques to efficiently retrieve relevant documents.
CO3. Compare and contrast different retrieval models and select appropriate models for specific search

scenarios.

CO4. Develop practical skills in implementing and evaluating information retrieval systems.

CO5. Demonstrate an understanding of advanced topics in information retrieval, including web search and machine learning techniques.

ETHICAL HACKING

CO1. Apply ethical hacking methodologies to conduct comprehensive security assessments and penetration tests.

CO2. Perform effective footprinting and reconnaissance techniques to gather critical information about target systems.

CO3. Identify and exploit vulnerabilities in various network and system components using appropriate tools and techniques.

CO4. Evaluate the security posture of web servers, web applications, and wireless networks, and recommend appropriate countermeasures.

CO5. Demonstrate an understanding of ethical and legal considerations in conducting ethical hacking activities and adhere to professional codes of conduct.

CYBER LAW AND IPR

CO1. Demonstrate a comprehensive understanding of cyber laws and their application in the digital age.

CO2. Evaluate legal frameworks and regulations governing cyber laws.

CO3. Identify and assess key issues in cyber laws, such as e-commerce, e-governance, and electronic records and contracts.

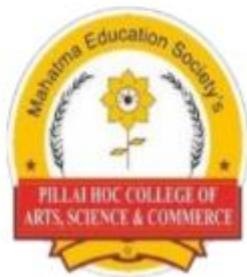
CO4. Understand cyber crimes, enforcement mechanisms, and the role of the Cyber Appellate Tribunal.

CO5. Analyze emerging issues in cyber laws, including liability of ISPs, privacy concerns, and jurisdictional complexities.

CO6. Recognize intellectual property rights and online regulations, including copyrights, patents, and domain name disputes.

**Mahatma Education Society's
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Rasayani**

Affiliated to University of Mumbai
NAAC Accredited with "A+" Grade in cycle II
ISO 9001:2015 Certified



Programme - B.Sc. Data Science

Programme Specific Outcomes

PSO. No.	PSO Title	PSOs in brief
PSO1	Analytical Modeling and Solution Design	Students can formulate and implement robust predictive models and analytical solutions to address complex domain-specific problems by selecting and optimizing appropriate statistical and machine learning algorithms
PSO2	Scalable Data System Competency	Students can architect and deploy scalable data pipelines and storage mechanisms capable of ingesting, cleaning, and processing massive, unstructured datasets efficiently using distributed computing frameworks and cloud technologies.
PSO3	Responsible Practice and Research	Students can critically evaluate the ethical implications of data science interventions—including algorithmic bias, data privacy, and societal impact—while demonstrating the ability to independently research and integrate emerging methodologies.
PSO4	Professional Communication and Adaptability	Students can translate complex technical findings into actionable business insights for non-technical stakeholders through effective data storytelling and visualization, while demonstrating adaptability and leadership within cross-functional teams.

Course Outcomes

Semester-I

INTRODUCTION TO PYTHON PROGRAMMING
CO1 Demonstrate the use of variables, data types, and input/output functions in Python programming. CO2 Apply control statements and operators to implement logical and conditional operations in Python. CO3 Explain and utilize dictionaries for storing and retrieving data efficiently. CO4 Develop Python programs using functions and string operations for modular and efficient coding. CO5 Understand the concept of modules and use standard and custom modules in Python programs.
R PROGRAMMING
CO1 Students will be able to write basic R code to perform calculations and data manipulation CO2 Students will be able to import, clean, and prepare data for analysis in R CO3 Students will be able to use R packages to create basic data visualizations CO4 Students will be able to perform descriptive statistical analysis using R, apply R programming skills to solve simple data-related problems.
DESCRIPTIVE STATISTICS
CO1: Able to organize, manage and present the data. CO2 :To understand the use Measures of Central Tendencies and Dispersion. CO3: Able to understand and compute the consistent and inconsistent data CO4:Able to identify the association between variables CO5: Able to understand forecasting techniques and to find cause and effect relationship between variable through regression analysis
EXCEL FOR BUSINESS
CO1: Participants will gain a foundational understanding of spreadsheet structure and the components of financial models. CO2: Participants will be able to create well-structured financial models, addressing common design challenges. CO3: Participants will master Excel functions, shortcuts, cell referencing, and named ranges for efficient financial modelling. CO4: Participants will gain expertise in formatting, using form controls, creating PivotTables, and employing various tools for effective financial modelling. CO5: students will be able to design, build, and present professional dashboards that communicate financial insights visually and interactively.
INDIAN ROOTS OF INFORMATION SCIENCE

CO1 Learners will understand and appreciate the rich Indian Knowledge Tradition. CO2 Learners will understand the contribution of Indians in various fields & experience increased subject-awareness and self-esteem
COMMUNICATION SKILLS IN ENGLISH
CO 1. Demonstrate an understanding of essential aspects of communication skills.
CO 2. Exhibit the ability to Read a variety of written text using sub skills such as skimming and scanning.
CO 3. Identify and rectify common grammatical errors in English .
CO 4. Show competence in delivering compelling presentations and engage in articulate and effective conversations in English across different contexts.
CO 5. Display advanced formal writing skills in crafting job application letters, CVs, and Statements of Purpose.

Semester-II

ADVANCE PYTHON PROGRAMMING
CO1 Apply appropriate list and tuple operations to solve problems using Python programming. CO2 Implement and analyze regular expressions to perform pattern matching and text processing tasks. CO3 Design and develop Graphical User Interface (GUI) and Flask applications using Python. CO4 Demonstrate understanding of NumPy arrays and operations for numerical computing. CO5 Analyze, manipulate, and visualize data using appropriate libraries to derive meaningful insights.
DATABASE MANAGEMENT SYSTEM
CO1: To appreciate the importance of database design. CO2: Analyze database requirements and determine the entities involved in the system and their relationship to one another. CO3: Write simple queries to MySQL related to String, Maths and Date Functions. CO4: Create tables and insert/update/delete data, and query data in a relational DBMS using MySQL commands. CO5: Understand the normalization and its role in the database design process. Handle data permissions.
STATISTICAL METHODS I
CO1: Understand the concept of continuous random variables and their distributions (PDF, CDF, and related properties). CO2 :Compute and interpret parameters (mean, variance, median) for standard continuous distributions: Uniform, Exponential, and Normal. CO3: Apply the Normal distribution to real-life problems using the normal curve and standard normal

table.
CO4: Understand the concepts of sampling, estimators, bias, standard error, and the Central Limit Theorem
CO5: Perform point and interval estimation for population parameters (mean, proportion) based on large sample theory.
WEB TECHNOLOGY
CO1 Students will be able to create structured HTML documents using HTML 5.
CO2 Students will be able to apply CSS for text and link styling
CO3 Students will be able to implement responsive design with css.
CO4 Students will be able to apply json to enhance user experience.
CO5 Students will be able to use PHP.
EFFECTIVE COMMUNICATION SKILLS
CO1: Learners will be able to apply effective listening strategies by practicing active listening
CO2: Learners will be able to communicate effectively and appropriately in English during a range of contexts such as meeting and greeting, self-introduction, group discussions, and interviews.
CO3: Learners will be able to analyze and interpret various types of written texts, including news reports, advertisements, online content, poems, and essays for academic and real-world applications.
CO4: Learners will be able to produce clear and structured written communication such as emails, resumes, notices, meeting agendas/minutes, paragraphs
ENVIRONMENTAL MINDFULNESS AND SUSTAINABLE LIVING
CO 01: To provide overview on the concept of environment, ecosystems, biodiversity and reflect on environmental values
CO 02: To develop awareness global environmental concerns, issues, and impacts and need for action to address these challenges
CO 03: To identify the applications of sustainable development and environmental management strategies
MARKETING MIX II: MARKETING IN THE DIGITAL AGE
CO 01: To introduce students to the fundamental concepts of marketing and market dynamics.
CO 02: To provide a foundational understanding of how Artificial Intelligence (AI) is applied in modern promotional strategies
CO 03: To Understand the basics of digital marketing platforms and tools, and understand the importance of ethical marketing practices.

Semester-III

DESIGN AND ANALYSIS OF ALGORITHMS
CO1. Understand and explain the fundamental principles and properties of algorithms and data structures, and apply them to solve computational problems.
CO2. Analyze the time and space complexity of algorithms using asymptotic notations and mathematical techniques for both recursive and non-recursive algorithms.
CO3. Implement and apply various data structures such as linked lists, stacks, queues, trees, and graphs for solving different computational problems.
CO4. Design and implement efficient algorithms for searching, sorting, and graph-based operations, evaluating their comparative performance in terms of complexity.
CO5. Evaluate and choose appropriate algorithmic techniques and data structures for solving new and

complex problems, demonstrating critical thinking and problem-solving abilities.
DATA WAREHOUSING
CO1. Learner is able to demonstrate knowledge of business intelligence, data warehouse with clear understanding of architectural types and will be able to establish the relationship between architectural building blocks. CO2. Learner is able to elaborate changing dimensions with respect to current trends & using aggregate tables. CO3. Learner is able to handle the processes of data preprocessing, data transformation and data reduction.
DATA MINING
CO1 Ability to acquire knowledge of Data Mining. CO2 Ability to gain information about Data mining issues and its social implication. CO3 Proficiency in preprocessing data. CO4 Acquire knowledge of various classification methods. CO5 To attain various techniques of clustering and prediction CO6 Ability to gain knowledge on Graph mining, Social Network Analysis and Multi Relational Data Mining.
STATISTICAL METHODS I
CO1: Understand and apply fundamental concepts of probability CO2: Analyze and compute probabilities of compound and conditional events CO3: Demonstrate knowledge of random variables CO4: Calculate and interpret key statistical measures CO5: Apply and derive properties of standard discrete probability distributions
हिन्दी भाषा : व्यावहारिक प्रयोग
CO1: ववद्यावर्थयो कल हाजभाषा वहंदी का ज्ञान प्राप्त हलगा, एवं दक्षता प्राप्त हलगी CO2: ववद्यावर्थयो कल हाजभाषा वहंदी के व्याकहवणक प्रयलग की जानकाही प्राप्त हलगी CO3: ववद्यावर्थयो कल वहंदी-संज्ञा आवद का ज्ञान प्राप्त हलने के सार् भाषा के िुद्ध, व्यावहारहक रूप का ज्ञान हलगा CO4: ववद्यावर्थयो कल काहकों, वाक्य होना एवं भावषक वोहों आवद का ज्ञान प्राप्त हलगा
FIELD PROJECT

CO1. To Apply concepts learned in classrooms to real-world socioeconomic conditions enhancing their understanding and skills

CO2. To show insights into the challenges, opportunities and culture of socioeconomic diversity, preparing them for future role as responsible citizens

CO3. To demonstrate evidence of research aptitude and skills of critical thinking, analytical skills, and ethical research conduct in field work

CO4. To display problem-solving abilities in making informed decisions in complex scenarios through practical situations

CO5. To work in teams and collaborate to achieve common goals in the work field environments through collaborative efforts

CO6. To show integrity in their dealings with their work and the people that they interact with by upholding professional; principles and ethical standards

Semester-IV

BIG DATA

CO1 Explain the evolution of Big Data technologies, from 3Vs to 32Vs, and demonstrate understanding of Hadoop, Spark, Flink, and their role in Big Data Analytics and Real-Time Processing.

CO2 Analyze the role of NoSQL databases in Big Data ecosystems and evaluate suitable data models for specific Big Data applications.

CO3 Apply resource management techniques for Big Data processing systems in cloud environments and assess the effectiveness of single-resource and multi-resource management strategies.

CO4 Design and implement distributed data processing workflows using MapReduce, and optimize system performance through efficient job scheduling, storage, and data processing techniques.

CO5 Demonstrate proficiency in real-time data analytics by developing stream processing solutions and apply packing algorithms to enhance Big Data replay performance on multicore systems.

ARTIFICIAL INTELLIGENCE

CO1: Able to understand the building blocks of AI

CO2: Able to analyze the problem and solving it by implementing suitable techniques

CO3: Able to apply the logic based techniques to solve examples.

CO4: Ability to implement Bayesian approaches

CO5: Ability to use machine learning concepts for solving problems.

MACHINE LEARNING

CO1 Understand the foundational concepts and principles of Machine Learning
CO2 Apply supervised and unsupervised learning techniques, including classification algorithms and clustering algorithms
CO3 Evaluate the performance of Machine Learning models using classification metrics
CO4 Implement regression models (such as linear regression and logistic regression) and understand their applications in predictive analysis.

Major Practical

CO1: Practical implement machine learning algorithms such as KNN, decision trees, SVM, Naïve Bayes, linear regression, and logistic regression.
CO2: Apply these algorithms to real-world datasets and problem scenarios.
CO3: Develop the skill in evaluating and assessing the performance of machine learning models using appropriate metrics.
CO4: Apply clustering techniques, including hierarchical clustering and K-means clustering, for grouping and segmentation tasks.
CO5: Learners will be able to explore skills to process algorithms using prescribed techniques.

OPERATIONAL RESEARCH II

CO1 Ability to Create Network Diagrams, Identification of Critical Path, and Project Scheduling Skills
CO2 Ability to Formulate Game Theory Problems, Strategic Decision Making and Optimal Strategy Identification
CO3 Analytical Decision-Making Skills, Optimal Decision Identification and Risk and Uncertainty Management

TESTING OF HYPOTHESIS

CO1: Ability to Critical Thinking and apply analytical tools to interpret results effectively.
CO2: Ability to critically evaluate existing research, assess evidence, and make data-driven decisions.

INTRODUCTION TO COMMUNICATION SKILLS IN ENGLISH- II

CO1: Understand and interpret any text they are reading from different perspectives.
CO2: Arouse the interest of learners in listening to and watching good quality audio and visual media.
CO3: Acquire proficiency in listening, speaking, reading and writing skills that will help them meet the challenges of the world.
CO4: Develop good oral and written skills of communication in the English language.

FINANCE FOR BEGINNERS

CO1: .Will be able to explain basic financial concepts such as budgeting, savings, and investments.
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CO3: Will be able to identify different financial instruments and their risks
CO4: Will be able to evaluate financial decisions using fundamental financial principles.
CO5: Will be able to understand the functioning of financial markets and banking systems.

COMMUNITY ENGAGEMENT PROJECT

CO1: Students will be able to apply theoretical concepts learned in classrooms to real-world socio-economic conditions to enhance practical skills.
CO2: Students will be able to demonstrate deep insights into the challenges, opportunities, and culture of socioeconomic diversity, preparing them for roles as responsible citizens.

CO3: Students will be able to evidence research aptitude, critical thinking, analytical skills, and ethical conduct during field work.

CO4: Students will be able to display problem-solving abilities and make informed decisions in complex scenarios through practical field situations.

CO5: Students will be able to work effectively in teams to achieve common goals within field work environments.

Semester V

Computer Vision

CO1 : Understand the fundamentals of image formation.

CO2 : Use and Demonstrate operations of Image Processing.

CO3 : Relate and Explain various features of Image.

CO4 : Understand, Identify and Examine various image patterns.

CO5 : Design and develop practical and innovative image processing and computer vision applications or systems

Data Engineering

CO1 : To remember and explain the Data Engineering basics and Lifecycle.

CO2 : To apply the Data Architecture Design with various options available.

CO3 : To create the Data from source and make use of Storage.

CO4 : To understand the Ingestion process and know about Queries, Modeling, and Transformation.

CO5 : To Illustrate Data Analytics, Machine Learning and to Explain the importance of Security and Privacy.

Campus to Corporate

CO1 : Apply active listening techniques and overcome barriers to become a better listener.

CO2 : Demonstrate improved speaking skills with clarity, confidence, and fluency.

CO3 : Utilise interview techniques to enhance job interview performance and create impactful résumés.

CO4 : Apply interpersonal communication skills to build effective relationships and manage conflicts in professional settings.

CO5 : Effectively deliver negative news messages, develop crisis communication plans, and handle press conferences in challenging situations

Robotic Process Automation

CO1 : Understand and implement the mechanism of business process and can provide the solution in an optimised way.

CO2 : Apply the features used for interacting with database plugins.

CO3 : Apply and Use the plug-ins and other controls used for process automation.

CO4 : Implement and handle the different events, debugging and managing the errors.

CO5 : Test and deploy the automated process

Robotic Process Automation

CO1 : Demonstrate a comprehensive understanding of social media analytics concepts, theories, and tools.

CO2 : Apply various social media analytics techniques to extract insights and make informed decisions.

CO3 : Perform social network analysis to uncover patterns, relationships, and influential nodes within social networks.

CO4 : Utilise text analytics methods to extract meaningful information from social media text data.

CO5 : Design and implement recommender systems for social media platforms, considering user preferences and item similarities to enhance user experiences.

Semester-VI

Machine Learning

CO1 : Understand the foundational concepts and principles of Machine Learning

CO2 : Apply supervised and unsupervised learning techniques, including classification algorithms and clustering algorithms

CO3 : Evaluate the performance of Machine Learning models using classification metrics, ROC/AUC curve analysis, and cross-validation techniques.

CO4 : Implement regression models (such as linear regression and logistic regression) and understand their applications in predictive analysis.

CO5 : Utilize dimensionality reduction techniques (Like PCA) for feature reduction and selection, and apply association rule mining algorithms (such as the Apriori algorithm) for discovering meaningful patterns in datasets

Exploratory Data Analysis

CO1 : Understand importance of data and its types in Exploratory Data Analysis.

CO2 : Classify EDA and summary statistics in context of interpretation.

CO3 : Understand the significance of missing value imputations in better EDA interpretations.

CO4 : Analyse the measure of central tendency in describing the quick view of data set.

CO5 : Categorize measure of dispersion and its interpretation in spread ness of data.

Internet of Things

CO1 : Describe what IoT is and how it works today and Recognise the factors that contributed to the emergence of IoT

CO2 : Design and program IoT devices and Use real IoT protocols for communication

CO3 : Secure the elements of an IoT device

CO4 : Design an IoT device to work with a Cloud Computing infrastructure.

CO5 : Transfer IoT data to the cloud and in between cloud providers and Define the infrastructure for supporting IoT deployments

Applied Business Analytics

CO1 : Understand basics of statistical concepts like probability distribution, hypothesis testing etc.

CO2 : Experiment with Business Intelligence Tools for Data Analysis.

CO3 : Make use of the business analytics methods for discovering the knowledge

CO4 : Apply Regression Analysis with Time Series Analysis and forecasting

CO5 : Apply and Construct various modelling techniques for Optimization and simulation.

Sports Analytics

CO1 : To remember and understand the Cricket analytics and its procedures.

CO2 : To apply cricketr package for analysing performances of cricketers.

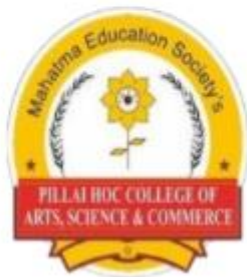
CO3 : To understand the use of cricketr package template.

CO4 : To analysing performances of cricketers using of Cricpy package.

CO5 : To apply and evaluate Cricket analysis with Machine Learning using Octave

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Programme: Hospitality Studies / Hotel Management

Programme Specific Outcome

PSOs. No.	PSO Title	PSOs in brief
PSO1	Hospitality Operational Competence	Graduates will demonstrate strong technical and practical skills in core hospitality operations including food production, food and beverage service, front office operations, and housekeeping management while applying culinary creativity, food safety, and hygiene standards as per industry requirements.
PSO2	Customer Service and Professionalism	Students will exhibit excellent guest service skills, professional communication, problem-solving abilities, teamwork, and ethical conduct , enabling them to deliver quality guest experiences and adapt effectively to real hospitality work environments.
PSO3	Hospitality Management and Digital Competency	Graduates will apply managerial and technological skills such as planning, organizing, staffing, leadership, cost and inventory control, decision-making, and use of hospitality technologies like PMS, POS systems, and reservation software to support efficient hospitality operations.

PSO4	Entrepreneurship and Sustainable Hospitality Practices	Students will develop entrepreneurial thinking, leadership capabilities, and sustainable hospitality practices, including responsible resource management, waste reduction, eco-friendly operations, and ethical tourism.
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COURSE OUTCOMES (CO)
SEMESTER-I

COURSE 01- Fundamentals of Food Production I (Theory)

C01	To understand and apply basic culinary terminology, techniques and fundamental principles of the kitchen.
C02	To understand the organization chart, ingredients and equipment.
C03	Demonstrate fundamental culinary skills including knife handling skills, Mise en place and basic cooking techniques

COURSE 02- Introduction to Food & Beverage Service

C01	Understand the fundamentals of food and beverage service operations. Describe the organizational structure, types of food service establishments, and key roles in F&B operations.
C02	Identify and apply various types of service methods and techniques. Demonstrate knowledge of service styles such as silver service, plate service, buffet, and self-service.
C03	Explain the use and maintenance of service equipment. Handle cutlery, crockery, glassware, and other equipment appropriately to ensure hygiene and safety.
C04	Understand menu planning, types, and interpretation. Analyze menu design, sequence, terminology, and its importance in guest satisfaction

COURSE 03-BASIC ROOM DIVISION

C01	Introduce the students to the Hotel & Tourism Industry Understand the appropriate organization structures and duties in the Front Office and related departments
C02	Develop, prepare guest relations and evaluate practical aspect with guests. Understand the role of public relations with hotel industry.
C03	Develop skills required as an efficient and effective receptionist in any hotel (large or Small) and to handle situations and types of guest in the job. Understanding the functioning of the Telecommunication department.

COURSE 04 - Fundamentals of Social and Emotional Skills

C01	Learners will be able to define and Identify values and life skills required in personal and professional life.
C02	Learners will develop awareness of the self and apply well- defined stress and emotional management strategies.

C03	Learners will be able to apply creative and critical thinking and emotional intelligence to address challenges in life
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COURSE 05- Information & Communication Technology

<u>C01</u>	Understand the fundamental concepts of ICT and its role in various sectors like education, health, governance, and business.
<u>C02</u>	Identify and describe the core components of a computer system including hardware, software, and operating systems
<u>C03</u>	Demonstrate proficiency in using word processing, spreadsheets, and presentation tools for academic and professional tasks.
<u>C04</u>	Apply internet tools, email, and social media responsibly for information gathering and communication.
<u>C05</u>	Utilize cloud-based storage and collaboration platforms for file sharing, real-time teamwork, and virtual communication.

COURSE 06- Communication Skills in English-I (AEC)

CO1	Students must be able to understand and apply the core principles of business communication in diverse professional contexts.
CO2	Students must be able to demonstrate enhanced English language proficiency across Listening, Speaking, Reading, and Writing (LSRW) skills.
CO3	Students must be able to communicate effectively and confidently in professional settings by applying acquired functional English language skills.

COURSE 07- CULTURAL AND CULINARY HERITAGE OF INDIA

CO1	The incorporation of the Indian Knowledge System into the hospitality industry not only preserves and celebrates India's rich heritage.
CO2	It creates a unique identity in a competitive global market
CO3	It offers guests meaningful and memorable experiences while promoting sustainability, wellness, and cultural understanding.

SEMESTER- II

COURSE 01- Fundamentals of Food Production II (Theory)

CO1	Identify and classify raw materials, ingredients and commodities used in food production
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CO2	Prepare soups, sauces, gravies with professional presentation.
CO3	Plan and execute basic menus and manage kitchen operations during practical sessions.

COURSE 02- Intermediate Operations of Food & Beverage Service I (Theory)

CO1	To enable students to think critically to take a decision for forming judgments. This includes observation, analysis, interpretation, reflection, evaluation, inference, explanation, problem solving, and decision making.
CO2	To train students to speak, read, write and listen through electronic media in English and in Hindi. To enable students to reach out to large number of people via ideas, books, media and technology
CO3	To empower students to stimulate views of others, mediate disagreements, negotiate on behalf of the organizations that they are working for and help mediate and mitigate situations.
CO4	To help students to invest their time in a continuous learning and training process, thus upgrading themselves as per the latest trends and requirements of the hospitality industry.

COURSE 03- Fundamentals of Room Division Management

CO1	Demonstrate basic front office operations including reservation handling, guest check-in, check-out, and guest escorting procedures
CO2	Apply standard housekeeping practices such as bed making, guest room cleaning, bathroom cleaning, and maintenance of room amenities.
CO3	Develop operational skills in handling cleaning equipment, materials, and procedures to ensure hygiene and guest satisfaction in rooms division.

COURSE 04- Environmental Mindfulness and Sustainable Living

CO1	Learners will be able to provide overview on the concept of environment, ecosystems, biodiversity and reflect on environmental values
CO2	Learners will develop awareness global environmental concerns, issues, and impacts and need for action to address these challenges
CO3	Learners will be able to identify the applications of sustainable development and environmental management strategies

COURSE 05- Fundamental of Information & Communication Technology

CO1	Understand the fundamental concepts of ICT and its role in various sectors like education, health, governance, and business.
CO2	Identify and describe the core components of a computer system including hardware, software, and operating systems
CO3	Demonstrate proficiency in using word processing, spreadsheets, and presentation tools for academic and professional tasks.
CO4	Apply internet tools, email, and social media responsibly for information gathering and communication.
CO5	Utilize cloud-based storage and collaboration platforms for file sharing, real-time teamwork, and virtual communication.

COURSE 06- Effective Communication Skills (AEC)

CO1	Learners will be able to apply effective listening strategies by practicing active listening
CO2	Learners will be able to communicate effectively and appropriately in English during a range of contexts such as meeting and greeting, self-introduction, group discussions, and interviews.
CO3	Learners will be able to analyze and interpret various types of written texts, including news reports, advertisements, online content, poems, and essays for academic and real-world applications.
CO4	Learners will be able to produce clear and structured written communication such as emails, resumes, notices, meeting agendas/minutes, paragraphs

SEMESTER-III

COURSE 01-Intermediate Culinary & Restaurant Operations -I (Theory)

CO1	Understand and apply the principles of menu planning and production for volume feeding across various institutional catering sectors.
CO2	Identify appropriate kitchen equipment and explain their usage, selection criteria, and maintenance in quantity food establishments.
CO3	Apply techniques of indenting, purchasing, and storage for bulk food production with effective inventory control.
CO4	Analyse regional Indian cuisines, evaluate traditional spice blends, gravies, masalas, and factors influencing local food habits.
CO5	Recognize and use Indian culinary terms relevant to professional bulk kitchen operations.

COURSE 02- INTERMEDIATE CULINARY AND RESTAURANT OPERATIONS II (Theory)

CO1	Classify the various types of alcoholic beverages & differentiate between distilled spirits and explain the alcohol fermentation process
CO2	Explain the production of the Still, Sparkling, Fortified and Aromatised wines and show how Viticulture & Vinification effects its overall quality.
CO3	Illustrate the production process for brewed, fermented and distilled beverages.
CO4	Distinguish between Old World & New World Wines producing Countries, Principle regions & Wine Laws.
CO5	Explain the origin and production of Spirits (Pot Still & Patent Still Process), & classification of Liqueurs.

COURSE 03- Intermediate Room Division

CO1	Managing financial records for guests and non-guests, including different types of folios and vouchers
CO2	Handling accounts billed to third parties like corporations or government agencies for hotel services.
CO3	Understand different linen, uniform and difference between commercial vs. in-house laundries and wash cycles.
CO4	Handle laundry services with care label instructions

CO5	Use appropriate materials for flower arrangement
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COURSE 04- Human resource management

CO1	Students will be able to explain the basic concepts related to Human Resource Management.
CO2	Students will understand and describe key HR processes such as HR planning, recruitment, selection, training, development and placement.
CO3	Students will be able to identify and explain the importance of the above.

COURSE 05- CC-NSS

CO1	Students will be able to analyze the contributions of key Indian social reformers such as Mahatma Gandhi, Swami Vivekananda, Mahatma Phule, Rajshri Shahu Maharaj, Baba Amte, and others, and explain their impact on the development of social work in India.
CO2	Students will demonstrate improved soft skills and life skills, including communication, problem-solving, empathy, self-awareness, and interpersonal skills, enabling them to participate more effectively as NSS volunteers in community-based activities.

SEMESTER-VI

COURSE 01-INDUSTRIAL TRAINING

CO1	Exposure to Industrial Training is an integral part of the 4th semester. The class would be divided into two groups or as the case may be. The 20 weeks industrial training would be divided into all the major departments of the hotel.
CO2	Industrial Training will require an input of 120 working days i.e. (20 weeks x 06 days = 120 days).
CO3	For award of marks, 50% marks of IT would be on the basis of feed-back from the industry in a prescribed Performance Appraisal Form (PAF). It will be the students responsibility to get this feed-back / assessment form completed from departments of the hotel for submission to the institute at the end of Industrial Training. For the remaining 50% marks(10%-Presentation Skills,10% Viva, 10% Log Book and 20% Training Report) students would be assessed on the basis of seminar / presentation before a select panel. A hard copy of the report will also have to be submitted to the panel.
CO4	Responsibilities of Institute, hotel and the student / trainee with aims & objectives have been prescribed for adherence.
CO5	Once the student has been selected / deputed for industrial Training by the institute, he / she shall not be permitted to undergo IT elsewhere. In case students make direct arrangements with the hotel for Industrial Training,

	these will necessarily have to be approved by the institute. Students selected through campus interviews will not seek Industrial Training on their own.
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COURSE 02- Introduction to Communication Skills in English II

CO1	Demonstrate an understanding of English Usage in Communication
CO2	Exhibit the ability to Read a variety of written text using subskills such as analyzing and interpreting text.
CO3	Show competence in comprehending a variety of oral texts.
CO4	Actively participate in group discussion, and research and prepare for the interview effectively
CO5	Display advanced formal (email writing, report writing) and creative writing skills.

SEMESTER- V

COURSE 01- Food Production & Patisserie

CO1	Advanced Culinary Techniques Demonstrate competency in advanced culinary methods, including modern cooking techniques, menu planning, and professional kitchen operations
CO2	International Cuisine Competency Prepare and present a variety of international cuisines with proper use of ingredients, cooking styles, flavor profiles, and plating principles.
CO3	Pâtisserie Skills Apply advanced pâtisserie techniques to produce pastries, gateaux, desserts, bread, and confectionery items with industry-quality finishing.
CO4	Kitchen Management & Planning Manage production schedules, workflow, portion control, cost control, and resource utilisation in a professional kitchen environment.
CO5	Creativity & Innovation Create innovative recipes and modern dessert presentations by experimenting with ingredients, textures, flavours, and contemporary plating styles.

COURSE 02- Food & Beverage Operations Management

CO1	Identify and plan F&B outlets — Understand different types of food & beverage outlets (specialty restaurants, coffee shops, room-service, etc.), and design appropriate layout, ambience (furniture, décor, lighting, crockery/ cutlery/ glassware/ linen) to meet service and guest satisfaction standards.
CO2	Plan staffing & operations for F&B outlets — Determine staff requirements and scheduling (shifts, reliefs), allocate duties efficiently, and manage labour deployment for smooth operations.
CO3	Perform menu planning and cost control analysis — Develop menus for different outlets/events, plan courses (à la carte, casual, theme, banquets, catering), and compute costs (material, labour, overhead) including break-even / cost-volume-profit analysis for profitability.

CO4	Manage banquets, catering and special F&B services — Plan and coordinate banquets, catering events (e.g. weddings, conferences), manage bookings, staffing, service procedures; organize outdoor/airline/rail/ marine catering operations.
CO5	Understand and apply F&B operations control and revenue management — Implement operational controls, manage revenue and cost efficiency, and ensure overall quality and guest satisfaction in F&B operations.

COURSE 03- Front Office

CO1	Explain the structure and functioning of the Front Office department Understand organizational hierarchy, roles, duties, and interdepartmental coordination.
CO2	Apply advanced guest services and reservation procedures Handle reservations, registration, room allocation, and guest cycle activities using standard operating procedures.
CO3	Demonstrate skills in handling front office accounting and financial control Manage folios, billing processes, modes of payment, night auditing, and cashiering operations.
CO4	Evaluate revenue management techniques used in the lodging industry Interpret concepts like forecasting, pricing strategies, yield management, and occupancy analysis.
CO5	Use property management systems (PMS) effectively Operate computerized front office software for check-in, check-out, guest history, and revenue tracking
CO6	Manage guest relations and communication professionally Handle complaints, provide personalized service, and maintain service quality standards.
CO7	Analyze security and safety procedures related to front office operations Understand emergency protocols, key control systems, and confidentiality policies.
CO8	Apply professional ethics and soft skills required in the hospitality sector Demonstrate grooming, etiquette, teamwork, leadership, and decision-making in operational scenarios.

COURSE 04- HOUSEKEEPING

CO1	Apply guidelines for hiring and managing contract housekeeping services Understand different types of outsourcing/contract services for housekeeping.
CO2	Perform manpower planning and rostering for housekeeping department Determine required staff strength (fixed & variable) depending on hotel category.
CO3	Apply principles of interior design and aesthetic upkeep in hotel premises Understand selection and maintenance of lighting, fixtures, windows/window treatments, wall finishes, floor coverings etc.
CO4	Plan and implement housekeeping layouts and equipment selection for different hotel areas Plan for functional layout of housekeeping-related spaces (e.g. linen rooms, storage, maintenance, public areas) with appropriate equipment and supplies.
CO5	Maintain professional standards of cleanliness, guest comfort and departmental coordination

	Understand and implement hotel-level housekeeping standards suitable for different hotel categories (limited-service, mid-range, full-service).
CO6	Demonstrate knowledge of contemporary trends in housekeeping (e.g. green housekeeping, outsourcing, guest amenities, level-of-service variations) Recognize and apply sustainable/green housekeeping practices where required.

COURSE 04- Corporate English

CO1	Enhance their communication skills — both verbal and written.
CO2	Adapt to challenges in a global scenario (i.e. communicate appropriately in international/professional contexts).
CO3	Practice and apply business etiquette and professional communication norms.

COURSE 05- Environmental & Sustainable Tourism (Theory)

CO1	Understand basic environmental concepts and resource types Define environment, scope and importance of environmental studies.
CO2	Understand tourism fundamentals and classification Explain the evolution of travel/tourism — from early times to present.
CO3	Recognize institutional and organisational aspects of tourism Identify national/domestic and international tourism organizations (e.g. governmental, non-governmental, global) and their role
CO4	Grasp the concept and need for sustainable tourism Explain sustainable development and why sustainable tourism matters globally and locally.
CO5	Apply sustainable tourism principles to real-life / local context Evaluate sustainable tourism practices: in developed countries, developing countries, within India, and specifically in a city context (e.g. Mumbai).
CO6	Critically analyze effects of tourism and propose sustainable measures Analyse environmental changes (pollution, resource consumption, waste) caused by tourism and accommodation sectors.

SEMESTER- VI

COURSE 01- Organizational Behavior

CO1	Diagnose and analyse individual and group behaviour within an organization — understanding how people act, interact, and perform in hospitality settings.
CO2	Develop skills that help improve both individual and group performance in entrepreneurial and established hospitality ventures.
CO3	Enhance overall personal effectiveness and adaptability to sustain and grow in the dynamic working environment of the hospitality industry.

COURSE 02- Strategic Management

CO1	Identify operating strategies and management concepts Students will be able to identify and understand the operating strategy and strategic management concepts as applied to hospitality organizations, including strategic intent, environmental analysis, and strategic formulation.
CO2	Develop strategic decision-making skills Students will develop skills in strategic decision making, enabling them to assess internal/external environments (e.g., SWOT, Porter's Five Forces) and make informed choices that align with organizational goals.
CO3	Participate in policy formation and strategic planning Students will be able to strategize and participate in policy formulation and planning processes, contributing to strategy formulation and implementation in real-world hospitality settings..

COURSE 03- Practical - Event Planning, Marketing & Management

CO1	Attain expertise in advanced culinary skills, including preparation, cooking techniques, and application of complex food production methods.
CO2	Understand and apply principles of kitchen management such as layout, workflow, cost control, and organization to run kitchen operations effectively.
CO3	Develop entrepreneurial skills required to plan, manage, and operate independent food production ventures (such as a catering business or speciality food services).
CO4	Develop the ability to plan, organize and design events such as conventions, seminars, and special functions creatively and strategically
CO5	Understand financial, marketing, operational, and strategic issues involved in setting up and managing events, including budgeting, resource allocation, sponsorship, promotion, and logistics.

COURSE 04- ADVANCED FOOD PRODUCTION

CO1	Attain expertise in advanced culinary skills, including preparation, cooking techniques, and application of complex food production methods.
CO2	Understand and apply principles of kitchen management such as layout, workflow, cost control, and organization to run kitchen operations effectively.
CO3	Develop entrepreneurial skills required to plan, manage, and operate independent food production ventures (such as a catering business or speciality food services).

COURSE 02- ADVANCED FOOD AND BEVERAGE SERVICE

CO1	Understand and apply advanced service techniques – Identify factors that create impulse buying and perform advanced Gueridon service operations such as preparation, filleting, carving, flambé, and finishing items from a Gueridon trolley.
CO2	Manage beverage operations effectively – Plan and operate bar operations while managing inventory and maintaining accurate records related to beverage

	control.
CO3	Apply cost management principles – Understand and apply cost dynamics relevant to the food and beverage industry, supporting operational efficiency and profitability.
CO4	Understand food & beverage control cycle – Demonstrate a detailed understanding of the various facets of the food and beverage cycle of control during both operational and post-operational phases.

COURSE 03- STRATEGIC HUMAN RESOURCE MANAGEMENT (Theory)

CO1	<p>Conceptual Understanding</p> <p>Students will be able to explain the concept, evolution and importance of Strategic Human Resource Management and how it differs from traditional HRM.</p>
CO2	<p>Strategic HR Function Awareness</p> <p>Students will demonstrate an understanding of strategic HR functions such as resourcing strategy, HR outsourcing, and technology integration in SHRM.</p>
CO3	<p>Recruitment & Development Insight</p> <p>Students will identify modern recruitment and employee development practices — including coaching, mentoring, work–life integration and emotional intelligence in HR strategy.</p>
CO4	<p>Implementation Skills</p> <p>Students will be able to outline how HR strategies are formulated, aligned with business goals, implemented and the barriers involved.</p>

**Mahatma Education Society's
Pillai HOC College of Arts, Science & Commerce (Autonomous)
Rasayani**

Affiliated to University of Mumbai
NAAC Accredited with "A+" Grade in cycle II
ISO 9001:2015 Certified



Programme- B.Sc.IT - Bachelor in Information Technology

Programme Specific Outcome

PSOs. No.	PSO Title	PSOs in brief
PSO1	Software Development Fundamental	Develop understanding to design and build functional software using programming, data structures, databases, and web technologies.
PSO2	Advanced Technical Problem Solving	Apply the skill to solve tough IT problems using critical thinking and applying concepts like AI, Machine Learning, Cloud, and IoT.
PSO3	Project Management and Research Communication	Develop a research mindset to plan and manage IT projects, and clearly communicate technical ideas to others.
PSO4	System Analysis and Secure Design	Understand what users need and design secure, working IT systems using proper analysis methods.

COURSE OUTCOMES

Semester-1

PROGRAMMING WITH C
CO1.To build flowcharts, pseudo- code for C programs CO 2.To use C language syntax and semantics in their programs CO 3To implement loops and decision making CO 4. To apply different types of data structures in their programs CO 5.To write well-structured, readable, and maintainable C code and to use dynamic memory allocation
DATABASE MANAGEMENT SYSTEM
CO1. To appreciate the importance of database design. CO2. Analyze database requirements and determine the entities involved in the system and their relationship to one another. CO3. Write simple queries to MySQL related to String, Maths and Date Functions. CO4. Create tables and insert/update/delete data, and query data in a relationalDBMS using MySQL commands. CO5. Understand the normalization and its role in the database design process. Handle data permissions
DESCRIPTIVE STATISTICS
CO1: Able to organize, manage and present the data. CO2 :To understand the use Measures of Central Tendencies and Dispersion. CO3: Able to understand and compute the consistent and inconsistent data CO4:Able to identify the association between variables CO5: Able to understand forecasting techniques and to find cause and effect relationship between variable through regression analysis.
COMBINATIONAL & SEQUENTIAL DESIGN
CO1 : Students will be able understand and explain the operation of basic logic gates, universal gates, and standard digital ICs. CO2 : Students will be able simplify and implement Boolean expressions using Boolean algebra and Karnaugh maps to design optimized digital circuits. CO3 : Students will be able to design and realize combinational circuits & sequential circuits. CO4 : Students will be able to implement code converters and advanced arithmetic circuits like multipliers and comparators for digital applications. CO5 : Identify and describe the key characteristics and applications of various digital logic families.
INDIAN ROOTS & INFORMATION SYSTEM
CO1. Learners will understand and appreciate the rich Indian Knowledge Tradition. CO2. Learners will understand the contribution of Indians in various fields. CO3.Learner will experience increased subject-awareness and self-esteem.
COMMUNICATION SKILLS IN ENGLISH
CO 1. Demonstrate an understanding of essential aspects of communication skills. CO 2.Exhibit the ability to Read a variety of written text using sub skills such as skimming and scanning. O 3.Identify and rectify common grammatical errors in English . CO 4. Show competence in delivering compelling presentations and engage in articulate and effective conversations in English across different contexts. CO 5. Display advanced formal writing skills in crafting job application letters, CVs, and Statements of

Purpose.

FUNDAMENTALS OF SOCIAL & EMOTIONAL SKILLS

CO 01: To define, identify and develop values and life skills to improve in personal and professional life

CO 02: To develop awareness of the self and apply well- defined stress and emotional management strategies

CO 03: To apply creative and critical thinking and emotional intelligence to address challenges in life

BASICS OF MARKETING MIX

CO 1 Students can learn about the various elements of marketing mix

CO 2 Students are able to understand the key concepts and components of product, product development, price mix strategies, pricing decisions and brand positioning

CO 3 Students are able to know about the physical distribution and other marketing control strategies of product

Semester-II

PROGRAMMING WITH C++

CO1: Students can explain the key concept of OOP and their application in software development.

CO2: Students can design and implement classes and objects to model real world entities.

CO3: Students can apply the concepts of polymorphism, virtual functions, inheritance and exception handling in the program.

CO4: Students can apply operator overloading, runtime polymorphism, generic programming.

CO5: Students can implement file handling concepts in program.

WEB TECHNOLOGY

CO1: Students will be able to create structured HTML documents using HTML 5.

CO2: Students will be able to apply CSS for text and link styling

CO3: Students will be able to implement responsive design with css.

CO4: Students will be able to apply json to enhance user experience.

CO5: Students will be able to use PHP.

EXCEL FOR DATA SCIENCE

CO1: Students should be able to use the excel to store and organize data for small to medium-sized datasets.

CO2: Students should be able to design formulas.

CO3: Students should be able to do the formatting of the numeric data.

CO4: Students should be able to work with pivot tables and charts.

CO5: Students should be able to implement basics in case study.

PL/SQL

CO1. Students will be able to explain PL/SQL variables, data types, control and conditional statements.
 CO2. Students will be able to apply sequences, cursors, collections, composite data types, and BULK COLLECT in PL/SQL to handle large datasets efficiently.
 CO3. Students will be able to differentiate between various PL/SQL structures such as functions, procedures, and triggers.
 CO4. Students will be able to evaluate PL/SQL programs for error and exception handling effectiveness.
 CO5. Students will be able to develop PL/SQL packages, functions, procedures, and triggers for database applications.

EFFECTIVE COMMUNICATION SKILL

CO1: Learners will be able to apply effective listening strategies by practicing active listening
 CO2: Learners will be able to communicate effectively and appropriately in English during a range of contexts such as meeting and greeting, self-introduction, group discussions, and interviews.
 CO3: Learners will be able to analyze and interpret various types of written texts, including news reports, advertisements, online content, poems, and essays for academic and real-world applications.
 CO4: Learners will be able to produce clear and structured written communication such as emails, resumes, notices, meeting agendas/minutes, paragraphs

ENVIRONMENTAL MINDFULNESS AND SUSTAINABLE LIVING

CO1: To provide overview on the concept of environment, ecosystems, biodiversity and reflect on environmental values
 CO2: To develop awareness global environmental concerns, issues, and impacts and need for action to address these challenges
 CO3: To identify the applications of sustainable development and environmental management strategies

MARKETING MIX II: MARKETING IN THE DIGITAL AGE

CO1: To introduce students to the fundamental concepts of marketing and market dynamics
 CO2: To provide a foundational understanding of how Artificial Intelligence (AI) is applied in modern promotional strategies
 CO3: To Understand the basics of digital marketing platforms and tools, and understand the importance of ethical marketing practices.

Semester-III

PYTHON PROGRAMMING

CO 1. Demonstrate mastery of Python features to tackle a wide range of programming challenges.
 CO 2. Utilize control flow statements to ensure accurate and logical program execution.
 CO 3. Efficiently manipulate arrays, strings, and data structures to enhance data handling and problem-solving.
 CO 4. Design modular, efficient programs by leveraging functions, modules, and string operations.
 CO 5. Manage file operations, employ regular expressions, and manipulate date and time data to improve program functionality and performance.

DATA STRUCTURES

CO1 Demonstrate knowledge of core data structures and their operations
 CO2 Analyze the time and space complexity of algorithms and choose the most efficient solution for a given problem.

C03 Translate algorithmic solutions into correctly functioning code using their chosen programming language.
C04 Implement and traverse binary trees and binary search trees, demonstrating their understanding of these structures.

OPERATING SYSTEMS

C01.Outline the basic concept of operating systems
C02.Analyze the working of operating system
C03.Examine the working of various scheduling approaches.
C04.Apply the concepts of synchronization and deadlock
C05.Apply the file access mechanisms

STATISTICAL METHODS I

C01: Understand and apply fundamental concepts of probability
C02: Analyze and compute probabilities of compound and conditional events
C03: Demonstrate knowledge of random variables
C04: Calculate and interpret key statistical measures
C05: Apply and derive properties of standard discrete probability distributions

DS_SCALA FOR DATA SCIENCE

C01. Apply quantitative modeling and data analysis techniques to the solution of real world business problems, communicate findings, and effectively present results using data visualization techniques.
C02.Recognize and analyze ethical issues in business related to intellectual property, data security, integrity, and privacy.
C03.Apply ethical practices in everyday business activities and make well-reasoned ethical business and data management decisions.
C04.Demonstrate knowledge of statistical data analysis techniques utilized in business decision making.
C05.Apply principles of Data Science to the analysis of business problems.

APPLIED MATHEMATICS

C01:Familiar with the various forms and operations of a complex number.

C02.Find the Laplace transform of a function of using definition.

C03.Find the Inverse Laplace transform of a function of using definition matrix.

C04.Solve Differential equations of first degree and first order.

C05.Solve Differential equations of first degree and higher order

हिन्दी भाषा : व्यावहारिक प्रयोग

C01: ववद्यावर्थयो कल हाजभाषा वहंदी का ज्ञान प्राप्त हलगा, एवं दक्षता प्राप्त हलगी

C02: ववद्यावर्थयो कल हाजभाषा वहंदी के व्याकहवणक प्रयलग की जानकाही प्राप्त हलगी

C03: ववद्यावर्थयो कल वहंदी-संज्ञा आवद का ज्ञान प्राप्त हलने के सार् भाषा के िुद्ध, व्यावहारहक रूप का ज्ञान हलगा

C04: ववद्यावर्थयो कल काहको, वाक्य होना एवं भावषक वोहो आवद का ज्ञान प्राप्त हलगा

Financial Literacy

CO 01 : Students would be able to understand the fundamental concepts of financial literacy and personal finance for day-to-day money management.

CO 02: Students would be able to analyze and apply banking, digital finance, and credit concepts to make informed financial decisions.

CO 03: Students would be able to evaluate basic investment avenues and develop personal financial plans to achieve financial goals responsibly.

EXTENSION WORK

CO 01 : Provide equal access to quality education for all, supporting national goals for universal literacy and numeracy.

CO 02 : Offer a flexible, multidisciplinary education focused on conceptual understanding, personality development, critical thinking, and creativity.

CO 03 : Organize remedial programs to address learning gaps and offer continuous educational opportunities for all ages.

CO 04 : Create multiple pathways for aspirants to develop practical skills that lead to meaningful employment opportunities.

CO 05 :.Implement programs to disseminate knowledge, provide services, and actively contribute to community development.

FIELD PROJECT

CO1 : Students will able to apply concepts learned in classrooms to real-world socioeconomic conditions enhancing their understanding and skills.

CO2 : Students will able to show insights into the challenges, opportunities and culture of socioeconomic diversity,preparing them for future role as responsible citizens

CO3 : Students will able to demonstrate evidence of research aptitude and skills of critical thinking, analytical skills, and ethical research conduct in field work

CO4 : Students will able to display problem-solving abilities in making informed decisions in complex scenarios through practical situations.

CO5 : Students will able to work in teams and collaborate to achieve common goals in the work field environments through collaborative efforts.

CO6 : Students will able to show integrity in their dealings with their work and the people that they interact with by upholding professional; principles and ethical standards.

Semester-IV

CORE JAVA

CO1. Understand the basics of Java and its runtime environment.

CO2. Be proficient in using Java's data types, control flow statements, and OOP principles such as classes, inheritance, and exception handling.

CO3. Creating own classes and objects

CO4. Develop mini projects using Class, Interface and exception handling

SOFTWARE ENGINEERING

CO1.Demonstrate a comprehensive understanding of Agile concepts and Scrum practices.

C02.Apply Scrum processes to effectively manage software development life cycles.

C03.Create and prioritize user stories for efficient Product Backlog management..

C04.Utilize metrics to evaluate and enhance Sprint performance and team productivity..

C05.Implement strategies for cost, customer, and risk management in Scrum projects.

C06.Formulate effective Sprint retrospectives to drive continuous improvement.

COMPUTER NETWORK

CO 1.Understanding the Transport layer protocols and their utilities

CO 2.Various application layer protocols and their implementation

CO3:Mailing Services and web services implementation

INTRODUCTION TO COMMUNICATION SKILLS IN ENGLISH- II

CO1. Understand and interpret any text they are reading from different perspectives.

CO2. Arouse the interest of learners in listening to and watching good quality audio and visual media.

CO3.Acquire proficiency in listening, speaking, reading and writing skills that will help them meet the challenges of the world.

CO4.Develop good oral and written skills of communication in the English language.

FINANCE FOR BEGINNERS

CO1: .Will be able to explain basic financial concepts such as budgeting, savings, and investments.

CO2: Will be able to apply financial literacy skills to manage personal and small business finances.

CO3: Will be able to identify different financial instruments and their risks

CO4: Will be able to evaluate financial decisions using fundamental financial principles.

CO5: Will be able to understand the functioning of financial markets and banking systems.

COMMUNITY ENGAGEMENT PROJECT

CO1 : Will able to apply theoretical concepts learned in classrooms to real-world socio-economic conditions to enhance practical skills.

CO2 : Will able to demonstrate deep insights into the challenges, opportunities, and culture of socioeconomic diversity, preparing them for roles as responsible citizens.

CO3 : Will able to evidence research aptitude, critical thinking, analytical skills, and ethical conduct during field work.

CO4 : Will able to display problem-solving abilities and make informed decisions in complex **scenarios** through practical field situations.

CO5 : Will able to work effectively in teams to achieve common goals within field work environments.

CO6 : Will able to maintain high ethical standards and integrity in dealings with both work and the people they interact with.

Semester-V

SOFTWARE PROJECT DEVELOPMENT

- CO1: Describe the basic concepts of software project management with its life cycle
- CO2: Apply project estimation and evaluation techniques to real world problem
- CO3: Apply Key project management system techniques like PERT, CRM
- CO4: Identify project risk, monitor and track project deadlines
- CO5: Work in teams to evaluate the different modes of communication among people.

INTERNET OF THINGS: THEORY AND PRACTICE

- CO1.Explain the concept of the Internet of Things and its applications in real-life scenarios.
- CO2.Apply design principles to create user-friendly and connected devices.
- CO3.Understand the communication protocols of the internet and design efficient web-connected devices.
- CO4.Prototype embedded devices and create their physical design using various tools and techniques
- CO5.Understand the business models and funding options available for startups in the Internet of Things domain and apply them to real-life scenarios

EMERGING TECHNOLOGIES

- CO1: Understand and articulate the foundational concepts and practical applications of Big Data, and compare and contrast SQL and NoSQL databases.
- CO2: Design and implement effective MongoDB data models utilizing JSON, BSON, and various schema strategies; efficiently perform data operations using the MongoDB shell.
- CO3: Understand and utilize MongoDB's storage engine, journaling, and GridFS file system; effectively design and implement MongoDB use cases.
- CO4: Evaluate the benefits and implications of transitioning from traditional disk storage to SSD and in-memory databases, proficiently use technologies like TimesTen, Redis, etc., and effectively utilize jQuery for DOM manipulation.
- CO5: Understanding of JSON, including its grammar, syntax, and data types, and be able to create, parse, and persist JSON objects and arrays. They will also learn to compare JSON with XML for data interchange and effectively use JSON in various web development contexts.

Semester-VI

SOFTWARE TESTING AND QUALITY ASSURANCE

- CO1: Learners understand various software testing methods.
- CO2: Learners can identify defects and manage those defects for improvement in quality.
- CO3: Learners analyze and comprehend the use of modern software testing tools and procedures for their projects testing.
- CO4: Understand and apply methods for verifying and validating software to ensure it meets requirements

and functions correctly.

CO5: Gain comprehensive knowledge of various testing levels and methodologies to ensure thorough software quality assurance from requirements to system testing stages.

INFORMATION SECURITY

CO1.Understanding the importance of information protection.

CO2.Comprehending the evolution of information security.

CO3.Utilize established methodologies for implementing and managing security.

CO4.Analysing Intrusion Detection and Prevention Systems, Voice over IP (VoIP) and PBX security.

CO5.Understanding the security considerations for virtual machines and security aspects of cloud computing.

BUSINESS INTELLIGENCE AND DATA ANALYTICS

CO1.Learners can explore the concepts of Strategic Decision Support and Harnessing Data for Informed Business Decisions

CO2.Application used for Data-Driven Mathematical Models and Data Mining for Informed Decision Making

CO3.Managing data through Advanced Data Analysis Techniques: Classification, Clustering, and Model Evaluation

CO4.Analyzing Strategic Information Management: Enhancing Decision-Making Across Marketing, Logistics, and Production

CO5.Fact findings using Strategic Organizational Intelligence: Bridging Gaps, Cultivating Knowledge, and Embracing Artificial Intelligence

FUNDAMENTALS OF GIS

CO1 Comprehend fundamental concepts and practices of Geographic Information Systems (GIS).

CO2 Apply basic graphic and data visualization concepts such as color theory,symbolization, and use of white space.

CO3 Apply GIS analysis to address geospatial problems and/or research questions.

CO4 Demonstrate proficiency in the use of GIS tools to create maps that are fit-for-purpose and effectively convey the information they are intended to.

CO5 Develop an integrated practical project, drawing on appropriate source data, providing meaningful analysis, effective visualization of output and drawing appropriate conclusions which demonstrate professional level insight.

IT ACT & CYBER LAWS

CO1 Students are able to apply data preprocessing techniques to clean and transform raw data, handle missing values and outliers, and merge datasets.

CO2 Students are able to implement machine-learning algorithms to perform tasks such as regression, classification, clustering, and ensemble learning

CO3 Students are able to evaluate and compare different machine learning models using appropriate evaluation metrics and cross-validation techniques.

CO4 Students are able to create informative and visually appealing data visualizations to communicate insights and patterns in data.

CO5 Students will be able to understand the principles and practices of data management, including data governance, data quality assurance, and data privacy considerations.

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Programme: Master of Commerce (M.Com)

Programme Specific Outcomes

PSOs. No.	PSO Title	PSOs in brief
PSO1	Advanced Accounting Expertise	Postgraduates will gain in-depth knowledge of advanced financial, corporate, and international accounting standards.
PSO2	Financial Analysis and Decision-Making	Postgraduates will be able to analyze complex financial data and provide insights for managerial and strategic decision-making.
PSO3	Research and Technology Application	Postgraduates will develop skills to conduct accounting research and effectively use accounting software and data analytics tools.
PSO4	Ethics and Regulatory Compliance	Postgraduates will apply ethical principles, corporate governance, and regulatory frameworks in accounting, auditing, and financial reporting.

Course Outcomes

Mcom Part I SEMESTER I

ADVANCED COST & MANAGEMENT ACCOUNTING

CO1	Apply marginal costing and absorption costing techniques along with breakeven and contribution analysis to make effective managerial decisions in various business scenarios.
CO2	Develop and use standard costing systems to analyze variances in materials, labor, and overheads for improved cost control and operational efficiency.
CO3	Prepare and implement different types of budgets including zero-based and flexible budgets to achieve effective budgetary control and financial planning.
CO4	Calculate and analyze operating costs for service industries such as hospitals, hotels, and transport to support cost control and decision-making.

ADVANCED FINANCIAL ACCOUNTING

CO1	Learners will be able to analyze and evaluate the financial performance of banking companies by applying statutory formats, NPA provisioning rules, and regulatory disclosure requirements.
CO2	Learners will be able to execute foreign currency accounting, including journal entries, translation methods, and preparation of foreign branch accounts as per applicable Accounting Standards.
CO3	Learners will be able to interpret regulatory frameworks for life and general insurance businesses and apply them in preparing technically correct final accounts required by IRDA.
CO4	Learners will be able to prepare, review, and validate the financial statements of co-operative societies, ensuring compliance with the Maharashtra State Co-operative Societies Act and prescribed accounting rules.

DIRECT AND INDIRECT TAXATION-INCOME TAX

CO1	Students will understand the concept of Residential Status and Scope of Total Income
CO2	After successful completion of the course, students are able to create an understanding of the basic concept of Direct Tax and basic definition of Direct Tax and assessee.
CO3	It familiarizes with heads of income with its components
CO4	Students are able to develop insight of the basics of Income Tax Act with special reference to computation of total income.

Research Methodology In Commerce and Management

CO1	Learners will be able to understand the meaning, need, scope, and types of research, and develop skills to plan research, select problems, formulate hypotheses, and determine sampling methods.
CO2	Learners will be able to acquire the ability to collect primary and secondary data effectively, design questionnaires, and select appropriate data collection methods for various research contexts.

CO3	Learners will be able to process, analyze, and interpret research data using statistical tools, measures of central tendency and dispersion, correlation, regression, and hypothesis testing techniques.
CO4	Learners will be able to develop the skills to prepare structured research reports, apply proper citation methods, maintain ethical standards, avoid plagiarism, and utilize modern technology in research.

Fundamental Analysis for Corporate

CO1	Analyze macroeconomic factors and indicators to evaluate their influence on financial markets and investment decisions.
CO2	Examine industry structures and competitive dynamics using industry analysis tools, including Porter's Five Forces Model, to identify attractive industries.
CO3	Evaluate company performance and value using financial statements, financial ratios, and valuation techniques for informed investment decisions.
CO4	Construct and manage investment portfolios using fundamental analysis principles to achieve long-term wealth creation.

Advanced Trends in Accounting - I

CO1	To inform learners about user interface and company management in Tally ERP 9,
CO2	To inform learners about the creation and management of master ledgers in TallyERP 9

SEMESTER II

Advanced Cost Accounting

CO1	Learners will be able to understand process costing and techniques applied in industry.
CO2	Learners will be able to identify various cost allocation methods and apply ABC method of costing system.
CO3	Learners will be able to define responsibility center and evaluate performance of company..
CO4	Learners will be able to under different techniques used in strategic cost management .

Corporate Finance

CO1	The learners will be able to identify the scope of financial management in practice.
CO2	The learners will be able to conceptualize the concept of valuation of securities.
CO3	The learners will be able to explain the concepts of financial accounting in general.
CO4	The learners will be able to identify and undertake various managerial decisions required in day-to-day business practices.

Direct and Indirect Taxation [Goods and Service Tax]

CO1	Learners will get an overview of GST, its need and applicability in India and Learners will understand the concept like Scope of Supply, Non-taxable Supply, Composition Scheme etc.
CO2	Learners will understand in detail about Time, Place and Value of Supply for computation of GST
CO3	Learners will have be able to calculate ITC, manner of utilization, assessment of tax liability and payment of GST
CO4	Learners will understand the provisions of GST registration, its procedure, documents needed for registration, cancellation of registration, deemed registration.

Advanced Trends in Accounting - II

CO1	Learners will be able to prepare a Financial report and do its analysis.
CO2	Learners will be able to activate GST masters in Tally and set up GST rate, Update Party GSTIN and updating GST in service ledgers.

Accounting of Housing Society & Charitable Trust

CO1	Learners will be able to define and prepare financial statements as per Maharashtra State Cooperative Societies Act.
CO2	Learners will be able to understand and apply auditing techniques in co- operative sector.
CO3	Learners will be able to understand concept of charitable trust and differentiate income exempted.
CO4	Learners will be able to understand the accounting process of accounting of charitable trusts.

MCOM PART II
SEMESTER III

Corporate Financial Accounting

CO1	Students will be able to explain the evolution and significance of Indian Accounting Standards and apply key Ind AS such as those related to employee benefits, financial instruments, earnings per share, intangible assets, and fair value measurement.
CO2	Students will be able to describe the concept and importance of Human Resource Accounting and apply cost-based and economic value models, particularly the Lev and Schwartz model, to value human capital practically.
CO3	Students will be able to understand the characteristics and factors affecting goodwill and apply various valuation methods including average profit, super profit, and capitalization methods to determine goodwill value.

CO4	Students will be able to identify factors affecting share valuation and apply income, net asset, and market approaches to accurately value shares and prepare valuation statements.
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Advanced Auditing	
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CO1	Learners will be able to apply auditing procedures to a simulated financial statement audit, ensuring compliance with relevant Standards on Auditing.
CO2	Learners will be able to prepare audit working papers and conduct variance analysis to a simulated financial statement.
CO3	Learners will be able to distinguish between different types of audit evidence (physical, documentary, analytical) and explain the procedures used to gather evidence for specific audit objectives, justifying the choice of procedures based on the nature of the assertion being tested.
CO4	Learners will be able to identify, analyse an audit report and explain the auditor's opinion on the financial statements, including the rationale for any modifications made to the opinion.

Financial Services	
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CO1	The learners will be able to critically evaluate and interpret financial attributes of leasing..
CO2	The learners will be able to calculate the effective costs of factoring.
CO3	The learners will be able to categorize and evaluate various alternate investments funds.
CO4	The learners will be able to compare and contrast various investment avenues considering its risk- return.

Accounting And Taxation Of E-Commerce Industries	
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CO1	The learners will be able to summarize and analyze the E-commerce landscape in India.
CO2	Learners will be able to record and reconcile digital transactions, understanding the nuances of different payment methods.
CO3	Learners will be able to demonstrate the ability to prepare financial statements for ecommerce businesses.
CO4	Learners will be able to identify and implement compliance requirements for operating an e-commerce business in India.

Advanced Trends in Accounting-III	
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CO1	The learners will be able to register and prepare various documents required under GST law.
CO2	The learners will be able to file various GST returns.

SEMESTER IV

Advanced Financial Management	
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CO1	Learners will be able to Calculate investment viability using techniques like NPV, IRR, and Payback Period.
CO2	Learners will be able to apply various techniques to investment scenarios and select the projects.
CO3	Learners will be able to demonstrate the use of capital budgeting techniques in international market.
CO4	Learners will be able to solve practical problems related to bilateral and multilateral netting in multinational cash flow operations.

International Financial Reporting Standards

CO1	The learners will be able to explain, summarize and identify the principles for recognizing and measuring elements in financial statements.
CO2	The learners will be able to apply the conceptual framework to identify financial elements and implement disclosure principles while solving case studies.
CO3	The learners will be able to evaluate accounting policies for their compliance with Ind AS and IFRS standards using case study method
CO4	The learners will be able to prepare comprehensive financial statements, including SOFP, SOPL, SOCE, and SOCF, adhering to Ind AS and IAS standards.

Personal Financial Planning

CO1	Learners will be able to evaluate financing options for major purchases, including housing and vehicles, based on affordability..
CO2	Learners will be able to evaluate and design appropriate insurance plans for specific financial goals and risk.
CO3	Learners will be able to evaluate retirement needs and create comprehensive retirement plans.
CO4	Learners will be able to create and evaluate an optimized investment portfolio based on individual goals.

Auditing and Assurance (Accounting Ethics and Corporate Governance)

CO1	Learners will be able define and summarize key terms and concepts related to professional ethics, independence, and auditing standards.
CO2	Learners will be able to apply relevant auditing standards while solving case studies.
CO3	Learners will be able to compare and draw implications of corporate governance codes across jurisdictions like the U.S. SEC and OECD principles.
CO4	Learners will be able to develop a governance framework for a mid-sized corporation aligning with Indian corporate governance codes

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Programme- M.Sc(IT)- Masters of Science in Information Technology

Programme Specific Outcomes

Sr. No	PSO Title	Programme Specific Outcomes
PSO1	Designing Ethical and Sustainable Computer Systems	Apply knowledge of mathematics, science, and computing to design, analyze, and evaluate complex computer-based systems while considering economic, environmental, social, ethical, and sustainability constraints.
PSO2	Research-Driven IT Solutions in Context	Review literature and conduct research to design experiments, analyze data, and draw valid conclusions; apply modern techniques, skills, and tools to implement effective IT solutions; and use contextual knowledge to assess professional, legal, health, social, and cultural issues in practice.
PSO3	Ethical and Societal Impacts of Computing	Analyze the local and global impact of computing on individuals, organizations, and society; apply ethical principles in professional practice; and function effectively as a team member or leader in multidisciplinary environments.
PSO4	Professional Communication and Continuous Development	Communicate effectively with diverse audiences through written, oral, and graphical modes; apply engineering and management principles to manage projects as a team member or leader; and engage in independent, lifelong learning for ongoing professional development.

COURSE OUTCOMES (CO)

Semester –I

Data Science

CO1	Apply quantitative modeling and data analysis techniques to the solution of real world business problems, communicate findings, and effectively present results using data visualization techniques & Recognize and analyze ethical issues in business related to intellectual property, data security, integrity, and privacy.
CO2	Apply ethical practices in everyday business activities and make well-reasoned ethical business and data management decisions.
CO3	Demonstrate knowledge of statistical data analysis techniques utilized in business decision making and Apply principles of Data Science to the analysis of business problems
CO4	Use data mining software to solve real-world problems & Employ cutting edge tools and technologies to analyze Big Data
CO5	Apply algorithms to build machine intelligence Demonstrate use of team work, leadership skills, decision making and organization theory.

Soft Computing Techniques

CO1	Gain a solid understanding of the fundamental concepts underlying soft computing, including the differences between soft computing and traditional hard computing methods.
CO2	Familiarize with a variety of soft computing techniques such as fuzzy logic, neural networks, genetic algorithms, swarm intelligence, and probabilistic reasoning.
CO3	Apply soft computing techniques to solve real-world problems from various domains such as engineering, finance, healthcare, and more.
CO4	Formulate problems in a way that lends itself to the application of soft computing techniques, taking into account the uncertainties and imprecisions present in real-world data.
CO5	Understand of how fuzzy logic works and its applications in modeling and decision-making under uncertainty.
CO6	Gain knowledge of neural network architectures, training algorithms, and their applications in pattern recognition, regression, and classification tasks.
CO7	Understand genetic algorithms, their components, and their use in optimization problems and search spaces.
CO8	Familiarize with swarm intelligence algorithms such as ant colony optimization and particle swarm optimization, and their applications in optimization and search problems.

Cloud Computing

CO1	Analyze the Cloud computing setup with its vulnerabilities and applications using different architectures.
CO2	Design different workflows according to requirements and apply map reduce programming model.
CO3	Apply and design suitable Virtualization concept, Cloud Resource Management and design

	scheduling algorithms.
CO4	Create combinatorial auctions for cloud resources and design scheduling algorithms for computing cloud
CO5	Assess cloud Storage systems and Cloud security, the risks involved, its impact and develop cloud application
CO6	Broadly educate to know the impact of engineering on legal and societal issues involved in addressing the security issues of cloud computing.

Image Processing	
CO1	Understand the relevant aspects of digital image representation and their practical implications.
CO2	Have the ability to design pointwise intensity transformations to meet stated specifications.
CO3	Understand 2-D convolution, the 2-D DFT, and have the ability to design systems using these concepts.
CO4	Have a command of basic image restoration techniques & wavelet decompositions and their role in image processing systems.
CO5	Understand the role of alternative color spaces, the design requirements leading to choices of color space, the ability to design systems using standard algorithms to meet design specifications.

Research Methodology	
CO1	Solve real world problems with scientific approach.
CO2	Develop analytical skills by applying scientific methods.
CO3	Recognize, understand and apply the language, theory and models of the field of business analytics.
CO4	Foster an ability to critically analyze, synthesize and solve complex unstructured business problems.
CO5	Understand and critically apply the concepts and methods of business analytics.
CO6	Identify, model and solve decision problems in different settings
CO7	interpret results/solutions and identify appropriate courses of action for a given managerial situation whether a problem or an opportunity
CO8	Create viable solutions to decision making problems

SEMESTER II	
Big Data Analytics	
CO1	Understand Big Data Concepts
CO2	Do Data Collection and Integration
CO3	Develop Data Storage and Management

CO4	Perform Data Preprocessing and Cleaning
CO5	Understand Data Transformation and Feature Engineering
CO6	Perform Exploratory Data Analysis (EDA)
CO7	Use Big Data Analytics Tools

Modern Networking

CO1	Understand the modern networking concepts and implement
CO2	To demonstrate scholarship of knowledge through performing in a group to identify, formulate and solve a problem related to Computer Networks
CO3	Prepare a technical document for the identified Networking System Conducting experiments to analyze the identified research work in building Computer Networks

Microservices Architecture

CO1	Develop web applications using Model View Controller.
CO2	Think and apply the microservices way to software development.
CO3	Are you able to understand architecture of web applications using MVC

Computer Vision

CO1	Understand the basics of computer vision.
CO2	Understand and analyse various structure-from-motion and dense motion estimation techniques
CO3	Apply various motion models to images and understand computational photography techniques
CO4	Apply epipolar geometry, rectification, and 3D correspondence and stereo reconstruction techniques
CO5	Understand image-based rendering and reconstruction

Semester III

Advanced Artificial Intelligence

CO1	Understand the fundamental principles and concepts of Artificial Intelligence.
CO2	Implement intelligent agents for different applications.
CO3	Understand advanced AI concepts and techniques

CO4	Demonstrate proficiency in deep learning and neural networks
CO5	Understand the concepts and applications of generative AI
CO6	Implement generative adversarial networks and variational autoencoders
CO7	Develop skills in using neural networks for image recognition and text generation
CO8	Create and train GAN models for image synthesis

Machine Learning	
CO1	Define and demonstrate an understanding of Machine Learning and its related terms conceptually and mathematically
CO2	Identify and differentiate the advantages and limitations of Machine Learning algorithms and their use cases.
CO3	Implement classifier algorithms for supervised learning tasks.
CO4	Use engineering techniques to improve a dataset for machine learning.
CO5	Compare the performance of different machine learning models on a given dataset.
CO6	Diagnose reasons for poor performance in a machine learning model.
CO7	Analyze the ethical implications of a machine learning system.
CO8	Critique the suitability of a machine learning solution for a real-world problem, considering factors beyond just model performance.
CO9	Assess the potential biases and fairness concerns in a machine learning model.
CO10	Develop a custom machine learning algorithm for a specific real-world problem.
CO11	Propose a comprehensive machine learning solution to address a complex real-world challenge.

Storage as a Service	
CO1	Covers the evolution of data access methods and introduces concepts like network storage architectures, storage networking functions, and storage I/O requirements.
CO2	Discusses different types of storage devices (disk drives, tape drives) and subsystem architectures, along with storage interconnect technologies like SCSI.
CO3	Explores the concept of storage virtualization, its technologies, and implications for performance and reliability, as well as the fundamentals of network backup.

CO4	Covers the relationship between file systems and operating systems, network file system basics, and protocols like NFS and CIFS.
CO5	Discusses clustered and distributed file systems, network storage for databases, and data management techniques including historical file versions and compliance storage.
CO6	Provides a historical context for storage networking, reviews block and file storage protocols, optical technologies, virtualization implementations, and network operating principles.

Natural Language Processing	
CO1	Students will get ideas about know-hows, issues and challenges in Natural Language Processing and NLP applications and their relevance in the classical and modern context.
CO2	Students will get an understanding of Computational techniques and approaches for solving NLP problems and develop modules for NLP tasks and tools such as Morph Analyzer, POS tagger, Chunker, Parser, WSD tool etc.
CO3	Students will also be introduced to various grammar formalisms, which they can apply in different fields of study
CO4	Students can take up project work or work in R&D firms working in NLP and its allied areas.
CO5	Student will be able to understand applications in different sectors

Semester IV

Blockchain	
CO1	Provide conceptual understanding of the function of Blockchain as a method of securing distributed ledgers, how consensus on their contents is achieved.
CO2	Demonstrate blockchain applications.
CO3	Gain the ability to write and deploy basic smart contracts on the Ethereum blockchain using Solidity programming language and tools like Truffle and Remix.
CO4	Able to analyze cryptoeconomic design and learn NFT and permissioned blockchains...

Deep Learning	
CO1	Describe basics of mathematical foundation that will help the learner to understand the Concepts of Deep Learning.
CO2	Understand and describe model of deep learning
CO3	Understand various deep supervised learning architectures for text & image data.
CO4	Gain knowledge about various deep learning models and architectures.
CO5	Familiarize various deep learning techniques to design efficient algorithms for real-world applications.

Robotic Process Automation

CO1	Recall and describe fundamental RPA and UiPath concepts, including key features of Studio and Orchestrator.
CO2	Explain RPA principles and how UiPath facilitates process automation through its mechanisms.
CO3	Interpret roles of components and tools in the UiPath ecosystem, understanding their functions.
CO4	Summarize UiPath's data manipulation and integration capabilities for efficient automation.
CO5	Utilize UiPath Studio to create workflows for simple business processes, incorporating data extraction and manipulation techniques

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Programme- M.Sc(OC)- Masters of Science in Organic Chemistry

Programme Specific Outcomes

Sr. No	PSO Title	Programme Specific Outcomes
PSO1	Advanced Chemical Research & Problem Solving	Gain knowledge of the advanced concepts in the branch of chemistry, scrutinize and accomplish a solution to problems encountered in the field of research and analysis.
PSO2	Applied Chemistry for Industry & Academia	Apply the basic knowledge of chemistry to perform various tasks assigned to them at the workplace in industry and academia to meet the global standards.
PSO3	Spectroscopic Analysis & Chemical Characterization	Deduce qualitative and quantitative information of chemical compounds using advanced spectroscopic methods which can further be analyzed using practical skills inculcated in them during the course.
PSO4	Multidisciplinary Chemical Problem Solving & Data Analysis	Design, analysis, synthesis and interpretation data to provide solutions to different industrial problems by working in the multi-disciplinary areas of chemical sciences.

COURSE OUTCOMES

Semester I

Inorganic Chemistry I

CO1: The learner will know the important fundamental concept of Group Theory, which helps them in understanding the properties and bonding in polyatomic molecules.

CO2: The learners get the knowledge about the various techniques used for Characterization coordination

compounds.
CO3: The learners develop the skill in interpretation of the spectra.
CO4: The learners will get comprehensive idea about established instrumental techniques and Significant characterization tools available to study inorganic complexes having wide applications in industries.

Organic Chemistry I
CO1: Predict the reactivity of organic compound from its structure and understand different methods used for determination of Organic Reaction Mechanism
CO2: Understand the fundamental concept in stereochemistry by applying various symmetry elements of organic molecule and acquire the knowledge of chirality by taking examples of symmetrical and unsymmetrical molecule.
CO3: Develop interest in stereochemistry by studying stereochemical features of different classes of organic compounds and nomenclature of various stereochemical phenomena
CO4: Organize the techniques of aromatic nucleophilic substitution reactions for synthesizing/transforming molecules.
CO5: Understand the concept of aromaticity and to know the nature of bonds, electronic effects and other properties of molecules.
CO6: Understand the preparation of important oxidizing reagent and predict the selectivity of the reagents in organic reactions and explain the preparation and uses of important reducing reagents in various organic transformation reaction.

Analytical Chemistry I
CO1: Understand various terms used in analytical chemistry and identify the different types of errors in analysis.
CO2: Sketch out the role and importance of total quality management, safety, accreditations and GLP in industries.
CO3: Understand the efficacy of automation in chemical analysis and design and specify applications of advanced analytical techniques in various fields.
CO4: Explore the applications of IR spectroscopy and thermal methods.
CO5: Perform basic calculations required in chemical analysis and interpret the experimental results of analytical techniques & transformation reaction.

Physical Chemistry II
CO1: The learners evaluate the different theories of chemical kinetics and effect of temperature on reaction rates.
CO2: The learners will understand the applications of chain reactions in the field of Polymer Chemistry.
CO3: The learners will evaluate the resting membrane potential by using the concept of bio electrochemistry.
CO4: The learners will try to accomplish a solution to problems encountered in the field of research.

Research Methodology
CO1: To enable the student to be able to extract information from journals and digital resources.
CO2: Understanding tools to analyse the data, writing and presenting scientific papers.
CO3: Describe research, identification of research problems, and preparation of proposals.
CO4: Safe working procedure And ethical handling of chemicals.

Semester II

Inorganic Chemistry II

CO1: The learners will be able to learn ligand substitution reactions of Octahedral and Square planar complexes, Trans effect and factors affecting these substitution reactions.

CO2: The learners will be able to understand the 18 e- and 16 e- electron square planar complexes by studying different examples. They will also learn the preparation and properties of a few selected compounds including sandwich compounds of Fe, Cr

CO3: The learners will understand the structure and bonding of a few inorganic compounds like Ziese's salt, ferrocene and bis(arene)chromium(0)

CO4: The learners will understand the occurrence and effect of toxic metals like Pb, As, Cu, Cd, and Hg on the environment, the different diseases caused by poisoning of metals and the impact these metals have on the living organism.

CO5: The learners will be familiar with the role of Inorganic chemistry in Biological systems, understand the structure of various biological oxygen carriers and molecules involved in electron storage and transport.

Organic Chemistry

CO1: Recognise the type of mechanism & intermediates involved in the given organic reaction and to prove mechanism for the reaction and identify the ways to modify aliphatic and aromatic compounds via Nucleophilic substitution reactions.

CO2: Predict the mechanism and stereochemistry of important organic reactions and understand and write the mechanism of rearrangement reactions with stereochemistry and its applications.

CO3: Understand the HOMO-LUMO concept and its significance in organic chemistry.

CO4: Understand the basic principle and concepts in UV and IR spectroscopy, ^1H , ^{13}C NMR, and mass spectroscopy

CO5: Understand how ^1H , ^{13}C NMR and Mass spectroscopy are important for the structure determination of organic compounds.

Analytical Chemistry

CO1: Able to compare the advantages/disadvantages of SEM, STM and TEM.

CO2: Able to develop different techniques to separate the components of mixture.

CO3: Conversant with basic principles and theories of mass spectrometry.

CO4: Able to apply the electroanalytical methods to sample under consideration.

CO5: Able to elaborate on electrogravimetry and coulometry techniques.

Physical Chemistry IV (Elective II)

CO1: To develop the skill to solve the problems based on molecular dynamics and quantum Chemistry.

CO2: Learners will be able to distinguish between competitive, Noncompetitive and Uncompetitive Inhibition in enzyme-catalysed reactions.

CO3: Learners will get knowledge of advanced chemical kinetics and molecular dynamics.

CO4: Learners will be able to use advanced concepts of chemical thermodynamics in chemical reactions.

Semester- III

Organic Reaction Mechanism

CO1. Apply advanced concepts of reactive intermediates and their chemistry to predict products and mechanisms of organic reactions.

CO2. Utilize LFER, Hammett, and Taft equations to quantitatively analyze reaction mechanisms and rationalize the influence of substituents and solvents

CO3. Understand and explain the mechanisms of key name reactions

CO4. Analyse the reactivity of enamines versus enolates and synthesize asymmetric reactions using chiral enamines.

Pericyclic Reactions and Photochemistry

CO1. Master pericyclic reaction mechanisms and rationalize them with orbital theory and Woodward-Hoffmann rules.

CO2. Analyze advanced cycloadditions, sigmatropic shifts, and electrocyclic reactions, including stereochemical effects.

CO3. Understand the fundamentals of photochemical processes.

CO4. Demonstrate proficiency in photochemical processes and transformations in organic molecules.

Stereochemistry and Advanced Spectroscopy

CO1. Demonstrate proficiency in the stereochemical analysis and nomenclature of complex ring systems, including perhydrophenanthrene, perhydroanthracene, hydrindane, steroids, and bridged/heterocyclic systems.

CO2. Employ modern methods for stereochemical determination, including NMR, and critically evaluate methods for resolution and assessment of optical purity.

CO3. Read and correlate aspects of spectral data to structures

CO4. Analyze different types of spectra and determine structures of molecules

Asymmetric Synthesis and Green Chemistry

CO1. Predict the stereochemical outcome under the conditions of asymmetric synthesis and to apply asymmetric transformations in a logical manner for the synthesis of chiral molecules.

CO2. Analyze and implement green reagents, catalysts and solvents in organic synthesis, justifying their environmental and practical advantages

CO3. Assess the role of advanced green catalysts, types, advantages and disadvantages and propose suitable catalytic systems for sustainable chemical processes

Semester- IV

Synthetic Organic Chemistry

CO1. Explain the need for protecting groups in organic synthesis and select appropriate protecting and deprotecting strategies for functional groups such as hydroxyl, carbonyl, amino, and carboxyl groups.

CO2. Utilize the disconnection approach to identify synthons and synthetic equivalents, perform functional group interconversions (FGI).

CO3. Formulate a general strategy for designing organic synthesis. Demonstrate competence in performing one-group and two group C-C disconnections.

CO4. Identify the reactions shown by transition and rare earth metals and use them in different reactions and in synthesis of organic compounds.

Chemistry of Natural Products

CO1. Identify natural products based on their properties. Use analytical evidences to determine structures of natural products

CO2. Use functional group transformations and reagents to write multistep synthesis of natural products

CO3. Understand structural features of steroids and outline the steps in their synthesis

CO4. Classify, determine structure based on analytical evidence and write synthesis of vitamins, antibiotics, naturally occurring insecticides and terpenoids

Metals/Non-metals in organic synthesis and Heterocyclic Chemistry

CO1. Apply knowledge of metal reagents for synthesis of organic compounds and design advanced organic transformations using different metal reagents

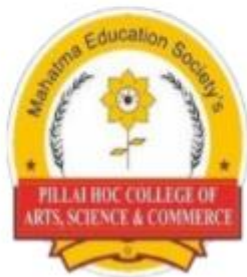
CO2. Apply knowledge of nonmetal reagents for synthesis of organic compounds and design advanced organic transformations using different metal reagents

CO3. Classify and write names using different systems of nomenclature for monocyclic, bicyclic and tricyclic fused heterocycles

CO4. Understand synthesis, structure and reactivity of different classes of bicyclic heterocycles

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Programme -M.Sc. Physics

Programme Specific Outcomes

PSOs. No.	PSO Title	PSOs in brief
PSO1	Advanced Scientific Understanding and Analytical Skills	Graduates will master Acquire advanced theoretical and experimental knowledge in major areas of physics.
PSO2	Experimental and Laboratory Skills	Graduates will be able to Design and conduct scientific experiments, analyze experimental data, and apply mathematical and computational methods to solve complex physical problems.
PSO3	Application of Physics in Technology and Interdisciplinary Fields	Graduates will be able to apply principles of physics to solve real-world problems in areas such as materials science, electronics, energy, and emerging technologies.
PSO4	Scientific Communication and Professional Development	Graduates will be able to effectively communicate scientific ideas through research reports, presentations, and publications, and will be prepared for careers in research, academia, industry, and related fields.

COURSE OUTCOMES (CO)

SEMESTER I

Classical Mechanics	
CO1	Understand the principle of virtual work and the concepts of least action, the formalisms of Lagrange and Hamiltonian.
CO2	Describe the motion of a system in Lagrangian and Hamiltonian formalisms
CO3	Understand the features of motion under central force, periodic motion, small oscillations as they appear in other areas of Physics
CO4	Use the Poisson brackets in Hamiltonian dynamics and solve related problems.
CO5	Understand the linkages of the techniques of Classical Mechanics in solving problems in areas of Statistical Mechanics (Phase space), Molecular Physics.

Quantum Mechanics	
CO1	Understand the basic principles of Quantum mechanics and the need for its formalism
CO2	Understand the Uncertainty Principle and formulation of Schrodinger equation
CO3	Understand the importance of Dirac formalism, vector spaces and apply the same in solving problems of potential barrier, square well potential
CO4	Apply the techniques of solving differential equations using various special functions as they appear in the solution of Schrodinger equation for Hydrogen atom problem
CO5	Solve the various boundary value and potential problems using the techniques of quantum mechanics
CO6	Gain understanding of the mathematical foundations of the angular momenta of a system of particles

Mathematical Physics	
CO1	Solve eigenvalue problems using matrices as they appear in Classical and Quantum Mechanics.
CO2	Apply tensor analysis to understand the formulation of relativistic electrodynamics and other areas of Physics
CO3	Apply residue theorem of complex variables to solve real and definite integrals
CO4	Understand the emergence of special functions as solutions of differential equations and to solve problems in physics
CO5	Solve partial differential equations using integral transforms in boundary value problems

Fundamental of Material Science	
CO1	To understand the atomic structure, types of bonding, and crystal geometry of materials, and relate these features to their physical and mechanical properties.

CO2	To understand and evaluate material imperfections and diffusion mechanisms, including their temperature dependence and applications in material processing.
CO3	Interpret mechanical properties and deformation behavior of metals through stress-strain relationships, hardness testing, and phenomena such as creep, fatigue, and fracture.
CO4	Apply phase diagram concepts (binary, eutectic, peritectic, monotectic, and ternary systems) and the Gibbs phase rule to predict microstructural changes during alloy solidification and heat treatment processes.

Research Methodology and Patent

CO1	Students are expected to learn the meaning of research, objectives and motivation of research, methodology of research etc.
CO2	Students are expected to learn Interpretation of data, report writing, and techniques of analysis.
CO3	Students will be able to explain the concept of Intellectual Property and identify different types of IP with their relevance in academic and industrial research
CO4	Students will develop the ability to conduct patent searches, understand the procedures for patent filing, and evaluate the commercial and legal value of their innovations.

Practical I

CO1	Students will be able to perform advanced experiments in optics, lasers, and semiconductor physics to determine key physical parameters with accuracy.
CO2	Students will design, build, and analyze various electronic circuits such as regulated power supplies, oscillators, phase controllers, and filters using ICs and discrete components.
CO3	Students will demonstrate proficiency in using laboratory instruments such as interferometers, spectrometers, laser diffraction setups, and oscilloscopes for data measurement and validation.
CO4	Students will develop the ability to critically analyze experimental data, prepare detailed reports, and present findings with clarity and scientific rigor.

SEMESTER II

Numerical Techniques and Programming

CO 1	Understand the use of programming language and write simple programs for mathematical problems
CO 2	Develop flowcharts for analyzing a given mathematical problem and solve them numerically
CO 3	Apply the techniques of numerical methods in interpolation to generate difference tables of a given data set
CO 4	Analyze a given data set and fit them to a suitable polynomial equation and present them graphically
CO 5	Simulate models for a given mathematical problem by related techniques

Application of Quantum Mechanics

CO 1	Apply the concept of non-relativistic Hamiltonian for an electron with spin and perform calculation using angular momentum techniques
CO 2	Apply various approximation methods in the solution of time independent and time dependent Schrodinger equations
CO 3	Apply the perturbation theory to various forms of Schrodinger equation in scattering theory and partial wave analysis
CO 4	Apply the quantum mechanical principles to solve problems of wave propagation, scattering phenomena
CO 5	Apply the concept of identical particles in various physical problems

Electrodynamics	
CO1	Students will be able to apply Maxwell's equations to analyze electromagnetic field behavior in vacuum and matter, and interpret concepts such as energy flow, stress tensor, and wave polarization.
CO2	Students will be able to explain the propagation of electromagnetic waves in waveguides and resonant cavities, and describe fundamental plasma parameters, particle motion, and confinement mechanisms.
CO3	Students will be able to formulate and solve electrodynamics problems using four-vectors and tensors, express Maxwell's equations in covariant form, and apply relativistic Lagrangian methods to derive conservation laws.
CO4	Students will be able to derive and analyze the radiation fields from moving charges using Liénard–Wiechert potentials, and explain different types of radiation such as dipole and multipole radiation with physical interpretation.

Solid State Physics	
CO 1	Know about diffraction of waves by Crystal and reciprocal Lattice.
CO 2	Understand the lattice vibration and thermal properties .
CO 3	Understand diamagnetism and para-magnetism.
CO 4	Understand the ferromagnetic, ferrimagnetic and anti-ferromagnetic orders.

Practical-II	
CO1	Apply theoretical physics concepts to practical situations, such as optical interference, diffraction, magneto-optic, and ultrasonic measurements.
CO2	Analyze electronic and semiconductor systems by measuring parameters like I–V/C–V characteristics, barrier capacitance, carrier mobility, and dielectric properties.
CO3	Design, simulate, and implement digital and microprocessor-based circuits (counters, registers, adders, regulators, PWM control, etc.) and understand their real-time operation.
CO4	Use Python programming to perform basic computational tasks such as numerical calculations, data handling, and algorithmic problem-solving relevant to laboratory applications.

SEMESTER III

Nuclear Physics

CO 1	Know about properties of nuclei, nuclear size, deuteron problem, nuclear scattering
CO 2	Understand alpha, beta and gamma decay
CO 3	Students will learn about nuclear models and nuclear reactions
CO 4	Students will learn about Elementary particle Physics

Electronics-1

CO1	Know about Timers, serial communication and interrupts in 8051 microcontrollers
CO2	Know about PIC microcontrollers 16C61/71 and Flash microcontrollers 16F8XX – memory organization, addressing modes, registers, CCP module etc.
CO3	Understand interfacing of microcontrollers and PIC microcontrollers and industrial applications of microcontrollers
CO4	Understand on-board and external communication interfaces

Statistical and Thermal Physics

CO1	Know about basics of Thermodynamics, Microscopic and macroscopic states, microcanonical ensemble etc.
CO2	Gain knowledge about canonical ensemble
CO3	Gain knowledge about Grand canonical ensemble
CO4	Know about basics of quantum statistics, quantum mechanical ensemble

VHDL and C++ Programming

CO1	Learn about Object Oriented Programming using C++, Classes, inheritance
CO2	Learn about VHDL terms, hardware, architecture, Process statements, structural design etc.
CO3	Learn about VHDL behavioral modeling, inertial delay, transport delay, sequential processing, process statement etc.
CO4	Learn about VHDL data types, subprograms and packages, predefined attributes, configurations

Practical-III

CO1	Students will learn about experiments based on PIC microcontrollers, 8051 microcontrollers and their interfacing.
CO2	Students will learn about C++ programming experiments and the experiments based on VHDL and its interfacing.
CO3	Students will demonstrate the use of C++ programming concepts such as classes, inheritance, polymorphism, and operator overloading in solving problems..
CO4	Students will be able to design, simulate, and implement digital circuits and device

	control applications using VHDL.
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SEMESTER IV

Experimental Physics	
CO1	Understand the data analysis using distribution methods as normal distribution, t distribution, log-normal distribution, Experimental error and uncertainty etc.
CO2	Understand various techniques of measuring and creating vacuum, leak detection
CO3	Understand various nuclear detectors, Gamma ray spectrometer, proportional counter detectors, cyclotron, synchrotron
CO4	Understand various characterization techniques as XRD, XRF, XPS, EDAX, FTIR, SEM, TEM, AFM

Python Programming	
CO1	Learn advanced Python using Files, Exceptions, OOP, Graphical user interface.
CO2	Learn advanced Python using Graphical user interface, Libraries like NumPy
CO3	Learn advanced Python using libraries like Panda's basics, Plotting and visualization
CO4	Learn about Internet of Things, hardware of IoT, embedded platform of IoT

Atomic and Molecular Physics	
CO 1	Students will learn about the fine structure of hydrogen atoms, Zeeman effect, exchange forces etc.
CO 2	Students will learn about central field, Thomas Fermi Potential, LS, JJ coupling and other type of couplings
CO 3	Students will learn about the interaction of one electron with electromagnetic radiation, Einstein coefficient, selection rules, X ray spectra etc.
CO 4	Students will learn about Born-Oppenheimer approximation, rotation and vibration of molecules, electronic spectra etc.

Microwave Electronics, Radar and Optical Fiber Communication	
CO 1	Analyze Microwave Guiding Systems
CO 2	Compare Microwave Generation Technologies
CO 3	Evaluate Radar System Principles and Performance
CO 4	Design Foundational Optical Communication Links

Practical-IV	
CO1	Perform experimental techniques to synthesize and characterize physical materials and analyze data statistically.
CO2	Write and execute Python programs for scientific computation, data visualization, and GUI-based applications.

CO3	Interface and control peripheral devices using ARM7 microcontroller for real-world applications.
CO4	Integrate experimental, computational, and embedded system knowledge to design and analyze physics-based experiments effectively.




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