



Re-Accredited 'B++' 2.86 CGPA by NAAC

**VEER NARMAD SOUTH GUJARAT UNIVERSITY**

University Campus, Udhna-Magdalla Road, SURAT - 395 007, Gujarat, India.

**વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી**

યુનિવર્સિટી કેમ્પસ, ઉદ્ધના-મગદલા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.

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ક્રમાંક:ઓથો./પરિપત્ર/M.Sc.CS/૧૦૦૭૪/૨૦૨૬  
તા.૦૨/૦૬/૨૦૨૬

પ્રતિ,  
વડાશ્રી,  
જે.પી.દાવર ઈન્સ્ટીટ્યૂટ ઓફ ઈન્ફોર્મેશન  
સાયન્સ એન્ડ ટેકનોલોજી,  
વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી,  
સુરત.

**વિષય:- M.Sc. (Cyber Security) 5 Year Integrated Programme Sem.-1 & 2 ના  
અભ્યાસક્રમ અંગે.**

સુજાશ્રી,

સવિનય જણાવવાનું કે, શૈક્ષણિક વર્ષ ૨૦૨૬ - ૨૭ થી અમલમાં આવનાર M.Sc. (Cyber Security) 5 Year Integrated Programme Sem.-1 & 2 નો પેટાસમિતિ દ્વારા તૈયાર કરવામાં આવેલ અભ્યાસક્રમ ઈન્ફોર્મેશન એન્ડ કોમ્યુનિકેશન ટેકનોલોજી વિષયની અભ્યાસ સમિતિની તા.૧૨/૦૩/૨૦૨૬ ની સભાના ઠરાવ ક્રમાંક:૦૨ થી મંજૂર કરી કોમ્પ્યુટર સાયન્સ ફેકલ્ટીને કરેલ ભલામણ કોમ્પ્યુટર સાયન્સ ફેકલ્ટીની તા.૨૯/૦૪/૨૦૨૬ ની સભાના ઠરાવ ક્રમાંક:૨૧ થી મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણને એકેડેમિક કાઉન્સિલની તા.૦૭/૦૫/૨૦૨૬ ની સભાના ઠરાવ ક્રમાંક:૫૯ થી મંજૂર કરેલ છે. જેનો અમલ કરવા આથી જાણ કરવામાં આવે છે.

  
કુલસચિવ

બિડાણ: ઉપર મુજબ

પ્રતિ,

- ૧) ડીનશ્રી, કોમ્પ્યુટર સાયન્સ વિદ્યાશાળા.
- ૨) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.
- ૩) એકેડેમિક / અનુસ્નાતક વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.

.....તરફ જાણ તેમજ અમલ સારું.

**Veer Narmad South Gujarat University, Surat**

**Program Structure: F. Y. B. Sc. (Cyber Security) / M. Sc. (Cyber Security)**

**(SEM – 1 and SEM – 2) (w.e.f. Academic Year June, 2026-2027)**

**Bachelor of Science in Cyber Security (B. Sc. (Cyber Security)) – Three Year Program**

**Bachelor of Science in Cyber Security (Honors) (B.Sc. (Cyber Security) (Hon.)) – Four Year Program**

**Master of Science in Cyber Security (M.Sc. (Cyber Security)) – Five Year Integrated Program**

**Structure of Program (Semester -1)**

Course Category	Course Code	Course Title	Marksheet Title in English	Level of Course	Teaching Hours/ Week		Exam Duration (Hrs)		Credit		Internal Marks		External Marks		Total Marks	
					TH	PR	TH	PR	TH	PR	TH	PR	TH	PR	TH	PR
MAJOR	101	Fundamentals of Cyber Security	Fundamentals of Cyber Security	100-199 Foundation/ Introductory	4	0	2	0	4	0	50	0	50	0	100	0
MAJOR	102	Computer Network	Computer Network	100-199 Foundation/ Introductory	4	0	2	0	4	0	50	0	50	0	100	0
MINOR	103	Fundamentals of Computer	Fundamentals of Computer	100-199 Foundation/ Introductory	4	0	2	0	4	0	50	0	50	0	100	0
MDC	104	Mathematics-1	Mathematics-1	100-199 Foundation/ Introductory	4	0	2	0	4	0	50	0	50	0	100	0
AEC	105	Communication Skills for Cyber Security	Communication Skills in English	100-199 Foundation/ Introductory	2	0	1	0	2	0	25	0	25	0	50	0
SEC	106	Fundamentals of Web Technology	Fundamentals of Web Technology	--	2	0	0	2	2	0	0	25	0	25	0	50
VAC/ VAC-IKS	107	Value Added Course-1	Value Added Course-1	--	2	0	1	0	2	0	25	0	25	0	50	0
<b>Total</b>					<b>22</b>	<b>0</b>	<b>--</b>	<b>--</b>	<b>22</b>	<b>0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>500</b>	<b>50</b>

*P. V. Desai*

**Veer Narmad South Gujarat University, Surat**

**Program Structure: F. Y. B. Sc. (Cyber Security) / M. Sc. (Cyber Security)**

**(SEM – 1 and SEM – 2) (w.e.f. Academic Year June, 2026-2027)**

**Bachelor of Science in Cyber Security (B. Sc. (Cyber Security)) – Three Year Program**

**Bachelor of Science in Cyber Security (Honors) (B.Sc. (Cyber Security) (Hon.)) – Four Year Program**

**Master of Science in Cyber Security (M.Sc. (Cyber Security)) – Five Year Integrated Program**

**Structure of Program (Semester -2)**

Course Category	Course Code	Course Title	Marksheet Title in English	Level of Course	Teaching Hours/Week		Exam Duration (Hrs)		Credit		Internal Marks		External Marks		Total Marks	
					TH	PR	TH	PR	TH	PR	TH	PR	TH	PR	TH	PR
MAJOR	201	Fundamentals of Programming	Fundamentals of Programming	100-199 Foundation/Introductory	2	4	2	2	2	2	25	25	25	25	50	50
MAJOR	202	Introduction to Cyber Law	Introduction to Cyber Law	100-199 Foundation/Introductory	4	0	2	0	4	0	50	0	50	0	100	0
MINOR	203	Operating System	Operating System	100-199 Foundation/Introductory	4	0	2	0	4	0	50	0	50	0	100	0
MDC	204	Mathematics-2	Mathematics-2	100-199 Foundation/Introductory	4	0	2	0	4	0	50	0	50	0	100	0
AEC	205	Business Communication Skills for Cyber Security	Business Communication Skills in English	100-199 Foundation/Introductory	2	0	1	0	2	0	25	0	25	0	50	0
SEC	206	Web Development - 1	Web Development - 1	--	2	0	0	2	2	0	0	25	0	25	0	50
VAC/ VAC-IKS	207	Value Added Course-II	Value Added Course-II	--	2	0	1	0	2	0	25	0	25	0	50	0
<b>Total</b>					<b>20</b>	<b>4</b>	<b>--</b>	<b>--</b>	<b>20</b>	<b>2</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>450</b>	<b>100</b>
Internship*	208	Summer Internship	Summer Internship	--	0	4	0	0	0	4	0	50	0	50	0	100

\* Summer Internship applicable only to students seeking exit after first year.

*P. Y. Desai*

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**

**M.Sc(Cyber Security)**

<b>Name of Program</b>	Master of Science (Cyber Security)
<b>Program Abbreviation</b>	M.Sc. (Cyber Security)
<b>Duration</b>	Five years (Ten Semesters)
<b>Eligibility Criteria</b>	H S C / Equivalent Examination from Science Stream ( A / B / AB Group) or Vocational Stream or General Stream (Commerce) with English as one of the subjects.
<b>Pre-requisite</b>	Basic computer awareness, logical reasoning ability, and an interest in cybersecurity are expected; no prior knowledge of programming or cybersecurity is required
<b>Medium of Instruction</b>	English
<b>Objective of Program</b>	The objective of the program is to develop highly skilled cybersecurity professionals with strong theoretical foundations, practical expertise, research capability, and ethical responsibility to protect digital systems, networks, and critical infrastructure.
<b>Program Outcome (PO)</b>	<p><b>PO1 : Discipline knowledge</b> Apply comprehensive knowledge of computer science and cyber security, including operating systems, networking, cryptography, secure software engineering, and digital forensics, to solve domain-relevant problems.</p> <p><b>PO2 : Problem analysis</b> Identify, formulate, and analyze complex cyber security problems using principles of computing, mathematics, and statistics to derive logical, evidence-based conclusions.</p> <p><b>PO3 : Design and development of secure solutions</b> Design, implement, and evaluate secure systems, applications, and processes that meet specified functional, performance, and security requirements under realistic constraints.</p> <p><b>PO4 : Modern tool usage</b> Select, configure, and apply appropriate modern tools, platforms, and frameworks—such as vulnerability scanners, penetration testing suites, SIEM, forensics tools, and cloud services—understanding their capabilities and limitations.</p> <p><b>PO5 : Ethics, laws, and professional responsibility</b> Apply ethical principles, professional codes of conduct, and relevant cyber laws and regulations to practice responsible and accountable cyber security.</p> <p><b>PO6 : Teamwork, communication, and leadership</b> Function effectively as an individual and as a member or leader in multidisciplinary teams, and communicate clearly with technical and non-technical stakeholders through reports, documentation, and presentations.</p> <p><b>PO7 : Project management and societal impact</b></p>

*P. V. Desai*

Apply principles of project management and basic financial awareness in security projects, and understand the societal, organizational, and environmental impact of Cyber security technologies and decisions.

**Program Specific Outcomes (PSO)**

**PSO1 – Secure systems and network engineering**  
Design, configure, and harden systems and networks using appropriate architectures, protocols, cryptographic mechanisms, and secure coding practices to ensure confidentiality, integrity, availability, and privacy.

**PSO2 – Offensive security and testing**  
Plan and perform ethical hacking, vulnerability assessment, and penetration testing of systems, applications, and networks, and recommend appropriate remediation measures.

**PSO3 – Digital forensics and incident response**  
Collect, preserve, analyze, and interpret digital evidence, and participate effectively in incident detection, triage, containment, eradication, and recovery.

**PSO4 – Governance, risk, and compliance**  
Conduct information security risk assessments and audits, contribute to the design and implementation of information security management systems, and support organizations in complying with relevant standards, policies, and regulations.

**PSO5 – Security operations and threat intelligence**  
Contribute to the functioning of Security Operations Centers by monitoring security events, correlating logs, applying threat intelligence, and using security analytics tools to detect and respond to advanced threats.

**PSO6 – Advanced and emerging cyber security technologies**  
Analyze and implement security solutions for advanced domains including cloud computing, Internet of Things (IoT), artificial intelligence-based systems, malware analysis, and critical infrastructure protection.

**Mapping between Pos and PSOs**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
PO1	■	■	■	■	■	■
PO2	■	■	■	■	■	■
PO3	■	■	■	■	■	■
PO4	■	■	■	■	■	■
PO5	■	■	■	■	■	■
PO6	■	■	■	■	■	■
PO7	■	■	■	■	■	■

*P. Y. Dosa*

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	<b>Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security) [ 5 Years Integrated Programme ]</b>					
<b>Semester</b>	1					
<b>NCrF Credit Level</b>	4.5					
<b>Course Type</b>	Major Course					
<b>Course Subtype</b>	Skill Development					
<b>Subject Type</b>	Discipline Specific					
<b>Course Code</b>	101					
<b>Course Level</b>	5					
<b>Course Title</b>	Fundamentals of Cyber Security					
<b>Credit</b>	<b>Theory:</b>	<b>4</b>	<b>Practical:</b>	<b>0</b>	<b>Total: 4</b>	
<b>Effective Form</b>	Academic Year: 2026-27					
<b>Course Outcomes</b>	<p><b>CO1</b> - Explain the fundamental concepts of digital hygiene, cyberspace, cybersecurity, and information security, including related terminologies such as deep web, dark web, digital footprints, and zero trust security.</p> <p><b>CO2</b> - Classify and describe various types of malware (viruses, worms, trojans, ransomware, bots, APTs, etc.) and demonstrate appropriate preventive and remedial measures for malware infections.</p> <p><b>CO3</b> - Recognize and evaluate major cybercrimes such as phishing, identity theft, financial frauds, social media crimes, misinformation, and emerging cyber threats, with emphasis on real-world scenarios.</p> <p><b>CO4</b> - Identify various types of threats and implement best practices of cyber hygiene including secure password management, safe internet browsing, device security, secure e-commerce usage, and protection of personal and institutional data.</p> <p><b>CO5</b> - Interpret the institutional and legal framework of cybersecurity in India</p> <p><b>CO6</b> - Develop awareness of ethical, legal, and responsible online behavior, emphasizing internet ethics, privacy protection, and compliance with cybersecurity laws.</p>					
<b>Course Content</b>	<p><b>Unit - 1 Introduction to Cyber Security &amp; Digital Ecosystem</b></p> <p><b>1.1 Cyber Security Fundamentals</b></p> <p>1.1.1 Meaning, scope, and need of Cyber Security</p> <p>1.1.2 Information Security vs Cyber Security</p> <p>1.1.3 Cyber space and digital ecosystem</p> <p>1.1.4 Importance of cyber security in education, society, and nation</p> <p><b>1.2 Digital World Concepts</b></p> <p>1.2.1 Surface Web, Deep Web, Dark Web</p>					

*P. V. Desai*

1.2.2 Digital identity and digital footprints

1.2.3 Digital inheritance

### **1.3 Security Principles**

1.3.1 Confidentiality, Integrity, Availability (CIA Triad)

1.3.2 Introduction to Authentication, Authorization, Accountability

### **1.4 Core Cyber Security Terminology**

1.4.1 Asset, threat, vulnerability, risk

1.4.2 Attack, attack vector, exploit, payload

1.4.3 Data breach, incident, incident response

1.4.4 Patch, update, zero-day vulnerability

## **Unit – 2 Cyber Threat & Malware**

### **2.1 Introduction to Cyber Threat**

2.1.1 Why cyber attacks happen

2.1.2 Why people fall victim to cyber crimes

2.1.3 Common attack vectors

### **2.2 Malware Fundamentals**

2.2.1 Meaning and objectives of malware

2.2.2 Malware lifecycle and infection methods

### **2.3 Types of Malware**

2.3.1 Virus, Worm, Trojan

2.3.2 Backdoor and Rootkits

2.3.3 Bots and Botnets

2.3.4 Ransomware

2.3.5 Spyware, Adware, Keyloggers

2.3.6 Advanced Persistent Threats

### **2.4 Malware Awareness**

2.4.1 Indicators of malware infection

2.4.2 Preventive measures (user-level)

## **Unit – 3 Cyber Crimes, Frauds & Digital Hygiene**

### **3.1 Social Engineering Attacks**

3.1.1 Social engineering concepts and psychology

3.1.2 Phishing, spear phishing, vishing, smishing

3.1.3 Fake websites, QR-code scams

### **3.2 Identity & Information Crimes**

3.2.1 Identity theft and credential theft

3.2.2 Shoulder surfing

3.2.3 Spoofing and impersonation

3.2.4 Application-based frauds

### **3.3 Financial & Online Frauds**

3.3.1 UPI, OTP, and banking frauds

3.3.2 E-commerce frauds

3.3.3 SIM swap and SIM cloning

3.3.4 Misinformation, disinformation, fake news, deepfakes

### **3.4 Digital Hygiene Practices**

3.4.1 Safe browsing and email practices

3.4.2 Password hygiene and MFA

3.4.3 Device safety and backup awareness

*P. Y. Desai*

**Unit – 4 Cyber Safety Governance, Laws & Frameworks****4.1 Cyber Safety & Incident Awareness**

4.1.1 Cyber incidents and reporting mechanisms

4.1.2 User responsibilities in cyber safety

**4.2 Institutional & National Cyber Frameworks**

4.2.1 CERT-In and Cyber Swachhta Kendra

4.2.2 National Cyber Crime Reporting Portal

4.2.3 Cyber Crisis Management Plan

**4.3 Cyber Laws & Legal Framework (India)**

4.3.1 Information Technology Act, 2000 &amp; ITAA 2008

4.3.2 Types of cyber offences and penalties

4.3.3 Digital evidence and cyber forensics (introductory)

**4.4 Cyber Security Policies**

4.4.1 Cyber security policy: purpose and structure

4.4.2 Data protection and privacy principles

4.4.3 Role of standards and frameworks

**Mapping between  
Cos and PSOs**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2						
CO3						
CO4						
CO5						
CO6						

**Reference Books**

1. Cyber Security by Nina Godbole, Sunit Belapure, 2011, wiley publication
2. A Handbook on Basics of Cyber Hygiene for Higher Education Institutions, UGC- Ministry of Education, New Delhi- 2024
3. Cyber Security Essentials, James Graham, Richard Howard and Ryan Otson, CRC Press
4. Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, Nina Godbole and Sunil Belapure, Wiley INDIA.
5. Introduction to Cyber Security , Chwan-Hwa(john) Wu, J. David Irwin. CRC Press T&F Group

**Teaching  
Methodology**

Class Room Teaching, Discussion and Assignment

**Evaluation  
Method**Internal Assessment: 50 MarksExternal Assessment: 50 Marks

*P. V. Desai*

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	<b>Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security) [ 5 Years Integrated Programme ]</b>					
<b>Semester</b>	1					
<b>NCrF Credit Level</b>	4.5					
<b>Course Type</b>	Major					
<b>Course Subtype</b>	Nil					
<b>Subject Type</b>	Discipline Specific					
<b>Course Code</b>	102					
<b>Course Level</b>	5					
<b>Course Title</b>	Computer Network					
<b>Credit</b>	<b>Theory:</b>	4	<b>Practical:</b>	0	<b>Total:</b>	4
<b>Effective Form</b>	Academic Year: 2026-27					
<b>Course Outcomes</b>	<p><b>CO1 - Classify Network Architectures:</b> Identify and differentiate between various network types (LAN, MAN, WAN) and models (Client-Server vs. Peer-to-Peer) to determine the most suitable setup for specific organizational needs.</p> <p><b>CO2 - Evaluate Physical Infrastructure:</b> Compare and contrast network topologies and transmission media (guided vs. unguided) to design efficient physical layouts for home or small office environments.</p> <p><b>CO3 - Explain Data Flow Models:</b> Deconstruct the process of data communication by mapping protocols and services to the appropriate layers of the OSI and TCP/IP reference models.</p> <p><b>CO4 - Execute Network Diagnostics:</b> Utilize standard command-line interface (CLI) tools—such as ping, ipconfig, and nslookup—to troubleshoot connectivity issues and verify network configurations.</p> <p><b>CO5 - Analyze Addressing Schemes:</b> Explain the hierarchical structure of IPv4, MAC addressing, and the Domain Name System (DNS) to manage how devices are identified and located on a network.</p> <p><b>CO6 - Assess Internet Services &amp; Security:</b> Describe the fundamental operation of common internet protocols (HTTP, SMTP, FTP) and recognize the critical role of networking structures in maintaining Cyber Security integrity.</p>					
<b>Course Content</b>	<p><b>Unit - 1 Introduction to Networking</b></p> <p>1.1 Introduction</p> <p>1.2 Types of networks: LAN, WAN, MAN</p> <p>1.3 Importance of networking in Cyber Security</p> <p>1.4 Client-Server vs. Peer-to-Peer Architectures</p>					

*P. Y. Bera*

	<p><b>Unit – 2 Network Components and Topologies</b></p> <p>2.1 Common Devices: Hubs, Switches (L2/L3), Routers, Modems, and Gateways.  2.2 Network Topologies: Bus, Star, Ring, Mesh, and Hybrid  2.3 Transmission Media: Guided (Twisted pair, Coaxial, Fiber Optics) vs. Unguided (Radio waves, Microwaves, Infrared).  2.4 Simple examples of home/office networks</p> <p><b>Unit – 3 Basics of Network Communication</b></p> <p>3.1 Data Transmission: Packets, Frames, Bandwidth, Latency, and Throughput  3.2 Introduction to IP addresses (IPv4)  3.3 MAC addresses and DNS  3.4 Basic IP commands (ipconfig, ifconfig, iwconfig, ping, netstat, nslookup)  3.5 Overview of OSI and TCP/IP models</p> <p><b>Unit – 4 Introduction to Internet and Services</b></p> <p>4.1 How the Internet works  4.2 Common services: Email (SMTP/IMAP), Web (HTTP/HTTPS), and File Sharing (FTP)  4.3 Basics of Wi-Fi and Mobile Networks</p>																																																	
<p><b>Mapping between Cos and PSOs</b></p>	<table border="1" data-bbox="400 864 1046 1077"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> <th>PSO6</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	CO1							CO2							CO3							CO4							CO5							CO6						
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<p><b>Reference Books</b></p>	<ol style="list-style-type: none"> <li>1. Computer Networking: A Top-Down Approach by Kurose &amp; Ross (Pearson).</li> <li>2. Data Communications and Networking (SIE) by Behrouz A. Forouzan (McGraw Hill).</li> <li>3. Networking All-in-One For Dummies by Doug Lowe (Wiley).</li> <li>4. Absolute Beginner's Guide to Networking by Joe Casad (Que Publishing).</li> </ol>																																																	
<p><b>Teaching Methodology</b></p>	<p>Classroom Teaching, Discussion, Independent Study and Assignments</p>																																																	
<p><b>Evaluation Method</b></p>	<p>Internal Assessment: 50 Marks  External Assessment: 50 Marks</p>																																																	

*P. V. Joshi*

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security) [ 5 Years Integrated Programme ]				
<b>Semester</b>	1				
<b>NCrF Credit Level</b>	4.5				
<b>Course Type</b>	Minor				
<b>Course Subtype</b>	Skill Development				
<b>Subject Type</b>	Discipline Specific				
<b>Course Code</b>	103				
<b>Course Level</b>	5				
<b>Course Title</b>	Fundamentals of Computer				
<b>Credit</b>	<b>Theory:</b>	4	<b>Practical:</b>	0	<b>Total:</b> 4
<b>Effective Form</b>	Academic Year: 2026-27				
<b>Course Outcomes</b>	CO1 - Student will be able to learn about computer hardware components and its working CO2 - Students will be able to understand usage of computer CO3 - Students will be able to work with different types of number systems ,and able to perform numerical of Binary, Octal and Hexadecimal numbers CO4 - Students will be able to learn types of software CO5 - Students will be able to understand basics of electronics CO6 -Students will be able to learn basics of IoT				
<b>Course Content</b>	<b>Unit - 1 Introduction to Computers and its components</b> 1.1 Computer 1.1.1 Introduction to Computer 1.1.2 The Components of Computer 1.1.3 Advantages and Disadvantages of Computer 1.1.4 Generations of Computer 1.1.5 Computer Software 1.1.6 Categories of Computers 1.1.6.1 Personal Computers 1.1.6.2 Mobile Computers 1.1.6.3 Servers 1.1.6.4 Mainframes 1.1.6.5 Super Computers 1.1.6.6 ATM 1.1.6.7 POS 1.1.7 Usage and Applications of Computer in Society				

*P. V. Yashwanth*

- 1.2 Components of Computer
  - 1.2.1 Block Diagram of Computer
  - 1.2.2 The System Unit
  - 1.2.3 Processor
  - 1.2.4 Motherboard
  - 1.2.5 Memory - Register, RAM, ROM
  - 1.2.6 Expansion Slots and Adaptor Cards
  - 1.2.7 Ports and Connectors
  - 1.2.8 Buses
  - 1.2.9 Power Supply
  - 1.2.10 Input Output Systems
  - 1.2.11 Storage Systems
  - 1.2.12 BIOS
  - 1.2.13 Interrupt
  - 1.2.14 Device Driver

### **Unit – 2 Computer Codes and Conversions**

- 2.1 Computer Codes
  - 2.1.1 Introduction to Computer Codes
  - 2.1.2 Decimal System
  - 2.1.3 Binary System
  - 2.1.4 Hexadecimal System
  - 2.1.5 Octal System
  - 2.1.6 4-bit BCD System
  - 2.1.7 8-bit BCD System
  - 2.1.8 ASCII code
  - 2.1.9 16-bit Unicode
  - 2.1.10 Conversion of Numbers (from one Number System to another - includes fixed and fractional numbers)

### **Unit – 3 Computer Software and Applications**

- 3.1 Types of software – System software and Application software
- 3.2 Programming languages – Machine, Assembly, High-level languages
- 3.3 Language translators – Compiler, Interpreter, Assembler
- 3.4 Introduction to office productivity tools
  - 3.4.1 word processing
  - 3.4.2 Spreadsheets
  - 3.4.3 Presentation software
- 3.5 File formats and document management

### **Unit – 4 Introduction to Internet of Things(IoT) and it's Applications**

- 4.1 Introduction of IoT
  - 4.1.1. IoT reference architecture
  - 4.1.2 recommended architecture principles and considerations
- 4.2 Prototyping the Embedded Devices for IOT
  - 4.2.1 Introduction to Embedded system
  - 4.2.2 Introduction of sensors, actuator, micro controller
  - 4.2.3 Introduction of FPGAs in Embedded system
  - 4.2.4 Introduction of Real time Operating System
  - 4.2.5 Energy sources and Power management

*P. Y. Desai*

	<p>4.3 introduction of Gateway and Edge device for IoT</p> <p>4.4 Introduction to IoT central Server</p> <p>4.5 Challenges in securing IoT solutions and IOT security Vulnerabilities</p> <p>4.6 IoT use cases: agricultural domain, Smart city Domain, Industrial smart Manufacturing Domain,</p>																																																	
<b>Mapping between Cos and PSOs</b>	<table border="1"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> <th>PSO6</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	CO1							CO2							CO3							CO4							CO5							CO6						
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<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment																																																	
<b>Evaluation Method</b>	Internal Assessment: 50 Marks External Assessment: 50 Marks																																																	

*P. Y. D. S. A.*

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security)   5 Years Integrated Programme					
<b>Semester</b>	1					
<b>NCrF Credit Level</b>	4.5					
<b>Course Type</b>	MDC					
<b>Course Subtype</b>	Nil					
<b>Subject Type</b>	Intra-disciplinary					
<b>Course Code</b>	104					
<b>Course Level</b>	5					
<b>Course Title</b>	Mathematics - 1					
<b>Credit</b>	<b>Theory:</b>	.4	<b>Practical:</b>	0	<b>Total:</b>	4
<b>Effective Form</b>	Academic Year: 2026-27					
<b>Course Outcomes</b>	<p>CO1 - Demonstrate understanding of set theory, including set operations, Venn diagrams.</p> <p>CO2 - Understand the concept and use of relations.</p> <p>CO3 - Apply and analyze functions in different forms (algebraic, graphical, tabular) and interpret their properties in problem-solving.</p> <p>CO4 - Understand the concept of Matrix and determinant.</p> <p>CO5 - Perform various operations related to matrix and determinant operations, including inverse and transpose, in computational contexts.</p> <p>CO6 - Develop independent learning skills, including the ability to research and explore mathematical concepts in Cyber security.</p>					
<b>Course Content</b>	<p><b>Unit - 1 Set Theory</b></p> <p>1.1 Set Theory Introduction, Representation, Operations and their properties</p> <p>1.2 Venn diagram</p> <p>1.3 De Morgan's Law</p> <p>1.4 Difference of Two Sets</p> <p>1.5 Cartesian product of two sets</p> <p>1.6 Number of Elements in Finite Sets</p> <p><b>Unit – 2 Relations</b></p> <p>2.1 Introduction</p> <p>2.2 Definition: Relations and Inverse relations</p> <p>2.3 Composition of Relations</p> <p>2.4 Types of Relations</p> <p>2.5 Equivalence Relations</p>					

	<p><b>Unit – 3 Functions</b></p> <p>3.1 Meaning and Definition of function  3.2 Domains, Co-Domain and Range of a function  3.3 Relation between Input(Domain) and Output (Range)  3.4 Condition for defining the function  3.5 Representation of functions : Algebraic, Graphical and tabular form  3.6 Types of Functions  3.7 Useful Real Functions,  3.8 Different Functions and their Graphs</p> <p><b>Unit – 4 Determinants and Matrices</b></p> <p>4.1 Determinant: Basic concepts and examples  4.2 Introduction: Matrices  4.3 Special type of matrices  4.4 Operations on matrices (transformation, Addition, Subtraction and multiplication of Matrices)  4.5 Transpose of Matrix and its properties  4.6 Adjoint of a square Matrix  4.7 Inverse of Matrix  4.8 Properties of the Inverse of a Matrix  4.9 Trace of a Matrix</p>																																																	
<p><b>Mapping between Cos and PSOs</b></p>	<table border="1" data-bbox="400 958 1054 1182"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> <th>PSO6</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td style="background-color: #cccccc;"></td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td style="background-color: #cccccc;"></td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td style="background-color: #cccccc;"></td> <td style="background-color: #cccccc;"></td> <td></td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> </tr> <tr> <td>CO4</td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> </tr> <tr> <td>CO5</td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> </tr> <tr> <td>CO6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	CO1							CO2							CO3							CO4							CO5							CO6						
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<p><b>Reference Books</b></p>	<ol style="list-style-type: none"> <li>1. Co-ordinate Geometry– Shanti Narayan.</li> <li>2. Linear Algebra – Sushoma Verma.</li> <li>3. Advanced Mathematics – B. S. Shah &amp; Co.</li> <li>4. Shantinakaran: Text book of Matrices, S. Chand and Co., New Delhi.</li> <li>5. Vasistha and Vasistha: Matrices, Krishna Prakashan, 2008.</li> </ol>																																																	
<p><b>Teaching Methodology</b></p>	<p>Classroom Teaching, Discussion, Independent Study and Assignments</p>																																																	
<p><b>Evaluation Method</b></p>	<p>Internal Assessment: 50 Marks  External Assessment: 50 Marks</p>																																																	

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security) [ 5 Years Integrated Programme ]				
<b>Semester</b>	1				
<b>NCrF Credit Level</b>					
<b>Course Type</b>	AEC				
<b>Course Subtype</b>	Skill Development				
<b>Subject Type</b>	Intra-disciplinary				
<b>Course Code</b>	105				
<b>Course Level</b>					
<b>Course Title</b>	Communication Skills for Cyber Security				
<b>Credit</b>	<b>Theory:</b>	02	<b>Practical:-</b>		<b>Total:</b> 02
<b>Effective Form</b>	Academic Year: June 2026-27				
<b>Course Outcomes</b>	<p><b>CO1</b> - Students will be able to understand the fundamentals, process, elements, and importance of communication in cyber security contexts such as incident reporting and team coordination.</p> <p><b>CO2</b> - Students will be able to apply the Seven Cs of communication and different communication types (verbal, non-verbal, written, visual) to effectively convey cyber security information to technical and non-technical audiences.</p> <p><b>CO3</b> -Students will be able to analyze cyber security situations, identify communication barriers, and use critical thinking to interpret threats and improve team communication.</p> <p><b>CO4</b> -Students will be able to gauge communication strategies, listening effectiveness, and responses during cyber security incidents to ensure clarity, accuracy, and professionalism.</p> <p><b>CO5</b> - Students will be able to Create clear, structured, and professional communication such as incident reports, emails, and cyber security awareness content for diverse audiences.</p> <p><b>CO6</b> -Designing &amp; integrating (highest-level skill: synthesis + real-world application)</p>				
<b>Course Content</b>	<p><b>Unit 1: Fundamentals of Communication</b></p> <p><b>1.1 Communication: An Overview and Four Skills</b></p>				

- 1.1.1 Meaning, process, and elements of communication
  - 1.1.2 Role of communication in cybersecurity (team coordination, reporting threats)
- Application:** Communicating a detected cyber-attack to the IT team

## **1.2 Need and Importance of Effective Communication**

- 1.2.1 Incident response
  - 1.2.2 Security awareness
  - 1.2.3 Client communication
- Application:** Explaining a data breach clearly to non-technical users

## **1.3 The Seven Cs of Effective Communication**

- 1.3.1 Clear
  - 1.3.2 Concise
  - 1.3.3 Concrete
  - 1.3.4 Correct
  - 1.3.5 Coherent
  - 1.3.6 Complete
  - 1.3.7 Courteous
- Application:** Writing a clear email about password reset policies

## **1.4 Types of Communication**

- 1.4.1 Verbal (meetings, calls)
  - 1.4.2 Non-verbal (body language during presentations)
  - 1.4.3 Written (reports, emails)
  - 1.4.4 Visual (charts, dashboards)
- Application:** Writing a cybersecurity incident report

## **1.5 Role of Creative & Critical Thinking**

- 1.5.1 Creative: Designing awareness campaigns
  - 1.5.2 Critical: Analyzing suspicious messages or threats
- Application:** Identifying phishing emails using logical thinking

## **1.6 Role of Emotions in Communication**

- 1.6.1 Staying calm during cyber incidents
  - 1.6.2 Avoiding panic while informing users
- Application:** Handling clients after a hacking incident

## **1.7 Role of Interpersonal Communication**

- 1.7.1 Team collaboration in security operations
- 1.7.2 Communication between analysts, developers, and managers

## **1.8 Communicating Across Culture**

- 1.8.1 Working in global cybersecurity teams
- 1.8.2 Respecting language, tone, and cultural differences

## **1.9 Barriers to Effective Communication**

- 1.9.1 Technical jargon confusion
- 1.9.2 Language barriers
- 1.9.3 Misinterpretation of security instructions
- 1.9.4 Users not understanding complex password rules

## **1.10 Non-verbal Communication & Body Language**

- 1.10.1 Eye contact; posture during presentations
- 1.10.2 Confidence while explaining security issues

### **Listening Skills (Cyber Security Context)**

## **2.1 Hearing vs Listening**

- 2.1.1 Hearing = Passive
- 2.1.2 Listening = Active understanding

**Application:** Listening carefully to instructions during security lab

## **2.2 Process of Listening**

- 2.2.1 Receiving
- 2.2.2 Understanding
- 2.2.3 Evaluating
- 2.2.4 Responding

**Application:** Understanding steps to configure firewall

## **2.3 Types of Listening**

- 2.3.1 Active listening
- 2.3.2 Critical listening
- 2.3.3 Informational listening

## **2.4 Advantages of Listening**

- 2.4.1 Better understanding of threats
- 2.4.2 Fewer mistakes in implementation
- 2.4.3 Improved teamwork

## **Unit 2: Speaking Skills (Cyber Security Context)**

### **3.1 Characteristics of an Effective Communicator**

- 3.1.1 Clarity
- 3.1.2 Confidence
- 3.1.3 Accuracy
- 3.1.4 Technical awareness

### **3.2 Public Speaking Skills for Workplace**

- 3.2.1 Presenting security reports
- 3.2.2 Conducting awareness sessions
  - 3.2.2.1 Cyber Safety Tips
  - 3.2.2.2 Types of Cyber Attacks

### **3.3 Principles of Good Conversationalist**

- 3.3.1 Listening actively
- 3.3.2 Responding politely
- 3.3.3 Asking relevant questions

**Application:** Discussing a suspected cyber threat with team members

## **Reading Skills and Writing Skills**

### **4.1 Developing Efficient Reading Skills**

- 4.1.1 Skimming (quick overview)

4.1.2 Scanning (finding key info)  
**Application:** Reading Cyber security articles or alerts

**4.2 Interpreting Job Advertisements**

- 4.2.1 Security Analyst
- 4.2.2 Ethical Hacker
- 4.2.3 Network Security Engineer

**4.3 Interpreting Graphics and Data**

- 4.3.1 Security dashboards
- 4.3.2 Threat reports
- 4.3.3 Charts and logs

**4.4 Comprehending News**

- 4.4.1 Understanding cybercrime news
- 4.4.2 Analyzing real-world attacks
- Application:** Data breaches, ransomware attacks

**4.5 Importance of Writing**

- 4.5.1 Reports, emails, documentation
- 4.5.2 Clear communication in cybersecurity

**4.6 Formal and Informal Writing**

- 4.6.1 Formal: Incident reports, official emails
- 4.6.2 Informal: Team chats, internal messages

**4.7 Paragraph Writing**

- 4.7.1 Cybersecurity awareness
- 4.7.2 Importance of strong passwords

**4.8 Email Writing**

- 4.8.1 Reporting issues
- 4.8.2 Sending alerts
- 4.8.3 Communicating with clients
- Example Subject: *Urgent – Suspicious Login Detected*

**4.9 Interpreting Brochures & Advertisements**

- 4.9.1 Cybersecurity product ads
- 4.9.2 Evaluating tools (antivirus, firewalls)

**Mapping between Cos and PSOs**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2						
CO3						
CO4						

	CO5						
	CO6						
<b>Reference Books</b>	<p>1. Anand, Renu, and Neena Kaul. <i>Communicative English Resource Book</i>. Oxford University Press, 2018.</p> <p>2. Brown, Jeffrey W. <i>The Security Leader's Communication Playbook: Bridging the Gap between Security and the Business</i>. Wiley, 2023.</p> <p>3. Carnegie, Dale. <i>The Quick and Easy Way to Effective Communication</i>. Mahavir Book House, 2018.</p> <p>4. Foulon, Christophe. <i>Hack the Cybersecurity Interview</i>. 2nd ed., Wiley, 2020.</p> <p>5. Karal, Rajeevan, et al. <i>English for Successful Communication</i>. Oxford University Press, 2016.</p> <p>6. Kumar, Sanjay, and Pushp Lata. <i>Communication Skills</i>. Oxford University Press, 2011.</p> <p>7. Mason, Joshua C. <i>Speak Security With a Business Accent: A Field Guide for Translating Cyber Risk</i>. Self-published, 2021.</p> <p>8. Meyer, Carolyn, and N. Bringi Dev. <i>Communicating for Results</i>. 4th ed., Oxford University Press, 2021.</p> <p>9. Phil, M. <i>Decoding Cybersecurity Risk: Practical Frameworks for IT Managers</i>. Expected publication, June 2025.</p> <p>10. Raman, Meenakshi, and Sangeeta Sharma. <i>Communication Skills: For University of Mumbai</i>. Oxford University Press, 2018.</p> <p>11. Rayithi, Mohan. <i>Soft Skills for Cybersecurity Leaders</i>. Packt Publishing, 2022.</p> <p>12. Rutherford, Andrea J. <i>Basic Communication Skills for Technology</i>. 2nd ed., Pearson, 2001.</p> <p>13. Soundaraj, Francis. <i>Basics of Communication in English</i>. Macmillan Publishers, 2007.</p>						
<b>Teaching Methodology</b>	<ul style="list-style-type: none"> <li>• Lectures &amp; interactive sessions</li> <li>• Case studies (cyber incidents)</li> <li>• Role plays &amp; group discussions</li> <li>• Report writing &amp; presentations</li> <li>• Practical communication exercises</li> </ul>						
<b>Evaluation Method</b>	<p>Internal Assessment: 25 Marks</p> <p>External Assessment: 25 Marks</p>						

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	<b>Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security) [ 5 Years Integrated Programme ]</b>				
<b>Semester</b>	<b>1</b>				
<b>NCrF Credit Level</b>	<b>4.5</b>				
<b>Course Type</b>	<b>SEC</b>				
<b>Course Subtype</b>	<b>Skill Development</b>				
<b>Subject Type</b>	<b>Discipline Specific</b>				
<b>Course Code</b>	<b>106</b>				
<b>Course Level</b>	<b>5</b>				
<b>Course Title</b>	<b>Fundamentals of Web Technology</b>				
<b>Credit</b>	<b>Theory:</b>	<b>2</b>	<b>Practical:</b>	<b>0</b>	<b>Total: 2</b>
<b>Effective Form</b>	<b>Academic Year: 2026-27</b>				
<b>Course Outcomes</b>	<p>CO1: Explain the fundamental architecture of the Internet, including protocols, IP addressing (IPv4/IPv6), DNS, and web server operations.</p> <p>CO2: Design structural web pages using core HTML elements, forms, tables, and multimedia.</p> <p>CO3: Implement advanced HTML5 features, including semantic tags, scalable graphics (Canvas/SVG), and embedded media, to build modern web interfaces.</p> <p>CO4: Apply Cascading Style Sheets (CSS) to control typography, colors, formatting, and the box model (margins, padding, borders).</p> <p>CO5: Develop visually engaging user interfaces utilizing advanced CSS properties, such as multi-column layouts, 2D/3D transforms, transitions, and animations.</p> <p>CO6: Construct responsive, user-friendly websites using the Bootstrap framework and apply basic Search Engine Optimization (SEO) techniques.</p>				
<b>Course Content</b>	<p><b>Unit : 1 : Introduction to Internet</b></p> <p>1.1 History of Internet</p> <p>1.2 Working of Internet</p> <p>1.3 Internet Applications</p> <p>1.4 Advantages of Internet</p> <p>1.5 WWW</p> <p>1.6 Uniform Resource Locator</p> <p>1.7 W3C Standards</p>				

*P. V. Desai*

- 1.8 Web Pages
- 1.9 Web Server
- 1.10 Web Browsers
- 1.11 Domain Name Service
- 1.12 Applications of Internet
- 1.13 Internet Service Providers
- 1.14 DSL, Broadband and ISDN
- 1.15 Dedicated Connections
- 1.16 Wireless Connections
- 1.17 IP Addresses - IPv4 and IPv6
- 1.18 DHCP
- 1.19 Static IP and Dynamic IP

**Unit : 2 : HTML**

- 2.1 Structure
- 2.2 Open Source HTML Editors
- 2.3 Links
- 2.4 Images and ImageMaps
- 2.5 Tables
- 2.6 Forms
- 2.7 Frames

**Unit : 3 : Advanced HTML**

- 3.1 Semantic Elements and Non-Semantic Elements
- 3.2 HTML5 Elements
- 3.3 HTML5 Input Types and Attributes
- 3.4 Graphics - Canvas and SVG
- 3.5 Media - audio, embed, source, track and video

**Unit : 4 : Advanced Cascading Style Sheet (CSS)**

- 4.1 Style Sheet Types
  - 4.1.1 Linked
  - 4.1.2 Embedded
  - 4.1.3 Inline
- 4.2 Style Sheet Precedence
- 4.3 Style Sheet Syntax
- 4.4 Using Classes
- 4.5 Font Control
- 4.6 Text Control
- 4.7 Color and Background
- 4.8 List Box Control
- 4.9 Miscellaneous Properties
  - 4.9.1 Margin and Padding Properties
  - 4.9.2 Border Properties
  - 4.9.3 Tables
- 4.10 Multi-Column Layouts
- 4.11 Gradients
- 4.12 Drop Shadows
- 4.13 2D Transforms
  - 4.13.1 Translate

*P. V. Srinivas*

	4.13.2 rotate 4.13.3 scale 4.13.4 skew 4.14 3D Transforms 4.15 Transitions 4.16 Animations 4.17 Paged Media 4.18 Using Ready made Templates 4.19 Bootstrap framework 4.19.1 Introduction to Responsive Design, Using Bootstrap in a Web page 4.19.2 Typography, Color management, Jumbotron, Images, Alerts, Buttons 4.19.3 Tables, Forms, Drop downs, Navigation bar, Grid Basics, Pagination 4.19.4 Testing responsiveness using Browser Developer Tools 4.20 Characteristics of User Friendly Websites with Improved UI/UX 4.21 Basic Search Engine Optimization (SEO) Techniques																																																	
<b>Mapping between Cos and PSOs</b>	<table border="1"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> <th>PSO6</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	CO1							CO2							CO3							CO4							CO5							CO6						
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<b>Reference Books</b>	<ol style="list-style-type: none"> <li>How the Internet Works : Preston Gralla - Que PUB.</li> <li>HTML 5.0 Black Book : Kogent - Dreamtech Press</li> <li>HTML &amp; CSS: The Complete Reference : Thomas - TMH</li> <li>The Book of CSS3 - A Developer's Guide to the Future of Web Design : Peter Gasston - No Starch Press</li> <li>The Internet : K.L. James - PHI</li> <li>Internet Technology and Web Design : ISRD Group - TMH</li> <li>Bootstrap: Jake Spurlock - O'Reilly</li> <li>Search Engine Optimization: Harold Davis - O'Reilly</li> </ol>																																																	
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<b>Evaluation Method</b>	Internal Assessment: <u>25</u> Marks Ex.ernal Assessment: <u>25</u> Marks																																																	

*P. Y. Desai*

[Subject code for Theory-2711001602011001]

[Subject code for Practical-2711001602011002]

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

SYLLABUS

<b>Program Name</b>	Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security) [ 5 Years Integrated Programme ]					
<b>Semester</b>	2					
<b>NCrF Credit Level</b>	4.5					
<b>Course Type</b>	Major Course					
<b>Course Subtype</b>	Skill Development					
<b>Subject Type</b>	Discipline Specific					
<b>Course Code</b>	201					
<b>Course Level</b>	5					
<b>Course Title</b>	Fundamentals of Programming					
<b>Credit</b>	<b>Theory:</b>	2	<b>Practical:</b>	2	<b>Total:</b>	4
<b>Effective Form</b>	Academic Year: 2026-27					
<b>Course Outcomes</b>	<p>CO1 - To apply problem solving techniques to design algorithms and implement programs using C programming language.</p> <p>CO2 – To develop structured programs using control structures, functions and modular programming concepts.</p> <p>CO3 – To utilize arrays, strings, pointers and preprocessing directives to implement efficient solutions.</p> <p>CO4 –To build proficiency in pointer operations and their relationship with arrays, functions, and structures.</p> <p>CO5 - To apply command line arguments and dynamic memory allocation in program development.</p> <p>CO6– To design applications using structures and file handling to process and analyze data such as system logs.</p>					
<b>Course Content</b>	<p><b>Unit – 1 Programming Basics and Control Structures</b></p> <p>1.1 Introduction to Programming and Problem Solving</p> <p>1.2 Algorithms and Flowchart</p> <p>1.3 Structure of a C Program</p> <p>1.4 Data Types, Variables and Constants</p> <p>1.5 Operators and Expressions</p> <p>1.6 Input and Output Functions (printf, scanf)</p> <p>1.7 Decision Making Statements: if, if-else, nested if, switch</p> <p>1.8 Looping Constructs: while, do-while, for</p> <p>1.9 break and continue statements</p> <p><b>Unit -2 Array &amp; User Defined Function</b></p>					

- 2.1 Introduction to Array
  - 2.1.1 Concept and need of arrays
  - 2.1.2 Declaration and initialization of arrays
- 2.2 One Dimensional Arrays
  - 2.2.1 Memory representation
  - 2.2.2 Accessing array elements
  - 2.2.3 Basic operations on arrays (traversing, searching, sorting)
- 2.3 Two Dimensional Arrays
  - 2.3.1 Declaration and initialization
  - 2.3.2 Matrix representation and operations
  - 2.3.3 Applications of 2D arrays
- 2.4 Character Arrays and Strings
  - 2.4.1 Declaration and initialization of character arrays
  - 2.4.2 String representation in C
  - 2.4.3 Standard string handling functions (strlen, strcpy, strcmp, strcat)
  - 2.4.4 Basic string manipulation programs
- 2.5 Applications of Arrays
  - 2.5.1 Searching and sorting techniques
  - 2.5.2 Processing lists of data
- 2.6 User Defined Functions
  - 2.6.1 concept of Modular Programming
  - 2.6.2 Function Declaration, Definition and Calling
  - 2.6.3 Recursion
  - 2.6.5 Storage classes
  - 2.6.4 Applications of User Defined Functions

**Unit -3 Structure , Union & Pointer**

- 3.1 Structure
  - 3.1.1 Declaring and defining Structure elements
  - 3.1.2 Structure Initialization
  - 3.1.3 Structure assignment
  - 3.1.4 Array of Structure, Array within a structure
  - 3.1.5 Nested Structure
  - 3.1.6 Size of Structure
- 3.2 Union
- 3.3 Pointer
  - 3.3.1 Pointer Basics
  - 3.3.2 Pointers and arrays
  - 3.3.3 Chain of pointers
  - 3.3.4 Pointer and character strings
  - 3.3.5 Array of pointers, pointer to array
  - 3.3.6 Pointer and functions
    - 3.3.6.1 Call by value & call by reference
    - 3.3.6.2 Passing array to a function using pointer
  - 3.3.7 Pointer to structures
  - 3.3.8 Issues with pointers
  - 3.3.9 Dynamic memory allocation
    - 3.3.9.1 Allocating a memory block
    - 3.3.9.2 Allocating multiple blocks of memory
    - 3.3.9.3 Altering the size of a block
    - 3.3.9.4 Releasing used Space

**Unit – 4 Preprocessing, Command Line Arguments and File Handling**

*P. V. Gnan*

	<p>4.1 File Management</p> <ul style="list-style-type: none"> <li>4.1.1 Introduction : Definition, File structure, concept of Record</li> <li>4.1.2 File access modes: Sequential, random, binary,</li> <li>4.1.3 File Operations (read, write, open ,close, move etc.)</li> <li>4.1.4 Error handling during I/O operations</li> </ul> <p>4.2 Command Line Arguments</p> <p>4.3 Preprocessing Directives</p> <ul style="list-style-type: none"> <li>4.3.1 Features of C Preprocessor</li> <li>4.3.2 Macro</li> <li>4.3.3 File Inclusion</li> <li>4.3.4 Conditional compilation</li> <li>4.3.5 Compiler Control Directives</li> </ul>																																																	
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<p><b>Evaluation Method</b></p>	<p>Internal Assessment: <u>50</u> Marks External Assessment: <u>50</u> Marks</p>																																																	

*P. V. D. S. S.*

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security) [ 5 Years Integrated Programme ]				
<b>Semester</b>	2				
<b>NCrF Credit Level</b>	4.5				
<b>Course Type</b>	Major				
<b>Course Subtype</b>	Employability				
<b>Subject Type</b>	Discipline Specific				
<b>Course Code</b>	202				
<b>Course Level</b>	5				
<b>Course Title</b>	Introduction to Cyber Law				
<b>Credit</b>	<b>Theory:</b>	4	<b>Practical:</b>	0	<b>Total:</b> 4
<b>Effective Form</b>	Academic Year: 2026-2027				
<b>Course Outcomes</b>	<p>CO1: Explain the concept of cyberspace and the evolution of cyber law, including the key provisions of the Information Technology Act, 2000 and its amendments.</p> <p>CO2: Interpret the legal framework governing electronic records, electronic signatures, and e-governance under the Information Technology Act.</p> <p>CO3: Analyze the provisions related to cyber offences, penalties, compensation, and adjudication mechanisms under the IT Act.</p> <p>CO4: Evaluate constitutional and human rights issues in cyberspace, including freedom of expression, right to privacy, and data protection.</p> <p>CO5: Examine legal and regulatory challenges related to digital activities such as e-banking, e-commerce, and intellectual property rights in cyberspace.</p> <p>CO6: Assess emerging cyber law issues including cryptocurrency regulation, dark web activities, social media risks, and Internet of Things (IoT) security challenges.</p>				
<b>Course Content</b>	<p><b>Unit - 1 Introduction</b></p> <p>1.1 Origin and meaning of Cyberspace</p> <p>1.2 Cyberspace vs. Physical space.</p> <p>1.3 A brief overview of Information Technology Act, 2000</p> <p>1.4 Extent - Amendments to Bharatiya Nyaya Sanhita, Bharatiya Adhiniyam, Bankers Book Evidence Act, Reserve Bank of India Act, Negotiable Instrument Act, Right to Information Act etc.</p> <p>1.5 Definitions</p> <p>1.6 Authentication of electronic records</p> <p>1.7 Electronic signature</p> <p><b>Unit - 2 The Information technology Act, 2000</b></p>				

*P. V. Verma*

- 2.1 Extent - Amendments to Bharatiya Nyaya Sanhita, Bharatiya Sakshya Adhinyam, Bankers Book Evidence Act, Reserve Bank of India Act , Negotiable Instrument Act, Right to Information Act etc.
- 2.2 Definitions
- 2.3 Authentication of electronic records
- 2.4 Electronic signature
- 2.5 E-Governance
  - 2.5.1 Electronic governance
  - 2.5.2 Attribution, acknowledgement and dispatch of electronic records
  - 2.5.3 Secure electronic records and electronic signature
  - 2.5.4 Appointment of controller and functions
- 2.6 Penalties and compensation
  - 2.6.1 Penalties, compensation, adjudication
- 2.7 Offences
  - 2.7.1 Offences under the Act
  - 2.7.2 Punishments under the Act

**Unit – 3 Constitutional & Human Rights Issues in Cyberspace**

- 3.1 Freedom of Speech and Expression in Cyberspace
- 3.2 Right to Access Cyberspace – Access to Internet
- 3.3 Right to Data Protection
- 3.4 Right to Privacy
- 3.5 Violation of Privacy on Internet
- 3.6 Data Protection and Privacy

**Unit – 4 Cyber Law – Contemporary Trends**

- 4.1 E- Banking
- 4.2 E- Consumer
- 4.3 IPR in Cyber Space
- 4.4 E-commerce
- 4.5 Crypto currency and Cyber Laws
- 4.6 Dark Web and Legal Challenges
- 4.7 Social Networking Sites & Cyber Security Challenges
- 5.8 Internet of Things

**Mapping between Cos and PSOs**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2						
CO3						
CO4						
CO5						
CO6						

**Reference Books**

1. Textbook on Cyber Law by Pavan Duggal, Lexis- Nexis
2. Cyber Law-Law of Information Technology and Internet, Anirudh Rastogi, Lexis- Nexis
3. Understanding Laws– Cyber Laws and Cyber Crimes, Garima Tiwari, Lexis- Nexis
4. Nandan Kamath Law relating computers Internet & E Commerce, Universal Law Publishing Co. Pvt. Ltd. Delhi.
5. M. K. Saxena, Information Technology Law: Concepts, Evolution & Enactments, Mangal Deep Publ.
6. Cyber Law & Cyber Crimes By Advocate Prashant Mali; Snow White

*P. V. Duggal*

	Publications, Mumbai 7. Cyber Law in India by Farooq Ahmad; Pioneer Books 8. Information Technology Law and Practice by Vakul Sharma; Universal Law Publishing Co. Pvt. Ltd. 9. The Indian Cyber Law by Suresh T. Vishwanathan; Bharat Law House New Delhi 10. Guide to Cyber and E- Commerce Laws by P.M. Bukshi and R.K. Suri; Bharat Law House, New Delhi 11. Web References: Ministry of Electronics & IT – IT Act and Rules <a href="https://www.meity.gov.in">https://www.meity.gov.in</a> 12. India Code – Official Indian Laws Portal <a href="https://www.indiacode.nic.in">https://www.indiacode.nic.in</a> 13. CERT-In Cyber Security Guidelines <a href="https://www.cert-in.org.in">https://www.cert-in.org.in</a>
<b>Teaching Methodology</b>	Classroom Teaching, Discussion, Independent Study and Assignments
<b>Evaluation Method</b>	Internal Assessment: 50 Marks External Assessment: 50 Marks

*P. V. Desai*

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	<b>Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security) [ 5 Years Integrated Programme ]</b>					
<b>Semester</b>	<b>2</b>					
<b>NCrF Credit Level</b>	<b>4.5</b>					
<b>Course Type</b>	<b>Minor</b>					
<b>Course Subtype</b>	<b>Nil</b>					
<b>Subject Type</b>	<b>Discipline Specific</b>					
<b>Course Code</b>	<b>203</b>					
<b>Course Level</b>	<b>5</b>					
<b>Course Title</b>	<b>Operating System</b>					
<b>Credit</b>	<b>Theory:</b>	<b>4</b>	<b>Practical:</b>	<b>0</b>	<b>Total:</b>	<b>4</b>
<b>Effective Form</b>	<b>Academic Year: 2026-27</b>					
<b>Course Outcomes</b>	<p><b>CO1</b> - Explain the structure, functions, and types of operating systems, including kernel architecture, system calls, and OS services.</p> <p><b>CO2</b> - Analyze and apply process management concepts such as process states, CPU scheduling algorithms, inter-process communication, and synchronization mechanisms.</p> <p><b>CO3</b> - Evaluate memory management techniques including paging, segmentation, virtual memory, and memory protection mechanisms used in modern operating systems.</p> <p><b>CO4</b> - Describe and apply file system organization and I/O management, including access control, storage allocation methods, and device management.</p> <p><b>CO5</b> - Identify and analyze operating system security threats and vulnerabilities, including malware, privilege escalation, and denial-of-service attacks, along with basic mitigation techniques.</p> <p><b>CO6</b> - Demonstrate the use of operating system-level security mechanisms such as authentication, authorization, access control models, auditing, and secure OS configuration in real-world scenarios.</p>					
<b>Course Content</b>	<p><b>Unit - 1 Operating System Fundamentals</b></p> <p>1.1 Introduction : Purpose of OS, history, types (batch, time-sharing, distributed, embedded)</p> <p>1.2 System Components : Kernel, shell, services, system libraries</p> <p>1.3 Process Concept : Process vs. program, process states, Process Control Block</p> <p>1.4 Threads and Concurrency</p> <p>1.5 Inter-Process Communication : Shared memory, message passing</p> <p><b>Unit – 2 Memory, Storage, and File Systems</b></p>					

*P. V. Desai*

	<p>2.1 Memory Management  2.2 Virtual Memory  2.3 File System Concepts  2.4 I/O Management  2.5 Storage Security</p> <p><b>Unit – 3 Operating System commands</b>  3.1 Commands related to File/Folder Operations  ls, cd, cp, md, rd, rm, cat, tee, pwd, more, head, tail, mv, mkdir, rmdir, file  3.2 Commands related to user management and permission  who, whoami, chmod, chown, chgrp, passwd, , w, users, groups, finger, last  3.3 Commands related to Editing and other applications  vi, nano, grep, find, locate, head, tail, where, whereis, sort</p> <p><b>Unit – 4 OS Resource Management</b>  4.1 OS Installation  4.2 Directory Services  4.3 Types of Servers  4.4 Inter-device communication  4.5 Deadlock Management</p>																																																	
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<b>Evaluation Method</b>	Internal Assessment: 50 Marks External Assessment: 50 Marks																																																	

*P. Y. Yasa*

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security)   5 Years Integrated Programme				
<b>Semester</b>	2				
<b>NCrF Credit Level</b>	4.5				
<b>Course Type</b>	MDC				
<b>Course Subtype</b>	Nil				
<b>Subject Type</b>	Intra-disciplinary				
<b>Course Code</b>	204				
<b>Course Level</b>	5				
<b>Course Title</b>	Mathematics - 2				
<b>Credit</b>	<b>Theory:</b>	<b>4</b>	<b>Practical:</b>	<b>0</b>	<b>Total:</b> <b>4</b>
<b>Effective Form</b>	Academic Year: 2026-27				
<b>Course Outcomes</b>	<p>CO1 - Compute and interpret descriptive statistics (mean, median, mode, variance, standard deviation).</p> <p>CO2 - Understand the concept of Measures of dispersion with application.</p> <p>CO3 - Understand the central tendency, correlation and correlation coefficient and also regression.</p> <p>CO4 - Calculate probabilities using axioms, combinatorics, and Bayes' Theorem for independent and conditional events.</p> <p>CO5 - Identify and apply appropriate discrete distributions to find expectations and mass functions.</p> <p>CO6 - Use probability density functions to compute moments and variances for continuous models.</p>				
<b>Course Content</b>	<p><b>Unit - 1 Basic Statistics</b></p> <p>1.1 Data types and classification</p> <p>1.2 Frequency distributions</p> <p>1.3 Measures of central tendency: Mean, Median, Mode , Quartiles, Deciles, Percentiles</p> <p><b>Unit – 2 Measures of dispersion</b></p> <p>2.1 Range</p> <p>2.2 Quartile Deviation</p> <p>2.3 Mean Deviation</p> <p>2.4 Variance</p> <p>2.5 Standard deviation</p> <p>2.6 Skewness and Kurtosis</p>				

	<p><b>Unit – 3 Correlation and Regression</b>  3.1 Correlation: Positive and negative correlation, Pearson correlation  3.2 Coefficient Regression: Simple linear regression, Least squares method  Introduction to multiple regression(basic idea)</p> <p><b>Unit – 4 Basics of Probability</b>  4.1 Definition of Probability  4.2 Sample Spaces  4.3 Events  4.3.1 Types of events  4.3.2 Algebra of Events  4.4 Conditional Probability  4.5 Baye’s theorem  4.6 Discrete and Continuous Random variables  4.7 Mathematical expectations and Variance  4.8 Discrete Probability Distribution : Binomial Distribution, Density Function, Mean and Variance of the Distributions, Properties and uses</p>																																																	
<b>Mapping between Cos and PSOs</b>	<table border="1" data-bbox="416 815 1070 1037"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> <th>PSO6</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td style="background-color: #cccccc;"></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> </tr> <tr> <td>CO4</td> <td style="background-color: #cccccc;"></td> <td style="background-color: #cccccc;"></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> <td></td> </tr> <tr> <td>CO5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> </tr> <tr> <td>CO6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	CO1							CO2							CO3							CO4							CO5							CO6						
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<b>Teaching Methodology</b>	Classroom Teaching, Discussion, Independent Study and Assignments																																																	
<b>Evaluation Method</b>	Internal Assessment: 50 Marks External Assessment: 50 Marks																																																	

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**SYLLABUS**

<b>Program Name</b>	M.Sc. (Cyber Security)				
<b>Semester</b>	2				
<b>NCrF Credit Level</b>	02				
<b>Course Type</b>	AEC				
<b>Course Subtype</b>	Skill Development				
<b>Subject Type</b>	Intra-disciplinary				
<b>Course Code</b>	205				
<b>Course Level</b>					
<b>Course Title</b>	Business Communication Skills for Cyber Security				
<b>Credit</b>	<b>Theory:</b>	02	<b>Practical:-</b>	-	<b>Total:</b> 2
<b>Effective Form</b>	Academic Year: June 2026				
<b>Course Outcomes</b>	<p>CO1 Understand the importance of communication in cyber security operations</p> <p>CO2 Apply communication strategies during cyber incidents and threats</p> <p>CO3 Follow ethical and confidential communication practices in cyber environments</p> <p>CO4 Prepare professional cyber security reports, emails, and notices</p> <p>CO5 Use appropriate cyber security terminology and professional expression</p> <p>CO6 Demonstrate LSRW skills for cyber security professional communication</p>				
<b>Course Content</b>	<p><b>Unit 1: Understanding Cyber Security and Professional Communication</b></p> <p>1.1 Meaning and importance of Professional Communication in Cyber Security</p> <p>1.2 Communication flow in SOC (Security Operations Center) teams</p> <p>1.3 Features of successful cyber professional communication</p> <p>1.4 Purpose of communication in cyber incident management</p> <p>1.5 Role of business communication in Cyber Security organizations</p> <p>1.6 Communication during cyber threats, phishing attacks, and data breaches</p> <p><b>Application-Based Activities</b></p> <p>1.7 Drafting security alert messages</p> <p>1.8 Simulated communication during a cyber incident</p> <p>1.9 Team communication exercises for security operations</p> <p><b>Understanding Specific Communication Needs in Cyber Security</b></p> <p>2.1 Corporate communication in Cyber Security companies</p>				

- 2.2 Persuasive strategies in cyber awareness campaigns
- 2.3 Ethics in Cyber Security communication
- 2.4 Confidentiality and responsible disclosure
- 2.5 Business Etiquette and Netiquette in digital communication
- 2.6 Secure email communication and professional online behavior

#### **Application-Based Activities**

- 2.7 Creating cyber awareness campaigns
- 2.8 Writing ethical disclosure emails
- 2.9 Role-play on client communication during cyber attacks

### **Unit 2 Cyber Security Business Writing**

- 3.1 Professional email writing for IT and Cyber Security
- 3.2 Writing incident reports and vulnerability reports
- 3.3 Cyber Security documentation and ticket writing
- 3.4 Business conversations with clients and technical teams
- 3.5 Writing content for cyber awareness websites and blogs
- 3.6 Report writing for malware analysis and security audits

#### **Application-Based Activities**

- 3.7 Writing phishing alert notices
- 3.8 Drafting incident response reports
- 3.9 Preparing website content on cyber safety

### **Cyber Security Vocabulary and Professional Expressions**

#### **4.1 Cyber Security Business Vocabulary**

- 4.1.1 Common Cyber security terminology
- 4.1.2 IT and network security terms
- 4.1.3 Business idioms used in corporate IT communication

#### **4.2 Expressions Used In:**

- 4.2.1 Resume writing for Cyber Security jobs
- 4.2.2 Interviews for SOC Analyst / Ethical Hacker roles
- 4.2.3 Meetings and client discussions
- 4.2.4 Group discussions on cyber threats
- 4.2.5 Security presentations and awareness programs
- 4.2.6 Client conversations during technical support

#### **4.3 LSRW Skills in Cyber Security Communication**

##### **4.3.1 Listening Skills**

- 4.3.1.1 Listening to client requirements
- 4.3.1.2 Understanding cyber incident briefings
- 4.3.1.3 Listening to security podcasts and webinars

##### **4.3.2 Speaking Skills**

- 4.3.2.1 Business greetings in professional IT environments
- 4.3.2.2 Speaking about software, firewalls, malware, cloud security, AI security, and cyber trends
- 4.3.2.3 Explaining technical concepts to non-technical users

##### **4.3.3 Reading Skills**

- 4.3.3.1 Reading cyber security reports, advisories, and emails
- 4.3.3.2 Reading IT company documentation and policies

##### **4.3.4 Writing Skills**

- 4.3.4.1 Writing professional emails

	4.3.4.2 Preparing cyber awareness notices 4.3.4.3 Writing meeting summaries and technical notes																																																	
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<b>Teaching Methodology</b>	<ul style="list-style-type: none"> <li>• Lectures &amp; interactive sessions</li> <li>• Case studies (cyber incidents)</li> <li>• Role plays &amp; group discussions</li> <li>• Report writing &amp; presentations</li> <li>• Practical communication exercises</li> </ul>																																																	
<b>Evaluation Method</b>	Internal Assessment: 25 Marks External Assessment:25 Marks																																																	

## VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

## SYLLABUS

<b>Program Name</b>	<b>Bachelor of Science (Cyber Security) Bachelor of Science (Cyber Security) Honours Master of Science (Cyber Security) [ 5 Years Integrated Programme ]</b>				
<b>Semester</b>	<b>2</b>				
<b>NCrF Credit Level</b>	<b>4.5</b>				
<b>Course Type</b>	<b>SEC</b>				
<b>Course Subtype</b>	<b>Skill Development</b>				
<b>Subject Type</b>	<b>Discipline Specific</b>				
<b>Course Code</b>	<b>206</b>				
<b>Course Level</b>	<b>5</b>				
<b>Course Title</b>	<b>Web Development- 1</b>				
<b>Credit</b>	<b>Theory:</b>	<b>2</b>	<b>Practical:</b>	<b>0</b>	<b>Total: 2</b>
<b>Effective Form</b>	<b>Academic Year: 2026-27</b>				
<b>Course Outcomes</b>	<p>CO1: Apply foundational JavaScript programming constructs, data types, and object-oriented principles to solve basic computational problems.</p> <p>CO2: Develop interactive web interfaces by manipulating the Document Object Model (DOM) and implementing dynamic event handlers.</p> <p>CO3: Design dynamic HTML forms and evaluate user input using rigorous client-side validation techniques to ensure data integrity.</p> <p>CO4: Utilize Browser Object Model (BOM) properties, timers, and client-side storage mechanisms (Cookies, localStorage) for efficient session and state management.</p> <p>CO5: Apply the use of XML and JSON data formats and process them.</p> <p>CO6: Implement asynchronous web requests using the fetch() API to fetch data from the server.</p>				
<b>Course Content</b>	<p><b>Unit : 1 : JavaScript Basics and Object Model</b></p> <p>1.1. Basic of JavaScript Programming</p> <p>1.2. The &lt;script&gt; tag – Basic Syntax</p> <p>1.3. Variables</p> <p>    1.3.1. Expressions</p> <p>    1.3.2. Data Types</p> <p>    1.3.3. Operators</p> <p>1.4. Strict Mode, hoisting</p>				

*P. Y. Joshi*

- 1.5. var, let, const
- 1.6. Arrays
- 1.7. Objects and Classes
- 1.8. Regular Expressions
- 1.9. Working with Text Converting Strings – Template Strings
- 1.10. Conditional Loops
- 1.11. Functions
- 1.12. Math Operations
- 1.13. Date Object
- 1.14. Object Model and Event Handling
  - 1.14.1. Programming Using Objects
  - 1.14.2. Document Object Model
    - 1.14.2.1. Object Hierarchy
    - 1.14.2.2. Properties
    - 1.14.2.3. Methods
    - 1.14.2.4. Events
  - 1.14.3. Events
  - 1.14.4. Event Listeners and Handlers
  - 1.14.5. Window Object
  - 1.14.6. Open and Close New Windows Dynamically
  - 1.14.7. Alert
  - 1.14.8. Confirm
  - 1.14.9. Prompt Windows

## **Unit : 2 : Manipulating Components**

- 2.1. The Keyword this
- 2.2. Forms
- 2.3. Names vs. IDs
- 2.4. Arrays of Elements
- 2.5. Manipulating the Value of a Text Field
- 2.6. Text Field Events
- 2.7. Form Handlers
- 2.8. Checkboxes
- 2.9. Radio Buttons
- 2.10. Selects on Change in Various Form Elements
- 2.11. Hidden Text Field values
- 2.12. Add and remove Form elements
- 2.13. Dynamically Modifying Select Lists
- 2.14. Validating Form Entries
- 2.15. Processing Forms

## **Unit : 3 : Image Handling and Browser Capabilities**

- 3.1. Image Swaps and pre-caching
- 3.2. navigator Object
- 3.3. location, console and history Objects
- 3.4. Screen Object
- 3.5. Timers
- 3.6. Cookies, localStorage, sessionStorage

*P. Y. J. S. S.*

	<p><b>Unit : 4 : Introduction to XML and JSON</b></p> <p>4.1. XML Fundamentals</p> <p>4.1.1. XML Syntax and rules</p> <p>4.1.2. Need of XML in Application Development</p> <p>4.1.3. XHTML</p> <p>4.2. Parsing XML DOM using JavaScript</p> <p>4.3. fetch() method to load data</p> <p>4.2 JSON Data Format and its Applications</p>																																																	
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<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment																																																	
<b>Evaluation Method</b>	Internal Assessment: <u>25</u> Marks External Assessment: <u>25</u> Marks																																																	

*Dr. Payal Joshi*