



Smt. P. D. Hinduja Trust's

K. P. B. HINDUJA COLLEGE OF COMMERCE

- NAAC Re-accredited with "A+" Grade CGPA: 3.59 •

Autonomous Minority Institution
(Affiliated to University of Mumbai)

Sindhi Linguistic Minority Institution



REGISTERED ADDRESS:

315, New Charni Road, Charni Road East,
Opera House, Girgaon, Mumbai, Maharashtra 400004



CURRENT ADDRESS:

Sadhana House, 570 Pandurang Budhkar Marg,
Behind Mahindra Towers, Worli, Mumbai - 400018



CONTACT DETAILS:

Tel: 022-4098-9000 (100 Hunting lines)



EMAIL:

info@hindujacollege.com



WEBSITE:

www.hindujacollege.edu.in/

HANDBOOK

2026-2027





Founder Shri. Parmamand Deepchand Hinduja (1901 -1971)



Shri. Parmanand Deepchand Hinduja was a harmonious blend of philanthropy and mercantile activities. He believed in setting aside a portion of the profits from his businesses for charitable activities, especially in the fields of education and healthcare which he considered to be the fundamental right of every human being. His social consciousness, vision and magnanimity inspired the establishment of K.P.B. Hinduja College of Commerce in 1974.

We, at the College remain inspired by the great soul and commit ourselves to be steered
by his fundamentals :

Work to Give

A Word Is a Bond

Act Local, Think Global

Partnership for Growth

Advance Fearlessly



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Mumbai - 400018. Tel: 022-4098-9000 - Email: info@hindujacollege.com - Website: www.hindujacollege.edu.in



Managing Trustees



Shri. Prakash P. Hinduja
Chairman, Hinduja Group (Europe)



Shri. Ashok P. Hinduja
Chairman, Hinduja Group of Companies
(India)



Mr. Shom A. Hinduja
President,
Alternative Energy and Sustainability,
Hinduja Group



Mr. Prashant Asher
Independent Director



Namrata Hinduja



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Director & Advisor Message



Dear Students,

Welcome to Hinduja College, where education goes beyond textbooks and nurtures innovation, creativity, and independent thinking. We believe every student has unique potential, and our aim is to help you discover, develop, and excel in your chosen path.

At Hinduja College, academic excellence is blended with professional learning in a dynamic environment. Through quality education, new initiatives, and emerging technologies, we prepare you for future opportunities with confidence.

Your growth and well-being remain central to our mission. With dedicated faculty, meaningful student-teacher interaction, and personalised guidance, we strive to create an enriching learning experience.

Our college is recognised for strong academic results and a legacy of excellence in Mumbai. Alongside academics, we encourage social responsibility, empathy, environmental awareness, and active citizenship.

Whether you aspire to become a leader, pursue a specialised career, or explore new possibilities, Hinduja College offers you the platform to achieve your goals.

We warmly welcome you to this transformative journey.

Dr. Minu Madlani



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Principal's Message



Dear Students,

It gives me immense pleasure to welcome you to K.P.B. Hinduja College of Commerce, an institution known for academic excellence, values-based education, and holistic development. As you begin this exciting new chapter, I warmly welcome you to a campus that nurtures talent, encourages innovation, and prepares students for a changing world.

Established in 1974, Hinduja College is guided by the inspiring philosophy of our founder, Shri Parmanand Deepchand Hinduja: "My Dharma is to work so that I can give." This spirit of service and dedication continues to shape our vision.

At Hinduja College, we are committed to creating a student-centric environment with strong industry connect and a global outlook. Along with academics, we encourage participation in leadership opportunities, cultural activities, sports, social outreach, and skill-building initiatives for all-round growth.

This brochure has been designed as a ready-reckoner for first-year students. It introduces you to the college's history, values, committees, student bodies, and important details about your programme. We hope it will guide you as you begin your college journey.

I encourage each one of you to dream big, remain curious, work hard, and make meaningful contributions to society. Your years at Hinduja College will be a journey of learning, friendships, self-discovery, and growth.

I wish you every success and a memorable student life ahead.

Prof (Dr.) Navin M. Punjabi



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Co-ordinators



Dr. Antara Sonawane Sarode

***Chief Coordinator – Professional Programmes (UG & PG),
K. P .B. Hinduja College of Commerce, Mumbai (Autonomous)***



Dr. Jagruti Darji,

***Assistant Coordinator – Professional Programmes (UG & PG),
K. P .B. Hinduja College of Commerce, Mumbai (Autonomous)***

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Overview of The Student Handbook

Welcome to K.P.B. Hinduja College of Commerce – your gateway to a vibrant and enriching academic journey. This handbook serves as your comprehensive guide to understanding everything our institution has to offer.

Designed to help you make informed decisions, it provides valuable insights into our academic programs, core values, campus culture, and the wide range of opportunities available for your intellectual and personal growth.

It provides essential information on academics, and student life, helping you begin your journey with confidence. At Hinduja College, we believe informed and motivated students are key to a rewarding educational experience, and this guide is your first step toward a rewarding and successful educational experience with us.



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Motto, Vision & Mission of the College

MOTTO

Guided by its motto, "Character is Supreme," the College aligns all its activities toward holistic student development. It is committed to nurturing character and personality without discrimination, instilling secular values such as integrity, social justice, ethics, and reason, and fostering resilience to face life's challenges.

The College also prepares students for diverse careers in business by providing quality education, career direction, and a broad, humane outlook, enabling them to take on responsible roles in banking, finance, media, management, and industry.



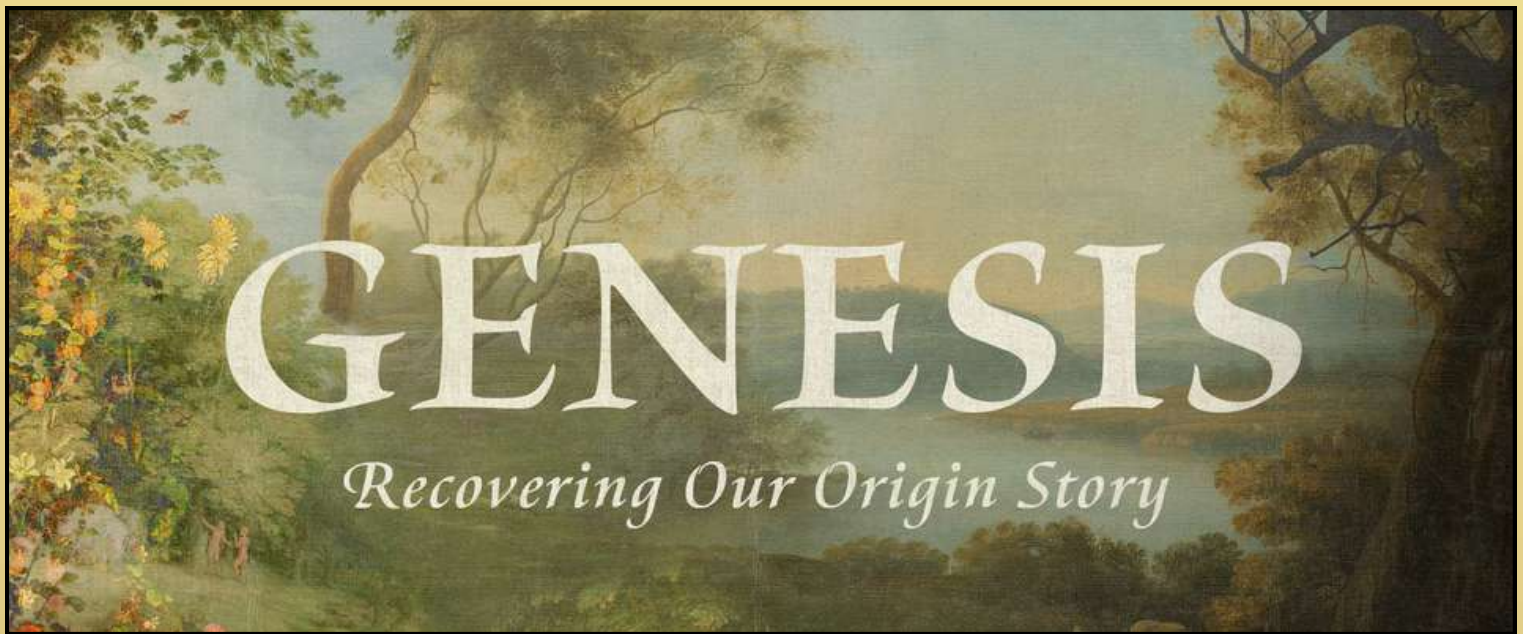
To empower students not only to excel but also to outshine.

To inculcate the values of hard work, diligence and determination and above all, the will to succeed through a holistic and multi-pronged approach.



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K.P.B. Hinduja College of Commerce, established in 1974 by the visionary industrialist Late Shri Parmanand Deepchand Hinduja, reflects his philanthropic commitment to education and healthcare as fundamental human rights. Recognized as a premier institution in Mumbai, the College has received several accolades, including the University of Mumbai's 'Best College Award' (2010-11) and the UGC's 'College with Potential for Excellence' status (2016). It was re-accredited with an 'A+' Grade by NAAC in 2017 and granted autonomous status from 2022-23, with NEP 2020 implemented from 2023-24.

With over 6,000 students, 70 full-time and 45 visiting faculty, the College offers 15 academic programmes from junior college to postgraduate and doctoral levels. It is dedicated to preparing students for responsible careers in commerce, banking, insurance, and industry. To achieve its goals, the College emphasizes excellence in academics alongside industry-oriented skill development. It offers a range of value-added courses such as Diamond Cutting, Cyber Law, Stock Market Operations, CFP, Entrepreneurship, Digital Media Marketing, Event Management, ERP, CRM, and Computer Applications. Students are also exposed to the real world of commerce through guest lectures by industry experts, industrial visits, field trips, and internships.

Aligned with its motto, "Character is Supreme," the College fosters social responsibility through extension activities like NSS, NCC, DLLE, and the Nature Club, nurturing commitment, service, and responsible citizenship among students.

***"In the world of business, the only constant is change.
Embrace it, adapt to it, and thrive in it."***

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AUTONOMY & NEP



About Autonomy:

K.P.B. Hinduja College of Commerce was granted Autonomous Status by the UGC in July 2022, enabling it to design and update curricula in line with evolving industry and societal needs. The College actively promotes research among faculty and students, while also encouraging community service, extension activities, and socially relevant projects.

National Education Policy (NEP) 2020:

In line with directives from the Government of Maharashtra, the College implemented NEP 2020 from the academic year 2023–24, following UGC guidelines (12 December 2022) and the Government Resolution dated 20 April 2023.

Salient Features of NEP 2020

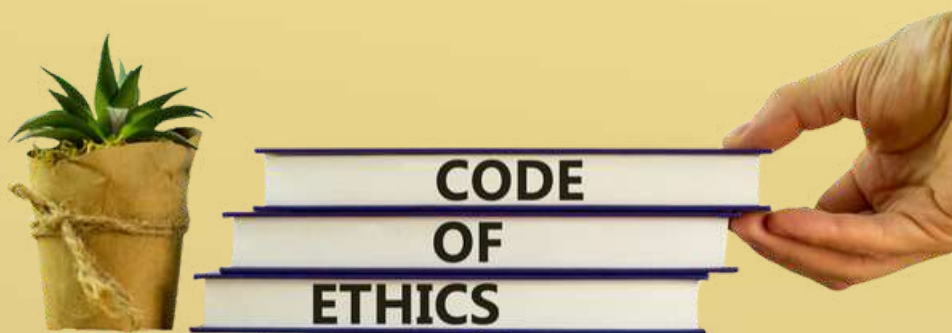
- **Multidisciplinary Learning:** Offers a flexible curriculum that enables students to choose subjects across disciplines, bridging arts, humanities, sciences, and commerce.
- **Critical Thinking Focus:** Emphasizes conceptual clarity and analytical skills over rote learning.
- **Skill & Vocational Development:** Integrates practical skills and vocational training to enhance employability and promote entrepreneurship.
- **Assessment Reforms:** Adopts continuous, competency-based evaluation for a more holistic assessment of student learning.
- **Inclusion and Equity:** Promotes equal access to quality education, addressing gender and social disparities and supporting marginalized groups, including students with disabilities.
- **Research and Innovation:** Encourages a strong research culture through dedicated centres and active student–faculty engagement in innovation.
- **Internationalization:** Enhances global exposure through academic collaborations, exchange programmes, and international partnerships.
- **Implementation:** NEP 2020 is being introduced in phases across institutions, including the University of Mumbai, laying the foundation for a more inclusive, flexible, and future-ready education system.

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Conduct and Ethics



Behavior

In our College, behavior and professionalism go hand in hand. We prioritize a culture of respect, integrity, and collaboration. Your behavior in the College is not only a reflection of yourself but also a representation of our collective commitment to excellence.

- Minimum 75% attendance in lectures in each subject is mandatory according to Ordinance No. 6086 of the University of Mumbai. Disciplinary action will be taken against students defaulting in attendance.
- Punctuality in attending lectures must be observed by students. Students must join the class within the first 05 minutes of the commencement of the lecture.
- A Notepad/Notebook and Pen must be carried by students to take down notes and instructions.
- Students are expected to be dressed appropriately during lectures.
- During offline lectures students must mute their mobile phones and during online lectures they must mute their microphones unless instructed otherwise by the faculty.
- Students must keep their camera on throughout an online class.
- In an online class, students may either type their queries in the 'Chat' window or use the option of the 'Raised Hand' feature.
- Any kind of indiscipline or use of improper language in the classroom is strictly prohibited and will warrant firm disciplinary action.

Together, let's create an environment where everyone feels valued, supported, and inspired to bring their best selves to the Institution each day.

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Conduct and Ethics

RAGGING FREE CAMPUS



Attendance

Students must attend all lectures, tutorials, and practicals as per University of Mumbai regulations, with a minimum of 75% attendance each semester. Failure to maintain the required attendance, including prolonged absence in any month, may lead to disciplinary action, including removal from the College Roll.

Discipline

Students must carry a valid Identity Card at all times; failure to do so may lead to denial of entry and loss of access to college facilities. In case of loss, a written request must be made to the Principal for a duplicate card.

Students are expected to maintain discipline, respect college property, and keep the परिसर clean. Unauthorized communication with the press regarding college matters is prohibited. Misconduct or indiscipline may result in strict action, including expulsion. Smoking, spitting, and the use of mobile phones on campus are strictly prohibited. Students must be neatly and modestly dressed, and adhere to all University rules.

ANTI – RAGGING

RAGGING IS AN OFFENCE WHICH WILL BE DEALT WITH FIRMLY, RAGGING IS PUNISHABLE UNDER THE 'MAHARASHTRA PREVENTION OF RAGGING ACT'.

The Prohibition of Ragging Act

Ragging is strictly prohibited as it violates fundamental rights and is punishable under law. As defined by the Hon'ble Supreme Court of India, ragging includes any form of verbal, written, or physical conduct that causes harassment, humiliation, psychological harm, or fear among junior students. It includes acts such as forcing juniors to perform tasks, do menial work, answer vulgar questions, view inappropriate content, or engage in activities causing physical or mental harm. Any such behavior will invite strict disciplinary action.

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Hinduja Foundation Prizes & Scholarships



- To enthuse students to excel in academics, sports and cultural activities and instill in them a spirit of healthy competition, as well as to inculcate habits of discipline and regularity, generous Prizes and Scholarships of Rs. 7.5 lakhs have been instituted by the Hinduja Foundation for every academic year. The prizes cover a broad spectrum of achievements which include:
 - Best Student of the Year Award (Female)
 - Best Student of the Year Award (Male)
 - Best Class Representative
 - Best Sportsman
 - Best Sports woman
 - Best Athlete of the College
 - Best N.S.S. Volunteer
 - Best DLLE Volunteer
 - Best N.C.C. Cadet
 - Best Student Organizer
 - Best Rotaractor
-
- Hinduja Academic Excellence Award for Consistent Performance throughout F.Y.B.Com., S.Y.B.Com., and T.Y.B.Com., and in the Self-Finance Courses; B.Com(Accounting and Finance), B.Com(Banking and Insurance), Bachelor of Management Studies, Bachelor of Mass Media, B.Sc.(Information Technology), B.Com(Financial Markets), B.Com(Transport Management) and B.Com(Investment Management)
 - The Highest Grade in Each Class
 - The Highest Marks in Each Subject
 - Outstanding Performance in Cultural Activities.



N.B.

- Repeaters and A.T.K.T. students are not eligible for scholarships and freeships.
- Only students whose attendance is satisfactory and good conduct are eligible for Hinduja Foundation Prizes and Scholarships.
- Students are eligible for the Hinduja Foundation Award provided they continue their studies in this college.
- Details of various freeships and scholarships instituted by the Government will be displayed on the college notice-board.



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STUDENT SUPPORT SERVICES



Ms. Asha Ambani
Counsellor



Office

The College Office functions from 9-30 a.m. to 4-30 p.m. on all working days.

Train & Bus Concession Forms

Students seeking train and bus concession forms are required to contact Ms. Yogita S. Humane in the College Office. Forms will be issued during office hours from 10:30 a.m. to 1:30 p.m. on all working days.

Academic Transcripts

Students requiring Academic Transcript should contact the respective staff. Forms will be issued during office hours from 10:30 a.m. to 4:30 p.m. on all working days.

Ms. Kiran S. Dikwalkar
Jr. Clerk
(Aided Section)

Ms. Yogita S. Humane
Jr. Clerk
(Self-Financing Section)

Mr. Sanjiv A. Nikam
Jr. Clerk
(Junior College)

Student Counselling Services

The College provides access to a qualified counsellor to support students' emotional well-being and personal development. Students are encouraged to seek guidance on academic, personal, or emotional concerns. All interactions are handled with strict confidentiality, ensuring a safe and supportive environment for every student. The counsellor is available on Mondays and Fridays from 11:30 a.m. to 2:30 p.m.



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INFRASTRUCTURE FACILITIES

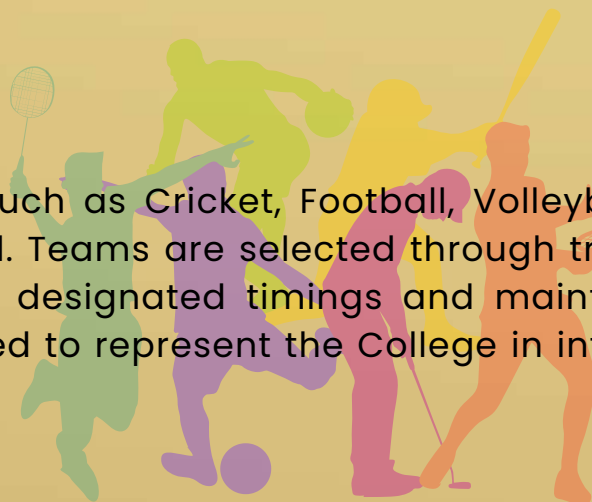


Library

The College Library is well-equipped with the latest publications in commerce, along with books of general interest, journals, periodicals, and newspapers. It is open from 7:00 a.m. to 6:00 p.m. on all working days, and access is permitted only with a valid ID card. Students must return issued books on time to avoid fines. Reference materials, question papers, periodicals, and newspapers are for reading within the library only. Maintaining silence and following library rules, as notified, is mandatory.

Gymkhana

The College provides facilities for sports such as Cricket, Football, Volleyball, Table Tennis, Chess, Carrom, and Throwball. Teams are selected through trials based on merit. Students must adhere to designated timings and maintain discipline. Selected students are encouraged to represent the College in inter-collegiate and external competitions.



Canteen

The College canteen offers hygienic food at reasonable prices.



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COLLEGE COMMITTEES



STATUTORY COMMITTEES

DLLE (Extension Work)	N.S.S.
Examinations Committee	Students' Council & Extra Curricular Activities
IQAC	Unfair Means Enquiry Committee
N.C.C	

NON- STATUTORY COMMITTEES

Academic Calendar	Marathi Mandal
Accountancy Association	Mentoring Committee
Add-on Courses	P.T.A.
Admission Committee	Placement Cell
Alumni Association	Planning and Evaluation Committee
Anti-Ragging Cell	Planning Forum
Attendance & Discipline	Prospectus
CAS Co-ordination Committee	Remedial Teaching (for Slow Learners)
CIC (College Internal Committee)	Research Cell
College Grievance Redressal Committee	Rotaract
Commerce Association	SC/ST Welfare
Counselling Centre	Selection & Prize Distribution
Faculty Welfare & Activities Co-Ordinator	Special Cell (For Students with Special Needs)
Gymkhana, Hiking And Nature Club	Student Welfare & Career Counselling
Library Committee	Study Circle (For Competitive Exams)
Literary & Debating Society	Time Table Committee
Magazine Committee	Women's Development Cell



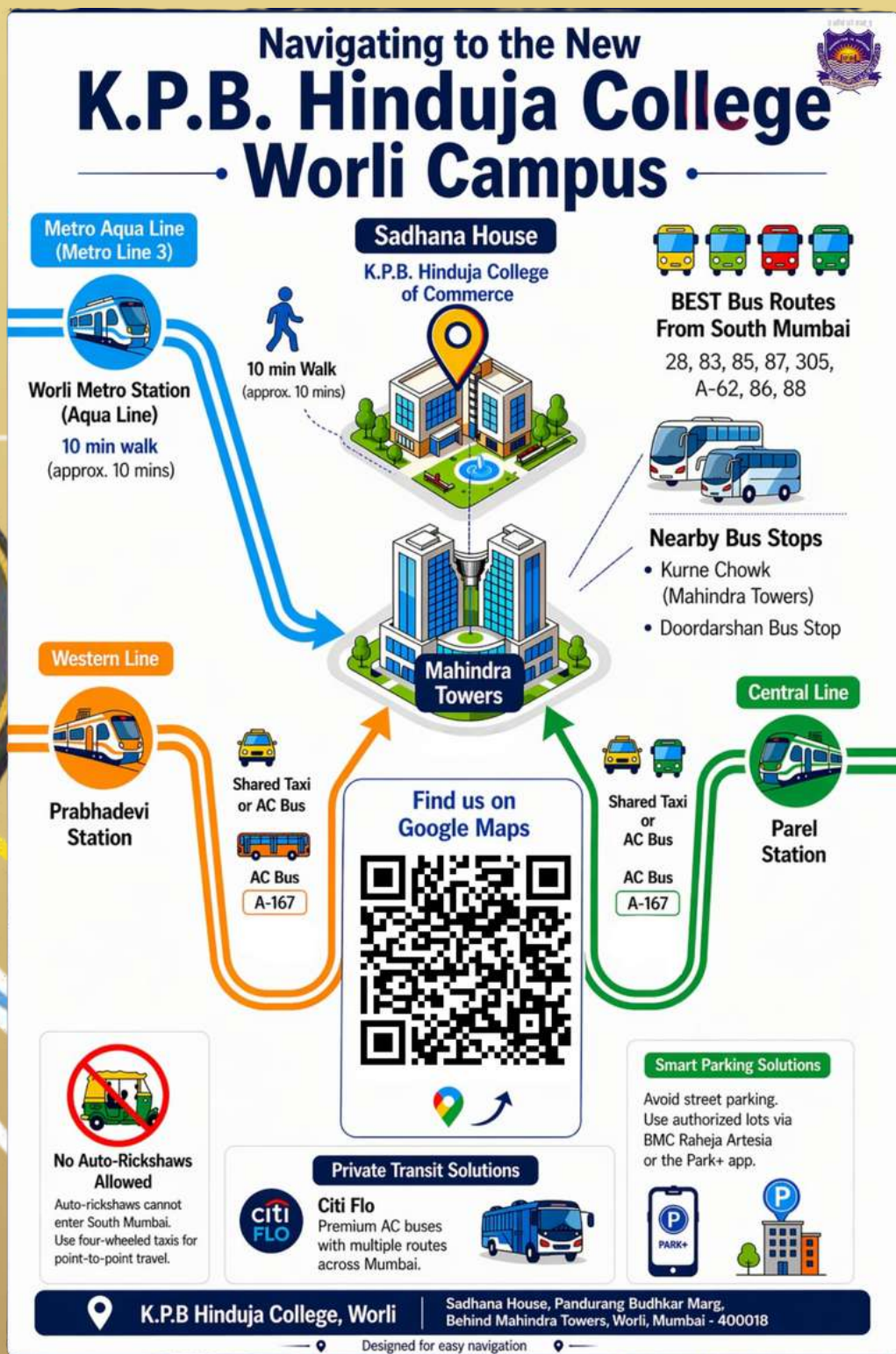
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CAMPUS LOCATION AND ACCESS

The new campus of K.P.B. Hinduja College of Commerce is located at Sadhana House, 570 Pandurang Budhkar Marg, behind Mahindra Towers, Worli, Mumbai – 400018. The campus is well-connected through multiple modes of public and private transport, ensuring convenient accessibility from different parts of Mumbai.



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B.SC. CS & DF

BACHELOR OF SCIENCE IN CYBER SECURITY AND DIGITAL FORENSICS



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KNOW YOUR PROGRAMME

B.SC. CS & DF

BACHELOR OF SCIENCE IN CYBER SECURITY AND DIGITAL FORENSICS



ELIGIBILITY & PASSING CRITERIA

Candidates seeking admission to B.Sc CS & DF must have passed Std. XII (or equivalent) from Science, or Commerce streams.
All admitted students must register with the University of Mumbai.



PASSING STANDARD (NEP 2020)

Students must secure a minimum of 40% separately in both internal and external assessments to pass, with combined marks determining the final result.



CREDIT SYSTEM

The University of Mumbai has introduced the credit system in all the Central, State & Deemed learning centres in the country, under the Universities Five Year Plan.

PERFORMANCE GRADING SCALE

Marks range out of 100	Grade and Grade Description	Grade Points
90 TO 100	O: Outstanding	10
80 TO 89.99	A+ Excellent	9
70 TO 79.99	A: Very Good	8
60 TO 69.99	B+: Good	7
55 TO 59.99	B: Above Average	6
50 TO 54.99	C: Average	5
40 TO 49.99	P: Pass	4
39.99 OR BELOW	F: Fail	0

The performance grading shall be based on the aggregate performance of the Internal Assessment Test and the Semester End Examination.

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STRUCTURE OF FIRST-YEAR B. COM COURSE:F.Y. B.SC. CS & DF

Semester I			Semester II		
Category	Course Name	Credits	Category	Course Name	Credits
Major Core	Basics of Computer Networks	2	Major Core	Fundamentals of Cyber Security	2
Major Core	Python Programming Fundamentals	2	Major Core	Basics of Cryptography	2
Major Practical	Python Programming & Networks Lab	2	Major Practical	Cyber Security Fundamentals & Cryptography Lab	2
Generic/Open Elective	Digital Marketing Fundamentals	4	Minor	RDBMS	2
Value Added Skill (Practical)	Introduction to Forensics Tools	2	Generic/Open Elective	Entrepreneurship and Startup Essentials	4
Skill Enhancement	Introduction to Cyber Threats	2	Value Added Skill (Practical)	Advanced Python for Forensics	2
Ability Enhancement	English – I	2	Skill Enhancement	Web & API Basics for AI	2
Value Education	Green Technology & Sustainable Development	2	Ability Enhancement	English – II	2
Indian Knowledge System	Computing in Ancient India	2	Value Education	Ethics and Human Values in Cybersecurity	2
Co-Curricular	Physical Education / NSS / NCC	2	Co-Curricular	Physical Education / NSS / NCC	2
Total		22	Total		22

Note:

As per the National Education Policy 2020, after completing the third year of undergraduate study, a student may opt to pursue the fourth year either as an Honours programme or as an Honours with Research specialization track, depending on their academic interests and career aspirations.

After completing the fourth year of undergraduate education, students can directly pursue a postgraduate degree by successfully completing two semesters (1 year) of advanced coursework, along with research projects in their domain of specialization.



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KNOW YOUR PROGRAMME

B.SC. CS & DF

BACHELOR OF SCIENCE IN CYBER SECURITY AND DIGITAL FORENSICS

College examinations are compulsory for all students. No student will be granted any Scholarship, Freeship, Concession or any other similar facilities, unless among other conditions, he/she shows satisfactory performance at various examinations. Any Student found guilty of copying or using unfair means, directly or indirectly in an examination may be denied admission to any class again besides being liable for prosecution. FY/SY students will be promoted to SY/TY respectively after considering the passing standard prescribed as per the University guidelines received from time to time.

Scheme of Examination

1) Degree – Self Financed Programmes

Credit	Semester End Examinations	Internal Examinations
4	60 Marks	40 Marks
2	30 Marks	20 Marks

***NB: Internal Assessment includes tests, presentations, field-based assignments, projects etc.

ATKT Examination: –

There will be ATKT / Repeaters examination for those who failed and Makeup Examination for those who remained Absent on Medical ground.

Revaluation & Verification: –

Rules & procedures for providing photocopies of answer books to the examinee and process of revaluation of the answer books of the examinee who apply for revaluation will be as per university circular from time to time.

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PROGRAMME DETAILS

A

Programme Overview

Name, Overview of the programme
Brief Introduction

B

Programme Details

Programme Outcomes (POs)

C

Faculty & Subject Details

F.Y. B.Sc. CS & DF Subjects & Faculty
Details
Syllabus

D

Best Practices & Future Plans

Unique initiatives of your Programme
Innovative teaching or research practices
Academic expansion
Research goals

Contact Details

- **Mr. Shivkumar Chandey- Programme Coordinator**
- **shivkumarchandey@politechno.com**



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A. PROGRAMME OVERVIEW

About B.Sc. Cyber Security & Digital Forensics

The Bachelor of Science in Cyber Security & Digital Forensics (B.Sc. CSDF) is a three-year undergraduate programme designed to prepare students for the rapidly evolving field of cyber security and digital investigation. The programme provides a strong foundation in computer systems, network security, digital forensics, programming, cryptography, ethical hacking, cyber laws, and incident response, enabling students to safeguard digital assets and investigate cybercrimes.

The curriculum integrates theoretical knowledge with extensive practical learning through hands-on laboratory sessions, case studies, security tools, forensic software, and real-world cyber investigation scenarios. Students develop technical expertise in identifying cyber threats, securing information systems, analysing digital evidence, and implementing industry-standard security practices.

The programme emphasizes experiential learning through projects, workshops, seminars, internships, hackathons, and interactions with industry professionals. Students gain exposure to modern tools and technologies used in cyber defence, digital forensics, network analysis, and security operations, preparing them to address emerging cybersecurity challenges.

Graduates of the programme are equipped for careers as Cyber Security Analysts, Digital Forensic Investigators, SOC Analysts, Incident Responders, Security Consultants, Penetration Testers, Network Security Engineers, and Cyber Crime Investigators, while also building a strong foundation for higher studies and research in cyber security and digital forensics.



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B. PROGRAMME DETAILS

B.SC. CS & DF

BACHELOR OF SCIENCE IN CYBER SECURITY AND DIGITAL FORENSICS

Programme Outcomes (POs):

- **PO1:** Core Cyber Security & Networking Competency: Understand foundational concepts of networking, cyber security principles, cryptography, cyber threats, operating systems, cloud security, and ethical hacking methodologies.
- **PO2:** Practical & Technical Skills: Use modern tools and techniques to configure secure networks, analyze vulnerabilities, perform penetration testing, collect and preserve digital evidence, and conduct forensic investigations in compliance with legal frameworks.
- **PO3:** Investigation & Incident Response Proficiency: Investigate cybercrime cases systematically by applying digital forensic procedures, malware analysis, threat intelligence, and reporting methods aligned with cyber law and security policies.
- **PO4:** Design & Development of Cyber Solutions: Design and implement secure solutions, mini projects, research models, and security automation systems to protect infrastructure, applications, IoT devices, and cloud environments.
- **PO5:** Industry Readiness & Employability: Acquire industry-oriented skills through hands-on training, internships, real-time labs, cybersecurity tools, certifications, research projects, simulations, and case studies to excel in cyber-security and forensic careers.



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Syllabus

Smt. P. D. Hinduja Trust's
K. P. B. Hinduja College of Commerce, Mumbai
(Autonomous)

Re-accredited 'A+' Grade by NAAC



Affiliated to
The University of Mumbai

Syllabus for B.Sc. Cyber Security and Digital Forensics
Semester I & II under NEP 2020

Programme Code:



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SEMESTER – I

PROGRAM(s): F.Y.<u>B.Sc.</u> CS & <u>DF</u>		SEMESTER: I			
Course/Subject: Basics of Computer Networks		Course Code:			
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Evaluation (Project and Viva Voce)
2 lectures/1 hour each	NA	NA	2	20 marks	30 marks
Learning Objectives: 1. Understand the fundamentals of computer networks, networking devices, transmission media, network topologies, and the OSI and TCP/IP reference models. 2. Apply the concepts of IP addressing, subnetting, routing, network protocols, basic network security, common network attacks, and network troubleshooting techniques.					
Course Outcomes After successful completion of this course, students will be able to: CO1: Describe the fundamentals of computer networks, networking devices, transmission media, and network topologies. CO2: Explain the architecture and functions of the OSI and TCP/IP reference models. CO3: Apply IPv4 addressing, subnetting, and basic routing concepts to configure small networks. CO4: Analyze common networking issues using standard troubleshooting commands and techniques. CO5: Identify common network security threats and recommend appropriate protection mechanisms.					



DETAILED SYLLABUS

Unit	Detailed Contents	Hours
I	Fundamentals of Computer Networks • Concept of Computer Networks: Need, advantages, applications in cybersecurity & digital forensics • Types of Networks: PAN, LAN, MAN, WAN, GAN, CAN • Network Topologies: Bus, Star, Ring, Mesh, Hybrid – Advantages & disadvantages • Networking Devices: Hub, Switch, Router, Bridge, Repeater, Gateway, NIC, Access Point • Transmission Media: Guided (Twisted pair, Coaxial, Fiber optic), Unguided (Microwave, Radio, Satellite) • Reference Models: OSI Model – Layer-wise functions, protocols & services • TCP/IP Model – Comparison with OSI, protocol stack mapping Introduction to WLAN, Wi-Fi security basics, SSID, MAC filtering	15
II	IP Addressing, Routing & Basic Security Concepts • IP Addressing: IPv4 structure, classes, private & public IP, subnet mask • Subnetting: FLSM, VLSM, CIDR, Supernetting • Routing: Static vs Dynamic routing, RIP & OSPF concept • Important Protocols: HTTP/HTTPS, ICMP, ARP, DHCP, DNS, FTP, SMTP, SNMP • Basic Network Security: Concept of firewall, IDS/IPS, proxy, VPN overview • Common Network Attacks: MITM, DNS spoofing, ARP poisoning, DoS • Basic Troubleshooting Commands: ping, tracert, ipconfig, netstat, nslookup	15





Textbooks & References

Sr. No.	Title	Author / Source
1	Computer Networking: A Top-Down Approach (9th Ed., 2025)	James Kurose, Keith Ross / Pearson
2	Data Communications and Networking (6th Ed.)	Behrouz A. Forouzan / McGraw-Hill
3	Computer Networks (6th Ed.)	Andrew S. Tanenbaum, David J. Wetherall / Pearson
4	Network Security Essentials (6th Ed.)	William Stallings / Pearson
5	TCP/IP Illustrated, Vol. 1: The Protocols	W. Richard Stevens / Addison-Wesley





SEMESTER – I

PROGRAM(s): F.Y.B.Sc. CS & DF			SEMESTER: I		
Course/Subject: Python Programming Fundamentals			Course Code:		
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Examination
2lectures /1 hour each	NA	NA	2	20 marks	30 marks
Learning Objectives: 1.Understand the fundamentals of Python programming, including syntax, data types, variables, operators, and control structures. 2.Learn Python functions, modules, file handling, object-oriented programming, and exception handling for developing simple applications.					
Course Outcomes After successful completion of this course, students will be able to: CO1: Describe the fundamentals of Python programming, including variables, data types, operators, input/output operations, algorithms, flowcharts, and control structures. CO2: Apply Python programming constructs such as conditional statements, loops, lists, and basic string manipulation to solve simple computational problems. CO3: Explain the concepts of functions, modules, file handling, exception handling, and object-oriented programming for developing structured Python programs. CO4: Develop Python programs using standard libraries, regular expressions, and debugging techniques to automate basic tasks and process data efficiently. CO5: Identify the applications of Python programming in cybersecurity and digital forensics by developing simple scripting solutions for automation and data analysis.					



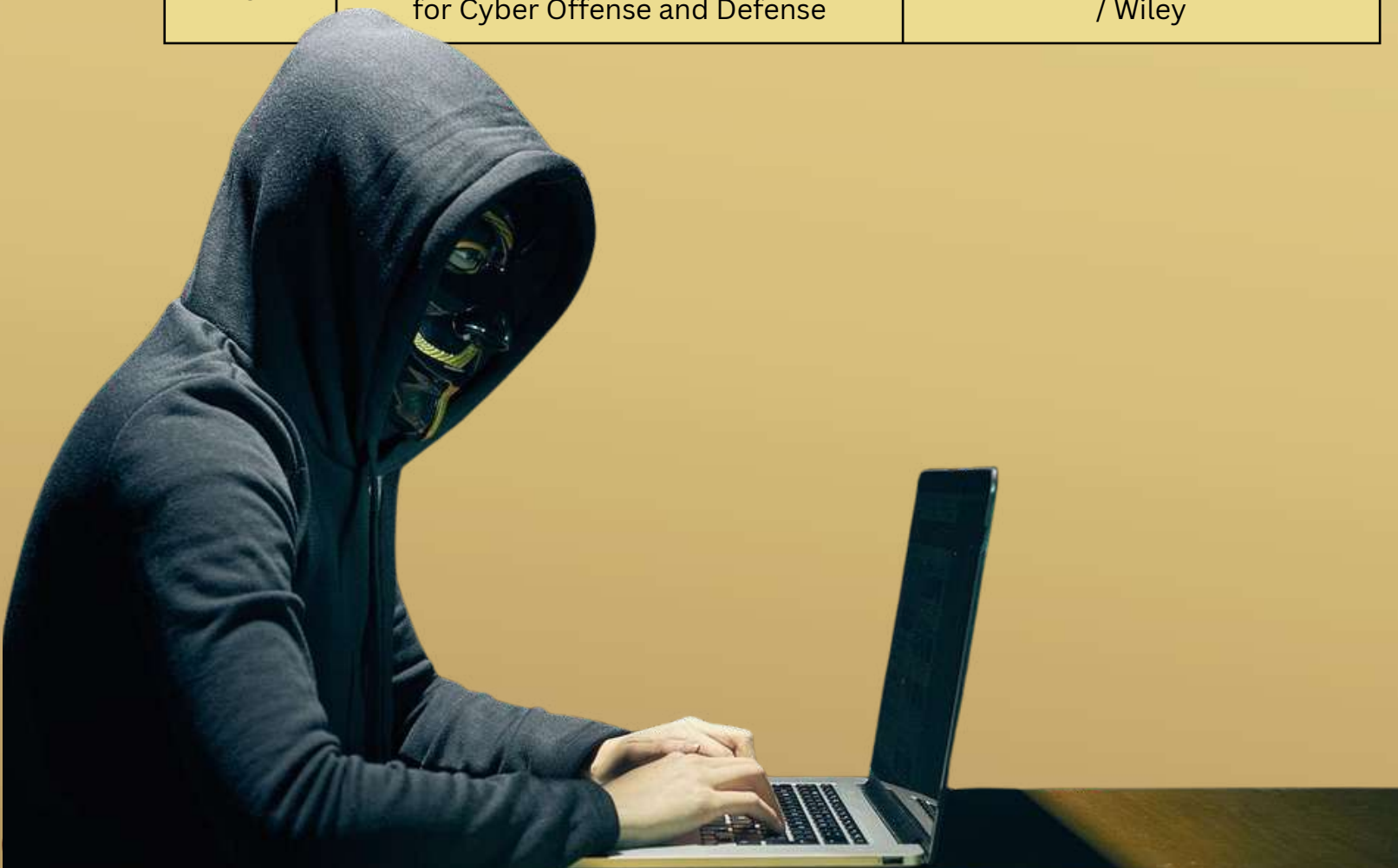
DETAILED SYLLABUS

Unit	Detailed Contents	Hours
I	Introduction to Programming and Python Basics · Overview of Programming: What is programming? Why Python? History, features, and installation (IDLE, PyCharm setup) · Algorithms and Flowcharts: Basic concepts of algorithms (step-by-step problem-solving), pseudocode examples; Introduction to flowcharts (symbols: start/end, input/output, decisions, loops) with simple problems like "Calculate average of three numbers" (Draw flowcharts manually and digitally using tools like draw.io) · Basic syntax: Variables (naming conventions), data types (int, float, str, bool with real-life analogies like "str as text messages"), operators (arithmetic, relational, logical with truth tables) · Input/output: print() for displaying results, input() for user interaction (error-proofing basics); Formatting strings (f-strings for simple reports) · Control structures: if-else (decision-making with everyday scenarios like "grade checker"), loops (for simple repetition like summing numbers, while for user menus), break/continue (with flowchart integration) · Lists and basic collections: Creation, indexing, slicing (analogies to shopping lists); Simple methods (append, pop); Applications in cybersecurity: Basic data parsing for log files (e.g., extracting IP addresses)	15
II	Functions, Modules, and Advanced Beginner Concepts · Functions: Why functions? Definition, parameters (positional/keyword), return values (simple math functions); Lambda functions (one-liners for quick tasks); Recursion (basic intro with factorial, avoiding deep dives) · Modules: Import statements, standard libraries (math for calculations, random for simulations, os/sys for file paths; cyber examples like random password generation) · File handling: Reading/writing text files (step-by-step with 'with' statements), exception handling (try-except-finally for file errors like "file not found"; log parsing exercises) · Object-Oriented Programming: Gentle intro to classes/objects (analogy to "blueprints for cars"), basic inheritance (parent-child classes for simple tools), encapsulation (private variables); No advanced polymorphism yet (Forensic classes like "LogAnalyzer") · Strings and regular expressions: Basic methods (split, join), regex module for simple pattern matching (e.g., email validation in forensic data; re.match basics) · Error handling and debugging: Common beginner errors (indentation, type mismatches), debugging techniques (print statements, pdb intro)	15



Textbooks & References

Sr. No.	Title	Author / Source
1	Python Crash Course (3rd Ed., 2023)	Eric Matthes / No Starch Press
2	Automate the Boring Stuff with Python (2nd Ed.)	Al Sweigart / No Starch Press
3	Black Hat Python (2nd Ed., 2021)	Justin Seitz, Tim Arnold / No Starch Press
4	Violent Python (2nd Ed.)	TJ O'Connor / Syngress
5	Python for Cybersecurity: Using Python for Cyber Offense and Defense	Heather Shannon, Alexey Soshin / Wiley



**SEMESTER – I**

PROGRAM(s): F.Y.B.Sc. CS & DF			SEMESTER: I		
Course/Subject: Python Programming & Networks Lab			Course Code:		
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Examination
4 lectures /60 mins each	4	NA	2	NA	30 marks

Learning Objectives:

1. Develop basic Python programming skills by implementing programs using variables, control structures, functions, modules, and file handling.
2. Apply object-oriented programming, string processing, and regular expressions to develop simple cybersecurity and digital forensics scripts.
3. Understand computer networking concepts by configuring network topologies, IP addressing, routing, and troubleshooting using Cisco Packet Tracer.
4. Gain hands-on experience in implementing and testing Python programs and simulated computer networks for real-world cybersecurity applications.

Course Outcomes:

After completion of the course, learners would be able to:

CO1: Develop Python programs using variables, data types, operators, conditional statements, loops, functions, modules, and file handling to solve basic computational problems.

CO2: Apply object-oriented programming concepts, string manipulation, regular expressions, and exception handling to create simple cybersecurity and digital forensics scripts.

CO3: Configure and test computer network topologies, networking devices, IPv4 addressing, and communication protocols using Cisco Packet Tracer.

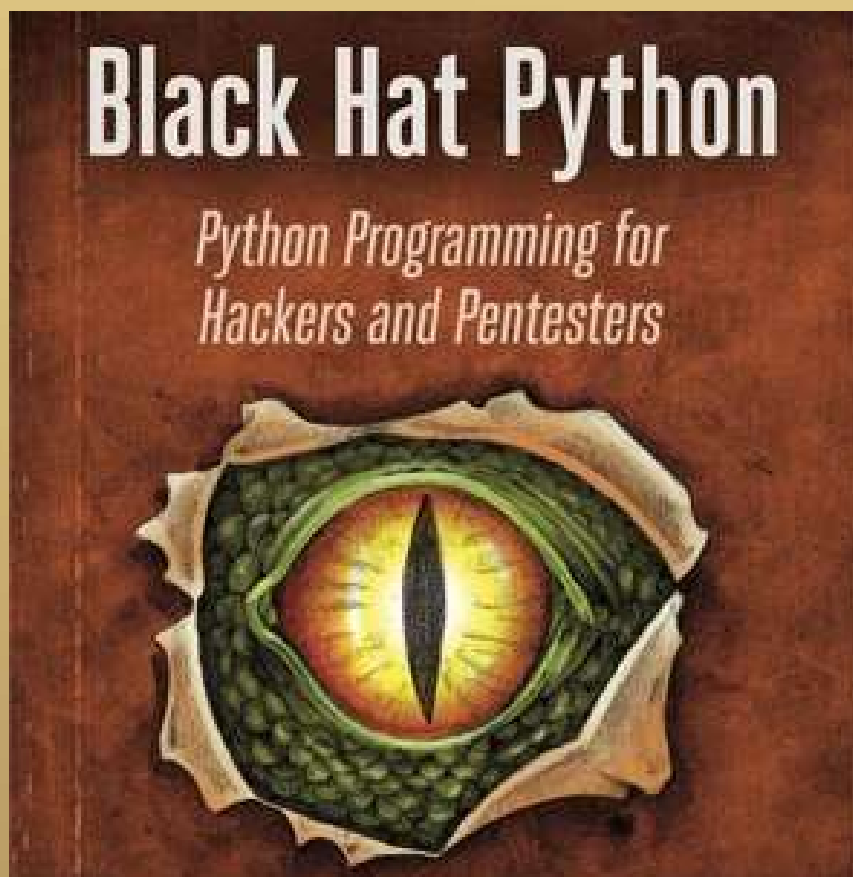
CO4: Analyze network communication, routing, connectivity, and access control mechanisms through practical simulation and troubleshooting techniques.

CO5: Demonstrate practical skills in Python programming and computer networking to support automation, network administration, and introductory cybersecurity applications.



Textbooks & References

Sr. No.	Title	Author / Source
1	Hands-On Python for Cybersecurity	Dr. Deepti Gupta / BPB Publications
2	Black Hat Python (2nd Edition, 2021)	Justin Seitz & Tim Arnold / No Starch Press
3	Python Network Programming Cookbook (2nd Edition)	Pradeepta Mishra / Packt Publishing
4	Introduction to Networks Companion Guide (CCNAv7)	Cisco Networking Academy / Cisco Press
5	Lab Manual for Computer Networks (B.Sc. IT)	Mumbai University / Internal Publication





DETAILED SYLLABUS

10 Python Labs (Using IDLE)		
Practical No.	Task / Title	Description
1	Python: Hello World with Input	Write Python program to print "Hello, Cyber Security!" with user input for name.
2	Python: Variable Operations	Write Python program to declare variables for IP (str), port (int), status (bool); perform arithmetic and type conversions.
3	Python: Password Checker	Write Python program to check password strength using if-elif-else (length >8, has digit).
4	Python: Loops with Break	Write Python program using for/while loops to print ports 1-1024; add break/continue.
5	Python: List Operations	Write Python program to create IP list; append, slice, sort, and check membership.
6	Python: Function Validation	Write Python program to define function for email validation; use positional/keyword params and lambda.
7	Python: Module Usage	Write Python program to import math/random/os; generate random password and list directory.
8	Python: File Handling	Write Python program to read/write log file; use try-except for FileNotFoundError.
9	Python: String Regex	Write Python program to split/join strings; use re module for basic email pattern matching.
10	Python: OOP Class	Write Python program to define class NetworkDevice with attributes/methods; add inheritance and try-except for IP input.



DETAILED SYLLABUS

10 Networking Labs (Using Cisco Packet Tracer)		
Practical No.	Task / Title	Description
1	Networks: Basic Connectivity	Using Cisco Packet Tracer, connect 2 PCs via switch; ping and observe PDU.
2	Networks: Bus Topology	Using Cisco Packet Tracer, build bus topology with 3 PCs; ping and note collisions.
3	Networks: Star Topology	Using Cisco Packet Tracer, build star topology with hub/switch; compare broadcasts.
4	Networks: HTTP Simulation	Using Cisco Packet Tracer, simulate PC-to-PC HTTP; trace OSI layers in simulation mode.
5	Networks: IP Assignment	Using Cisco Packet Tracer, assign IPv4 IPs to 3 PCs (192.168.1.0/26); ping and subnet.
6	Networks: Media Comparison	Using Cisco Packet Tracer, connect PCs with twisted pair/coaxial/wireless; compare pings.
7	Networks: Inter-LAN Routing	Using Cisco Packet Tracer, connect 2 LANs via router; add static routes and inter-ping.
8	Networks: ARP/ICMP Capture	Using Cisco Packet Tracer, ping between PCs; capture ARP/ICMP in simulation.
9	Networks: ACL Block	Using Cisco Packet Tracer, configure ACL on router to block one subnet's traffic.
10	Networks: Troubleshooting	Using Cisco Packet Tracer, build faulty network (IP mismatch); troubleshoot with ping/traceroute/show commands.



SEMESTER – I

PROGRAM(s): F.Y.B.Sc. CS & DF			SEMESTER: I		
Course/Subject: Digital Marketing Fundamentals			Course Code:		
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Examination
4 lectures/ 1 hour each	NA	NA	4	40 marks	60 marks
Learning Objectives: 1.To understand the fundamentals of digital marketing and its role in modern business and brand promotion. 2.To learn search engine optimization, search engine marketing and content marketing techniques for improving online visibility. 3.To explore social media marketing, email marketing and digital engagement strategies for target audiences. 4.To develop analytical skills for measuring campaign performance using digital marketing tools and metrics.					
Course Outcomes: After completion of the course, learners would be able to: CO1: Describe the fundamentals of digital marketing, consumer journeys and various digital marketing channels. CO2: Explain search engine optimization, search engine marketing, content marketing and social media marketing strategies. CO3: Apply digital marketing tools and techniques to design effective online marketing campaigns. CO4: Analyze campaign performance using web analytics, key performance indicators and return-on-investment metrics. CO5: Identify ethical, legal and secure digital marketing practices while planning and executing digital campaigns.					



DETAILED SYLLABUS

Unit	Detailed Contents	Hours
I	· Digital Marketing Overview · Introduction: Digital vs. traditional marketing; 4Ps in digital (product, price, place, promotion); consumer journey (awareness, consideration, conversion). · SEO Basics: On-page (keywords, meta tags), off-page (backlinks); tools like Google Keyword Planner. · Content Marketing: Blogging, video for storytelling; content calendars.	15
II	· Paid and Social Strategies · SEM: Google Ads setup, bidding (CPC/CPM); ad copywriting. · Social Media: Platforms (Facebook, Instagram, LinkedIn); organic/paid posts, influencer collaborations. · Email Marketing: Newsletters, automation (Mailchimp basics); segmentation.	15
III	· Engagement and Analytics · Influencer and Affiliate: Partnership models, tracking ROI. · Analytics: Google Analytics for traffic/engagement; metrics (bounce rate, conversion). · Mobile Marketing: App promotion, SMS; responsive design.	15
IV	· Ethics and Campaigns · Ethical Issues: Data privacy (GDPR in marketing), fake news; secure practices. · Campaign Planning: Full-funnel strategy; A/B testing. · Case Studies: Successful cyber-brand campaigns (e.g., antivirus promotions).	15



Reference Books:

Sr. No.	Title	Author / Source
1	Digital Marketing (4th Ed., 2023)	Dave Chaffey, Fiona Ellis-Chadwick / Pearson
2	This is Marketing	Seth Godin / Portfolio
3	Digital Marketing Strategy	Simon Kingsnorth / Kogan Page
4	SEO 2023	Adam Clarke / Independently Published
5	Digital Marketing for Dummies	Ryan Deiss, Russ Henneberry / For Dummies

DIGITAL MARKETING FOR DUMMIES



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SEMESTER – I

PROGRAM(s): F.Y.B.Sc. CS & DF			SEMESTER: I		
Course/Subject: Financial Literacy and Personal Finance			Course Code:		
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Examination
4 lectures/ 1 hour each	NA	NA	2	40 marks	60 marks
Learning Objectives: 1.To understand the fundamental concepts of financial literacy, personal finance, budgeting, and money management. 2.To develop knowledge of banking systems, digital payment methods, credit management, and responsible borrowing. 3.To explore investment opportunities, wealth creation strategies, and long-term financial planning. 4.To develop awareness of taxation, insurance, financial security, and safe financial practices					
Course Outcomes: After completion of the course, learners would be able to: CO1: Describe the fundamental concepts of financial literacy, budgeting, saving, and personal financial planning. CO2: Explain banking services, digital payment systems, credit management, and responsible financial decision-making. CO3: Apply investment principles and financial planning techniques to achieve personal financial goals. CO4: Analyze various investment options, risk-return relationships, and wealth creation strategies. CO5: Identify taxation, insurance, financial frauds, and financial security measures for effective personal financial management.					



DETAILED SYLLABUS

Unit	Detailed Contents	Hours
I	Fundamentals of Financial Literacy • Meaning and importance of financial literacy • Income, expenses, and financial goals • Budgeting: types, tools, and techniques • Saving habits and emergency funds	15
II	Banking and Digital Finance • Banking system in India: types of accounts • Digital payments: UPI, cards, net banking, wallets • Credit and loans: types, EMI, interest calculation • Credit score and responsible borrowing	15
III	Investment and Wealth Creation • Basics of investment: risk vs return • Investment options: FD, RD, Mutual Funds, SIP, Shares (intro) • Power of compounding and long-term planning • Introduction to retirement planning	15
IV	Taxation, Insurance and Financial Security • Basics of income tax, deductions (80C, etc.) • Filing income tax returns (overview) • Insurance: life, health, general insurance • Financial frauds and safety practices	15

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year
1	Personal Finance	E. Thomas Garman, Raymond Fogue	Cengage	13th	2021
2	Rich Dad Poor Dad	Robert Kiyosaki	Plata Publishing	Latest	2017
3	The Psychology of Money	Morgan Housel	Jaico	1st	2020
4	Financial Literacy for Beginners	Giovanni Rigters	Independently Published	1st	2019
5	Guide to Financial Markets	Marc Levinson	Economist Books	7th	2020



SEMESTER – I

PROGRAM(s): F.Y. <u>B.Sc. CS & DF</u>			SEMESTER: I		
Course/Subject: Introduction to Forensics Tools (Practical)			Course Code:		
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Examination
4 lectures/ 1 hour each	4	NA	2	40 marks	60 marks
Learning Objectives: 1. Familiarize with open-source forensics tools for data acquisition. 2. Practice disk imaging and hash verification techniques. 3. Learn basic file recovery and timeline analysis. 4. Understand chain of custody in tool usage.					
Course Outcomes: After completion of the course, learners would be able to: CO1: Demonstrate basic acquisition and hashing using a single GUI tool. CO2: Explain and apply chain of custody in tool-based workflows. CO3: Implement simple file viewing and export on sample evidence. CO4: Analyze basic timelines for introductory incident insights.					



SEMESTER – I

Practical No.	Task / Title	Description
1	Launch and Preview	Launch FTK Imager and create a logical drive preview of a sample folder; export as a basic evidence file (Tool: FTK Imager - GUI Export Wizard).
2	Physical Acquisition	Acquire a physical preview of a sample USB drive image; note the process time and file size (Tool: FTK Imager - Physical Drive Selection).
3	Hash Generation	Generate and display an MD5 hash for a sample evidence file; compare it to a pre-known good hash (Tool: FTK Imager - Verify Hashes feature).
4	Acquisition Log	Document a simple acquisition step-by-step in the tool's built-in notes; save as a PDF report (Tool: FTK Imager - Case Log/Report Export).
5	Evidence Import	Import a sample image into FTK Imager and browse the file tree without modifications (Tool: FTK Imager - Add Evidence Item).
6	Custom Export	Create a custom export of a folder structure from a preview image, including metadata like creation dates (Tool: FTK Imager - Export Files with Options).
7	Batch Verification	Verify hash integrity for a multi-file evidence set (e.g., 3-5 documents) and flag any mismatches (Tool: FTK Imager - Batch Hash Verification).
8	Log Entry Simulation	Simulate a quick acquisition log entry for a hypothetical device seizure, including who/what/when details (Tool: FTK Imager - Integrated Notes and Export).



SEMESTER – I

Practical No.	Task / Title	Description
9	Case Creation	Create a new case in Autopsy and add a sample disk image; explore the directory structure (Tool: Autopsy - New Case Wizard).
10	Deleted File Recovery	View and export a deleted text file from the sample image's unallocated space (Tool: Autopsy - File Types View and Export).
11	Timeline Report	Generate a basic timeline report for files modified in the last 7 days from the image (Tool: Autopsy - Timeline Module).
12	Browser Artifact Extraction	Extract and preview browser history artifacts from a user profile in the image (Tool: Autopsy - Keyword Search and Ingest Modules).
13	Incident Summary Report	Compile a simple incident summary report from viewed artifacts; include screenshots (Tool: Autopsy - Reports Generation).
14	Image Tagging and Export	Search for and tag image files (e.g., JPEGs) in a case; export tagged items to a folder (Tool: Autopsy - Keyword Search with Tagging).
15	Filtered Views	Build a filtered views of recent documents by file type and date; note any suspicious patterns (Tool: Autopsy - Views and Filters).
16	Basic Ingest Run	Run a basic ingest on a small image to auto-detect and highlight potential artifacts like URLs or emails (Tool: Autopsy - Ingest Manager with Default Modules).



Textbooks & References

Sr. No.	Title	Author / Source
1	Practical Digital Forensics (2019)	Richard Boddington / Packt Publishing
2	Digital Forensics for Legal Professionals (2012)	Larry Daniel, Lars Daniel / Elsevier
3	The Basics of Digital Forensics (2nd Ed., 2014)	Jason Luttgens, Matthew Pepe, Kevin Mandia / Syngress
4	Digital Forensics with Open Source Tools (2011)	Cory Altheide, Harlan Carvey / Syngress
5	File System Forensic Analysis (2005)	Brian Carrier / Addison-Wesley



DIGITAL FORENSICS

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SEMESTER – I

PROGRAM(s): F.Y.B.Sc. CS & DF			SEMESTER: I Communicative English		
Course/Subject: Introduction to Cyber Threats			Course Code:		
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Examination
2 lectures/ 1 hour each	NA	NA	2	20 marks	30 marks
Learning Objectives: 1. Understand the fundamentals of cyber threats, attack vectors, malware, and social engineering techniques, along with their impact on the confidentiality, integrity, and availability of information systems. 2. Develop awareness of insider threats, supply chain risks, threat intelligence, and basic threat modeling techniques for identifying and mitigating cybersecurity risks.					
Course Outcomes: After completion of the course, learners would be able to: CO1: Describe common cyber threats, attack vectors, and their impact on the confidentiality, integrity, and availability of information systems. CO2: Explain the characteristics, propagation methods, and basic mitigation techniques for different types of malware and cyber attacks. CO3: Apply knowledge of social engineering techniques, phishing attacks, and user awareness practices to identify and prevent common cyber threats. CO4: Analyze insider threats, supply chain risks, and basic threat intelligence to identify potential security vulnerabilities and attack patterns. CO5: Demonstrate an understanding of basic threat modeling concepts and cybersecurity best practices for protecting organizational information assets.					



DETAILED SYLLABUS

Unit	Detailed Contents	Hours
I	Overview of Cyber Threats · Threat Landscape: Introduction to cybersecurity fundamentals, CIA triad (Confidentiality, Integrity, Availability), common attack surfaces (e.g., endpoints, networks). · Malware Fundamentals: Types of malware (viruses, worms, trojans, ransomware) – Definitions, examples, and real-world impacts on systems and data. · Network-Based Threats: DDoS attacks, Man-in-the-Middle (MITM), SQL injection – Mechanisms, symptoms, and basic consequences. Practical of Malware Identification: Simulate malware detection using online scanners or virtual sandboxes (e.g., VirusTotal integration or simple demo files in a safe environment using Simulators / Virtual Labs).	15
II	Human-Centric and Advanced Threats · Social Engineering: Techniques including phishing, vishing, pretexting – Psychological manipulation, common signs, and defensive awareness. · Insider and Supply Chain Threats: Types of insider threats (intentional vs. unintentional), supply chain vulnerabilities (e.g., third-party software risks) – Detection indicators and prevention basics. · Advanced Persistent Threats (APTs): Zero-day exploits, nation-state actors – Lifecycle overview and high-level response strategies. · Threat Modeling: Introduction to STRIDE framework (Spoofing, Tampering, Repudiation, Information Disclosure, Denial of Service, Elevation of Privilege) – Simple application to scenarios. Practical of Threat Simulation: Model a basic phishing attack or insider threat scenario using role-playing tools or virtual labs (e.g., phishing email simulator or STRIDE worksheet in Simulators / Virtual Labs).	15



Reference Books:

Sr. No.	Title	Author / Source
1	Cybersecurity and Cyberwar (2014)	P.W. Singer, Allan Friedman / Eamon Dolan
2	Hacking Exposed (8th Ed., 2023)	Stuart McClure et al. / McGraw-Hill
3	Cyber Threat Intelligence (2018)	Ali Dehghantanha, Kim-Kwang Raymond Choo / Springer
4	The Fifth Domain (2019)	Richard A. Clarke, Robert K. Knake / Penguin Press
5	Worm: The First Digital World War (2013)	Mark Bowden / Atlantic Monthly Press





SEMESTER – I

PROGRAM(s): F.Y. <u>B.Sc. CS & DF</u>			SEMESTER: I		
Course/Subject: English – I			Course Code:		
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Examination
2 lectures/ 1 hour each	NA	NA	2	20 marks	30 marks
Learning Objectives: 1. Develop effective communication skills through listening, speaking, reading, and writing for academic and professional environments. 2. Enhance grammar, vocabulary, pronunciation, and interpersonal communication skills to build confidence in presentations, group discussions, and workplace interactions.					
Course Outcomes: After completion of the course, learners would be able to: CO1: Recall and apply appropriate vocabulary, grammar, and language conventions in oral and written communication. CO2: Demonstrate effective listening and speaking skills in academic, professional, and interpersonal communication. CO3: Apply writing techniques to prepare emails, paragraphs, reports, and other professional documents. CO4: Analyze written and spoken information to improve comprehension, interpretation, and communication effectiveness. CO5: Demonstrate confidence and professionalism by participating effectively in group discussions, presentations, and collaborative communication activities.					



DETAILED SYLLABUS

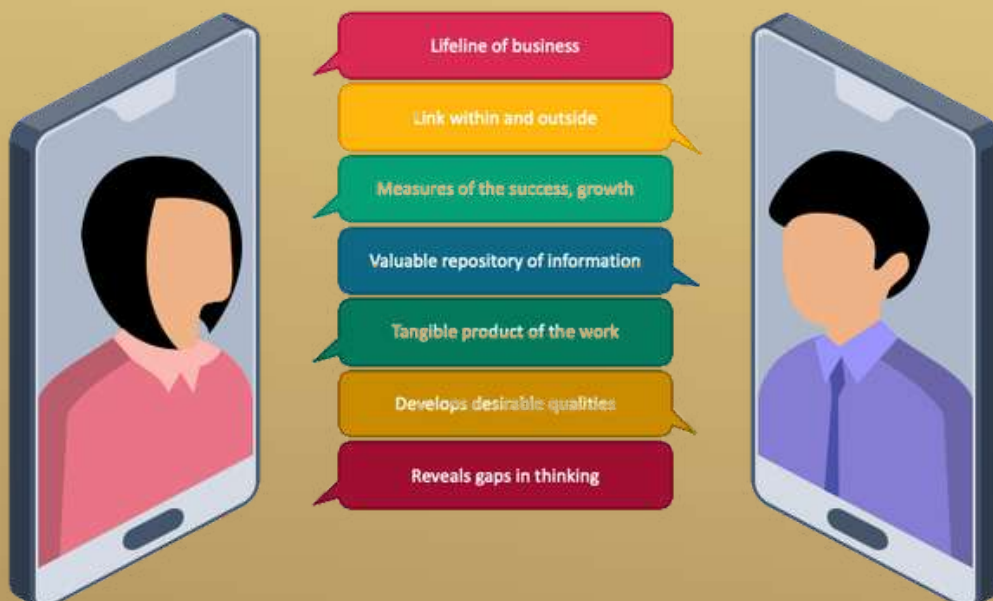
Unit	Detailed Contents	Hours
I	Communication Skills • Listening Skills: Active listening, note-taking, understanding spoken content from lectures and discussions • Speaking Skills: Pronunciation, intonation, clarity in speech, introduction and presentation skills • Vocabulary Development: Technical vocabulary, synonyms/antonyms, word formation (prefixes/suffixes) • Interactive Activities: Role-plays, short presentations, group discussions on general and technical topics Practical Activity: Listening exercises with audio clips, short presentations, and group discussions with peer feedback.	15
II	Reading and Writing Skills • Reading Skills: Skimming, scanning, comprehension, summarization of passages • Writing Skills: Formal emails, paragraph writing, basic report writing • Grammar: Tenses, articles, prepositions, sentence structure, common errors • Integrated Skills: Reading-to-writing exercises and peer review activities Practical Activity: Write emails, summaries, and short reports; grammar exercises and peer evaluation.	15





Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year
1	Technical Communication: Principles and Practice	Meenakshi Raman, Sangeeta Sharma	Oxford University Press	3rd	2015
2	Communication Skills	Sanjay Kumar, Pushp Lata	Oxford University Press	2nd	2018
3	High School English Grammar and Composition	Wren & Martin	S. Chand	Revised	2016
4	English for Technical Communication	N.P. Sudharshana	Cambridge University Press	1st	2010
5	A Course in English Communication	Kiranmai Dutt, Geetha Rajeevan, C.L.N. Prakash	Cambridge University Press	2nd	2016



NAAC Re-accredited with "A+" Grade (CGPA: 3.59)



SEMESTER – I

PROGRAM(s): F.Y.B.Sc. CS & DF			SEMESTER: I		
Course/Subject: Green Technology and Sustainable Development			Course Code:		
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Examination
2 lectures /1 hour each	NA	NA	2	20 marks	30 marks
Learning Objectives: 1. Understand the fundamental concepts of environmental studies, ecosystems, biodiversity, and the importance of environmental conservation for sustainable development. 2. Develop awareness of environmental pollution, sustainable practices, green technologies, and ethical responsibilities towards environmental protection.					
Course Outcomes: After completion of the course, learners would be able to: CO1: Describe the fundamental concepts of environmental studies, ecosystems, biodiversity, and environmental sustainability. CO2: Explain the causes, effects, and control measures of environmental pollution and contemporary environmental challenges. CO3: Apply the principles of sustainable development and green technologies to promote environmentally responsible practices. CO4: Analyze environmental issues, resource conservation strategies, and sustainable solutions for protecting natural ecosystems. CO5: Demonstrate environmental awareness, ethical values, and responsible citizenship for the conservation and sustainable use of natural resources.					



DETAILED SYLLABUS

Unit	Detailed Contents	Hours
I	Ecosystems and Green Technology • Concept of ecosystem: types, components, and energy flow • Biodiversity: levels, importance, and threats • Introduction to green technology: renewable energy (solar, wind), energy conservation • Environmental issues related to industrialization and technology • Importance of sustainable development and environmental protection Activity: Study local ecosystem or campus environment and identify sustainable practices.	15
II	Environmental Challenges and Sustainable Practices • Types of pollution: air, water, soil, noise – causes and effects • Waste management: solid waste, e-waste, recycling and reuse • Sustainable resource management: water, energy, and natural resources • Global initiatives: Sustainable Development Goals (SDGs) • Individual and community role in environmental conservation Activity: Group project on sustainable practices or simple model using recycled materials.	15



Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year
1	Environmental Studies: From Crisis to Cure	R. Rajagopalan	Oxford University Press	3rd	2016
2	Textbook of Environmental Studies for Undergraduate Courses	Erach Bharucha	UGC	2nd	2013
3	Environmental Science	Cunningham & Cunningham	McGraw Hill	14th	2017
4	Environmental Pollution Control Engineering	C.S. Rao	New Age International	2nd	2006
5	Introduction to Environmental Engineering and Science	Gilbert M. Masters, Wendell Ela	Pearson	3rd	2007





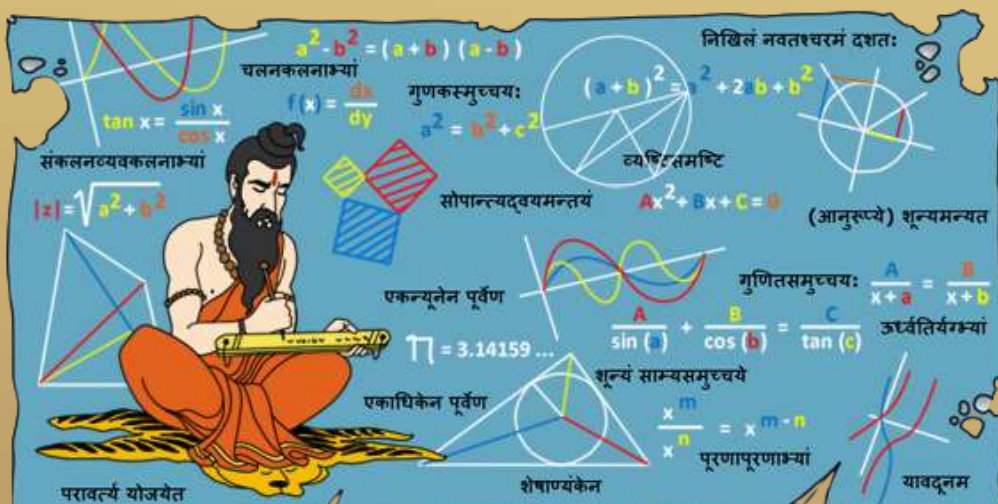
SEMESTER – I

PROGRAM(s): <u>F.Y.B.Sc. CS & DF</u>			SEMESTER: I		
Course/Subject: Computing in Ancient India			Course Code:		
Teaching Scheme					Evaluation Scheme
Lectures (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Continuous Internal Assessment (CIA)	Semester End Examination
2 lectures /60 mins each	NA	NA	2	20 marks	30 marks
Learning Objectives: 1. Understand the contributions of ancient Indian knowledge systems to mathematics, computation, logic, and scientific thinking. 2. Develop an appreciation of Vedic mathematics, traditional problem-solving techniques, and India's rich intellectual and cultural heritage in science and technology.					
Course Outcomes: After completion of the course, learners would be able to: CO1: Describe the major contributions of ancient Indian knowledge systems to mathematics, computation, and scientific development. CO2: Explain the principles of Vedic mathematics, traditional calculation techniques, and ancient methods of measurement. CO3: Apply Vedic mathematical techniques and traditional logical methods to solve basic arithmetic and reasoning problems. CO4: Analyze the principles of logic, reasoning, and scientific thinking embedded in ancient Indian philosophical traditions. CO5: Appreciate the historical, cultural, and scientific contributions of India to mathematics, computation, and global knowledge systems.					



DETAILED SYLLABUS

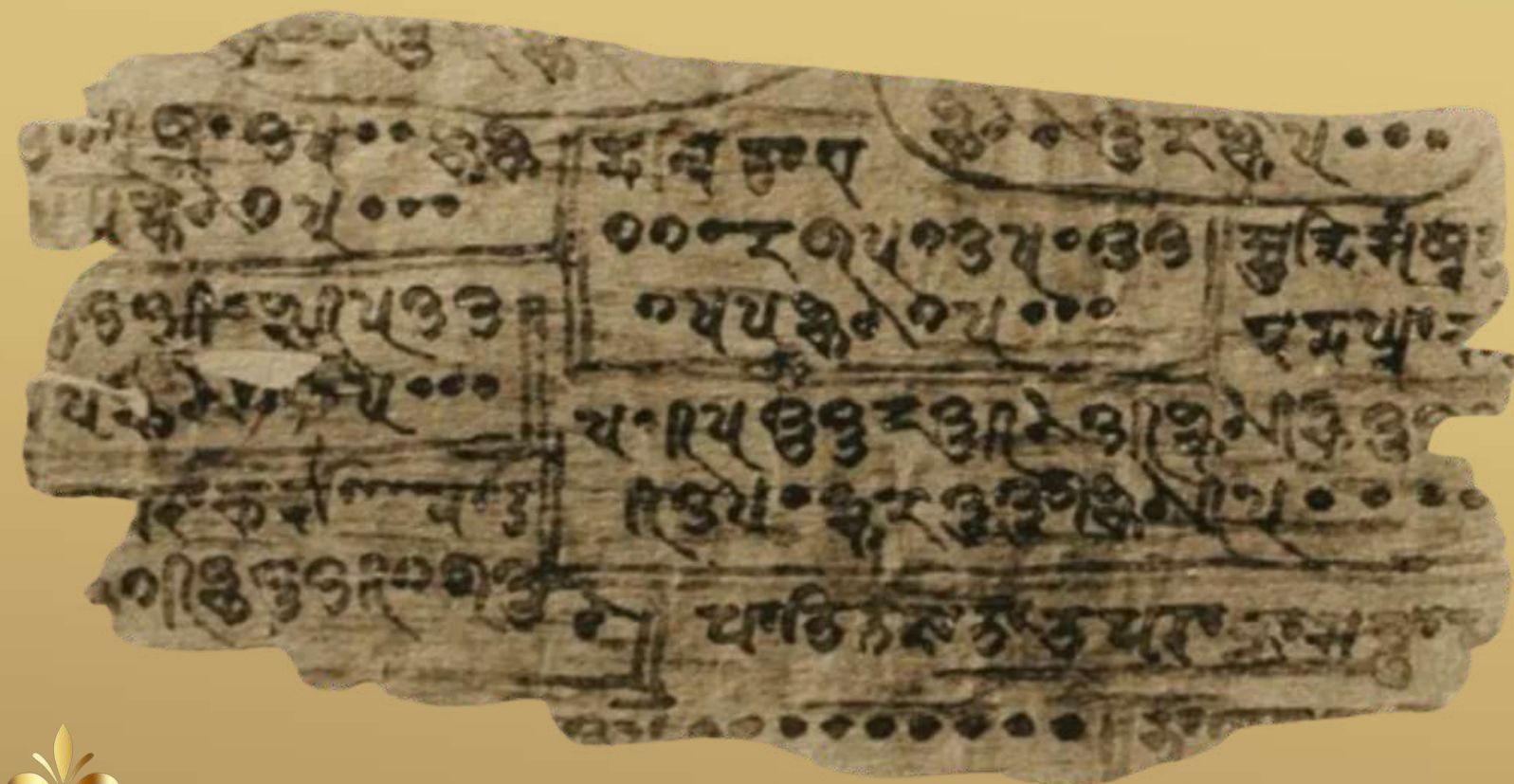
Unit	Detailed Contents	Hours
I	Mathematical Foundations in Ancient India • Evolution of Indian numerals and decimal number system • Concept of zero and contributions of Aryabhata and Brahmagupta • Vedic Mathematics: Basic sutras and mental calculation techniques • Traditional counting systems and patterns in ancient texts • Contributions to algebra, arithmetic, and astronomy Activity: Solve basic arithmetic problems using Vedic mathematics techniques and compare with conventional methods.	15
II	Ancient Logic, Devices and Knowledge Systems • Introduction to Yantras and traditional tools used for measurement and calculations • Nyaya logic: Basic principles of reasoning and inference • Ancient methods of secure communication and simple ciphers • Contributions of ancient Indian scholars to science and technology • Ethical values and knowledge-sharing traditions in ancient India Activity: Analyze simple logical statements using Nyaya principles and perform basic cipher encoding/decoding exercises.	15





Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year
1	History of Computing in India	Subrata Dasgupta	Springer	1st	2016
2	Vedic Mathematics	Bharati Krishna Tirthaji	Motilal Banarsidass	Reprint	2015
3	Indian Mathematics: Engaging with the World from Ancient to Modern Times	George Gheverghese Joseph	World Scientific	1st	2011
4	The Wonder That Was India	A.L. Basham	Picador	Revised	2004
5	Introduction to Indian Philosophy	S. Radhakrishnan	Oxford University Press	2nd	1996





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(Affiliated to University of Mumbai)



Thank You

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