St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

IGNITE • INSPIRE • INNOVATE

(Deemed to be University U/S 3 of the UGC Act, 1956)

In Collaboration With

Centre for Excellence in Digital Forensics, Chennai 600 096

B.Sc. (Hons.) Information Security and Digital Forensics

(Approved by UGC)

(I to VIII Semesters)

Regulations and Syllabus

Choice Based Credit System

REGULATIONS – 2024

(Effective from the Academic Year 2024-25)

VISION & MISSION OF THE DEPARTMENT

Vision

To develop students to achieve academic excellence and leadership in Information Security and Digital Forensics with emphasis on continual improvement leading to Research and to meet out the society needs.

Mission

- To encourage students to take up a career in Cyber Security.
- To master broader concepts such as the responsible use of resources, the appropriate management of risks, and the alignment of information technology with the organization.
- To provide quality education and training in specialized tools to the students to investigate, prevent and manage cyber-attacks.
- To create awareness, extend education and prepare the base for further studies in the area of information security, digital forensics and cyber laws.

Programme Educational Objectives (PEOs)

PEO 1: Graduates attain sound foundation in fundamentals of Digital Forensics, Information Security, and Cyber Security and to assist them exhibit strong, independent learning, analytical & problem-solving skills in CSE

PEO 2: Graduates learn to apply critical thinking and problem-solving skills in designing and implementing secure solutions for real-world problems ensuring they are technically sound, economically feasible and socially responsible.

PEO 3: Graduate are provided a learning atmosphere that is favourable to adapt to an evolving technological environment and tools and accomplish sustainable progress in the emerging areas of Digital Forensics and Information security through life-long learning.

PEO 4: Graduates will demonstrate ethical and professional behavior in their cyber-security practice, adhering to legal and moral standards.

PEO 5: Graduates learn giving expert testimony when a case comes to trial

Programme Outcomes (POs)

PO 1: Ability to analyse problems and use appropriate skills and technology to reach solutions.

PO 2: Protect an organization's ICT assets from external and internal attacks.

PO 3: Understanding the procedures of collecting the digital evidence from the Scene of Crime and knowing the various mechanisms in Analyzing it using various forensics tools

PO 4: Ability to perform risk assessment and vulnerability assessment for securing the information in an organization

PO 5: Ability to demonstrate vulnerabilities and sources of attack and intrusion by monitoring the performance of computer networks and information systems.

PO 6: Uses best practices and standards in the field of protecting information and networks of organizations.

PO 7: Develop and enact cyber security and digital forensics policies, procedures and plans aligned with industry practices to manage and ensure the security of industries.

PO 8: Integrates the enterprise with the security features and technically configure various devices for enhancing the security.

Program Specific Outcomes (PSOs)

PSO 1: Ability to understand information security**,** network security, cryptography, database security, cyber security and cloud security and develop strong defense against cyber threats.

PSO 2: Acquire the proficiency in conducting risk assessments, penetration testing, and forensic analysis to detect and mitigate cyber-security incidents.

PSO 3: Ability to use cyber security and cyber forensics software/tools. Design cyber-security strategies and assess cyber-security risk management policies to protect an organization's information and assets.

PSO 4: Acquire field experience in cyber forensics and information security through Mini-Project, Internship, Project and visits to organizations.

ST. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

B.Sc. Hons. (Information Security and Digital Forensics) PROGRAMME

REGULATIONS AND SYLLABI UNDER CHOICE BASED CREDIT SYSTEM

(Effective from the Academic Year 2024-2025)

B.Sc. Hons. (Information Security and Digital Forensics) REGULATIONS (2024)

Regulations – 2020 is applicable to the students admitted to the Degree of Bachelor of Science (Hons.) Information Security and Digital Forensics (Eight Semesters) programme effective from the academic year 2024-2025.

1. NOMENCLATURE

Programme : Refers to the Master of Science in Computer Science Stream that a student has chosen for study.

Course Refers to the course (Subject) that a student would have to undergo during the study in the Institution

Batch Refers to the starting and completion year of a programme of study. For Eg. Batch of 2020–2022 refers to students belonging to a 2 years Degree Programme admitted in 2020 and completing in 2022.

Department Each Programme of the Institution is grouped under a Department. Eg. M.Sc. Computer Science is grouped under Departments of Computer Science and Applications. This Department offers various Undergraduate and Postgraduate Programmes in Sciences like B.Sc. (Computer Science), M.Sc. (Computer Science).

Dean Refers to the Head of Arts and Science & Management Studies Programmes.

HoD Refers to the Head of a Department (HoD) offering various UG and PG programmes. He / She will be the Head of all staff members and Students belonging to the Department

2. QUALIFICATION FOR ADMISSION

Qualification for admission will be as per the criterion specified by the appropriate agencies of the Government of India.

- Candidates who passed the Higher Secondary Examination with Mathematics, Physics and

Chemistry conducted by the Government of Tamil Nadu or its equivalent in the relevant subjects as recognized by the Institute or any other equivalent Examination thereto wherever prescribed are eligible for admission to Three Year B.Sc(CS with CS) Programme.

- Candidates who passed Three Year Diploma in Technical Education in the concerned subject conducted by the Government of Tamil Nadu are eligible for admission to the Second Year of Three Year B.Sc(CS with CS) Programme –Lateral Entry in the relevant discipline.

3. STRUCTURE OF PROGRAMME

Every Programme will have a curriculum with syllabus consisting of theory and practical.

SEMESTER– I

Course Code	Course Title	Hours / Week				Marks		
		L	T	P	C	CIA	ESE	Total
24ISU101	**Core 1:** Computer Networks and Troubleshooting	3	0	0	3	40	60	100
24ISU111	**Core 1:** Computer Networks and Troubleshooting LAB	0	0	4	2	40	60	100
24ISU102	**Core 2:** Cyber Criminology	3	0	0	3	40	60	100
24MAU101	**Minor 1:** Mathematics -1	3	0	0	4	40	60	100
24BAU162	**Multidisciplinary Course 1:** Management Thoughts and Applications	3	0	0	3	40	60	100
24CAU141	**SEC 1 :** Office Automation	3	0	0	3	40	60	100
24TAU151/ 24HIU151/ 24TEU151/ 24FRU151	**AEC1 :** Language-I (Tamil-I / Hindi-I / English-I, French-I)	3	0	0	2	40	60	100
24ENU151	**AEC2 :** English-I	3	0	0	2	40	60	100
Total		**21**	**0**	**4**	**22**	**320**	**480**	**800**

SEMESTER–II

Course Code	Course Title	Hours / Week				Marks		
		L	T	P	C	CIA	ESE	Total
24ISU201	**Core 3:** Fundamentals of Digital Forensics	3	0	0	3	40	60	100
24ISU211	**Core 3:** Digital Forensics Lab	0	0	4	2	40	60	100
24ISU202	**Core 4**: Basics of Information Security	3	0	0	3	40	60	100
24MAU101	**Minor 2:** Mathematics -II	3	0	0	4	40	60	100
24BOU262	**Multidisciplinary Course 2:**Environmental Studies	3	0	0	3	40	60	100
24CBU241	**SEC 2:** Digital Literacy and Cyber Security	3	0	0	3	40	60	100
24TAU251/ 24HIU251/ 24TEU251/ 24FRU251	**AEC3 :** Language-I (Tamil-I / Hindi-I / English-I, French-I)	3	0	0	2	40	60	100
24ENU251	**AEC4 :** English-I	3	0	0	2	40	60	100
Total		**21**	**0**	**4**	**22**	**320**	**480**	**800**

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SEMESTER – I SYLLABUS

24ISU101	Computer Networks and Troubleshooting	L	T	P	C
		4	1	0	0
Pre- Requisite					
Course Objectives:					

- Impart the basic taxonomy and terminology of the computer networking area.
- Describe how packets in the internet are delivered.
- Have working knowledge of protocols**.**
- Pursue productive careers in computer networking or a related computing field.
- Proficient at solving computer networking problems in the workplace.

Unit I – Physical Layer **10 Hrs**

Network Hardware, Network Software, Reference Models, Data Communication – Transmission Media – Wireless Transmission – Communication Satellites – Digital Modulation and Multiplexing – Public Switched Telephone Network – Mobile Telephone System

Unit II – Data Link Layer **10 Hrs**

Data Link Layer design issues – Error Detection and Correction – Data Link Protocol – Sliding Window Protocols – Multiple Access Protocols – Ethernet – Bluetooth – RFID – Data link Layer Switching

Unit III – Network Layer & Transport Layer **08 Hrs**

Network Layer: Design Issues – Routing Algorithms – Congestion Control Algorithm – Quality Service

Transport Layer: Service – Protocols – Internet Transport Protocols: UDP – TCP

Unit IV – Application Layer **08 Hrs**

DNS – Electronic Mail – World Wide Web – Streaming Audio and Video – Content Delivery

Unit V – Networking Troubleshooting **09 Hrs**

Workstation Trouble Shooting – Windows Server Troubleshooting – SQL Server 2000 Troubleshooting – Exchange Server Troubleshooting – Firewall Troubleshooting – VPN Troubleshooting

Total Hours: 45

Text Books:

1. Alan Sugano, "The Real-World Network Troubleshooting Manual: Tools, Techniques, and Scenarios", Firewall Media, 2010, ISBN: 9788131800140.
2. Andrew S Tanenbaum, "Computer Networks", Prentice Hall PTR, 2003, ISBN: 9780130661029.

Reference Books:

1. Neal Allen, "Network Maintenance and Troubleshooting Guide: Field Tested Solutions for Everyday Problems", 2nd edition, Addison Wesley, 2009, ISBN-13: 978-0321647412.
2. Behrouz A. Forouzan. "Computer Networks", McGraw-Hill Higher Education, 2011, ISBN: 9780073264530.

Useful Websites:

- **https://www.javatpoint.com/link-state-routing-algorithm**

- https://www.tutorialspoint.com/data_communication_computer_network/error_detection_and_correction.htm
- https://www.scaler.com/topics/error-detection-and-correction-in-computer-networks/
- https://www.tutorialspoint.com/what-is-congestion-control-algorithm
- https://www.ibm.com/topics/content-delivery-networks
- https://www.geeksforgeeks.org/what-is-a-content-distribution-network-and-how-does-it-work/
- https://learn.microsoft.com/en-us/troubleshoot/windows-server/welcome-windows-server
- https://hypertecsp.com/knowledge-base/server-troubleshooting-guide/
- https://www.dpstele.com/snmp/troubleshooting/firewall-problems.php
- https://www.algosec.com/blog/firewall-troubleshooting-steps
- https://support.microsoft.com/en-us/windows/automatically-diagnose-and-fix-problems-with-windows-firewall-513e9cf8-19ae-d579-2092-d5e64fe06f5f
- https://learn.microsoft.com/en-us/troubleshoot/sql/database-engine/connect/resolve-connectivity-errors-overview
- https://learn.microsoft.com/en-us/exchange/troubleshoot/exchange-server-welcome
- https://www.linkedin.com/pulse/15-possible-issues-related-exchange-server-outlook-5-steps-decelles
- https://www.skillzcafe.com/blog/microsoft/exchange-server/troubleshooting-common-exchange-server-performance-issues
- https://www.kaspersky.com/resource-center/preemptive-safety/common-vpn-problems
- https://www.ibm.com/docs/en/i/7.3?topic=networking-troubleshooting-vpn
- https://learn.microsoft.com/en-us/troubleshoot/windows-server/networking/troubleshoot-remote-access-vpn-and-aovpn-guidance

Expected Course Outcomes:

At the end of course , the student will be able to

CO1: Describe how computer networks are organized with the concept of layered approach.

CO2: Explain basic concepts of transmission media and digital data transmission.

CO3: Familiarize with the Protocols used at each layer and their role in network design and implementation**.**

CO4: Analyze, design and implement routing and congestion algorithms.

CO5: Troubleshoot software and hardware problems and address them.

24ISU111	Computer Networks and Troubleshooting Lab	L	T	P	C
		0	0	4	2
Pre-requisite					

Course Objectives:

The fundamentals of networking lab will assist a student in gaining first-hand knowledge on:

- Understanding the establishment of different topologies, domain controller and client server architecture
- Configuring switches and Routers
- Monitoring and Analyzing Network Traffic

1. Setting up Network Topologies
2. Network Connections
3. Network Monitoring
4. Network Traffic Analysis
5. Network security and testing firewall configuration up a Local Area.
6. Trouble Shooting Network Connectivity
7. IP Tracing and Network Availability
8. IP subnet addressing – Network & Transport Layers
9. Switch Configuration and connecting.
10. Router Configuration
11. TCP/IP Connectivity
12. Configuring Static and Default Route.

Expected Course Outcomes:

CO1: Implement Network Topologies
CO2: Gain a deeper understanding of Internet protocols.
CO3: Ability to discover, analyze and identify security issues in the network.
CO4: Ability to apply routing algorithm.
CO5: Configure routers, switches, and end devices to provide access to local and remote network resources and to enable end-to-end connectivity between remote devices.

24ISU102	Cyber Criminology	L	T	P	C
		4	1	0	0
Pre- Requisite					

The primary objective of this course is to provide students with a comprehensive understanding of crime, particularly in the context of cyber-crimes, criminal behaviour and criminal justice agencies.

Course Objectives:

- To gain insight into the basics of crime and cyber-crimes.
- To learn about cyber-crimes targeting property, individuals, nations, and organizations.
- To provide students with a basic understanding of criminological theories and their application to cyber-crime.
- To explore profiling techniques, key psychological concepts and theories related to cyber criminals.
- To understand the legal and procedural aspects of cyber-crime investigation

Unit I: Basic Concepts of Crime and Cyber Criminology **9 Hrs**

Definitions – Crime, Elements of Crime, Juvenile delinquency, deviance, Cyber Space, Cyber Crime, Cyber Criminology, Information Security– Conventional Crimes Vs Cyber Crimes- Causes and Extent of Cyber Crimes- Uniqueness and challenges of Cyber crimes- Penetration Testing, Incident Response and GRC.

Unit II: Forms of Cyber Crimes **9 Hrs**

Types of Cyber Crimes – Cyber Crimes Against Property, Person, Nation and Organizations – Phishing, Social engineering, Denial of Service, Distributed Denial of Service, Malwares, Cyber Bullying, Cyber Stalking, Cyber Pornography, Cyber Espionage, Cyber Defamation, Web Defacement, Hacking, Cracking, Cyber Terrorism, Cyber Warfare, Data Theft, Data Diddling, Cyber Vandalism, Insider Threats and IPR related frauds.

Unit III: Theoretical Perspectives of Cyber Crimes **9 Hrs**

Criminological Theories and Cyber Crime – Routine Activity Theory, Social Learning Theory, Differential Association Theory, Differential Opportunity Theory, Social bond theory and Space transition theory.

Unit IV: Psychology of Cyber Criminals **9 Hrs**

Types of Cyber Criminals – Modus Operandi of Cyber Criminals – Profiling of Cyber Criminals- Psychological theories relating to cyber criminals- Concept: Personality, Motivation and Intelligence.

Unit V: Cyber Crime and Criminal Justice Agencies **9 Hrs**

F.I.R. – Charge sheet - Cognizable and Non-cognizable offences– On line complaints- Search of Cyber-crimes and Digital evidence, Cyber Crime Investigation and Collection of digital evidences— Cyber-crime cells – Cyber Appellate Court / Tribunals / Powers – Role of National and International agencies in the prevention of Cyber Crime.

Total Hours: 45

Text Books:

1. Prof. V Paranjape, "Criminology, Penology and Victimology", Central Law Publication, Paperback, 2017
2. Ram Ahuja, "Criminology", Rawat Publication, Reprinted 2015
3. Mohamed Chawki, Ashraf Darwish, Mohammad Ayoub Khan, Sapna Tyagi, "Cybercrime, Digital Forensics and Jurisdiction" Springer; 2015 edition (23 March 2015), ISBN-13**:** 978-3319151496
4. Chuck Eastom, "Computer Crime, Investigation, and the Law", Paperback Edition Delmar Cengage Learning, 2010

Reference Books:

1. Burke, Roger Hopkins, "Introduction to Criminological Theory", Willan Publishing; 4th New edition, 2013
2. Srivastava S S, "Criminology and Criminal Administration", Central Law Agency, New Delhi, Paperback, 2017

Useful Websites:

- **https://cybersecurityventures.com/**
- **International Journal of Cyber Criminology (cybercrimejournal.com)**
- **Cyber Criminology: Evolving a novel discipline with a new journal (researchgate.net)**

Expected Course Outcomes:

At the end of the course, the student will be able to

CO1: Equip with theoretical knowledge to address and manage crime in both conventional and cyber contexts.
CO2: Clearly define different types of cyber-crimes and their characteristics.
CO3: Analyse how these theories explain criminal behavior in various contexts, including cyberspace.
CO4: Learn psychological theories to understand the behavior and motivations of cyber criminals.
CO5: Apply legal knowledge and methodologies for investigating cyber-crimes.

24MAU101	MATHEMATICS-I	L	T	P	C	Total Marks
		3	1	0	4	100

PREREQUISITES: NIL

COURSE OBJECTIVES:

The main objectives of this course are to:

1	To introduce the concepts of approximation values.
2	To learn the basic concepts of matrices.
3	To form algebraic equations finding roots.
4	To gain general knowledge of trigonometry.
5	To train the students to learn basic calculus.

UNIT 1:	NUMERICAL METHODS	12 hrs

Numerical Methods: Operators E,Δ, ∇difference tables - Newton -Raphson method-Newton‟s forward and backward interpolation formulae for equal intervals.

UNIT 2:	MATRICES	12 hrs

Symmetric-Skew-Symmetric-Orthogonal-Hermetian-Skew-Hermetian-Unitary Matrices-Eigen values and Eigen-vectors-Cayley-Hamilton theorem (without proof)-verification.

UNIT 3:	THEORY OF EQUATIONS	12 hrs

Polynomial equations with real coefficients-irrational roots-complex roots-symmetric functions of roots-reciprocal equation-Newton's method to find a root approximately - simple problems.

UNIT 4:	TRIGONOMETRY	12 hrs

Expansions of sin(nθ) and cos(nθ) in a series of powers of sinθ and cosθ - Expansions of $\sin^n\theta$, $\cos^n\theta$, $\tan^n\theta$ in a series of sines, cosines and tangents of multiples of "θ" - Expansions of sinθ, cosθ and tanθ in a series of powers of "θ".

UNIT 5:	DIFFERENTIAL CALCULUS	12 hrs

Successive differentiation-n^{th} derivatives-partial differentiations (simple problems)-Jacobians-maxima and minima of functions of two variables-Lagrange's multipliers - Simple problems.

60 PERIODS

COURSE OUTCOMES:

Upon successful completion of the course, students will be able to:

CO1:	Solve algebraic series and solve equations numerically
CO2:	Get knowledge of matrices to find eigen values and eigen vectors.
CO3:	Find roots of equations.
CO4:	Solve all kinds of trigonometric functions.
CO5:	Get the knowledge of basic differential calculus.

TEXT BOOKS

1.	Allied Mathematics Volume I and II by P. Duraipandian and S. Udayabaskaran, Published by S. Chand-2016 Edition (Reprint)

REFERENCES

1.	S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 2009, Chennai

Course Code:	Course Title:	L T P C
24CAU141	**Office Automation**	**3 0 0 3**

Prerequisites: None

Course Objectives:

1. To understand basics of computer and identify the components of a computer system.
2. To understand and familiarize in I/O and storage devices.
3. To familiarize the students in preparation of documents and presentations with office automation tool.
4. To make aware of Office automation using MS-Office
5. To educate MS-office system, internet operations, online, offline working areas
6. To train them to work on the comment based activities in MS-office system
7. To make the participants to understand various services based on online and offline surfaces

Unit I: **No. of Hours: 09**

Introduction to Computer and Information Technology: History, Computer system concepts- Computer system characteristics- Capabilities and limitations Types of computers- Generations. Computer organization and working: Introduction-The Control UnitALU- Memory-Read only memory (ROM).

Unit II: **No. of Hours: 09**

Input Devices: Introduction- Keyboards-Mouse-Joysticks-Optical Recognition input- Scanners-Bar coders-Digital camera-MICR-Card reader-Web Cameras Light pens-Trackball- Touch screens-Touch pad-Digitizer-Voice input-Voice recognizers. Output Devices: Introduction-Monitors and Displays-Multimedia Projector-Printers-Graphics Output Devices-Plotters-Flatbed Plotters-Drum Plotters. Storage Devices: Introduction- Hard Disk Drives –CD-ROMs and DVDs – Magnetic tape –Erasable disks.

Unit III: **No. of Hours: 09**

Microsoft Office and Word Processing: Introduction to Microsoft Office - Microsoft Word Screen. Microsoft Word: Working with Document in Word – Introduction – saving the file – Formatting, Alignment of text, Applying fonts-Spell checking- Borders and shading – Closing of the file, Editing document, Autocorrect-Auto format-Find and Replace, Page numbering, header and footer- Footnotes and endnotes- splitting panes-Tiling of the documents using mail merge in Word.

Unit IV: **No. of Hours: 09**

Microsoft Office Excel: Understanding Spreadsheets-Creating a Worksheet in Microsoft Excel - Copying formula – Styles –functions in Excel – Using Auto calculate –References –Sum, Average functions. Creating Charts in Excel -Auditing a workbook – Comments Inserting – Function wizard-Goal seeking- Typing with Auto fill- Formatting numbers and Labels – changing the size of Rows and columns- Add or Remove a sheet – Protect a worksheet-Applying themes.

Unit V: **No. of Hours: 09**

Microsoft PowerPoint: Getting Started with PowerPoint - Developing a PowerPoint Presentation - Performing Advanced Text Editing Operations - Adding Graphical Elements to Your Presentation - Modifying Objects in Your Presentation - Adding Tables to Your Presentation - Adding Charts to Your Presentation - Preparing to Deliver Your Presentation.

Text Books

1. COMPUTER ON OFFICE AUTOMATION (Theory Book) Mr. M.Veerapandiyan Second Edition: Jan 2023
2. Computer Basics with Office Automation, January 2019, by Archana Kumar
3. Learning computer fundamentals, MS Office and Internet & Web technology, Dinesh Maidasani, Firewall Media, Third Edition, 2014.

Reference Books:

1. A Beginners Guide to Computers – Alexis Leon & Mathews Leon-Vikas Publishing House Pvt. Ltd., 2001.
2. Fundamentals of Computers, P. Mohan, Himalaya Publishing House, Revised Edition, 2010.
3. Fundamentals of Computers, V. Rajaraman, PHI Publication, Fifth Edition, 2010.

Expected Course Outcomes:

Upon the completion of this course, the students will be able

CO1: Understand about Computer and Information Technology.

CO2: Acquire knowledge on I/O and Storage devices usage and also to acquire knowledge on editor, spreadsheet and presentation software

CO3: Understand and discuss about the use of Office Package in daily life and apply hands on training to the students to create and format documents using MSWord

CO4: Construct charts in MS-Excel and

CO5: Design presentation with efficient slides

Course code	Ability Enhancement Course -1	L	T	P	C
	பொதுத் தமிழ்	3	0	0	2

அலகு - 1 கவிதை இலக்கியம்

அ. நாட்டுப்புற இலக்கியம், மரபுக் கவிதை, புதுக்கவிதை வரலாறுகள்

ஆ. தாலாட்டு பாடல், ஒப்பாரி (பாக்குறது எக்காலம்)

இ. பாரதியார் – பாரத தேசம்(1,5,9,10,12,13)

ஈ. பாரதிதாசன் – தமிழ்க் காதல் (2 பாடல்கள்)

உ. பட்டுக்கோட்டை – செய்யும் தொழிலே தெய்வம்

அலகு - 2 சிற்றிலக்கியம்

அ. சிற்றிலக்கிய வரலாறு

ஆ. நந்திக்கலம்பகம் – (பாட்டுடைத் தலைவன் வீரச்சிறப்பு, மேக விடு தூது, கையறுநிலை)

இ. குற்றாலக் குறவஞ்சி – குறத்தி மலை வளம் கூறுதல் (2 பாடல்கள்)

ஈ. இயேசுபிரான் பிள்ளைத்தமிழ் – (2 பாடல்கள்)

அலகு - 3 சிறுகதை இலக்கியம்

அ. உரைநடை இலக்கிய வரலாறு

ஆ. கு.ப.ராஜகோபாலன் – விடியுமா!

இ. குளத்தங்கரை அரசமரம் – வ.வே.சு

அலகு - 4 நாடகம்

பம்மல் சம்பந்த முதலியார் – சந்திரஹரி

அலகு - 5 மொழிப் பயற்சி

அ. அலுவல் கடிதமும் விண்ணப்பமும்

ஆ. நேர்காணல்

இ. பேச்சுக்கலை

CO NO	COURSE OUTCOME	RBT
CO1	மொழி வழியே கவித்திறனையும், படைப்பாற்றல் திறனையும் வளரத்தல்	K3, K6
CO2	கால மாற்றத்தில் வெவ்வேறு வடிங்களைப் பெறும் இலக்கியங்களை அறிதலும் அவ்வாறு தோன்றிய இலக்கியக் கூறுகளை ஆய்வுசெய்தலும்	K4
CO3	புனைவு இலக்கிய வளர்ச்சியில் சிறுகதையின் பங்கினை விளங்கிகொண்டு அப்படைப்பாற்றல் திறனைப் பயன்படுத்துதல்	K2, K3
CO4	பண்டைய கால நாடக இலக்கியம் இன்றைய தொழில்நுட்பத்தின் மூலம் அடைந்த வளர்ச்சியினை மதிப்பிடுதல் மற்றும் அதில் தனித்திறனை வளரத்தல்	K6
CO5	மொழியின் பயன்பாடுகளையும் இலக்கியத் திறனையும் விளங்க செய்தல்	K5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	-	-	2	-	-	2	-	-
CO2	-	-	-	2	-	-	-	-
CO3	-	2	2	-	-	-	-	-
CO4	-	-	-	-	-	2	-	-
CO5	-	-	-	-	2	-	-	-
AVERAGE	-	2	2	2	2	2	-	-

Since it is mapped with, PO2, PO3, PO4, PO5, PO6, this subject is consider for empolyability

Course Code:	Course Title:	L T P C
24FRU151	French - I	2 0 0 2

Prerequisites: None

Course Objectives:

1. To get a good exposure to the basics of French.
2. The learner will be able to make simple sentences in French as well as articulate using the various parts of speech.
3. Be able to effectively understand and use French grammar and the pronunciation.

Unit - 1. **No. of Hours: 06**

Decouvrir le langue francaise – Discover the French Language.

Unit – 2. **No. of Hours: 06**

Faire Connaissance – Getting to know people and learning to converse.

Unit -3 **No. of Hours: 06**

Organsizer son temps – Articulation of how we are organasing our time.

Unit – 4 **No. of Hours: 06**

Découvrir son environnement – Communication with respect to discovering and explaining one's environment.

Unit – 5 **No. of Hours: 06**

S'informer, se faire plaisir. – Learning and understanding the language with practical usage

Text Books

Campus 1. Methode de Francais. Author Jacky Girardet & Jacques Pecheur

ANNEXURE-II

Course Code: 24ENU151	Ability Enhancement course E1	L	T	P	C
	ENGLISH -I	3	0	0	2

Prerequisites: None

COURSE OBECTIVES:

This course is designed to equip students with a comprehensive understanding of effective communication and interpersonal skills, essential for professional growth.

UNIT – I: Vocabulary: **No.of.Hours:06**

- Synonyms and Antonyms
- One word substitution
- Word Formation (prefixes & suffixes)
- Homonyms, Homophones and Homographs
- Discourse Markers
- Cause & Effect Expressions

UNIT – II: Language and Communication: **No.of.Hours:06**

- Definition of Language
- Importance of Language
- Definition of Communication
- Barriers of Communication
- Importance of Communication
- Principles of Communication

UNIT – III: Communication Strategies: **No.of.Hours:06**

- Verbal Communication
- Tone, Audibility, Fluency
- Types of Verbal Communication
- Non- verbal Communication
- Posture, Gestures, Facial expression, Eye contact
- Advantages and Disadvantages of Verbal and Non-Communication

UNIT – IV: Self-management Skills **No.of.Hours:06**

- Self-awareness and Self-confidence
- Time management
- Stress management
- Perseverance and Resilience

- Mind mapping

UNIT-V: Social skills: **No.of.Hours:06**

- Negotiation & persuasion
- Networking
- Problem solving and Empathy
- Decision making
- Presentation skills
- Leadership skills and Team work
- Social responsibility

Total No.of.Hours: 30

Book Recommended

1. Krishna Mohan & Meera Banerji. *Developing Communication Skills*.Macmillan
2. SasiKumar. V and P.V. Dharmija. 1993. *Spoken English*: A Self-Learning Guide Conversation Practice. 34th reprint. Tata McGraw – Hill. New Delhi.
3. Suresh Kumar, E. & Sreehari, P. *Communicative English*. New Delhi: Orient BlackSwan, 2007.Print.
4. Yardi, V.V *English Conversation for Indian Students*. NewDelhi: Orient BlackSwan, 2002.Print.
5. Chandra, Joseph, Xavier Alphonse, Antony Jeyadoss and Mary Thomas. *Power Communication In English*. Chennai, Loyola Publication, 2003.
6. Cole, Kris. *Crystal clear Communication*. Chennai, East West Books Pvt.Ltd.,2001.
   McKay,Mathew,Martha Davis and Patrick Fanning. *Communication Skills*. New Delhi,B.Jain Pub.(P) Ltd;2003.

COURSE OUTCOMES:

By the end of the course students will be able to:

CO1: develop an enriched vocabulary and recognize the importance of discourse markers in effective communication.

CO2: recognize the barriers that can hinder effective communication and explore methods to overcome them.

CO3: analyze verbal communication and utilize non-verbal cues.

CO4: cultivate perseverance, resilience, and effective mind mapping for problem-solving and goal achievement.

CO5: demonstrate negotiation and persuasion skills for effective communication in various contexts.

SEMESTER – II SYLLABUS

24ISU201	Fundamentals of Digital Forensics	L	T	P	C
		4	1	0	4
Pre-Requisite					

Course Objectives:

- Give an overview of digital forensics, its approaches and best practices.
- Learn to collect forensic evidence and analyse.
- Outline a range of situations where digital forensics may be applicable.
- Explain the role of digital forensics in cybercrime investigations.
- Learn the phases of digital investigation such as preservation, analysis and acquisition of artifacts

Unit I – Introduction **09 Hrs**

Evolution of Digital Forensics – Role of Digital Forensics – Hardware and Software Environments – Properties of Digital Evidence – Digital Forensic Approaches and Best Practices – Ethics and Integrity - Artifacts

Unit II – Digital Evidence **09 Hrs**

Digital Evidence – Locating Digital Evidence – Selecting Digital Evidence – Data Collection – Recovering and Preserving Digital Evidence – Digital Forensic Imaging Tools – Forensic Duplication

Unit III – Analysing Digital Evidence **09 Hrs**

Using Forensic Tools – File signature analysis – Disk and File system analysis – Operating Systems as sources – Examining Browsers, E-mails, Messaging Systems and Mobile Phones – Validating the evidence – Data reduction and Filtering

Unit IV – Forensics Types **09 Hrs**

Network Forensic – E-mail Forensic – Mobile Phone Forensics – Social Media Forensics – Social Engineering Forensics – Cloud Forensics – Anti Forensics

Unit V – Legal Issues **09 Hrs**

Documenting and Reporting - Legal Challenges in Digital Forensic Investigation – Legal Provisions and Landmark Case Laws in India – International Perspective on Electronic Evidence Law – E-Witness - ISO/IEC 27037:2012

Total Hours: 45

Text Books:

1. Richard Boddington, "Practical Digital Forensics: Get Started with the Art and Science of Digital Forensics with this Practical, Hands-on Guide", Packt Publishing, 2016, ISBN-13: 978-1785887109.
2. Greg Gogolin, "Digital Forensics Explained", 2nd edition, CRC Press, 2021, ISBN-13: 978-0367503437.
3. Gagandeep Kaur, Anshika Dhawan, "Laws of Electronic Evidence and Digital Forensics", 1st edition, PHI Learning Pvt. Ltd., 2024, ISBN-13: 978-8119364640.

Reference Books:

1. Nilakshi Jain, Dhananjay R. Kalbande, "Ethical Hacking: Techniques, Tools, and Countermeasures", Jones & Bartlett Learning, 2022, ISBN: 9781284287691.
2. John Sammons, "The Basics of Digital Forensics: The Primer for Getting Started in Digital Forensics", Elsevier, 2012, ISBN: 978-1-59749-661-2.

Useful Websites:

- https://veriato.com/blog/the-evolution-of-digital-forensics/
- https://www.geeksforgeeks.org/digital-evidence-preservation-digital-forensics/
- https://www.cadosecurity.com/wiki/data-recovery-in-digital-forensics-methods-and-tips
- https://www.easeus.com/backup-recovery/forensic-imaging-tool.html
- https://blog.ccasociety.com/forensic-duplication/
- https://www.eccouncil.org/cybersecurity-exchange/computer-forensics/what-is-network-forensics/
- https://www.geeksforgeeks.org/what-is-network-forensics/
- https://www.geeksforgeeks.org/mobile-forensics-definition-uses-and-principles/
- https://defenseforensic.com/10-social-media-forensics-unveiling-the-hidden-truth-in-cyberspace/
- https://www.eccouncil.org/cybersecurity-exchange/computer-forensics/mobile-device-forensics/
- https://legal.thomsonreuters.com/blog/social-media-forensics-in-law-enforcement-investigations/
- https://www.slideshare.net/slideshow/social-media-forensics-176135165/176135165
- https://www.eccouncil.org/cybersecurity-exchange/computer-forensics/what-is-cloud-forensics/
- https://medium.com/@Infosec-Train/what-are-the-challenges-of-cloud-forensics-f2b1d85187db

Expected Course Outcomes:

At the end of course, the student will be able to

CO1: Explain the role and applications of digital forensics in cybercrime investigations and organisational information security management systems.

CO2: Perform evidence identifying, gathering, recovering, preserving and analysing, and the complete the legal proceedings.

CO3: Analyse digital evidence from different sources using appropriate tools, techniques and standards.

CO4: Understanding of the trade-offs and differences between various digital forensic types.

CO5: Articulate ethical, professional, and legal considerations associated with digital forensics practices and their application.

24ISU211	Fundamentals of Digital Forensics Lab	L	T	P	C
		0	0	4	2
Pre-requisite					

Course Objectives:

The fundamentals of networking lab will assist a student in gaining first-hand knowledge on:

- Collecting of forensic evidence for forensic analysis.
- Implement forensic analysis
- Monitoring and Analyzing Network Traffic

1. Installing Open source Forensic Investigation Tools
2. Deleted File Recovery
3. Find the last connected USB on a system
4. View the last activity of a system
5. Extracting Browser Artifacts.
6. Collect Email evidence in victim PC
7. Hiding and Extracting text file behind an Image file and Audio file
8. Make a Disk Image
9. Analyze metadata of a file
10. Image metadata analysis
11. Browser Forensics
12. Detect data hiding and unauthorized file copying

Expected Course Outcomes:

CO1: Understand the working of different forensic tools used for forensic investigation.
CO2: Recover deleted files.
CO3: Collect forensic evidence from victim PC.
CO4: Perform image and browser analysis.
CO5: Demonstrate competence in applying industry-standard forensic analysis techniques.

24ISU202	Basics of Information Security	L	T	P	C
		4	1	0	4
Pre- Requisite					

Course Objectives:

- Understand information security threats and countermeasures.
- Understands access control system, authentication system and risk management.
- Learns security policies and standards.
- Describe some tools to secure networks, such as honeypots, VPN, and Firewalls.
- Explain information security life cycle and security maintenance models.

Unit I – Introduction 10 Hrs

History of Information security – CNSS Security model – Components of an Information system – Balancing information security and access – Approaches to Information security implementation – Security in the System Development Life Cycle – Security Professional and the organization – Threats and attacks –Information Extortion –Software attacks – Technical hardware failures – Technical software failures

Unit II – Information Security Management 09 Hrs

Information security planning and governance – Information security policy, standards and practices – Information security blueprint – Information security education, training and awareness – Continuity strategies – Overview of Risk management – Risk identification and assessment – Risk control – Risk control practices

Unit III – Information Security controls 09 Hrs

Physical Security control – Operations security – Access controls system – Telecommunications, Network and Internet security – Application Development Security – Managing Information Security – Control Frameworks

Unit IV – Security Technology and Tools 09 Hrs

Firewall systems – Firewall architecture – VPN – Intrusion detection and prevention systems – Honeypots, Honeynets and Padded cell systems – Scanning and analysis tools – Information and Cyber security Management – Security Policies and Managing

Unit V – Implementing and Maintenance 08 Hrs

Information Security Life Cycle – Security Development Guidelines - Information Security project management – Technical aspects of implementation – Nontechnical aspects of implementation – Security Maintenance models – Security solutions

Total Hours: 45

Text Books:

1. Michael E. Whitman, Herbert J. Mattord, Principles of Information Security 6th edition, Cengage Learning, 2017, ISBN 13: 978-1337102063.
2. Bel G. Raggad, Information Security Management: Concepts and Practice 1st edition, CRC Press, 2010, ISBN-13: 978-1420078541.

Reference Books:

1. Michael Workman, "Information Security Management", Jones & Bratlett Learning, 2021, ISBN: 9781284211658.
2. Heru Susanto, Mohammad Nabil Almunawar . "Information Security Management Systems: A Novel Framework and Software as a Tool for Compliance with Information Security Standard", 1st edition, Apple Academic Press, 2018, ISBN-13 : 978-1771885775.

Useful Websites:

https://www.kiteworks.com/secure-file-transfer/security-governance/
https://www.upguard.com/blog/information-security-policy
https://www.exabeam.com/explainers/information-security/the-12-elements-of-an-information-security-policy/
https://www.scribd.com/document/689387285/CNSS-Security-Model-Cont-Most-Challenging-to-Protect
https://medium.com/@kashafrafique5/demystifying-cybersecurity-and-information-security-exploring-the-cnss-security-model-and-more-44420e2667f3
https://www.geeksforgeeks.org/what-is-honeypot/
https://www.slideshare.net/slideshow/lesson-3-250240282/250240282

Expected Course Outcomes:

At the end of course , the student will be able to

CO1: Identify and prioritize threats, attacks and failures associated with information assets.
CO2: Design and implement risk management procedures.
CO3: Design and implement security controls to secure information from cyber-attacks.
CO4: Understand technologies and tools used in building security in information system.
CO5: Design solutions for information security**.**

24MAU201	MATHEMATICS-II	L	T	P	C	Total s
		4	0	0	4	100

PREREQUISITES: NIL

COURSE OBJECTIVES:

The main objectives of this course are to:

1	To learn the basic concepts of Integrations.
2	To train the students in Differential equations.
3	Concepts of Laplace Transforms is also introduced.
4	To Understand Partial Differential Equations.
5	To Learn Laplace transformations.

UNIT 1:	**INTEGRAL CALCULUS**	**12**

Bernoulli's formula. Reduction formulae - $\int_0^{\frac{\pi}{2}} sin^n x dx$, $\int_0^{\frac{\pi}{2}} cos^n x dx$, $\int_0^{\frac{\pi}{2}} sin^m x cos^n x dx$

(m, n being positive integers).

UNIT 2:	**FOURIER SERIES**	**12**

Fourier series for functions in (0,2π) and (0, 2l)- Half range sine and cosine series in (0, π) .

UNIT 3:	**DIFFERENTIAL EQUATIONS**	**12**

Ordinary Differential Equations: Second order non- homogeneous differential equations with constant coefficients of the form ay"+by'+cy=X where X is of the form $e^{\alpha x} sin\beta x$ and $e^{\alpha x} cos\beta x$.

UNIT 4:	**PARTIAL DIFFERENTIAL EQUATIONS**	**12**

Formation, complete integrals and general integrals-four standard types and solving Lagrange's linear equation P p +Q q=R

UNIT 5:	**LAPLACE TRANSFORMS**	**12**

Laplace transformations of standard functions and simple properties- inverse Laplace transforms-Application to solution of linear differential equations up to 2nd order- simple problems.

60 PERIODS

COURSE OUTCOMES:

Upon successful completion of the course, students will be able to:

CO1:	Solve all type of integrals.
CO2:	Acquire the knowledge of Fourier series.
CO3:	Get the knowledge to solve ordinary differential equations.
CO4:	Get the knowledge to solve partial differential equations.
CO5:	Acquire the knowledge of Laplace transformations.

TEXT BOOKS

1.	Allied Mathematics Volume I and II by P. Duraipandian and S. Udayabaskaran, Published by S. Chand-2016 Edition (Reprint)
2.	Dr. A.Singaravelu-Allied Mathematics, Published by Meenakshi Agency 2017

REFERENCES

1.	S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 2009, Chennai

		L	T	P	C
24CBU241	**Digital Literacy and cyber Security**	**3**	**0**	**0**	**3**

Learning Objective:

The Learning Objectives of this course are as follows:

- Understand the digital world and need for digital literacy.
- Create awareness about Digital India.
- Explore, communicate and collaborate in cyberspace.
- Building awareness on cyber safety and security.

Unit –I Digital inclusion and Digital Literacy

Needs and challenges – vision of digital India : Digi locker, E-Hospitals, e- path Shala, BHIM, e- Kranti- Electronic Delivery of services),e-Health Campaigns- Public utility portals of Government of india such as RTI, Health, Finance , Income Tax filling, Education.

Unit – II Communication and Collaboration in the Cyberspace

Electronic communication : Electronic mail, Blogs, social media, Collaborative Digital platforms, Tools/platforms for online learning- Collaboration using file sharing ,messaging , video conferencing.

Unit – III Towards Safe and secure Cyberspace

Online security and privacy – Threats in the digital world: Data breach and Cyber Attacks – Block chain Technology – Security Initiatives by the Govt. of India.

Unit- IV Ethical Issues in Digital World

Netiquettes – Ethics in digital communication – Ethics in Cyberspace – case study on Ethical hacking.

Unit – V Case Study

Spread digital literacy/awareness amongst the vulnerable groups and marginalised sections of the society like street vendors, domestic help- project digital services in the areas such as education, health , planning, framing cyber security, and justice, e-Kranti.

Text Books:

1. Rodney Joones and Chrisoph Hafner. "Understanding Digital Literacies : A Practical Introduction ".Routledge Books, 2nd edition , 2021.

Reference Books:

1. David Sutton. "cyber security : A practitioner's guide ", BCS Learning & Development Limited , UK 2017.

Links:

http://www.digitalindia.gov.in
http://www.digilocker.gov.in
http://www.cybercrime.gov.in
http://www.cybersafeindia.in
http://www.meity.gov.in/cyber-surashit-bharat -programme

Learning Outcome:

CO1: Use ICT and digital services in daily life.
CO2: Develop skills to communicate and collaborate in cyberspace using social platforms, teaching /learning tools.
CO3: Understand the significance of security and privacy in the digital world.
CO4: Evaluate ethical issues in the cyber world.

Course code	Ability Enhancement Course -3	L	T	P	C
	பொதுத் தமிழ்	3	0	0	2

அலகு – 1 செவ்வியல் இலக்கியம்

அ. தமிழ்ச் செவ்விலக்கிய வரலாறு (41 நூல்கள் அறிமுகம்)

ஆ. புறநானூறு – கபிலர் பாடல்கள் (8,105,106)

இ. முத்தொள்ளாயிரம்

அலகு - 2 அற இலக்கியம்

அ. அற இலக்கிய வரலாறு

ஆ. திருக்குறள் – நட்பு, உழவு

இ. நாலடியார் – கல்வி

ஈ. இனியவை நாற்பது – (1,2,9,16,28)

அலகு - 3 காப்பியம்

அ. தமிழ்க் காப்பியம் இலக்கிய வரலாறு

ஆ. சிலப்பதிகாரம் – வழக்குரைக் காதை

இ. பெரியபுராணம் – கண்ணப்ப நாயனார் புராணம்

ஈ. மணிமேகலை – மலர்வனம் புக்க காதை

அலகு - 4 சமயக் காப்பியம்

அ. இஸ்லாம் , கிறிஸ்துவ இலக்கிய வரலாறு

ஆ. சீறாப்புராணம் – மானுக்கு பிணை நின்ற படலம்

இ. தேம்பாவணி – வளன் சனித்தப் படலம்

அலகு - 5 மொழிப் பயிற்சி

அ.சந்திப் பிழை நீக்குதல்

ஆ மதிப்புரை எழுதுதல்

இ.மொழி பெயர்ப்பு

CO NO	COURSE OUTCOME	RBT
CO1	செவ்வியல் தமிழ் இலக்கியங்களை அறிந்து போற்றுதல்	K2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	-	2	-	-	-	-	-	-
CO2	-	-	-	-	-	2	-	-
CO3	-	-	-	-	2	-	-	-
CO4	-	2	-	-	-	-	-	-
CO5	-	-	2	-	-	-	-	-
AVERAGE	-	2	2	-	2	2	-	-

Since it is mapped with, PO2, PO3, PO5, PO6, this subject is consider for Skill development

Course Code:	Course Title:	L T P C
24FRU251	French - II	2 0 0 2

Prerequisites: None

Course Objectives:

1. To understand the intermediate concepts of French.
2. The learner will be able to make slightly more complex sentences in French as well as articulate using the various parts of speech.
3. Be able to effectively understand and use French grammar and the pronunciation.

Unit - 1. **No. of Hours: 06**

Emphasis on grammar building the awareness in using correct sentences. Conjugation of verbs. (er, ir, re – verbs). Adjectives.

Unit – 2. **No. of Hours: 06**

Improving the vocabulary. Proposing, accepting or denying a proposal. Verbs – To speak, To go, To come, To learn, to play, to work, to write, to take - for both writing and speaking and expressing day to day activities with these verbs.

Unit -3 **No. of Hours: 06**

Demonstrative pronom, Adverbial pronom, Les pronoms relatifs (qui, que)-Parler du passé - Compréhension/ production écrite- - Épreuves Usage of Pourquoi and Parce que.

Unit – 4 **No. of Hours: 06**

Conversion of verbs to noun and vice versa. Usage of Depuis and ilya. Mon, ton. Son, votre… Usage of Pronom Complement direct and Indirect

Unit – 5 **No. of Hours: 06**

Subjonctifs, Pronominaux verbs, Futur proche, Interrogative adjectifs, Compréhension/ production écrite-Épreuves

Text Books

Campus 1. Methode de Francais. Author Jacky Girardet & Jacques Pecheur

- Telephonic conversation
- Formal and Informal Conversation
- Interviews for Placement - Mock Interviews Job/Internship application–Cover letter& Resume
- Group Discussions and Debates

Total No.of.Hours: 30

Book Recommended

1. Krishna Mohan & Meera Banerji. *Developing Communication Skills*.Macmillan
2. SasiKumar. V and P.V. Dharmija. 1993. *Spoken English*: A Self-Learning Guide Conversation Practice. 34th reprint. Tata McGraw – Hill. New Delhi.
3. Suresh Kumar, E. & Sreehari, P. *Communicative English*. New Delhi: Orient BlackSwan, 2007.Print.
4. Yardi, V.V *English Conversation for Indian Students*. NewDelhi: Orient BlackSwan, 2002.Print.
5. Chandra, Joseph, Xavier Alphonse, Antony Jeyadoss and Mary Thomas. *Power Communication In English*. Chennai, Loyola Publication, 2003.
6. Cole, Kris. *Crystal clear Communication*. Chennai, East West Books Pvt.Ltd.,2001.
7. McKay,Mathew,Martha Davis and Patrick Fanning. *Communication Skills*. New Delhi,B.Jain Pub.(P) Ltd;2003.

COURSE OUTCOMES:

By the end of the course students will be able to:

CO1: understand the sequential process of listening & its impact and identify various types of listening.

CO2: demonstrate effective public speaking skills, utilizing appropriate body language, tone, and content.

CO3: understand the process of reading by engaging with diverse reading materials.

CO4: comprehend the writing process, construct coherent and focused paragraphs and develop efficient note-taking and note-making techniques.

CO5: engage effectively in group discussions and debates to excel in interviews.