

Anjuman Islam Janjira Degree College of Science

Lokmanya Tilak Road, Murud-Janjira dist. Raigarh. Maharashtra 402401

Academic Calendar

Teaching Plan for Semester-III Year: 2025-2026

Course	F.Y.B.Sc. (Computer Science) (NEP 2020)	Vertical 01	Mandatory
Course Code	MJ3		
Title	Design and Analysis of Algorithm		
Credits	2 Credits (30 Hrs)		
Name of the Faculty	Bismah Nazim Killedar		

Month	Date	Topic	Lectures	Lecture per Month
Nov-25	Module 1		13	6
	15-11-25	Chapter 1: Introduction to algorithms - What is algorithm, analysis of algorithm, Types of complexity,		
	19-11-25	Running time analysis, How to Compare Algorithms, Rate of Growth,		
	22-11-25	Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation,		
	26-11-25	Theta-Θ Notation, Asymptotic Analysis, Performance characteristics of algorithms,		
	29-11-25	Estimating running time / number of steps of executions on paper, Idea of Computability.		
Dec-25	03-12-25	Chapter 2: Introduction to Data Structures - What is data structure, types, Introduction to Array(1-d & 2-d),		7
	06-12-25	Stack and List data structures, operations on these data structures,		
	10-12-25	advantages disadvantages and applications of these data structures like solving linear equations,		
	13-12-25	Polynomial Representation, Infix-to-Postfix conversion.		
	17-12-25	Chapter 3: Recursion - What is recursion, Recursion vs Iteration, recursion applications like Factorial of a number,		
	20-12-25	Fibonacci series & their comparative analysis with respect to iterative version,		
	24-12-25	Tower of Hanoi problem.		
Jan-25	03-01-26	Chapter 4: Basic Sorting Techniques - Bubble, Selection and Insertion Sort & their comparative analysis	15	9
	Module 2			
	07-01-26	Chapter 1: Searching Techniques - Linear Search and its types, Binary Search and their comparative analysis,		
	10-01-26	Selection Techniques - Selection by Sorting, Partition-based		
	17-01-26	Selection Algorithm, Finding the Kth Smallest Elements in Sorted Order & their comparative analysis,		
	21-01-26	String Algorithms - Pattern matching in strings,		
	24-01-26	Brute Force Method & their comparative analysis		
	28-01-26	Chapter 2: Algorithm Design Techniques - Introduction to various types of classifications/design criteria and design techniques,		
	31-01-26	Greedy Technique - Concept, Advantages & Disadvantages,		
Feb-25	04-02-26	Applications, Implementation using problems like - file merging problem.		8
	07-02-26	Divide-n-Conquer - Concept, Advantages & Disadvantages,		
	11-02-26	Applications, Implementation using problems like - merge sort, Strassen's Matrix Multiplication		
	14-02-26	Dynamic Programming - Concept, Advantages & Disadvantages, Applications,		
	18-02-26	Implementation using problems like - Fibonacci series, Factorial of a number,		
	21-02-26	Longest Common subsequence		
	25-02-26	Backtracking Programming - Concept, Advantages & Disadvantages,		
	28-02-26	Applications, Implementation using problems like N-Queen Problem		
Mar-25		Test and Assesment	2	2
		Exam Preparation and Revsions		
		Tot. Lec.	30	30

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Academic Calendar

Teaching Plan for Semester-III Year: 2025-2026

Course	F.Y.B.Sc. (Computer Science) (NEP 2020)	Vertical 01	Mandatory
Course Code	MJP2		
Title	Computer Science Practical 1(Design and Analysis of Algorithm) (Module 1)		
Credits	1 Credits (30 Hrs)		
Name of the Faculty	Bismah Nazim Killedar		

Month	Day	Topic	Batch	Lecture per Month		
Nov-25	Monday	Array Operations:		6		
		Implement programs for 1-d arrays, Implement programs for 2-d arrays.				
	Monday	List-Based Stack Operations:				
		Create a list-based stack and perform stack operations.				
	Monday	Linear and Binary Search:				
		Implement linear and binary search algorithms on a list.				
Dec-25	Monday	Sorting Algorithms:		8		
		Implement sorting algorithms (e.g., bubble, selection, insertion).				
		Nth Max/Min Element:				
		Implement algorithms to find Nth Max/Min element in a list.				
	Monday	String Pattern Matching:				
		Implement algorithms to find a pattern in a given string.				
	Monday	Recursion:				
		Implement recursive algorithms (e.g., factorial, Fibonacci, Tower of Hanoi).				
	Jan-26	Monday	Greedy Algorithm:		6	
			Solve problems like file merging and coin change using the Greedy Algorithm.			
Monday		Divide and Conquer:				
		Implement algorithms like merge sort and Strassen's Matrix Multiplication.				
Monday		Dynamic Programming:				
		Implement algorithms for Fibonacci series and Longest Common Subsequence using dynamic programming.				
Feb-26	Monday	Revision 1		10		
	Monday	Revision 2				
	Monday	Journal Checking				
	Monday	Journal Checking				
	Monday	Journal Certification				
		Tot. Lec.		30		

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Academic Calendar

Teaching Plan for Semester-III Year: 2025-2026

Course	F.Y.B.Sc. (Computer Science) (NEP 2020)	Vertical	SEC
Course Code	SEC	Type	Practical
Title	Advanced Python Programming		
Credits	2 Credits (60 Hrs)		

Name of the Faculty	Bismah Nazim Killedar
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Month	Date	Topic	Batch	Lecture per Month	
Nov-25	Module 1			10	
	Saturday	OOPs In Python: Introduction to OOPs, Problems in Procedure Oriented Approach,			
	Wednesday	Features of Object Oriented Programming System (OOPS), Constructors and Destructors,			
	Saturday	Classes and Objects- Creating a Class, Self-Variable, Types of Variables,			
	Wednesday	Types of Methods, Passing Members of One Class to Another Class			
	Saturday	Inheritance and Polymorphism: Types of Inheritance, Constructors in Inheritance,			
Dec-25	Wednesday	Overriding Super Class Constructors and Methods,		14	
	Saturday	super() method, Polymorphism, Duck Typing ,			
	Wednesday	Operator Overloading, Method Overloading, Method Overriding			
	Saturday	Abstract Classes and Interfaces: Abstract Class, Abstract Method,			
	Wednesday	Interfaces in Python			
	Saturday	Threads in Python: Creating Threads in Python, Single Tasking and Multitasking,			
	Wednesday	Thread Synchronisation, Deadlock in Threads			
Jan-26	Module 2				16
	Saturday	Working with Databases: DBMS, working with MySQL Database-retrieving,			
	Wednesday	inserting, deleting,			
	Saturday	updating rows from table, Creating Database Tables through Python			
	Saturday	Exceptions: Errors in a Python Program,			
	Wednesday	Exceptions and Exceptions handling,			
	Saturday	User Defined Exceptions, Logging Exceptions,			
	Wednesday	Networking: TCP/IP Protocol Architecture, , User Datagram Protocol (UDP), FTP Architecture,			
Feb-26	Saturday	Web Page Operations, Sending a Simple Mail		16	
	Wednesday	Graphical User Interface: Creating a GUI in Python, Widget classes,			
	Saturday	Layout Manager, Event Handling			
	Wednesday	Data Science Tools: Introduction to NumPy, Matplotlib,			
	Saturday	pandas, Scipy,			
	Wednesday	Revision 1			
	Saturday	Revision 2			
	Wednesday	Revision 3			
Mar-26	Saturday	Journal Checking		4	
	Wednesday	Journal Certification			
		Tot. Lec.		60	

Academic Calendar**Teaching Plan for Semester-III Year: 2025-2026**

Course	S.Y.B.Sc. (Computer Science) (NEP 2020)	Vertical	SEC
Course Code	SEC	Type	Practical
Title	MEAN Stack Development		
Credits	2 Credits (60 Hrs)		
Name of the Faculty	Bismah Nazim Killedar		

Month	Date	Topic	Batch	Lecture per Month
Nov-25	Module 1			14
	Thursday	Chapter 1: Introduction to MEAN Stack: Understanding Full Stack Web Development,		
	Wednesday	Overview of MEAN Architecture & Workflow, Setting up the MEAN Development Environment		
	Thursday	Chapter 2:Node.js Fundamentals: Introduction & Installation of Node.js, Understanding package.json & npm, Node Modules & Module Exports,		
	Wednesday	Event Loop and Asynchronous Programming, Creating Basic Node.js HTTP Server, Handling Routes and Requests		
	Thursday	chapter 3: Express.js Framework: Introduction to Express, Creating Express Applications, Using Middleware (Built-in, Custom, Third-party), RESTful Routing in Express,		
	Wednesday	Creating API Endpoints (GET, POST, PUT, DELETE), Organizing Express Apps		
	Thursday	with Router Modules, Error Handling in Express, Environment Configuration using dotenv		
Dec-25	Wednesday	Chapter 4:MongoDB with Mongoose: Installing MongoDB and MongoDB Compass, Understanding Collections, Documents, Using Mongo Shell and MongoDB Compass.	14	
	Thursday	Introduction to Mongoose ODM, Defining Schemas & Models, Performing CRUD Operations, MongoDB Validation & Indexing Basics		
	Wednesday	Chapter 5: Introduction to Angular: Installing Angular CLI & Creating Angular App, Angular Project Structure, Anatomy of an Angular Component, One-way and Two-way Data Binding,		
	Thursday	*ngIf, *ngFor Directives, Using Services & Dependency Injection, Component Communication (Input/Output decorators		
	Module 2			
	Wednesday	Chapter 1: Angular Modules & Routing: Creating Feature Modules, Angular Routing: Setup and Navigation.		
	Thursday	RouterLink, RouterOutlet,		
	Wednesday	Route Params, Lazy Loading of Modules		
Jan-26	Wednesday	Chapter 2: Forms in Angular: Template-driven vs Reactive Forms,	14	
	Thursday	Building Forms using Reactive Forms Module,		
	Thursday	Form Validation and Error Handling, Submitting Form Data to Backend APIs		
	Wednesday	Chapter 3: Connecting Angular to REST API: HttpClientModule and Services,		
	Thursday	Making GET, POST, PUT, DELETE Requests,		
	Wednesday	Displaying Server Data in Templates, Handling Observables and Async Pipe, Error Handling in HTTP Requests		
	Thursday	Chapter 4: CRUD Application with Angular + Node + MongoDB: Building a Complete CRUD App (e.g., Student Records / Notes App),		
Feb-26	Wednesday	Integrated Frontend and Backend,	14	
	Thursday	Form Validation and User Notifications, Deploying to Cloud (Vercel/Render for Backend, Netlify for Frontend)		
	Wednesday	Introduction to Deployment: Preparing Angular Build, Serving Angular App with Express (Single Deployment),		
	Thursday	Environment Variables and Production Setup, Introduction to Git and Version Control		
	Wednesday	Revision 1		
	Thursday	Revision 2		
	Wednesday	Revision 3		

	Thursday	Journal Checking		
Mar-26		Journal Certification		2
		Tot. Lec.		60

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Academic Calendar

Teaching Plan for Semester-VI Year: 2025-2026

Course	T.Y.B.Sc. (Computer Science)
Course Code	USCS601
Title	Data Science
Credits	2 Credits (45 Lectures)
Name of the Faculty	Bismah Nazim Killedar

Month	Date	Topic	Lectures	Lecture per Month
		UNIT I		
Nov-25	6/11/2025	Introduction and syllabus discussion	15	12
	8/11/2025	UNIT I-Chapter I: What is Data Science?: Definition and scope of Data Science, Applications and domains of Data Science,		
	11-11-25	Comparison with other fields like Business Intelligence (BI), Artificial Intelligence (AI),		
	13-11-25	Machine Learning (ML), and Data Warehousing/Data Mining (DW-DM)		
	15-11-25	Chapter II: Data Types and Sources: Different types of data: structured, unstructured, semi-structured,		
	18-11-25	Data sources: databases, files, APIs, web scraping, sensors, social media		
	20-11-25	Chapter III: Data Preprocessing: Data cleaning: handling missing values, outliers, duplicates,		
	22-11-25	Data transformation: scaling, normalization, encoding categorical variables,		
	25-11-25	Feature selection: selecting relevant features/columns,		
	27-11-25	Data merging: combining multiple datasets		
	29-11-25	Chapter IV: Data Wrangling and Feature Engineering: Data wrangling techniques: reshaping, pivoting,		
Dec-25	02-12-25	aggregating, Feature engineering: creating new features,	15	10
	04-12-25	handling time-series data Dummification: converting categorical variables into binary indicators,		
	06-12-25	Feature scaling: standardization, normalization		
	09-12-25	Chapter V:Tools and Libraries: Introduction to popular libraries and technologies used in Data Science like Pandas, NumPy, Sci-kit Learn, etc.		
		Unit II		
	11-12-25	Chapter I:Exploratory Data Analysis (EDA): Data visualization techniques: histograms, scatter plots, box plots, etc.,		
	13-12-25	Descriptive statistics: mean, median, mode, standard deviation, etc.,		
	16-12-25	Hypothesis testing: t-tests, chi-square tests, ANOVA, etc.		
	18-12-25	Chapter II: Introduction to Machine Learning: Supervised learning: classification and regression,		
	20-12-25	Unsupervised learning: clustering and dimensionality reduction,		
	23-12-25	Bias-variance tradeoff, underfitting, and overfitting	14	
	03-01-26	Chapter III:Regression Analysis: Simple linear regression, Multiple linear regression,		
	06-01-26	Stepwise regression, Logistic regression for classification		
	08-01-26	Chapter IV: Model Evaluation and Selection: Techniques for evaluating model performance: accuracy, precision, recall,		
	10-01-26	F1-score, Confusion matrix and ROC curve analysis,		
	13-01-26	Cross-validation: k-fold cross-validation, stratified cross-validation,		
	15-01-26	Hyperparameter tuning and model selection		

Jan-26	15-01-26	Chapter V: Machine Learning Algorithms: Decision Trees and Random Forests, Support Vector Machines (SVM),	14	
	17-01-26	Artificial Neural Networks (ANN), Ensemble Learning: Boosting and Bagging, K-Nearest Neighbors (K-NN),Gradient Descent for optimization		
	Unit III			
	20-01-26	UNIT III-Chapter I: Model Evaluation Metrics: Accuracy, precision,		
	22-01-26	recall, F1-score,		
	24-01-26	Area Under the Curve (AUC),		
	27-01-26	Evaluating models for imbalanced datasets		
	29-01-26	Chapter II: Data Visualization and Communication: Principles of effective data visualization,		
	31-01-26	Types of visualizations: bar charts, line charts, scatter plots, etc.		
Feb-25	03-02-26	Visualization tools: matplotlib,	13	
	05-02-26	seaborn, Tableau, etc.		
	07-02-26	Data storytelling: communicating insights through visualizations		
	10-02-26	Chapter III: Data Management: Introduction to data management activities,		
	12-02-26	Data pipelines: data extraction, transformation, and loading (ETL),		
	14-02-26	Data governance and data quality assurance,		
	17-02-26	Data privacy and security considerations		
	21-02-26	Revision 1	4	
	24-02-26	Revision 2		
	26-02-26	Exam Preparation and Revisions		
		Tot. Lec.	45	45

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Academic Calendar

Practical Plan for Semester-VI Year: 2025-2026	
Course	T.Y.B.Sc. (Computer Science)
Course Code	USCSP601
Title	Data Science
Credits	1 Credits
Name of the Faculty	Bismah Nazim Killedar

Month	Date	Topic	Batch	Lecture per Month
Nov-25	Monday	1.Introduction to Excel i.Perform conditional formatting on a dataset using various criteria. ii.Create a pivot table to analyze and summarize data. iii.Use VLOOKUP function to retrieve information from a different worksheet or table. iv.Perform what-if analysis using Goal Seek to determine input values for desired output.		8
	Monday	2. Data Frames and Basic Data Pre-processing i.Read data from CSV and JSON files into a data frame. ii.Perform basic data pre-processing tasks such as handling missing values and outliers. iii.Manipulate and transform data using functions like filtering, sorting, and grouping		
Dec-25	Monday	3. Feature Scaling and Dummification i. Apply feature-scaling techniques like standardization and normalization to numerical features. Ii. Perform feature dummification to convert categorical variables into numerical representations		16
	Monday	4. Hypothesis Testing i. Formulate null and alternative hypotheses for a given problem. ii. Conduct a hypothesis test using appropriate statistical tests (e.g., t-test, chi square test). iii. Interpret the results and draw conclusions based on the test outcomes.		
	Monday	5.ANOVA (Analysis of Variance) i. Perform one-way ANOVA to compare means across multiple groups. Ii. Conduct post-hoc tests to identify significant differences between group means.		

	Monday	6. Regression and Its Types i. Implement simple linear regression using a dataset. ii. Explore and interpret the regression model coefficients and goodness-of-fit measures. iii. Extend the analysis to multiple linear regression and assess the impact of additional predictors		
Jan-26	Monday	7. Logistic Regression and Decision Tree i. Build a logistic regression model to predict a binary outcome. ii. Evaluate the model's performance using classification metrics (e.g., accuracy, precision, recall). iii. Construct a decision tree model and interpret the decision rules for classification		12
	Monday	8. K-Means Clustering i. Apply the K-Means algorithm to group similar data points into clusters. ii. Determine the optimal number of clusters using elbow method or silhouette analysis. iii. Visualize the clustering results and analyze the cluster characteristics		
	Monday	9. Principal Component Analysis (PCA) i. Perform PCA on a dataset to reduce dimensionality. ii. Evaluate the explained variance and select the appropriate number of principal components. iii. Visualize the data in the reduced-dimensional space.		
Feb-26	Monday	10. Data Visualization and Storytelling i. Create meaningful visualizations using data visualization tools ii. Combine multiple visualizations to tell a compelling data story. iii. Present the findings and insights in a clear and concise manner		9
		Journal Checking		
		Journal Checking		
		Journal Certification		
		Tot. Lec.		45

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Teaching Plan for Semester-VI Year: 2025-2026

Course	T.Y.B.Sc. (Computer Science)
Course Code	USCS6052
Title	CYBER LAWS AND IPR
Credits	2 Credits (45 Lectures)
Name of the Faculty	Ashmam Ahtisham Killedar

Month	Date	Topic	Lectures	Lecture per Month	
	UNIT I				
Nov-25	04-11-25	Introduction to Cyber Laws and Technology	15	11	
	06-11-25	Basic Concepts			
	10-11-25	Internet and Advantages and Disadvantages of Internet Technology			
	11-11-25	Network and Network Security			
	13-11-25	Legal Framework and Regulations			
	17-11-25	Cyber Law & Components of Cyber Law			
	18-11-25	Cyber Law in India			
	20-11-25	An Overview of Information Technology Act 2000			
	24-11-25	Cryptography			
	25-11-25	Encryption Technique & Algorithm			
	27-11-25	Digital Signature & Electronic Signature			
Dec-25	01-12-25	Key Issues in Cyber Laws:	15	11	
	02-12-25	E-Commerce, E-Governance, E-Record & E-Contract			
	04-12-25	Regulator, Certifying Authority			
	08-12-25	Electronic Signature Certificates			
	Unit II				
	09-12-25	Cyber Crimes and Enforcement			
	11-12-25	Cyber Appellate Tribunal,			
	15-12-25	Cyber Crimes-Cyber Contraventions			
	16-12-25	Cyber Offences			
	18-12-25	Power of Investigation & Search			
	22-12-25	E-Evidence			
23-12-25	Computer Forensic				
	01-01-26	Emerging Issues and Legal Considerations	15		
	05-01-26	ISP & Intermediary Not to be Liable in Certain Cases			

Jan-26	06-01-26	Consequential Amendments in Various Conventional Laws in India	12	
	08-01-26	Grey Areas of Information Technology Act, 2000		
	12-01-26	Jurisdiction and Privacy		
	13-01-26	Cyber Jurisdiction		
	15-01-26	E-Consumers		
	19-01-26	Privacy of Online Data and Information		
	Unit III			
	20-01-26	Intellectual Property Rights and Online Regulations	11	
	22-01-26	Free Speech Online or Online Freedom of Speech and Expression and Liability of Intermediary		
	27-01-26	Intellectual Property Rights (IPRs), Copyrights & Patents		
	29-01-26	International and Indian Scenario		
Feb-26	02-02-26	Copyright Issues and Digital Medium		
	03-02-26	Patent Issues in Digital Medium		
	05-02-26	Disputes and Resolution		
	09-02-26	Domain Name Dispute & Resolution		
	10-02-26	Trademark Issues in Digital Medium		
	12-02-26	Spamming		
	16-02-26	Phishing		
	17-02-26	Revision 1	4	
	23-02-26	Revision 2		
	24-02-26	Test and Assessment		
	26-02-26	Exam Preparation and Revisions		
		Tot. Lec.	45	45

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Academic Calendar

Teaching Plan for Semester-II Year: 2025-2026

Course	F.Y.B.Sc. (Computer Science) (NEP 2020)	Vertical 01	Major
Course Code	Major		
Title	Introduction to OOP using C++		
Credits	2 Credits (30 Lectures)		
Name of the Faculty	Ayesha Mehboob Fahim		

Month	Date	Topic	Lectures	Lecture per Month
MODULE 1				
Nov-25	19-Nov-25	Introduction to Programming Concepts: Object oriented programming paradigm, basic concepts of object oriented programming, benefits of object oriented programming,	12	4
	20-Nov-25	object oriented languages, applications of object oriented programming. Tokens-keywords, identifiers, constants-integer		
	26-Nov-25	real, character and string constants, backslash constants, features of C++ and its basic structure, simple C++ program without class, compiling and running C++ program.		
	27-Nov-25	Data Types, Data Input Output and Operators: Basic data types, variables, rules for naming variables, programming constants		
Dec-25	3-Dec-25	the type cast operator, implicit and explicit type casting, cout and cin statements, operators, precedence of operators		7
	4-Dec-25	Decision Making, Loops, Arrays and Strings: Conditional statements- if, if...else, switch loops- while, do...while		
	10-Dec-25	for, types of arrays and string and string manipulations		
	11-Dec-25	Unified Modeling Language (UML): Introduction to UML & class diagrams		
	17-Dec-25	Classes, Abstraction & Encapsulation: Classes and objects, Dot Operator, data members, member functions,		
	18-Dec-25	passing data to functions, scope and visibility of variables in function.		
	24-Dec-25	Constructors and Destructors: Default constructor, parameterized constructor, copy constructor, private constructor, destructors.		

Jan-26	7-Jan-26	Working with objects: Accessor - mutator methods, static data and static function, access specifiers, array of objects.	18	7
		MODULE 2		
	8-Jan-26	Polymorphism - Binding-static binding & overloading, constructor overloading function overloading,		
	15-Jan-26	operator overloading, overloading unary and binary operators.		
	21-Jan-26	Modelling Relationships in Class Diagrams: Association, AggregationComposition and examples covering these principles		
	22-Jan-26	Inheritance: Defining base class and its derived class, access specifiers, types of inheritance-single		
	28-Jan-26	multiple, hierarchical, multilevel, hybrid inheritance, friend function		
	29-Jan-26	Friend class, constructors in derived classes.		
Feb-26			9	
	4-Feb-26	Modelling Relationships: Generalization-Specialization		
	5-Feb-26	Examples covering these principles		
	11-Feb-26	Run time Polymorphism - Dynamic Binding, Function overriding, virtual function,		
	12-Feb-26	pure virtual function, virtual base class, abstract class.		
	12-Feb-26	Pointers: Introduction to pointers, * and & operators, assigning addresses to pointer variables,		
	18-Feb-26	accessing values using pointers, pointers to objects & this pointer, pointers to derived classes		
	25-Feb-26	File Handling: File Stream classes, opening and closing file-file opening modes,		
	26-Feb-26	text file handling, binary file handling		
Mar-26	5-Mar-26	order management etc. to design classes covering all relationships	3	
	11-Mar-26	Revision 1		
	12-Mar-26	Revision 2		
		Tot. Lec.	30	30

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Academic Calendar				
PRACTICAL Plan for Semester-II Year: 2025-2026				
Course	F.Y.B.Sc. (Computer Science) (NEP 2020)		Vertical 01	Major
Course Code	Major			
Title	Practical- Introduction to OOP using C++			
Credits	2 Credits			
Name of the Faculty	Ayesha Mehboob Fahim			
Month	Date	Topic	Batch	Lecture per Month
Nov-25	20-11-25	Introduction to Programming Concepts: Object oriented programming paradigm, basic concepts of object oriented programming.		4
	27-11-25	Data Types, Data Input Output and Operators: Basic data types, variables, rules for naming variables, programming constants, the type cast operator.		
Dec-25	04-12-25	Decision Making, Loops, Arrays and Strings: Conditional statements-if,if...else, switch loops- while, do...while, for		9
	11-12-25	Unified Modeling Language (UML): Introduction to UML & class diagrams.		
	18-12-25	Classes, Abstraction & Encapsulation: Classes and objects, Dot Operator, data members, member functions		
Jan-26	08-01-26	Constructors and Destructors: Default constructor, parameterized constructor, copy constructor, private constructor, destructors.		10
	08-01-26	Working with objects: Accessor - mutator methods, static data and static function, access specifiers, array of objects.		
	15-01-26	Polymorphism - Binding-static binding & overloading, constructor overloading function overloading		
	22-01-26	Modelling Relationships in Class Diagrams: Association, Aggregation-Composition and examples covering these principles		

	29-01-26	Inheritance: Defining base class and its derived class, access specifiers, types of inheritance		
Feb-26	05-02-26	Modelling Relationships: Generalization-Specialization and examples covering these principles		4
	26-02-26	Run time Polymorphism - Dynamic Binding, Function overriding, virtual function, pure virtual function, virtual base class, abstract class.		
Mar-26	05-03-26	Pointers: Introduction to pointers, * and & operators, assigning addresses to pointer variables		9
	12-03-26	File Handling: File Stream classes, opening and closing file-file opening modes,		
	12-03-26	Journal Checking		
			Tot. Lec.	30

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Teaching Plan for Semester-IV Year: 2025-2026			
Course	S.Y.B.Sc. (Computer Science) (NEP 2020)	Vertical 01	Major
Course Code	Major		
Title	Computer Networks		
Credits	2 Credits (30 Lectures)		
Name of the Faculty	Ayesha Mehboob Fahim		

Month	Date	Topic	Lectures	Lecture per Month
		MODULE 1		
Nov-25	8-Nov-25	Introduction to Computer Networks: Networking standards and organizations (ISO, IEEE, IETF)	12	7
	12-Nov-25	Types of Networks: LAN, MAN, WAN, Network topologies and basic hardware		
	15-Nov-25	Network Models: OSI Reference Model – layers, functions, TCP/IP Protocol Suite – layers and comparison with OSI		
	19-Nov-25	Physical Layer Concepts: Data and signals: analog & digital, Signal impairments: attenuation, noise, distortion,		
	22-Nov-25	Data transmission: bandwidth, throughput, latency, Digital transmission: line coding, analog-to-digital conversion, Transmission modes: simplex, half-duplex, full-duplex		
	26-Nov-25	Bandwidth Utilization & Transmission Media: Multiplexing: FDM, TDM, WDM, Spread Spectrum techniques: DSSS, FHSS		
	29-Nov-25	Transmission Media: Guided (Twisted Pair, Coaxial, Fiber Optics) & Unguided Media (Radio, Microwave, Infrared)		
	3-Dec-25	Switching Techniques: Circuit Switching, Packet Switching (connectionless and connection-oriented)		
Dec-25	6-Dec-25	Data Link Layer and Error Handling: Link layer addressing (MAC), framing concepts, Error detection: Parity,CRC, Checksum, Error correction: Hamming Code, Data link protocols: Stop-and-Wait,		6
	10-Dec-25	Go-Back-N, HDLC, Introduction to MAC: CSMA/CD, CSMA/CA		
	13-Dec-25	Wired & Wireless LANs: Ethernet (standard, fast, gigabit). IEEE 802.11 Wi-Fi, Bluetooth,		
	17-Dec-25	WiMAX, Cellular telephony: Generations overview (2G–5G), Satellite networks: types and applications		
		MODULE 2		
	20-Dec-25	Network Layer Fundamentals: Packet Switching Concepts, IPv4 Addressing, Subnetting,		
Jan-26	3-Jan-26	IP Packet forwarding & routing, Overview of ICMPv4, Basics of Mobile IP	18	8
	7-Jan-26	Routing Techniques: Routing algorithms: Concepts of Distance Vector & Link State Routing,		
	10-Jan-26	Unicast Routing Protocols: Basic overview of RIP & OSPF		
	17-Jan-26	IPv6: IPv6 Addressing format, comparison with IPv4,		
	15-Jan-26	ICMPv6, Transition strategies		
	21-Jan-26	Transport Layer Protocols, Transport layer services		
	24-Jan-26	User Datagram Protocol (UDP),		
	28-Jan-26	Transmission Control Protocol (TCP): Features, 3-way handshake		
Jan-26	31-Jan-26	Application Layer & Protocols: Client-Server architecture: Iterative vs Concurrent Servers,		
	4-Feb-26	Standard Protocols: HTTP (with HTTPS),		

Feb-26	7-Feb-26	FTP, Email (SMTP, POP3, IMAP), TELNET, SSH (modern replacement), DNS	8
	11-Feb-26	Quality of Service (QoS): Concepts of Delay, Jitter,	
	14-Feb-26	Bandwidth, Flow control techniques	
	18-Feb-26	Integrated Services (IntServ) and Differentiated Services (DiffServ),	
	21-Feb-26	Current trends: QoS in video streaming and VoIP	
	25-Feb-26	Revision 1	
	28-Feb-26	Revision 2	
Mar-26	7-Mar-26	Exam Preparation	1
		Tot. Lec.	30
			30

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Academic Calendar				
PRACTICAL Plan for Semester-IV Year: 2025-2026				
Course	S.Y.B.Sc. (Computer Science) (NEP 2020)		Vertical 01	Major
Course Code	Major			
Title	Practical- COMPUTER NETWORKS			
Credits	2 Credits			
Name of the Faculty	Ayesha Mehboob Fahim			
Month	Date	Topic	Batch	Lecture per Month
Nov-25	10-Nov-25	Introduction to Computer Networks: Networking standards and organizations, Types of Networks		6
	17-Nov-25	Network Models: OSI Reference Model – layers, functions, TCP/IP Protocol Suite – layers and comparison with OSI		
	24-Nov-25	Physical Layer Concepts: Data and signals: analog & digital, Signal impairments: attenuation, noise, distortion		
Dec-25	1-Dec-25	Bandwidth Utilization & Transmission Media: Multiplexing: FDM, TDM, WDM, Spread Spectrum techniques: DSSS, FHSS, Transmission Media.		8
	8-Dec-25	Switching Techniques: Circuit Switching, Packet Switching (connectionless and connection-oriented)		
	15-Dec-25	Data Link Layer and Error Handling: Link layer addressing (MAC), framing concepts, Error detection		
	22-Dec-25	Wired & Wireless LANs: Ethernet (standard, fast, gigabit). IEEE 802.11 Wi-Fi, Bluetooth, WiMAX, Cellular telephony.		
Jan-26	5-Jan-26	Network Layer Fundamentals: Packet Switching Concepts, IPv4 Addressing, Subnetting, IP Packet forwarding & routing,		6
	12-Jan-26	Routing Techniques: Routing algorithms: Concepts of Distance Vector & Link State Routing, Unicast Routing Protocols		
	19-Jan-26	IPv6: IPv6 Addressing format, comparison with IPv4, ICMPv6, Transition strategies		
Feb-26	2-Feb-26	Transport Layer Protocols, Transport layer services, User Datagram Protocol (UDP)		8
	9-Feb-26	Transmission Control Protocol (TCP): Features, 3-way handshake		
	16-Feb-25	Application Layer & Protocols: Client-Server architecture: Iterative vs Concurrent Servers, Standard Protocols		
	23-Feb-26	Quality of Service (QoS): Concepts of Delay, Jitter, Bandwidth, Flow control techniques, Integrated Services (IntServ) and Differentiated Services.		
Mar-26	2-Mar-26	Journal Checking		2
		Tot. Lec.		30

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Academic Calendar				

Teaching Plan for Semester-VI Year: 2025-2026	
Course	T.Y.B.Sc. (Computer Science)
Course Code	USCS6031
Title	Wireless Sensor Network
Credits	2 Credits (45 Lectures)
Name of the Faculty	Ayesha Mehboob Fahim

Month	Date	Topic	Lectures	Lecture per Month		
Nov-25	UNIT I		17	11		
	04-Nov-25	Chapter1: Introduction and Overview of Wireless Sensor Networks				
	8-Nov-25	Basic Sensor Network Architectural Elements,				
	11-Nov-25	Advantages of wireless sensor network				
	12-Nov-25	Challenges of wireless sensor network.				
	15-Nov-25	Applications,Sensor Node Technology				
	18-Nov-25	Sensor Taxonomy, WN Operating Environment,				
	19-Nov-25	Radio Technology, Network architecture				
	22-Nov-25	Optimization goals and figures of merit				
	25-Nov-25	Design principles for WSNs				
	26-Nov-25	Service interfaces of WSNs, Gateway concepts.				
	29-Nov-25	Chapter 2: Wireless Sensor Network Operating Systems and Ad-hoc Networks				
	Dec-25	2-Dec-25			Overview of Wireless Sensor Network Operating Systems	11
3-Dec-25		Examples of WSN Operating Systems Ad-hoc Networks in Wireless Sensor Networks				
6-Dec-25		Characteristics and Challenges of Ad-hoc Networks in WSNs,				
9-Dec-25		Energy Efficiency Considerations in Ad-hoc Networks				
10-Dec-25		Security and Privacy in Adhoc Networks,				
13-Dec-25		Examples of WSN OS, Ad-hoc Network.				
Unit II		11	12			
16-Dec-25				Chapter 1: Medium Access Control Protocol: Introduction		
17-Dec-25				Fundamentals of MAC Protocols,		
20-Dec-25				Sensor-MAC Case Study		
Jan-26	23-Dec-25	Chapter 2: Routing in WSN: Routing Challenges	17	12		
	3-Jan-25	Design Issues in Wireless Sensor Networks				
	6-Jan-25	IEEE 802.15.4 LR-WPANs Standard Case Study, Routing				
	7-Jan-25	Strategies in Wireless Sensor Networks				
	10-Jan-25	Chapter3 : Transport Control Protocol: Introduction				
	13-Jan-25	Traditional Transport Control Protocols,				
	17-Jan-25	Transport Protocol Design Issues,				
	20-Jan-25	WSN Middleware Architecture				
	Unit III				17	12
	21-Jan-26	Chapter 1: Wireless Transmission: Frequency for radio transmission,				
	24-Jan-26	Signals and Antennas				
	27-Jan-26	Signal propagation, Multiplexing, Modulation,				
	28-Jan-26	Spread spectrum, Cellular systems.				
31-Jan-26	Chapter 2: Telecommunication, Satellite and Broadcast Systems: Satellite and Broadcast Systems					
Feb-25	3-Feb-26	GSM: Mobile services, System architecture	17	12		
	4-Feb-26	Radio interface, Protocols,				
	7-Feb-26	Localization And Calling, Handover				
	10-Feb-26	security, New data services				
	11-Feb-26	DECT: System architecture, Protocol architecture				
	14-Feb-26	ETRA, UMTS and IMT- 2000.				
	17-Feb-26	Satellite Systems and History				
	18-Feb-26	Applications, Basics: GEO, LEO, MEO				
	21-Feb-26	Routing, Localization, Handover.				
	24-Feb-26	Revision 1				
	25-Feb-26	Revision 2				
	28-Feb-26	Exam Preparation and Revisions				
						45
		Tot. Lec.				

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PRACTICAL Plan for Semester-VI Year: 2025-2026				
Course	T.Y.B.Sc. (Computer Science)			
Course Code	USCS6031			
Title	Wireless Sensor Network			
Credits	2 Credits (45 Lectures)			
Name of the Faculty	Ayesha Mehboob Fahim			
Month	Date	Topic	Batch	Lecture per Month
	04-11-25			
Nov-25	11-11-25	Introduction and Overview of Wireless Sensor Networks: Basic Sensor Network Architectural Elements, Advantage and challenges, Applications, Sensor Node Technology		9
	18-11-25	Wireless Sensor Network Operating Systems and Ad-hoc Networks: Overview of Wireless Sensor Network Operating Systems, Examples of WSN Operating Systems Ad-hoc Networks		
	25-11-25	Sensor Taxonomy, WN Operating Environment, Radio Technology, Network architecture		
Dec-26	02-12-25	Applications, Basics: GEO, LEO, MEO; Routing, Localization, Handover.		12
	09-12-25	Medium Access Control Protocol: Fundamentals of MAC Protocols, Sensor-MAC Case Study		
	16-12-25	Protocol architecture; ETRA, UMTS and IMT- 2000. Satellite Systems		
	23-12-25	Routing in WSN: Routing Challenges and Design Issues in Wireless Sensor Networks		
Jan-26	06-01-26	Design principles for WSNs, Service interfaces of WSNs, Gateway concepts.		12
	13-01-26	Transport Control Protocol: Traditional Transport Control Protocols, Transport Protocol Design Issues, WSN Middleware Architecture		
	20-01-26	WN Operating Environment, Radio Technology, Network architecture, Optimization goals and figures of merit		
	27-01-26	Wireless Transmission: Frequency for radio transmission, Signals, Antennas, Signal propagation,		
Feb-26	03-02-26	Security and Privacy in Adhoc Networks, Examples of WSN OS, Ad-hoc Network.		12
	10-02-26	IEEE 802.15.4 LR-WPANs Standard Case Study, Routing Strategies in Wireless Sensor Networks,		
	17-02-26	Telecommunication, Satellite and Broadcast Systems: Satellite and Broadcast Systems: GSM: Mobile services, System architecture, Radio interface, Protocols		
	24-02-26	Journal Checking		
		Tot. Lec.		45

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Teaching Plan for Semester-III Year: 2025-2026			
Course	S.Y.B.Sc. (Computer Science) (NEP 2020)	Vertical 01	Mandatory
Course Code	Major(MJ9)		
Title	Software Engineering		
Credits	2 Credits (30 Hrs)		
Name of the Faculty	Ayman Ajaz Ulday		

Month	Date	Topic	Lectures	Lecture per Month
		Module 1		
Nov-25	08-11-2025	Chapter I:Introduction to Software Engineering:	4	4
	10-11-2025	Nature of Software, Software Engineering:		
	13/11/2025	Principles and Practice, Software Process Framework,		
	15/11/2025	Layered Technology, Process		
	17/11/2025	Framework,		
	20/11/2025	Process Patterns, Capability Maturity Model (CMM), Process		
	22/11/2025	Assessment		
	12-01-25	Chapter II:Software Development Models:		

25-Dec	12-04-25	Prescriptive Models: Waterfall, Incremental, Rapid	8	8
	12-06-25	Application Development (RAD), Evolutionary Models: Prototyping, Spiral Model,		
	12-08-25	Specialized Models: Component-Based Development, Aspect-Oriented		
	12-11-25	Development, Agile Development: Agile Manifesto, Extreme Programming (XP),		
	13/12/2025	Chapter III:Requirements Engineering and Analysis:		
	15/12/2025	Requirements Engineering Process,		
	18/12/2025	Elicitation Techniques (Interviews, Workshops, Use Cases), Components &		
	20/12/2025	Characteristics of a Software Requirements Specification (SRS), Validation of		
	22/12/2025	Chapter IV:System and Object-Oriented Modeling (using UML)		
26-Jan	Module 2		8	8
	01-01-26	Chapter I:Software Design and Architecture:		
	01-03-26	Design Principles: Coupling and Cohesion,		
	01-05-26	Functional-Oriented vs.,		
	01-08-26	Design Verification and Validation,		
	01-10-26	Coupling and Cohesion,		
	01-12-26	Object-Oriented Design, System Architecture Design,		
	15/01/2026	Monitoring and Control in Design		
	17/01/2026	Chapter II:Software Metrics and Estimation:		
	19/01/2026	Software Measurement: LOC, Function Point,		
	22/01/2026	and Use Case-Based Estimations, Object-Oriented Metrics,		
26-Feb	02-09-26	Models, Introduction to COCOMO II, Estimation in Agile Development,	7	7
	02-12-26	Make/Buy		
	14/02/2026	Chapter III:Software Project Management:		
	16/02/2026	Estimation, Project Scheduling: Effort Estimation, Time-Line Charts, Gantt Charts,		
	19/02/2026	Risk Management: Identification, Projection, RMMM Plan		
	21/02/2026	Chapter IV:Software Quality Assurance & Testing:		
	23/02/2026	SQA Activities, Software Reviews,		
	26/02/2026	Formal Technical Reviews (FTR), Software Reliability and SQA Plan, Verification		
	28/02/2026	& Validation, Testing Principles and Objectives,		
	7-3-2026	Revision	5	5
	9-3-2026	Exam Preparation and Revisions		
		Tot. Lec.		30

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Academic Calendar

Teaching Plan for Semester-VI Year: 2025-2026

Course	T.Y.B.Sc. (Computer Science)
Course Code	USCS602
Chapter:1	Cloud Computing and Web Services
Credits	2 Credits (45 Lectures)
Name of the Faculty	Ayman Ajaz Ulday

Month	Date	Topic	Lectures	Lecture per Month
UNIT I				
Nov-25	06-11-2025	Chapter:1 Web Services – Distributed Computing, Parallel Computing, WSDL	17	8
	10-11-2025	structure, SOAP- Structure of SOAP Message (In JAX-WS), SOAP		
	12-11-2025	SOAP Handler, REST-		
	13/11/2025	Messaging Architecture, SOAP Header, Client-side		
	17/11/2025	What is REST? HTTP methods, Java API for RESTful		
	19/11/2025	Chapter:2 Virtualization:- Characteristics of Virtualized		
	20/11/2025	of Virtualization. Virtualization using KVM, Creating ,		
	24/11/2025	oVirt - management tool for virtualization environment.		
	12-01-25	Introduction to Cloud Computing:	17	
	12-03-25	Definition, Types of Clouds,		
	12-04-25	Deployment of software solutions and web		
	12-08-25	applications, Types of Cloud Platforms, Essential characteristics – On-		
	12-12-25	demand self-service, Broad network access,		
	17/12/2026	Location independent resource		
	19/12/2026	pooling ,Rapid elasticity , Measured service, Comparing		

Dec-25	21/12/2026	with traditional IT service providers	11	13
	22/12/2026	Virtualization:- Characteristics of Virtualized Environments..		
	Unit II			
		Chapter:1 Cloud Computing Software Security fundamentals: Cloud Information Security Objectives, Confidentiality, Integrity, Availability, Cloud Security Services, Relevant Cloud Security Design Principles, Secure Cloud Software Requirements, Secure Development practices,Cloud Computing Software Security fundamentals: Cloud Information		
	05-01-2026	Security Objectives, Confidentiality, Integrity, Availability,		
	07-01-2026	Services, Relevant Cloud Security Design Principles,		
	08-01-2026	Chapter:2 Requirements, Secure Development practices,		
	12-01-2026	Secure Cloud Software		
Jan-26	14/01/2026	Requirements, Secure Development practices, Approaches to Cloud	12	12
	16/01/2026	Software Requirement Engineering, Cloud Security Policy Implementation.		
	20/01/2026	Unit III		
	21/01/2026	Chapter:1 Cloud Applications		
	22/01/2026	CloudSim: Introduction to Simulator, understanding		
	26/01/2026	CloudSim Architecture(User code, CloudSim, GridSim, Sim.Java)		
	28/01/2026	Understanding Working platform for CloudSim,		
	29/01/2026	CloudSim simulator,		
Feb-26	02-02-26	Chapter:2 OpenStack: Introduction to OpenStack,	13	8
	02-04-26	OpenStack operations, OpenStack CLI and APIs, Tenant		
	02-05-26	Quotas, Private cloud building blocks, Controller deployment,		
	02-09-26	deployment, Block Storage deployment, Compute		
	02-11-26	and utilizing OpenStack in production environments,		
	02-12-26	Building a production		
	16/02/2026	Chapter:3 AWS: Architecting on AWS, Building complex		
	18/02/2026	Virtual Private Cloud (Amazon VPC)		
Mar-26	03-09-26	with Amazon	4	5
	03-11-26	Revision 2		
	03-12-26	Exam Preparation and Revisions		
Tot. Lec.			45	45

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Academic Calendar

Practical Plan for Semester-V Year: 2025-2026

Course	T.Y.B.Sc. (Computer Science)
Course Code	USCSP602
Title	Cloud computing and web services
Credits	2 Credits
Name of the Faculty	Ayman Ajaz Ulday

Month	Date	Topic	Batch	Lecture per Month
Nov-25	08-11-2025	Define a simple services like Converting Rs into Dollar and Call it from different platform like JAVA and .NET		4
	15-11-2025	Create a Simple SOAP service.		
Dec-25	22-11-2025	Create a Simple REST Service.		4
	29-11-2025	Develop application to consume Google's search / Google's Map RESTful Web service.		
	06-12-2025	Write a program using Selenium WebDriver to update 10 student records in an Excel file.Perform data manipulation and verification.		
	13-12-2025	Develop application to consume Google's search / Google's Map RESTful Web service.		
Jan-26	20-12-2025	Develop application to download image/video from server or upload image/video to server using MTOM techniques		4

	03-01-2026	Implement FOSS-Cloud Functionality VSI (Virtual Server Infrastructure) Infrastructure as a Service (IaaS), Storage		
	10-01-2026	Implement FOSS-Cloud Functionality - VSI Platform as a Service (PaaS),		
Feb-26	01-02-2026	<i>Implementation of Openstack with user and private network creation.</i>		4
	02-08-26	Using AWS Flow Framework develop application that includes a simple workflow. Workflow calls an activity to print hello world to the console.		
	15/02/2026	Journal Checking		
Mar-26	5-3-2026	Journal Certification		4
		Tot. Lec.		45

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Teaching Plan for Semester-VI Year: 2025-2026

Course	T.Y.B.Sc. (CS)	
Course Code	USCS6042	
Title	Ethical Hacking	
Credits	2 Credits (45 Lectures)	
Name of the Faculty	Rushda Osama Khanzada	

Month	Date	Topic	Lectures	Lecture per Month
		UNIT I:		
Nov-25	6-11-2025	Terminology, Hacking Technology Types		10
	10-11-2025	Ethical Hacking Phases		
	12-11-2025	Hackivism, Hacker Classes, Skills Required for an Ethical Hacker		
	13-11-2025	Vulnerability Research, Ways to Conduct Ethical Hacking		
	17-11-2025	Footprinting: Definition		
	19-11-2025	Information Gathering Methodology		
	20-11-2025	Competitive Intelligence, DNS Enumeration, Whois and ARIN Lookups		
	24-11-2025	Types of DNS Records, Traceroute in Footprinting, E-Mail Tracking		
	26-11-2025	Social Engineering: Common Types Of Attacks		
	27-11-2025	Scanning and Enumeration: Port Scanning		
Dec-25	1-12-2025	Network Scanning, Vulnerability Scanning, CEH Scanning Methodology		12
	3-12-2025	SYN, Stealth, XMAS, NULL,		
	4-12-2025	IDLE, FIN Scans, Anonymizers, HTTP Tunneling Techniques		
	8-12-2025	IP Spoofing Techniques, SNMP Enumeration, Steps Involved in Enumeration		
		UNIT 2		
	10-12-2025	System Hacking: Password-Cracking Techniques		
	11-12-2025	Types of Passwords, Keyloggers and Other Spyware Technologies		
	15-12-2025	Escalating Privileges, Rootkits		
	17-12-2025	Sniffers: Protocols Susceptible to Sniffing, Active and Passive Sniffing		
	19-12-2025	ARP Poisoning, MAC Flooding, DNS Spoofing Techniques, Sniffing Countermeasures		
	22-12-2025	Denial of Service: Types of DoS Attacks, Working of DoS Attacks		
	23-12-2025	BOTs/BOTNETs, "Smurf" Attack, "SYN" Flooding, DoS/DDoS Countermeasures		
Jan-26	24-7-2025	Session Hijacking: Spoofing vs. Hijacking, Types		10
	5-1-2026	Sequence Prediction, Steps, Prevention		
	7-1-2026	Hacking Web Servers: Web Server Vulnerabilities		
	8-1-2026	Attacks against Web		
	12-1-2026	Servers, Patch Management Techniques,		
	14-1-2026	Web Server Hardening		
		UNIT 3		
	15-1-2026	Web Application Vulnerabilities: Web Application Hacking		
	19-1-2026	Web Application Threats, Google Hacking, Countermeasures		
	21-1-2026	Web-Based Password Cracking Techniques		
	15-1-2026	Authentication Types		

Nov-25	THURSDAY	Linux Network Analysis and ARP Poisoning Linux Network Analysis: Execute the ifconfig command to retrieve network interface information. Use the ping command to test network connectivity and analyze the output. Analyze the netstat command output to view active network connections. Perform a traceroute to trace the route packets take to reach a target host. ARP Poisoning: o Use ARP poisoning techniques to redirect network traffic on a Windows system. o Analyze the effects of ARP poisoning on network communication and security.		10
	THURSDAY	Port Scanning with NMap Use NMap to perform an ACK scan to determine if a port is filtered, unfiltered, or open. Perform SYN, FIN, NULL, and XMAS scans to identify open ports and their characteristics. Analyze the scan results to gather information about the target system's network services.		
Dec-25	THURSDAY	Network Traffic Capture and DoS Attack with Wireshark and Nemesy Network Traffic Capture:		12
	THURSDAY	Persistent Cross-Site Scripting Attack Set up a vulnerable web application that is susceptible to persistent XSS attacks. Craft a malicious script to exploit the XSS vulnerability and execute arbitrary code. Observe the consequences of the attack and understand the potential risks associated with XSS vulnerabilities.		
	THURSDAY	Session Impersonation with Firefox and Tamper Data Install and configure the Tamper Data add-on in Firefox. Intercept and modify HTTP requests to impersonate a user's session. Understand the impact of session impersonation and the importance of session management.		
Jan-26	THURSDAY	SQL Injection Attack Identify a web application vulnerable to SQL injection. Craft and execute SQL injection queries to exploit the vulnerability. Extract sensitive information or manipulate the database through the SQL injection attack		8
	THURSDAY	Creating a Keylogger with Python Write a Python script that captures and logs keystrokes from a target system. Execute the keylogger script and observe the logged keystrokes. Understand the potential security risks associated with keyloggers and the importance of protecting against them.		
Feb-25	THURSDAY	Exploiting with Metasploit (Kali Linux) Identify a vulnerable system and exploit it using Metasploit modules.		8
	THURSDAY	Gain unauthorized access to the target system and execute commands or extract information. Understand the ethical considerations and legal implications of using Metasploit for penetration testing.		
Mar-26	THURSDAY	Revision and Certification		1
	THURSDAY	Certification		
		Tot. Lec.		
				45

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Academic Calendar

PRACTICAL Plan for Semester-II Year: 2025-2026

Course	F.Y.B.Sc. (CS)	Vertical – 1	Course: VSC
Course Code	VSC		
Title	Practical Approaches in Web Technologies		
Credits	2 Credits (45 lectures)		
Name of the Faculty	Rushda Osama Khanzada		

Month	Day	Topic	Batch	Lecture per Month
		List of Practicals (External)		
Nov-25	TUESDAY	Basic Web Page: Create an HTML page with a heading, a paragraph, and use bold, italic, and underline text.		4
	FRIDAY	Make a page showing: An ordered list of your 5 favorite fruits. An unordered list of your hobbies.		
Dec-25	FRIDAY	Design a page that has: A table showing 3 students' names and marks. A form with Name, Email, and a Submit button.		10
	TUESDAY	Create an HTML page and use inline CSS to change the background color of the page and the text color of a paragraph.		
	FRIDAY	Make a webpage that has 3 paragraphs. Use ID selector to color one paragraph red and class selector to color the others blue.		
	TUESDAY	Create a page that uses internal CSS (inside <style> tag) to: Change the page background color. Set the font family to Arial. Center the main heading.		
	FRIDAY	Create an HTML page that uses internal JavaScript to show an alert box with the message "Welcome to My Web Page!"		
Jan-26	TUESDAY	Write a JavaScript program that takes two numbers (using prompt()), adds them, and displays the result using alert().		10
	FRIDAY	Create a script that asks for the user's age and shows: "You are an adult" if age ≥ 18 "You are a minor" if age < 18		
	TUESDAY	Create a simple XML document to store student information (name, roll number, and grade).		
	FRIDAY	Write a short XML document and an HTML document showing the same data (e.g., a book's title and author) to compare their structure.		
	TUESDAY	Create an XML file that includes special characters (like <, >, &) using entity references such as <, >, and &.		
	FRIDAY	Create a simple HTML page with a button that, when clicked, uses AJAX to load data from a text file (data.txt) and display it in a <div>.		
Feb-25	TUESDAY	Write a script using the XMLHttpRequest object to fetch and display the contents of an XML file (student.xml) when a button is clicked.		4
	FRIDAY	Create a webpage where moving the mouse over an image sends an AJAX request to load and display some text (like "Welcome!") below the image.		
	TUESDAY	Create a page with an image and three links: One link to another page in your folder. One link to an external website. Make the image clickable (link to Google).		
Mar-26	TUESDAY	CheckingCreate a simple XML document to store student information (name, roll number, and grade).		2
	FRIDAY	Revision		
	TUESDAY	Revision		
	FRIDAY	Certification		
		Tot. Lec.		30