Revised CBCS Syllabus

of

M.Sc (Mass Communication in Science and Technology)

The syllabus of M.Sc. in Mass Communication in Science & Technology has been revised in the light of suggestions/requirement of Choice Based Credit System (CBCS).The course was already having 4 semesters of 6 monthsduration , each having 4 units in each paper. Now there will be 4 major elective theory paper and a practical/project work (each paper of 4 credit i.e. total 20 credits) in each semester. Besides these, there will be 4 minor elective (of 3 credits each) with 1 minor elective in each semester i.e. total 12 credits. Total degree will be of 92 credits and each semester will be of 23 credits. The details of the CBCS based revised syllabus are given below:

Papers	Credits
Semester I	
1.1- Science and Technology Communication.	4
1.2- Computer Applications in Mass Communication.	4
1.3- Principle of Mass Communication.	4
1.4- Corporate Communications	4
1.5- EP - Science Journalism	3
1.6- Practical and Project Work	4
Semester II	
2.1- Media Technology	4
2.2- Information Technology	4
2.3- Technical Writing	4
2.4- Digital Media Communication	4
2.5- EP- Health Communication	3
2.6- Practical and Project work	4
Semester III	
3.1- Social Media Communication	4
3.2- Media laws and Ethics	4
3.3- Development Communication	4
3.4- Science Film Production	4
3.5- EP- Training in Scientific Institutions (Internship)	3
3.6- Practical and Project work	4
Semester IV	
4.1- Animation and Graphics	4
4.2- Research Methodology	4
4.3- Global Communication	4
4.4- Audio & Video Editing	4
4.5- EP- Foreign Language (French)	3
4.6- Research Project and Dissertations.	4

Semester I

1.1 Science and Technology Communication

Course Objectives

- To understand the role of science and technology in society and the interplay
- To understand the necessity of science communication
- To understand the evolution of science communication

Unit I
Introduction to Science &Technology and Society
Introduction to broad, research-based, critical understanding of the study broadly known as 'Science and Technology Studies' Technology awareness. Technology demonstration. Innovative Communication of Technology, Communication tools and techniques

Unit II
Science Communication
History of Science communication. Fundamentals of Science communication. Entrepreneurship in Science communication. The role of communication in science, importance of IT in communication, introduction to popular science communication in the broader contexts of (a) the role of communication in science.

Unit- III
The cultural, practical and policy-related role of science communication in wider society; providing intellectual resources for constructive critical analysis of popular science communication in a variety of real-world settings; cultivation of practical communication skills, with particular emphasis on effective speaking, writing and exhibiting on scientific and science-related topics to a variety of audiences; providing students with a range of resources and skills for effective communication of complex material, along with the opportunity to undertake a substantial practical project in either science writing or science exhibiting.

Unit- IV
Growing Up in a Media World. Adaptive Learning: Investigations and Exercises, Multi-Modal Learning Analytics, Design and Development of Technology-Enhanced Assessments, Innovation Management, Innovation by Design: Projects in Educational Technology, Formative Evaluation for Educational Product Development, Connected Teaching in the Digital Age.

Unit- V
Designing for Learning by Creating, Universal Design for Learning, Transforming Education through Emerging Technologies, Entrepreneurship in the Educational Marketplace, Advancing the Public Understanding of Education, Motivation and Learning: Technologies That Invite and Immerse, RF Circuits Design and CAD, Advanced Communication Systems, Software Tools and Simulation. Technology, awareness. Technology demonstration, Innovative Communication of Technology, Communication tools and techniques.

Course Outcomes

At the completion of the course the student will be able to demonstrate an understanding

- of the role of science and technology in society and the interplay
- of necessity and evolution of science communication

1.2- Computer Applications in Mass Communication

Course Objectives

- To understand the structure and operation of a basic computer system
- To understand the utilization of essential softwares
- To understand the utilization of internet

Unit-I
Computer Fundamentals:
Brief history of computer, Familiarization of Hardware and Software. Basic working of computer.

Unit II
Characteristic of different types of software, and operating systems, concept of interpreter and compilers.Definition. Generation and basic, components of computer.Input/output, devices, memory and other peripherals.
Introduction to operating systems (Windows 7 to 10), Function and features of Operating System (Accessories control panel. desktop. endow explorer). office Automation tools: Ms Word.

Unit-III
Office automation tools. M.S Excel & M.S point. Introduction to internet, Brief history & services of internet (Email, Video conferencing. Internet, Telephony. Chatting, Blogs, Use net), Internet protocols (FTP, HTTP. TCP/IP). Websites. Protocols & search engine: online news paper/channels/magazines.Advantages and threats in internet communication.

Unit IV
Graphical User Interface(GUI): Introduction of Ms. Windows, websites.Management Exposure to MS Word under MSoffice Exposure to MS Excel under MS Office.

Unit- V
Introduction to editing & production software: Photoshop, Quark, page Marker. coral draw. (Details about their introduction and application) and

Course Outcomes

At the completion of the course the student will be able to demonstrate to understand and utilize

- a basic computer system
- essential software
- and internet

1.3- Principle of Mass Communication

Course Objectives

- To understand the scope of human communication
- To understand the levels of communication
- To understand media system and theories
- To understanding influencing factors on media

Unit-I

Nature and scope of human communication, factions of Communication, Verbal and non verbal language, met language and paralanguage, purposive communication in social situation, communication as a process and semiotic. Communication models, linear and non linear action models, interaction models, transactional and convergence model.

Unit-II

Levels of communication- inters personal, interpersonal, group communication and mass communication. Barriers of Mass Communication, physical, psychological, technical barriers, limitations of receiver. Function of mass communication.

Unit-III

Major factions, surveillance, correlation and transmission of social heritage, entertainment and persuasion. Related functions- play fall time, talk about, reality ritual, status symbol, fulfillment of psychological need, Characteristics of audience. Media system and theories-authoritarian, libertarian, socialistic, social responsibility, development, participatory. Indian situation, Freedom and restraint, responsibly free press. Media control in India, government advertisers, social groups.

Unit-IV

Objects of mass communication- to teach, to please to propose.Media culture, market driven media content, ethical aspects. Factors influencing media performance Internal factors- control and policy, stability ethics, personal, circulation.

Unit-V

External factors-audience, media government relationship, pressure of groups and source.Issue of media monopoly, cross media ownership.Freedom of expression in theory and practice in India.

Course Outcomes

At the completion of the course the student will be able to demonstrate an understanding

- of human communication, various levels of communication
- of media system and theories
- and analyze the influencing factors on media and the degree of their influence

1.4- Corporate Communications

Course Objectives

- To understand corporate communication, its need, strategies and management
- To understand various targeted corporate communication
- To understanding influencing factors on media

Unit I

Corporate Communication is to use communication as a strategic instrument for achieving organizational objectives and values. The main focus areas are the development, coordination, implementation and effects of organizations,

Unit- II

Communication strategies and communication management targeted at internal and external groups of stakeholders. Group Communication, Press release, Media communication

Unit III

Corporate branding, communication strategies, planning and management. Corporate communication covers communication targeting the media (public relations), government (public affairs), investors (investor relations), the labour market (labour market communication) and employees (internal communication).

Unit- IV

Organizations owning media channels as well as the interaction with journalism to create a media image. Need of Corporate communication in crisis communication, external communication and internal communications. Processes of changing scenario of Institute or Organization.

Unit- V

Case studies of corporate Communication, Event Management, Business Communication, Corporate Advertising and Welfare agencies

Course Outcomes

At the completion of the course the student will be able to demonstrate

- an understanding of corporate communications, needs and strategies
- the skill to analyze, and apply need based communication strategies in the corporate world

1.5- Elective Paper - Science Journalism

Course Objectives

- To understand the evolution of science journalism
- To understand the need for science journalism
- To be equipped with tools for science journalism

Unit- I

Introduction to science journalism, Historical and present perspective, understanding science, fundamentals of science journalism, analysis of work done by some notable science journalists, understanding your role of as science journalists, importance of science journalism.

Unit- II

Science Journalism and Mass Media, Role of various forms of mass media in science journalism, Print Media, Audio/Visual Media, Folk Media, Interactive Media, Digital Media, Business writing, Brochures, Technical Brochures.

Unit-III

Scientific WritingTrends in science writing/ reporting, reporting and researching techniques, finding expert sources, interviewing and working with archives, developing beats and conducting quantitative analyses, techniques of scientific writing, technology tools, multimedia and digital publications for science writers, contemporary science writing: creative and professional forms, science narratives writing

Unit- IV

Thesis and Careers in Science Writing, Independent Study in Science Writing, Role of Social media in Science Journalism and Outreach, Ethics and neutrality in Science Journalism

Unit- V

Modern Trends in reporting, Sting operation, Impact of electronic media on print reporting, Interview: Types, conducting interview, Techniques, Framing questions.

Course Outcomes

At the completion of the course the student will be able to demonstrate

- and communicate the evolution of science journalism
- the skills to write need based employability gaining scientific articles in media

1.6- Practical/Project work

Will be mainly based on papers 1.1- 1.5.

Semester II

2.1- Media Technology

Course Objectives

* To understand technological advancements in communications
* To understand the use of these technological advancements

Unit- I

Radio Technology: The process of radio broadcasting .Radio Transmission, FM and AM radio, Radio band and frequencies, Satellite and Web radio

Unit II - Television Technology:

Satellite and terrestrial television transmission, Different transmission channels, How does a TV function? TV standards: NTSC, PAL, and SECAM, Interactive TV and HDTV

Unit- III - Cable Technology:

Origin and growth of cable industry, Major Players of cable industry, Direct to Home system, Set top box

Unit- IV – Web Technology:

Concept of web TV, Concept of web radio, Concept of www, HTTP Protocol, web browser and web servers Sound file format. AIFF,MIDI,MP3, MP4 and ASF

Unit V – Basis Equipments for Audio Video broadcasting:

Linear and Non Linear Editing, Vision mixer and recording etc.

Course outcomes

At the completion of the course the student will be able to demonstrate

* an understanding of various media used for communication
* the application of these media techniques for effective communication

2.2- Information Technology

Course Objectives

- To understand the various aspects of information technology
- To understand the applications of information technology

Unit 1
Introduction of IT, Introduction of ICT

Unit- II
Artificial Intelligence

Unit- III
Robotics Technology

Unit- IV
Digital Broadcast Communication, 4G and 5G Wireless Transmission

Unit–V
Cloud Computing, Data verification, Funding Techniques

Course outcomes

At the completion of the course the student will be able to

- Analyze the need for situation based requirement for information technology
- Skillfully apply requisite technology

2.3- Technical Writing

Course Objectives

- To understand effective writing
- To understand structure of various scientific manuscripts

Unit-I
Introduction; principles of effective writing.Overview, principles of effective writing. About cut the clutter. Giving emphasis on writing with strong, active verbs.How to write in the active voice; evade turning verbs into nouns; selecting strong verbs; and get to the main verb of a sentence quickly.

Unit- II
How to vary sentence structure and write high impact paragraphs. Practising use of the dash, colon, semi-colon, and parentheses, as well as writing well-organized and concise paragraphs.

Unit-III
Tips for making the writing process easier, more efficient, and more organized. The sections of a scientific manuscript.Formatting tables and figures, and how to write results.

Unit-IV
Methods, introduction, and discussion sections.Discussing the peer review process, as well as ethical issues in scientific publishing. Abstain from plagiarism, determine authorship, submit a paper, write a peer review, and avoid predatory journals. Types of writing beyond original research manuscripts.

Unit- V
How to write review papers, grants, letters of recommendation, and personal essays. Try to communication with broader audiences. How work with the media, be interviewed, conduct an interview, and write about science for general audiences.

Course outcomes

At the completion of the course the student will be able to demonstrate

- Effective writing abilities
- Skill in producing scientific manuscripts of different kinds.

2.4- Digital Media Communication

Course Objectives

- To understand digital media and its need
- To understand the creation of digital content
- To understand digital ethics

Unit- I
Meaning, Concept and Definitions of Digital Media. Need and scopes of digital Communication, History and growth of digital communication

Unit- II –How create
Digital Newspaper, Digital TV, digital content Digital data, digital magazine, digital radioNews Portals etc.

Unit- III- Digital Technology
Data transmission, Transmission and Recover, Analog to digital

Unit- III - Digital India
IT in a Liberalized in India. Government 1.0 to 3.0. E- Governance and govern mentality, Intellectual Property Conundrums and the state in the era of the digital

Unit- IV- Digital Software
Public sector software in India, Private sector software and others sector, Contested Information technology

Unit- V – Digital Ethics
Printing the picture: Media, ethical codes and the internet age, Society wide ethical dilemmas for online media professionals. Journalistic ethical dilemmas for online media professionals

Course outcomes

At the completion of the course the student will be able to demonstrate

- an understanding of digital media
- ability to create digital media content
- ability to apply digital media content for effective communication

2.5- EP- Health Communication

Course Objectives

- To understand the need for health awareness
- To understand health care organizations and their setup
- To understand how to achieve effective communication of health awareness.

Unit- I- Health Awareness
Concept, meaning and definitions of Health. Importance of Health and Parameter of fitness. Signs of illness,

Unit-II- Issues of health Communication
Disease, Communicative disease and non communicative disease, genetic and non genetic disease. Virus disease: COVID-19.Ebola, Flu and others types of disease, virus, symptoms, Infections etc.

Unit-III- Public health communication
The study health, Values Health, The role of doctors for communication, Health communication importance, Health Campaigns, Community-based Participatory Research. Patient Perspectives. Health communication campaign: print, webpage, video, education, edutainment, documentary, play/skit or other campaign.

Unit- IV – Health care Organizations in India.
Government and non government Organizations, ICMR etc. Medical colleges, Medical universities and Institutes. Organizations. Nursing home, private clinic and Practice. Life saving equipments for doctors, patent and other equipments.

Unit- V – World Health Organization.
WHO in abroad for public health.Health Programs, strategy, data collection and analysis. Emergency.

Course outcomes

At the completion of the course the student will be able to demonstrate

- understanding and analytical skills of health issues and their lack of awareness
- apply communication effectively to convey awareness about health care systems and health issues.

2.6- Practical and Project work

Will be based on the paper 2.1- 2.5..

Semester-III

3.1- Social Media Communication

Course Objectives

- To understand kinds of social media
- To understand impact and future of social media
- To understand ethical use and pitfalls of social media

Unit- I
Digital Communication Technology. Social Media: Background & History, Social Media Literacy: Communicating appropriately and responsibly.

Unit- II
Impact of Internet on Society, Stakeholders of Social Media, Identifying and Exploring Social Media. Online Tools for Social Media Communication, Social Media Policies and Management.

Unit- III
Direct Communication with the audience, Search Engines and Mobile Media, Collaboration, Community and Communication. Long term sustenance of audience.

Unit-IV
Social Media and Analytics: Measuring the Impact, Security and Privacy, Case studies of popular social media sites involved in Science Communication and Information Dissemination.

Unit- V
The future of Social Media. Tweeter, Face book. Whatsapp. Snap chats etc.

Course outcomes

At the completion of the course the student will be able to

- Understand social media types
- Analyze benefits and drawbacks of social media
- Assess and predict social media trends

3.2- Media laws and Ethics

Course Objectives

- To understand media regulations
- To understand ethical issues related to media creation and usage

Unit- I
History of Press India, British rule (Press), Bengal Gazette, Rule of Indian Press during freedom struggle, Vernacular press in India, early Press Laws.

Unit II
Constitution of India and Press Laws: Freedom of expressions. Contempt of Court 1971: Civil and criminal laws and definitions. Provisions of declaring emergency and their effects on Media. Right to Information Act 2005.

Unit- III
Indian penal Code 1860 (section 93.153AB,292,293.). Criminal procedure code 1973(Section 93,95,96,108,144,196and 327), Intellectual Property rights. Copy Right Act 1957.

Unit- IV
Prasar Bharti Act 1990, Cable TV. Network regulation Act1995. Cinematography Act 1952. Information Technology Act 2000

Unit- V
Press Commissions, Press Council of India. Working Journalist Act 1995. Ethics for Private Channels and FM RadioBroadcasting Editor association Ethics.

Course outcomes

At the completion of the course the student will be able to demonstrate

- An understanding of rules and regulations related to media content creation and communication
- Communicate and apply media ethics

3.3- Development Communication

Course Objectives

- To understand means of developing effective scientific communication tools

Unit- I
Building up a favorable climate for the development and application of science and technology. Science and technology education in the perspective of development needs.

Unit- II
Issues of relevance.Development of content, methods and materials for science and technology education.Endogenous development of science and technology education.

Unit III
Issues, objectives, areas and methods. The Vienna Programme of Action on Science and Technology for Development. Exchange of information. Indigenous system of science, media and environmental protection , Indian ancient scientific system, indigenous approach of science and technology development and school of learning.

Unit- IV
Digital communication. social network, virtual communication. participatory culture,
Social construction of scientific knowledge and of technology: A global perspective on embedding ethics in Science & Technology Policy, Policy Making and Policy Analysis: Science, Institutions and Power; Science

Unit- V
Role of Science & Technology in development communication. Role of DST CSTUP, CSIR. ICMR and ISRO in Developing country.

Course outcomes

At the completion of the course the student will be able to demonstrate

- An understanding of the developmental processes involved in creation of scientific content.

3.4- Science Film Production

Course Objectives

- To practically train students to be able to produce science films

This course will teach production techniques used by professional science and natural history film makers. This course is about the logistical, financial and managerial methodologies of documentary filmmaking. This course examines models of non-fiction writing and explores elements such as acts, character, emotional arcs, turning points, emotional emphasis and information imperatives. This course will examine the unique post-production requirements for contemporary documentary film and video. This production course explores the creation of non-linear documentary media.

Course outcomes

At the completion of the course the student will be able to

- Conceive, and produce a films

3.5- EP- Training in Scientific Institutions (Internship)

3.6 - Practical/Project work: will be based on the paper 3.1, 3.2, 3.3, 3.4 and 3.5..

Semester- IV

Course Objectives

- To understand animation types and methods
- To understand role of animation in communications

4.1- Animation and Graphics

Unit- I
Animation: What is animation? Types of animation, classification-film and television animation. Concept of 2-D and 3-D ANIMATION.Introduction to flash interface, 3-D max feature and facilities.

Unit-II
Overview of digital editing and motion graphics. visual effects. script writing and modeling.

Unit-III
Dynamics of Communication of science through . 2D Animations, 3D Animations, Sound Designing. Basic Photography. Photography (Adobe Light Room), Advanced Photography.

Unit- IV
Info graphics. Printing and Production Methods, Design Signs & Symbol, Design Corporate Identity Design, Digital Methods - VFX & Motion Graphics. Information Design

Unit- V
Communication for Social Impact.Media Planning & Strategies.Science and science cartoons, science communication through visuals and latest technology, sciencetoons.

Course outcomes

At the completion of the course the student will be able to demonstrate

- Understanding of animation types and their application
- Applied skills of using animation for effective communications

4.2- Research Methodology

Course Objectives

- To understand research methodologies for enabling effective scientific understanding and thus scientific communication

Unit- I
Meaning and Objective of Researcher, Steps in Research: Identification, Selection and formulation of research topic, Review of literature, Hypothesis: meaning, characteristics and importance of hypothesis.

Unit-II
Research Problems in formulating hypothesis, testing of hypothesis, Sampling techniques: Sampling theory-Types of sampling-Steps in sampling, sampling and Non-sampling error-sample size, Advantages and limitations of sampling

Unit- III
Research modeling: Types of Models, Model building and stages, Data consideration and testing, Heuristic and Simulation modeling. Data for research: Primary data-meaning-collection methods. Observation: Interview-Questionnaire. Schedule -Pre-test-Pilot study– Experimental and case studies-
Secondary data- Meaning Relevance, limitations and cautions.Processing Data: Checking- Editing- Coding- transcriptions and Tabulation- Data analysis-Meaning and methods- Quantitative and Qualitative analysis.

Unit-IV
Statistics in Research: Specific applications of measures of Central tendency, Dispersion. Skewness and Kurtosis in research. Measures of Relationship: Correlation – Simple, Partial and multiple-Regression-Simple and multiple-Association of Attributes – applications in research.

Unit- V
Hypothesis Testing and estimation. Standard error point, and interval estimates-Important non-parametric tests. Parametric Tests: Testing of significance mean, proportion, variance and correlation-Testing for significance of difference between means, proportions, variances and correlation coefficients. ANOVA and Chi-Square Tests.

Course outcomes

At the completion of the course the student will be able to demonstrate

- Skill in understanding and explanation of research methodologies and their effective communication

4.3- Global Communication

Course Objectives

- To understand global communication
- To understand flow of information globally

Unit-I
Introduction to the Study of Global Communication. Defining Global Communication, Views: Media Flows and Tran nationalization.

Unit- II
Controlling Communications; Organizations and Regulations: Dependence and Sovereignty: India and World.

Unit-III
Global Networks and Flows: India and the World. Corporations and Conglomerations. Developing Media Flow. Alternative Media Systems. Democratic and Community communication.

Unit-IV
Ethnic, Minority, and Special-Interest of communication. UN (UNESCO, UNDIP, UNICEF) efforts for education. science. culture and indispensible prerequisite for sustainable development through communication.

Unit-V
World Bank efforts for communicating with countries to end the extreme poverty, which promote shared prosperity and support, shared global development agenda.

Course outcomes

At the completion of the course the student will be able to demonstrate

- Understanding of global networks
- Ability to harness these global networks effectively

4.4- Audio & video Editing

Course Objectives

- To train the students in basics of audio and video editing

Unit I
Concept of audio editing. Analog and digital soundThree dimensional sound and surround sound

Unit II
Mobile recorded editing, Adobe edition and cool editing etc.

Unit III
Video Editing. Grammar of visual editing. Editing equipment, Linier video editing, Non Linier editing
Use of Chroma and special effect's

Unit IV
Final cut Pro

Unit V
Adobe Premiere Pro and Power Director

Course outcomes

At the completion of the course the student will be able to demonstrate

- Acquaintance with audio and video editing softwares
- Ability to handle audio and video editing softwares

4.5- EP- Foreign Language (French)

4.6- Project report and Dissertation.

Syllabus

of

PG Diploma in Information and Cyber Security

PG DIPLOMA IN INFORMATION & CYBER SECURITY (DICS)

SEMESTER-1		
Course Code	Course Name	Credits
DICS01	Cyber Security-I	4
DICS02	Cyber Security-II	4
DICS03	Laws and Ethics	4
DICS04	Operating system basics	4
DICS05	Practical based on DICS 1 &2	4
DICS06	Practical based on DICS 3 & 4	4
SEMESTER-2		
DICS07	System Security	4
DICS08	**Security Management**	4
DICS09	Network Cyber Security	
DICS10	Practical based on DICS 7,8 & 9	4
DICS11	Dissertation	8

DIPLOMA IN INFORMATION & CYBER SECURITY

SEMESTER-I

DICS 01: Cyber Security-I

Course objectives:
- To understand what is cyber security
- To understand safe guards

Unit 1: Introduction to Cyber Security-I
Overview of Cyber Security. Internet Governance, Challenges and Constraints, Cyber Threats, Cyber Warfare, Cyber Crime, Cyber terrorism, Cyber Espionage.

Unit 2: Introduction to Cyber Security-II
Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace. Existing legal frameworks and safeguards

Unit 3: Cyber Security Vulnerabilities and Cyber Security Safeguards- I
Cyber Security Vulnerabilities-Overview, vulnerabilities in software, System administration. Complex Network Architectures. Open Access to Organizational Data, Weak Authentication. Unprotected Broadband communications.

Unit 4: Cyber Security Vulnerabilities and Cyber Security Safeguards- II
Poor Cyber Security Awareness. Cyber Security Safeguards- Overview. Access control. Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking. Firewalls, Intrusion Detection Systems, Response. Scanning. Security policy, Threat Management.

Unit 5: Analysis of Latest Cyber crime cases
To be added every year

Course outcomes:
By the end of the course, the student will be able to
- Demonstrate concerns related to cyber security
- Assess vulnerability to cyber security and apply safeguards

DICS 02: Cyber Security-II

Course objectives:
- To understand methods of securing web applications
- To understand detection of intrusion
- To understand network security

Unit 1: Securing Web Application, Services and Servers
Introduction, Basic security for HTTP Applications and Services, Basic Security for SOAP Services, Identity Management and Web Services, Authorization Patterns, Security Considerations, Challenges.

Unit 2: Intrusion Detection and Prevention-I
Intrusion, Physical Theft, Abuse of Privileges, Unauthorized Access by Outsider, Malware Infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems.

Unit 3: Intrusion Detection and Prevention-II
Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation.

Unit 4: Cryptography
Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Applications of Cryptography.

Unit 5: Network Security
Overview of Firewalls- Types of Firewalls, User Management, VPN Security Security Protocols: - security at the Application Layer- PGP and S/MIME, Security at Transport Layer- SSL and TLS, Security at Network Layer-IPSec.

Course outcomes:
By the end of the course, the student will be able to
- Assess security of web applications
- Skillfully assess and deal with security threats.

DICS 03: Laws and Ethics

Course objectives:
- To understand the laws governing cyber security
- To understand cyber training
- To understand ethical issues

Unit 1: Cyberspace and the Law

Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards. The INDIAN Cyberspace, National Cyber Security Policy 2013. ISO 27001. Cyber Law (Information Technology Act, 2000) International Standards maintained for Cyber Security Security Audit ,Investigation by Investing Agency. Cyber Security Solutions

Unit 2: Cyber Forensics

Introduction to Cyber Forensics. Handling Preliminary Investigations, Controlling an Investigation, Conducting disk-based analysis. Investigating Information-hiding. Scrutinizing E-mail, Validating E-mail header information. Tracing Internet access. Tracing memory in real-time.

Unit 3

Information Security, Privacy and Ethics

Unit 4

Cyber Crime and Cyber Terrorism

Unit 5

Hacking, Ethical issues

Course outcomes:
By the end of the course, the student will be able to
- Understand the legality of cyber security and crime
- Cultivate skill of understanding and evaluating ethics

DICS 04: OPERATING SYSTEM BASICS

Course objectives:
- To Basic computer operating systems

Unit 1: Windows-I
Introduction, Types Of Operating System, My Computer, Recycle Bin, Desktop, Drives; Creating,Renaming a directory/folder, Make a file readonly,hidden. Editing a file; Delete a file.

Unit 2: Windows-II
Listing the files in the directory. Create a file, Copy a file from one directory to the other, Deleting all files from a directory/folder, Deleting a director/folder, Formatting a hard disk and loading operating system. Domain, workgroup.Active Directory, User Management. Network Setting, Services. IIS Configuration

Unit 3: Linux-1
Introduction, History of Linux, Distributions of Linux, Devices and drivers, File system hierarchy. The components: Kernel, Distribution, XFree86, Sawfish, Gnome, The command line commands, File, management commands. Working with nano, Working with help (man).

Unit 4: Linux-II
SSH and X-forwarding, Managing compressed archives with zip and tar, Working with GNU screen, How to add users and groups, working with su, working with sudo. Changing user password, Printing, Installing software with Yum, Yast. Rpm. Installing webmin.

Unit 5: Web browsers
Web Browsers: Types and security

Course outcomes:
By the end of the course, the student will be able to
- Demonstrate skill of operating basic computer systems

DICS 05: Practical 1

Based on DICS 1 and DICS 2

DICS 06: Practical 2

Based on DICS 3 & DICS 4

Course objectives:
- To understand system security at different levels

DICS 07: System Security

Unit-1
Desktop Security

Unit-2
Programming Bugs and Malicious code

Unit-3
Database Security

Unit-4
Operating System Security: Designing Secure Operating Systems, OS SecurityVulnerabilities.

Unit-5
Latest security threat case studies (to be updated every year)

Course outcomes:
By the end of the course, the student will be able to
- Demonstrate skill of assessing, maintain security and dealing with security threats

DICS 08: Security Management

Course objectives:
- To understand various aspects of security management

Unit -1
Disaster Recovery

Unit -2
Digital Signature

Unit - 3
Ethical Hacking, Penetration Testing

Unit -4
Introduction to Cyber Forensics, Handling Preliminary Investigations, Controlling an Investigation, Conducting disk-based analysis, Investigating Information-hiding, Scrutinizing E-mail, Validating E-mail header information. Tracing Internet access. Tracing memory in real-time.

Unit -5
Fake news

Course outcomes:
By the end of the course, the student will be able to
- Demonstrate understanding of cyber security vulnerabilities and their management.

DICS 09: NETWORK CYBER SECURITY

Course objectives:
- To understand network security maintenance

Unit I Network Security
Network Security Model. Network Security Threats. Public Key Infrastructure. Digital Signature Schemes

Unit 2 Internet and Web Application Security-I
Email security: PGP and SMIME. Web Security: Web authentication. Injection Flaws, SQL Injection

Unit 3 Internet and Web Application Security-II
Web Browser Security. E-Commerce Security.

Unit4 Wireless Network Security
Wireless Network Components, Security issues in Wireless Networks. Securing a Wireless Network, Mobile Security

Unit 5 Security Apps
Basics of designing, role, ethics.

Course outcomes:
By the end of the course, the student will be able to
- Assess vulnerability to cyber network security and apply safeguards

DICS 10: Practical based on DICS7-9
DICS 11: Dissertation