

**Sheth T. J. Education Society's  
Sheth N.K.T.T College of Commerce and  
Sheth J.T.T College of Arts, (AUTONOMOUS). Thane (W)**

**F. Y. B.Sc. (Cyber Security & Cloud Computing) 2026-27**

	<b>Semester -I</b>	<b>Credits</b>		<b>Semester -II</b>	<b>Credits</b>
<b>Major</b> CSP101	1. Python Programming	2	<b>Major</b> CSD201	1. Database Management System	2
CSA102	2. Artificial Intelligence	2	CSG202	2. Generative AI Foundations & Applications	2
<b>Major</b> CSPP103	1. Python Programming & Artificial Intelligence Practical	2	CSDP203	1. Database Management System Practical and Generative AI Foundations & Applications Practical	2
<b>Minor</b>	-		CSS204	1. Software Engineering	2
<b>OE</b> CSS104	Statistics for Computing	4	CSD205 CSD206	OE1: Discrete Mathematics OE2: Discrete Mathematics Practical	2 2
CSN105	1. VSC: Computer Networks Fundamentals	2	CSC207	1. VSC: Cloud Fundamentals	2
CSNP106	2. SEC: Computer Networks Fundamentals Practical	2	CSWP208	2. SEC: Web Technologies Practical	2
CSR107	1. AEC: Corporate communication-I	2	CSE209	1. AEC: Corporate communication-II	2
CSG108	2. VEC Green Technology- I	2	CSG210	1. VEC: Green Technology-II	2
CSI109	3. IKS: Evolution of IT	2			
CSN110/ CSY111	1. CC: NSS/ Sports/ Cultural/ Yoga	2	CSN211/ CSY212	1. CC: NSS/ Sports/ Cultural/ Yoga	2
	<b>Total</b>	<b>22</b>			<b>18</b>

**Dr. Yogeshwari Patil**  
Department Coordinator

**Prof. Heena Chande**  
NEP Coordinator

**Dr. Dilip Patil**  
Principal

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<b>Programme Name: B.Sc. (Cybersecurity and Cloud Computing)</b>		<b>Semester: I</b>
Course Category: <b>Major</b>		
Name of the Dept: <b>Science and Technology</b>		
Course Title: <b>Python Programming</b>		
Course Code: <b>CSP101</b>	Course Level: 4.5	
Type: <b>Theory</b>		
Course Credit: 2 credits		
Hours Allotted: 30 Hours		
Marks Allotted: 50 Marks		
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>1. To develop a strong foundation in Python programming concepts and problem-solving techniques.</li> <li>2. To enable learners to build structured programs and apply Python in cybersecurity-related tasks.</li> </ol>		
<b>Course Outcomes:</b>		
After the completion of the course, the learners would be able to:		
<b>CO 1:</b> apply core Python programming constructs to design efficient solutions.		
<b>CO 2:</b> develop modular programs using data structures, file handling, and error handling techniques.		
<b>Description of the course:</b>	This course provides a comprehensive introduction to Python programming with a focus on logical thinking, structured programming, and real-world applications. It emphasizes problem-solving, data handling, and scripting capabilities essential for cybersecurity operations such as automation, log analysis, and basic tool development.	

**Syllabus : NEP 2020 w.e.f from 2026-27**

Unit No.	Content	Hours
I	<b>Fundamentals of Python Programming and Control Structures:</b> Introduction to Python and its features, installation and development environments, syntax and program structure, variables and data types (numeric, string, boolean), type casting and operators (arithmetic, relational, logical), input and output operations, conditional statements (if, if-else, nested conditions) for decision making, iterative constructs (for and while loops) for repetition, introduction to functions including built-in and user-defined functions, parameter passing and return values, importance of modular programming and code reusability	15
II	<b>Data Structures, File Handling and Application Scripting:</b> Detailed study of data structures such as lists, tuples, sets and dictionaries including operations and use cases, string manipulation techniques and formatting, file handling operations (reading, writing, appending, handling text and binary files), exception handling (try, except, finally) for robust program execution, modules and packages for code organization, introduction to standard libraries such as os, sys and datetime, basics of scripting for automation tasks including simple log analysis and system-level operations relevant to cybersecurity	15
	<b>Total Hours</b>	<b>30</b>

**Books and References:**

Sr. No	Title	Author/s	Publisher	Edition
1	Learning Python	Mark Lutz	O'Reilly Media	5th Edition
2	Automate the Boring Stuff with Python	Al Sweigart	No Starch Press	2nd Edition
3	Core Python Programming	Wesley J. Chun	Prentice Hall	2nd Edition

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<b>Programme Name: B.Sc. (Cybersecurity and Cloud Computing)</b>		<b>Semester: I</b>
Course Category: <b>Major</b>		
Name of the Dept: <b>Science and Technology</b>		
Course Title: <b>Artificial Intelligence</b>		
Course Code: <b>CSA102</b>		Course Level: 4.5
Type: <b>Theory</b>		
Course Credit: 2 credits		
Hours Allotted: 30 Hours		
Marks Allotted: 50 Marks		
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>1. To introduce foundational concepts of Artificial Intelligence and Machine Learning.</li> <li>2. To develop an understanding of AI methodologies and their applications in real-world and cybersecurity domains.</li> </ol>		
<b>Course Outcomes:</b>		
After the completion of the course, the learners would be able to:		
<b>CO 1:</b> understand and differentiate key AI paradigms including machine learning approaches.		
<b>CO 2:</b> analyze real-world AI applications and evaluate challenges in deploying AI systems.		
<b>Description of the course:</b>	This practical course provides hands-on exposure to fundamental Artificial Intelligence and Machine Learning techniques using programming tools. It enables learners to work with datasets, implement basic models, and understand the practical workflow of AI systems including data preprocessing, model building, and evaluation. The course emphasizes application-oriented learning to solve real-world problems using AI techniques.	

Unit No.	Content	Hours
I	<b>Foundations of Artificial Intelligence and Problem Solving:</b> Introduction to Artificial Intelligence and its evolution, key concepts and terminologies, intelligent agents and their types, problem-solving in AI including state space representation and search techniques, overview of uninformed and informed search strategies, role of heuristics in improving efficiency, applications of AI in real-world domains including cybersecurity, automation and decision support systems.	15
II	<b>Machine Learning Concepts and Real-World Implementation:</b> Introduction to machine learning as a subset of AI, types of learning (supervised, unsupervised and reinforcement learning), understanding regression and classification problems, model training and evaluation concepts, issues such as overfitting, underfitting, bias and variance, challenges in real-world deployment of AI systems including data quality and scalability, case studies of AI applications and failures, introduction to AI-driven decision making in practical scenarios.	15
	<b>Total Hours</b>	<b>30</b>

### Books & References:

Sr. No	Title	Author/s	Publisher	Edition
1	Artificial Intelligence: A Modern Approach	Stuart Russell, Peter Norvig	Pearson	3rd Edition
2	Hands-On Machine Learning with Scikit-Learn & TensorFlow	Aurélien Géron	O'Reilly Media	2nd Edition
3	Artificial Intelligence Basics	Tom Taulli	Apress	1st Edition

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<b>Programme Name: B.Sc. (Cybersecurity and Cloud Computing)</b>		<b>Semester: I</b>
Course Category: <b>Major</b>		
Name of the Dept: <b>Science and Technology</b>		
Course Title: <b>Python Programming and Artificial Intelligence Practical</b>		
Course Code: <b>CSPP103</b>		Course Level: 4.5
Type: Practical		
Course Credit: 2 credits		
Hours Allotted: 60 Hours		
Marks Allotted: 50 Marks		
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>1. To develop practical programming and debugging skills.</li> <li>2. To build real-world scripts relevant to cybersecurity tasks.</li> <li>3. To provide hands-on experience with AI and machine learning tools.</li> <li>4. To enable implementation of basic models and analysis techniques.</li> </ol>		
<b>Course Outcomes:</b>		
After the completion of the course, the learners would be able to:		
<b>CO 1:</b> develop Python programs using structured and modular approaches.		
<b>CO 2:</b> implement file-based and automation scripts for practical applications.		
<b>CO 3:</b> implement basic machine learning models using programming tools.		
<b>CO 4:</b> analyze datasets and interpret model performance		
<b>Description of the course:</b>	This comprehensive course is designed to provide learners with both practical programming skills and a strong conceptual foundation in modern technologies such as Python, Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL). It offers hands-on experience in Python programming through structured exercises that build logical thinking, problem-solving abilities, and the capability to write efficient and optimized code. The course further explores real-world applications including file handling, error handling, and basic automation, enabling learners to apply Python in practical computing and cybersecurity contexts.	

Syllabus : NEP 2020 w.e.f. 2026-27

Sr No.	Content (List of Practicals)	Hours
	<b>Python Programming</b>	
1	<b>Practical on Variables, Operators and Input/Output</b>	
a)	Write Python programs to demonstrate the use of variables, data types, and operators (arithmetic, relational, logical).	
b)	Develop programs using input() and print() functions for formatted input and output operations.	
2	<b>Practical on Conditional and Looping Statements</b>	
a)	Implement programs using conditional statements (if, if-else, nested if) for decision-making problems.	
b)	Develop programs using loops (for, while) including use of break, continue, and pass statements.	
3	<b>Practical on Functions and Recursion</b>	
a)	Write user-defined functions with parameters and return values to solve computational problems.	
b)	Implement recursive functions (e.g., factorial, Fibonacci) and compare with iterative approaches.	
4	<b>Practical on Lists, Tuples and Dictionaries</b>	
a)	Perform operations on lists and tuples including indexing, slicing, and built-in functions.	
b)	Create and manipulate dictionaries using key-value pairs and implement common dictionary operations.	
5	<b>Practical on File Handling Operations</b>	
a)	Write programs to perform file operations (read, write, append) using text files.	
b)	Process file data to extract, modify, and store structured information.	
6	<b>Practical on Exception Handling</b>	
a)	Implement exception handling using try, except, else, and finally blocks in programs.	
b)	Create user-defined exceptions and handle runtime errors effectively.	
7	<b>Practical on Log File Analysis Script</b>	
a)	Develop a Python script to read and analyze log files to extract useful information (e.g., errors, timestamps).	
b)	Generate summary reports from log data such as frequency of errors or events.	
8	<b>Mini Project: Automation Tool</b>	
a)	Develop a Python-based automation tool (e.g., file organizer, data cleaner, or simple task automation script).	
b)	Implement features such as file handling, error handling, and user input in the automation tool.	
	<b>Note:</b> The above mini project topics are indicative examples. The final problem statements and implementation approach will be defined later with inputs and expertise from Deloitte.	
	<b>Artificial Intelligence</b>	
1	<b>Practical on Introduction to Python Libraries for AI (NumPy, Pandas)</b>	
a)	Perform basic operations using NumPy arrays and Pandas Data Frames.	
b)	Manipulate datasets using indexing, filtering, and aggregation functions.	
2	<b>Practical on Data Preprocessing and Visualization</b>	
a)	Clean and preprocess datasets by handling missing values, normalization, and encoding categorical data.	
b)	Visualize data using plots (bar chart, histogram, scatter plot) to identify patterns and trends.	

3	<b>Practical on Implementation of Linear Regression</b>	
a)	Implement linear regression using a dataset and analyze the relationship between variables.	
b)	Evaluate model performance using error metrics such as Mean Squared Error.	
4	<b>Practical on Classification using K-Nearest Neighbors</b>	
a)	Implement KNN algorithm for classification on a given dataset.	
b)	Analyze the effect of different values of K on model accuracy.	
5	<b>Practical on Clustering using K-Means</b>	
a)	Implement K-Means clustering to group similar data points.	
b)	Visualize clusters and interpret grouping results.	
6	<b>Practical on Model Evaluation Techniques</b>	
a)	Evaluate classification models using confusion matrix and accuracy metrics.	
b)	Calculate precision, recall, and F1-score for performance analysis.	
7	<b>Practical on Feature Selection and Data Analysis</b>	
a)	Perform feature selection techniques to identify important variables in a dataset.	
b)	Analyze the impact of selected features on model performance.	
8	<b>Practical on AI Application Workflow</b>	
a)	Design a basic AI workflow from data collection to model prediction for a given problem.	
b)	Implement a simple end-to-end pipeline integrating preprocessing, model building, and evaluation.	
9	<b>Mini Project: AI-based Problem Statement</b>	
a)	Develop an AI-based solution using appropriate algorithms for a real-world problem (e.g., prediction or classification).	
b)	Evaluate the model and present results with proper visualization and interpretation.	
	<b>Note:</b> The above mini project topics are indicative examples. The final problem statements and implementation approach will be defined later with inputs and expertise from Deloitte.	
	<b>Total Hours</b>	<b>60</b>

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<b>Programme Name: B.Sc. (Cybersecurity and Cloud Computing)</b>		<b>Semester: I</b>
Course Category/Vertical: <b>Open Elective</b>		
Name of the Dept: <b>Science and Technology</b>		
Course Title: <b>Statistics for Computing</b>		
Course Code: <b>CSS104</b>		Course Level: 4.5
Type: <b>Theory</b>		
Course Credit: 4 credits		
Hours Allotted: 60 Hours		
Marks Allotted: 100 Marks		
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>1. To develop a strong understanding of statistical concepts and their role in computing and data analysis.</li> <li>2. To equip learners with techniques to summarize, visualize, and interpret data effectively.</li> <li>3. To introduce probability theory and statistical distributions for modeling uncertainty.</li> <li>4. To enable application of inferential statistical methods for decision-making and hypothesis testing.</li> </ol>		
<b>Course Outcomes:</b>		
After the completion of the course, the learners would be able to:		
<b>CO 1:</b> apply descriptive statistical methods to summarize and interpret datasets.		
<b>CO 2:</b> analyze probabilistic models and distributions to handle uncertainty in computing problems.		
<b>CO 3:</b> perform inferential statistical analysis including hypothesis testing and estimation.		
<b>CO 4:</b> use statistical techniques to support data-driven decision-making in real-world applications.		
<b>Description of the course:</b>	This course provides a comprehensive foundation in statistical methods used in computing and data-driven decision-making. It covers descriptive, probabilistic, and inferential techniques essential for analyzing datasets, identifying patterns, and drawing meaningful conclusions. The course emphasizes practical applications in computing domains such as data analysis, cybersecurity analytics, and predictive modeling, enabling learners to interpret uncertainty and variability in real-world data.	

**Syllabus : NEP 2020 w.e.f 2026-27**

Unit No.	Content	Hours
I	<b>Descriptive Statistics:</b> Introduction to data and its types, methods of data collection, organization and presentation of data, measures of central tendency (mean, median, mode) and their significance, measures of dispersion (range, variance, standard deviation) to understand variability, skewness and kurtosis to analyze data distribution shape, graphical representation using charts and plots, interpretation of summarized data for decision-making	15
II	<b>Probability Theory:</b> Fundamentals of probability, sample space and events, axioms of probability, conditional probability and independence, Bayes theorem and its applications, random variables and their types, probability mass and density functions, expectation and variance, real-world applications of probability in computing and risk analysis <b>Probability Theory:</b> Fundamentals of probability, sample space and events, axioms of probability, conditional probability and independence, Bayes theorem and its applications, random variables and their types, probability mass and density functions, expectation and variance, real-world applications of probability in computing and risk analysis	15
III	<b>Probability Distributions:</b> Discrete and continuous distributions, Binomial distribution and its applications, Poisson distribution for event modeling, Normal distribution and its properties, standard normal distribution, central limit theorem, role of distributions in modeling real-world data and computational system	15
IV	<b>Inferential Statistics:</b> Sampling techniques and sampling distributions, estimation methods, confidence intervals, hypothesis testing procedures, errors and level of significance, correlation and regression analysis for relationship modeling, interpretation of results in data-driven decision-making and computing applications	15
	<b>Total Hours</b>	<b>60</b>

**References:**

Sr. No	Title	Author/s	Publisher	Edition
1	Applied Statistics and Probability for Engineers	Douglas C. Montgomery	Wiley	7th Edition
2	Introduction to Probability and Statistics	Sheldon Ross	Academic Press	10th Edition

3	Statistics for Engineers and Scientists	William Navidi	McGraw Hill	5th Edition
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<b>Programme Name: B.Sc. (Cyber Security &amp; Cloud Computing) Semester: I</b>	
Course Category/Vertical: <b>Vocational Skill Course (VSC)</b>	
Name of the Dept: <b>Science and Technology</b>	
Course Title: <b>Computer Network</b>	
Course Code: <b>CSN105</b>	Course Level: 4.5
Type: <b>Theory</b>	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
<b>Course Objectives :</b>	
<ol style="list-style-type: none"> <li>1. To explain and understand concept of the Data communication, Multiplexing and Data link layer</li> <li>2. To understand Concept of the Data Link control , Network Layer and transport layer.</li> </ol>	
<b>Course Outcomes :</b> After the completion of the course, the learners would be able to:	
<b>CO 1.</b> understand concept of the Data communication, Multiplexing and Data link layer	
<b>CO 2.</b> understand Concept of the Data Link control , Network Layer and transport layer.	
<b>Description of the course:</b>	The Computer Network syllabus introduces data communication, computer network and its types, describe working of ISO -OSI Model, TCP Model , Physical Layer , Data link layer , Data Link control , Network Layer , IP Protocol ,Trasport layer

**Syllabus: NEP 2020 w.e.f 2026-27**

Unit No.	Content	Hours
I	<p>Computer Network and Data communications: Computer Networks, Network types, Internet history, standards and administration, Network model, Protocol layering, TCP/IP protocol suite, The OSI model, Data and signals, periodic analog signals, digital signals, transmission impairment, data rate limits, performance, Digital-to-digital conversion, analog-to-digital conversion, transmission modes, digital-to-analog conversion, analog-to-analog conversion.</p> <p>Physical layer Bandwidth Utilization and Multiplexing Spread Spectrum Transmission media, Guided Media, Unguided Media Switching, circuit switched networks, packet switching, structure of a switch,</p> <p>Data Link Layer: Structure of Data Link Layer, Link layer addressing, Data Link Layer Design Issues, Error detection and correction, block coding, cyclic codes, checksum, forward error correction, error correcting codes, error detecting codes.</p>	15
II	<p>Data Link Control: DLC services, data link layer protocols, HDLC, Point-to-point protocol, Media Access Control Protocol, Random access, controlled access, channelization, Wired LANs – Ethernet Protocol, standard ethernet, fast ethernet, gigabit ethernet, 10 gigabit ethernet, Wireless LANs, Introduction to IEEE 802.11 project, Bluetooth, WiMAX, Cellular telephony, Satellite networks.</p> <p>Connecting devices and Virtual LANs.</p> <p>Network Layer and IP Protocol: Network layer services, packet switching, network layer performance, IPv4 addressing, forwarding of IP packets, Internet Protocol, ICMPv4, Mobile IP Unicast Routing, Routing algorithms, Unicast routing protocols, Next generation IP, IPv6 addressing, IPv6 protocol, ICMPv6 protocol, transition from IPv4 to IPv6.</p> <p>Transport Layer: Transport layer protocols, Simple protocol, Stop-and-wait protocol, Go-Back-n protocol, Selective repeat protocol, Bidirectional protocols, Transport layer services, User datagram protocol, Transmission control protocol, Standard Client-Server Protocols, World Wide Web and HTTP, FTP, Electronic mail, Telnet, Secured Shell, Domain name system.</p>	15
	<b>Total Hours</b>	30

**References:**

1. Edition Data Communication and Networking Behrouz A. Forouzan Year Tata McGraw Hill
2. TCP/IP Protocol Suite Behrouz A. Forouzan Tata McGraw Hill Fifth Edition 2013
3. Fourth Edition Computer Networks Andrew Tanenbaum Pearson 2010 Fifth 2013

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<b>Programme Name: B.Sc. (Cyber Security &amp; Cloud Computing) Semester: I</b>	
Course Category/Vertical: <b>Skill Enhancement Course (SEC)</b>	
Name of the Dept: <b>Science and Technology</b>	
Course Title: <b>Computer Network Practical</b>	
Course Code: <b>CSNP106</b>	Course Level: 4.5
Type: Practical	
Course Credit: 2 credits	
Hours Allotted: 60 Hours	
Marks Allotted: 50 Marks	
<b>Course Objectives:</b>	
<ol style="list-style-type: none"> <li>1. To explain and understand concept of the Data communication, Multiplexing and Data link layer.</li> <li>2. To understand Concept of the Data Link control, Network Layer and transport layer.</li> </ol>	
<b>Course Outcomes:</b> After the completion of the course, the learners would be able to:	
<b>CO 1.</b> understand concept of the Data communication, Multiplexing and Data link layer	
<b>CO 2.</b> understand concept of the Data Link control , Network Layer and transport layer.	
<b>Description of the Course:</b> This practical course is designed to provide hands-on experience in computer networking using the Cisco Packet Tracer 6.0.1 software. It enables learners to simulate, design, and analyze network topologies in a virtual environment without the need for physical hardware. The course focuses on understanding fundamental networking concepts such as IP addressing, routing, switching, and network configuration. Through practical exercises, students develop problem-solving skills and gain the ability to troubleshoot network issues effectively.	

Syllabus: NEP 2020 w.e.f. 2026-27

Sr. No.	Content (List of Practicals)	Hours
1.	<p>IPv4 Addressing and Subnetting</p> <p>a) Given an IP address and network mask, determine other information about the IP address such as:</p> <ul style="list-style-type: none"> <li>• Network address</li> <li>• Network broadcast address</li> <li>• Total number of host bits</li> <li>• Number of hosts</li> </ul> <p>b) Given an IP address and network mask, determine other information about the IP address such as:</p> <ul style="list-style-type: none"> <li>• The subnet address of this subnet</li> <li>• The broadcast address of this subnet</li> <li>• The range of host addresses for this subnet</li> <li>• The maximum number of subnets for this subnet mask</li> <li>• The number of hosts for each subnet</li> <li>• The number of subnet bits</li> <li>• The number of this subnet</li> </ul>	30
2.	Use of ping and tracert / traceroute, ipconfig / ifconfig, route and arp utilities.	
3.	Configure IP static routing.	
4.	Configure IP routing using RIP.	
5.	Configuring Simple OSPF.	
6.	Configuring DHCP server and client.	
7.	Create virtual PC based network using virtualization software and virtual NIC.	
8.	Configuring DNS Server and client.	
9.	Configuring OSPF with multiple areas.	
10.	<p>Use of Cisco Packet tracer to scan and check the packet information of following protocols</p> <ul style="list-style-type: none"> <li>• HTTP</li> <li>• ICMP</li> <li>• TCP</li> <li>• SMTP</li> <li>• POP3</li> </ul>	
	<b>Total Hours</b>	<b>60</b>

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<b>Programme Name : B.Sc. (Cyber Security and Cloud Computing) Semester: I</b>	
Course Category/Vertical: <b>Ability Enhancement Course (AEC)</b>	
Name of the Dept: <b>Science and Technology</b>	
Course Title: <b>Corporate Communication – I</b>	
Course Code: <b>CSR107</b>	Course Level: 4.5
Type: <b>Theory</b>	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
<b>Course Objectives:</b>	
<ol style="list-style-type: none"> <li>1. To inculcate the knowledge of basic communication skills in learners and make learners aware of how non-verbal communication impacts daily communication.</li> <li>2. To inculcate effective business writing skills in learners and create awareness about ethics in information</li> </ol>	
<b>Course Outcomes:</b> After the completion of the course, the learners would be able to:	
<b>CO 1:</b> develop their basic communication skills and gain knowledge of how verbal and non-verbal communication impacts the business world.	
<b>CO 2:</b> develop effective business writing skills.	
<b>Description of the course:</b>	The course introduces learners to the basic concepts of communication required in personal and professional lives. It will assist them in making effective use of both verbal and non-verbal methodologies of communication. The course will inculcate effective writing skills in learners enabling them to overcome the communication challenges they may face in the corporate world. With these skills they can turn out to be communication experts and PR experts as well.

Syllabus: NEP 2020 w.e.f. 2026-27

Unit No.	Content	Hours
I	<p><b>Introduction to Technical Communication</b></p> <p><b>Fundamentals of Technical Communication:</b> Introduction, The process of communication, Language as tool of communication, levels of communication, The flow of communication, Communication Networks, The importance of technical communication</p> <p><b>Barriers to communication:</b> Definition of Noise, classification of Barriers</p> <p><b>Non-verbal Communication:</b> Introduction, Definition, significance of nonverbal, forms of non-verbal communication, types of non-verbal communication</p> <p><b>The Seven Cs of Effective Communication:</b> Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness</p> <p><b>Meeting and conferences:</b> Introduction, Purpose of Meeting, planning a meeting, Meeting Process, Leading effective meeting, evaluating meeting, planning conference, teleconferencing.</p> <p><b>Group Discussion and team presentation:</b> Introduction, Benefits of GD, Workplace GD guidelines, Functional and non-functional roles in GD, Improving group performance, Assessment of group discussion, Team presentation.</p> <p><b>Email communication:</b> Introduction, Advantages of email, problems in email communication, Email etiquettes, Techniques of writing Effective Email</p>	15
II	<p><b>Business Writing and Visual Aids</b></p> <p><b>Business writing:</b> Introduction, Importance of written Business, Five main strategies of writing business messages</p> <p><b>Business correspondence:</b> Business letter writing, common component of Business letter, Strategies for writing body of a letter, Types of Business letter, writing memos.</p> <p><b>Business reports and proposal:</b> What is a report? Steps in writing routine Business report, parts of reports, corporate reports and Business proposals</p> <p><b>Careers and Resume:</b> Introduction to career building, resume format, traditional, electronic and video resumes, sending resume, follow-up letters and online recruitment process.</p> <p><b>Creating and Using Visual Aids:</b> Object, Models, Handouts, Charts and Graphs, Text Visuals, Formatting Computer generated charts, graphs and visuals.</p>	15
	<b>Total Hours</b>	60

## **References:**

1. Technical communication: principles and practices Meenakshi Raman & Sangeeta Sharma Oxford Higher Education
2. Business Communication Meenakshi Raman & Prakash Singh Oxford- Higher Education 2nd edition 2006
3. Effective Business Communication Herta Murphy, Herbert Hildebrandt, Jane Thomas Tata McGraw Hill 7th edition 2008
4. Professional Communication Aruna Koneru McGraw Hill 2008
5. Business and Professional Communication Plans, Processes and Performance James R. DiSanza Nancy J. Legge Pearson Education 4 th Edition
6. Storytelling with data-a data visualization guide for business professionals Cole Nussbaumer knaflic Wiley

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Sheth J.T.T College of Arts, (AUTONOMOUS). Thane (W)**

<b>Programme Name: B.Sc. (Cyber Security &amp; Cloud Computing) Semester: I</b>	
<b>Course Category/Vertical: Value Education Course (VEC)</b>	
<b>Name of the Dept: Science &amp; Technology</b>	
<b>Course Title: Green Technology-I</b>	
<b>Course Code: CSG108</b>	<b>Course Level: 4.5</b>
<b>Type: Theory</b>	
<b>Course Credit: 2 credits</b>	
<b>Hours Allotted: 30 Hours</b>	
<b>Marks Allotted: 50 Marks</b>	
<b>Course Objectives :</b>	
<ol style="list-style-type: none"> <li>1. Understand the concept of Green IT and impact of sustainability of computing applications, regulatory, non-regulatory and other influences affecting business.</li> <li>2. Understand Key sustainability challenges associated with data centers and strategies to make them more environmentally sustainable with in-depth coverage of energy-efficient storage technologies and data storage systems.</li> </ol>	
<b>Course Outcomes:</b> After the completion of the course, the learners would be able to:	
<b>CO1.</b> study emerging green IT regulations, energy management techniques, laws, standards and regulations related to Green IT.	
<b>CO2.</b> develop knowledge about green data storage and data centers and how the choice of hardware and software can facilitate a more sustainable operation.	
<b>Description of the course:</b>	The course introduces the learners to the concept of sustainable approach to IT resource management, focusing on minimizing environmental impact in the context of environmental concerns. The learners could upgrade their current understanding towards Green IT practices, reducing energy consumption and electronic waste, promoting efficient, cost-effective, and environmentally sustainable IT systems. Students would be able to explore new areas of IT professionals with expertise in Green IT.

**Syllabus: NEP 2020 w.e.f 2026-27**

Unit No.	Content	Hours
I	<b>Green IT An Overview</b> •Introduction, Environmental Concerns and Sustainable Development, Environmental Impacts of IT, Green IT, Applying IT for Enhancing Environmental Sustainability, Green IT Standards and Eco-Labeling of IT. • <b>Green Devices and Hardware</b> : Introduction, Life Cycle of a Device or Hardware, Reuse, Recycle and Dispose, Green Software ,Energy-Saving Software Techniques, • <b>Sustainable Software Development</b> : Introduction, Current Practices, Sustainable Software, Software Sustainability Attributes and Metrics Sustainable Software Methodology • <b>Regulating Green IT:</b> Laws, Standards and Protocols: Introduction, Introduction, Nonregulatory Government Initiatives, Industry Associations and Standards Bodies, Green Building Standards, Green Data Centres, Social Movements and Greenpeace	
II	• <b>Green Data Storage:</b> Introduction, Storage Media Power Characteristics, Energy Management Techniques for Hard Disks, System-Level Energy Management. Green Data Centres : Data Centres and Associated Energy Challenges, Data Centre IT Infrastructure, Data Centre Facility Infrastructure: Implications for Energy Efficiency, IT Infrastructure Management, Green Data Centre Metrics	
	Total Hours	30

**References:**

1. Green IT Toby Velte, Anthony Velte, & Robert Elsenpete McGraw Hill 2008
2. Harnessing Green It Principles And Practices San Murugesan, G.R. Gangadharan WILEY -
3. Green Data Center: Steps for the Journey Alvin Galea, Michael Schaefer, Mike Ebbers Shroff Publishers And Distributors 2011
4. Green Computing and Green IT Best Practice Jason Harris Emereo
5. Green Computing Tools and Techniques for Saving Energy, Money and Resources Bud E. Smith CRC Press 2014

**Sheth T. J. Education Society's  
Sheth N.K.T.T College of Commerce and  
Sheth J.T.T College of Arts, (AUTONOMOUS). Thane (W)**

<b>Programme Name: B.Sc. (Cyber Security &amp; Cloud Computing)</b>		<b>Semester: I</b>
<b>Course Category: Indian Knowledge System (IKS)</b>		
<b>Name of the Dept: Science &amp; Technology</b>		
<b>Course Title: Evolution of Information Technology</b>		
<b>Course Code: CSI109</b>		<b>Course Level: 4.5</b>
<b>Type : Theory</b>		
<b>Course Credit: 2 Credits</b>		
<b>Hours Allotted: 30 Hours</b>		
<b>Marks Allotted: 50 Marks</b>		
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>1. Make aware to Basics of Computer and various storage devices</li> <li>2. Concept of Hardware, Software and Networking devices &amp; to study I.T Act 2000</li> </ol>		
<b>Course Outcomes:</b> After the completion of the course, the learners would be able to:		
<b>CO 1</b> - study generations of Computer and basics of Internet and it applications		
<b>CO 2</b> - understand various software types and Basics of I.T. Act 2000		
<b>Description of the course:</b>	Through this course, learners will embark on a fascinating exploration of the historical milestones, key innovations, and transformative trends that have shaped the IT landscape. From early mechanical computing devices to the advent of the internet, mobile computing, and artificial intelligence, participants will gain valuable insights into how IT has revolutionized communication, commerce, and daily life.	

**Syllabus: NEP 2020 w.e.f 2026-27**

<b>Unit No.</b>	<b>Content</b>	<b>Hours</b>
I	<b>Computer Generation and its classification:</b> Introduction, What is Computer, Characteristics of computer, Evolution of Computer, Block Diagram of a computer, Generations of Computers. <b>Storage Devices:</b> Primary Vs Secondary Storage, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives <b>Software:</b> Software and its needs, Types of S/W. System Software: Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language, advantages & disadvantages of programming language. Application S/W and its Types	15
II	<b>Communication:</b> Introduction, Communication Types (modes), Data Transmission Medias, Modem and its working, characteristics, Types of Networks, Topologies, Computer Protocols. <b>Internet and the World Wide Web:</b> What is Internet? Evolution of Internet, Internet service providers, Internet and its applications, E-mail, Telnet, FTP, domain name server, Internet address, World Wide Web (WWW): World Wide Web uniform resource locator (URL), Browsers–Internet Explorer, Netscape Navigator, Opera, Firefox, Chrome, Mozilla. <b>I.T. Act 2000:</b> Introduction of IT Act 2000, Offences in IT Act 2000, Various provisions of IT Act 2000.	15
	<b>Total Hours</b>	<b>30</b>

**References:**

1. Fundamentals of Computers V. Rajaraman and Neeharika A. PHI Learning Sixth 2015
2. Data communication and networking Behrouz. Forouzan Tata McGraw Hill 5th edition 2013
3. Cyber law simplified Vivek Sood Tata McGraw Hill

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<b>Programme Name: B.Sc. (Cybersecurity and Cloud Computing)</b>		<b>Semester: I</b>
Course Category: <b>Co-Curricular (CC)</b>		
Name of the Department: <b>Sociology</b>		
Course Title: <b>National Service Scheme</b>		
Course Code: CSN110	Course Level: 4.5	
Type: Theory		
Course Credit: 2 credits		
Hours Allotted: 30 Hours		
Marks Allotted: 50 Marks		
<b>Course Objectives:</b>		
<ol style="list-style-type: none"> <li>1. To make aware the students about NSS ideology</li> <li>2. To make students understand social issues in India.</li> </ol>		
<b>Course Outcomes:</b>		
<b>CO 1.</b> Students will be aware the students about NSS ideology <b>CO 2.</b> Students will understand social issues in India.		
<p>Description: The NSS introduces students to the concept of voluntary community service as a means of personal development and nation-building. It typically involves engaging in various activities such as environmental conservation, literacy campaigns, health awareness drives, and disaster relief efforts.</p> <p>Relevance and Usefulness: In today's society, where there is a growing need for civic engagement and social cohesion, the NSS plays a crucial role. It instills a sense of civic duty and social responsibility in young people, empowering them to contribute positively to their communities and society at large.</p> <p>Application: Through hands-on participation in community service projects, NSS volunteers gain practical experience in leadership, teamwork, problem-solving, and communication skills. They also develop a deeper understanding of social issues and learn how to address them effectively through grassroots initiatives.</p> <p>Interest and Connection with Other Courses: The NSS intersects with various academic disciplines such as social work, public administration, sociology, and development studies. It provides students with opportunities to apply theoretical knowledge in real-world settings and reinforces the importance of active citizenship and social justice.</p> <p>Demand in the Industry: Employers increasingly value candidates who demonstrate a commitment to community service and civic engagement. Participation in the NSS signals to potential employers that an individual is socially conscious, proactive, and capable of working collaboratively towards common goals.</p>		

**Syllabus: NEP 2020 w.e.f. 2026-27**

Unit No.	Content	Hours
I	Introduction to NSS - Orientation and structure of NSS - The history of NSS- Objectives- Symbol and meaning- NSS hierarchy from national to college level	15
II	Basic social issues in India - Degeneration of value system, family system - Gender issues - Regional imbalance	15
	Total Hours	30

References:

1. National Service Scheme Manual (Revised) 2006, Government of India, Ministry of Youth Affairs and Sports, New Delhi.
2. University of Mumbai National Service Scheme Manual 2009.
3. <http://nss.nic.in>

**Sheth T. J. Education Society's**  
**Sheth N.K.T.T College of Commerce and**  
**Sheth J.T.T College of Arts, (Autonomous) (W)**

<b>Programme Name: B.Sc (Cybersecurity and Cloud Computing) Semester: I</b>	
Course Category/Vertical: <b>Co-Curricular (CC)</b>	
Name of the Dept: <b>Psychology</b>	
Course Title: <b>Yoga</b>	
Course Code: <b>CSY111</b>	Course Level:4.5
Type: Theory	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
<b>Course Objectives:</b> <ol style="list-style-type: none"> <li>1. To impart to the students the knowledge of teachings and philosophy of yoga tradition.</li> <li>2. To provide the knowledge of various Yoga therapy practices like asana (posture), pranayama (voluntarily regulated breathing techniques).</li> </ol>	
<b>Course Outcomes:</b> After the completion of the course, the learners would be able to: <b>CO 1.</b> use the basic principles and applications of Yoga. <b>CO 2.</b> use the practical knowledge in their day-to-day life.	
<b>Description of the course:</b>	Yoga practices will be important for the upcoming lifestyle hence students can seek a career in the same. Students will understand the importance of yoga in life. Students will be having practical exposure. Hence, practicing yoga will help students to maintain their health.

**Syllabus: NEP 2020 w.e.f 2026-27**

Unit No.	Content	Hours
I	<b>Theory of Yoga</b> A) Definition and meaning- Yoga, Sthula & Sukshma Vyayam, Asana, Pranayam, Yama & Niyama, Types of Shuddhi Kriya, Badhak Tatva B) Pranayam- Breath Awareness, Sectional Breathing, Anulom Vilom	10
II	<b>Practical</b>	20
	A) Prayer, Yogic Sanchalan, Yogic Sukshma Vyayam : Grievashakti vikasak, Katishakti vikasak, Jangha Shakti vikasak, Shwasan Marg shuddhi & Kapalbhati B) Asana- Standing Yogasana: Tadasana, Vrikshasana, Parivritta Trikonasana, Veerbhadrasana. Sitting Asanas: Vajrasana, Gomukhasa, Sasankasana, Padmasana, Parvatadana, Bhadrasana, Ustrasana. Prone Asanas: Bhujangasana, Ardha Shalbhasana, Adhomukh Shwanasana. Supine Yogasana : Uttanpadasana, Ardha Halasana, Saral Matsyasana, Ardha Pavan Muktasana, Setubandhasana & Shavasana	
	<b>Total Hours</b>	30

**References:**

1. Rajayoga - Swami Vivekananda - Ramakrishna Ashrama Publications.
2. C.D. Sharma: Critical Survey of Indian Philosophy, Motilal Banarsidass Publications  
2003

## Scheme of Examination

<b>Course with Credit</b>	<b>External Examination</b>	<b>Internal Examination</b>	<b>Total</b>
<b>Credit 4</b>	<b>60 marks</b>	<b>40 marks</b>	<b>100 marks</b>
<b>Credit 2</b>	<b>30 marks</b>	<b>20 marks</b>	<b>50 marks</b>

### Internal Examination Structure(Theory)

<b>Internal examination</b>	<b>40 marks</b>	<b>20 marks</b>
Project Presentation/Case Study /Quiz/Group Discussion	10 marks	5 marks
Assignment /Active class Participation/Attendance	10 marks	5 marks
Class test	20 marks	10 marks
Total	40 marks	20 marks

### Structure for Class Test(For 10 Marks)

<b>For 10 Marks</b>	
<b>Q1. Multiple Choice Questions</b>	<b>5 Marks</b>
<b>Q2. Answer in one or two sentences</b>	<b>5 Marks</b>

### Structure for Class Test(For 20 Marks)

<b>For 20 Marks</b>	
<b>Q1. Multiple Choice Questions</b>	<b>10 Marks</b>
<b>Q2. Answer in one or two sentences</b>	<b>10 Marks</b>

**External Examination (For 60 Marks)**

<b>Q. No.</b>	<b>External</b>	<b>Marks: 60</b>
Q.1	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 2	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 3	Answer the following questions (Any 3) A B C D E F	15 Marks
Q. 4	Answer the following questions (Any 3) A B C D E <b>F</b>	15 Marks

**External Examination (For 30 Marks)**

<b>Q. No.</b>	<b>External</b>	<b>Marks: 30</b>
Q.1	Answer the following questions ( Any 3) A B C D E F	15 Marks
Q.2	Answer the following questions ( Any 3) A B C D E F	15 Marks

**Practical Evaluation Internal: 20 marks**

1	Problem Solving	10
2	Lab Work/Performance	5
3	Viva	5

**Practical External Exam: 50 marks**

**A Certified copy journal is essential to appear for the practical examination.**

1	Practical Question 1	20
2	Practical Question 1	20
3	Journal	5
4	Viva Voce	5

**OR**

1	Practical Question 1	40
2	Journal	5
3	Viva Voce	5

