## SYLLABUS, TEACHING & EXAMINATION SCHEME
**For BSc WEF FROM SESSION 2018-19**

**BSc SYLLABUS WEF FROM SESSION 2018-19**

| **BSc - I Semester** | | | | | | |
|---|---|---|---|---|---|---|
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS111 | Computer Oriented Numerical Methods and Programming | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS112 | Computer Organization | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS121 | C Language Lab | 4 | 3 hrs | 20 | 80 | 100 |
| | | | | | | |
| **BSc - II Semester** | | | | | | |
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS211 | Programming in C++ | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS212 | Data Structure | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS221 | C++ and Data Structure Lab | 4 | 3 hrs | 20 | 80 | 100 |
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| **BSc - III Semester** | | | | | | |
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS311 | Web Design | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS312 | Operating System | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS321 | Web Design Lab | 4 | 3 hrs | 20 | 80 | 100 |
| | | | | | | |
| **BSc - IV Semester** | | | | | | |
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS411 | Database Management System | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS412 | Computer Graphics | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS421 | DBMS Lab | 4 | 3 hrs | 20 | 80 | 100 |
| | | | | | | |
| **BSc - V Semester** | | | | | | |
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS511 | Java Programming | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS512 | Computer networks | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS521 | Java Lab | 4 | 3 hrs | 20 | 80 | 100 |
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| **BSc - VI Semester** | | | | | | |
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS611 | ASP.NET | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS612 | E-commerce and Cyber Law | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS621 | ASP.NET Lab | 4 | 3 hrs | 20 | 80 | 100 |

| BSc - I Semester | | | | | | |
|---|---|---|---|---|---|---|
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS111 | Computer Oriented Numerical Methods and Programming | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS112 | Computer organization | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS121 | C Language Lab | 4 | 3 hrs | 20 | 80 | 100 |

| Unit | BSCS111: Computer Oriented Numerical Methods and Programming |
|---|---|
| I | Structure of C Programme, Identifiers and keywords, Data types, Constants and variables, scope of variables, Local and Global variables, Type conversion, Arithmetic operators, Library functions, Expressions, Input/Output statements, Get char and putchar, scanf, printf, compound statements and blocks. |
| II | Transfer of control: Relational operators, Logical operators, Bit wise operators, Unary operators, Hierarchy of Operations, If-else statement, switch statement, Goto statements and labels, while, Do-while and for statements, Nested loops, Break statement. |
| III | Array and Structures: Declaration, one-dimensional and multidimensional Arrays, Pointers, Pointer declaration, operations on pointers, Functions: Defining and accessing a function, Arguments of a function, Passing arguments and array to a function, Recursion. Structures: Defining a structure, Structure variables, unions, Difference between structure and Unions, Processing a Structure. |
| IV | Measure of Central Tendency: Median, mode, arithmetic mean, geometric mean, harmonic mean, partition values: quartiles, deciles and percentiles. Concepts of Roots: Synthetic division, value and values of derivative of a polynomial by synthetic division , Solution of simultaneous linear equation: Gauss elimination method, Gauss Seidal iterative method, Pivoting. |
| V | Iterative methods: Bisection method, false position, Newton Raphson, method Ordinary differential equations: Euler's methods. Runge-Kutta methods, Predicor- Corrector method-modified Euler's method |

*Suggested Readings*

- Let Us C, Yashwant P. Kanetkar, BPB Publications.
- Programming in ANSI C, Balaguruswamy, Mc Graw Hill
- Computer Oriented Numerical Methods, R S Salaria, Khanna Publication.
- Computer Oriented Numerical Methods, P Thangaraj,PHI Publication.
- Computer Oriented Numerical Methods, V Rajaraman, Prentice Hall India.

| Unit | BSCS112: Computer Organization |
|---|---|
| I | Number Systems and Codes: Number Systems: Decimal Number System, Binary Number System, Octal Number System, Hexa-Decimal Number System, Inter-conversion methods. Binary Arithmetic: addition and subtraction, Binary Codes: Weighted and Non-Weighted Codes, 8421 BCD Code, Excess-3 Code, Gray Code, ASCII and EBCDIC. |
| II | Boolean Algebra: Introduction to Logic. Logic Operations, AND, OR, NOT. Principle of Duality, AND Law, OR Law, Law of Negation, Commutative Law, Associative Law, Distributive Law, De-Morgan's Theorem. Digital Circuits: Introduction to Combinational and Sequential Circuits, Classification of Gates: Basic Gates, Universal Gates, And Exclusive Gates. Minterms and Maxterms, Sum of Products (SOP) and Products of Sum (POS).<br>Reduction Techniques: Need of Reduction. Reduction by Boolean Algebra, Karnaugh Maps: 2,3,4 Variable. |
| III | Combinational Circuits: Arithmetic Circuits: Half-Adder, Half-Subtractor, Full Adder, Full Subtractor, Parallel Adder, 2's Compliment Adder-Subtractor. Multiplexers, De-Multiplexers, Decoders, Encoders, Magnitude Comparator. |
| IV | Sequential Circuits: Flip-Flops: RS, D using NAND and NOR Gates, Introduction to Clock, & Timing Diagrams. Gated Flip-Flops (Latches). J-K Flip-Flop, T-Flip-Flop, J-K Master Slave Flip-Flop. Registers: Buffer register, shift register, SISO, SIPO, PISO, PIPO registers. |
| V | Sequential Circuits: Counters: Asynchronous and Synchronous; Ripple Up, Ripple Down Counters, Modulo Counters. Design of Synchronous Counters. Memories: Classification of memories, Volatile and Non-Volatile memories. Memory Technologies; Semiconductor, Magnetic and Optical Memories. RAM and ROM. |

*Suggested Readings*

- Fundamentals of Digital Circuits, Kumar Anand. A., PHI New Delhi
- Modern Digital Electronics, Jain R. P., Tata Mc Graw Hill , New Delhi
- Digital Design, Mano Morris, M. , PHI, New Delhi
- Digital Computer Fundamentals, Bartee Thomas, C., Mc Graw Hill.

| BSCS121:C LANGUAGE LAB |
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| **Practical Exercises** |
| Exercises based on Data types, Input / output statement, if statement, for loop, while loop, Nested Loops , Switch case Statement, Break statement, recursion, one dimensional, two dimensional arrays, structure, call by value function calling mechanism, call by address function calling mechanism. |

| BSc - II Semester | | | | | | |
|---|---|---|---|---|---|---|
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS211 | Programming in C++ | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS212 | Data Structure | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS221 | C++ and Data Structure Lab | 4 | 3 hrs | 20 | 80 | 100 |

| Unit | BSCS211: Programming in C++ |
|---|---|
| I | Principles of Object-Oriented Programming - Basic concepts of Object-Oriented programming, Benefits of OOPS(Object-Oriented Language), Structure of C++ program, Tokens, Keywords, Identifiers, constants, Basic data types, user-defined data types, derived data type.<br>Declaration of Variables, Reference variable, various types of operators in C++, Scope resolution operator, type cast operator. Implicit conversion, operator precedence, control structure: If, If-else, Loops: for, while and do-while.<br>Functions in C++:- Function prototype, call by reference, call by value, default arguments, const argument. |
| II | Classes and Objects:- Specifying a class, Defining member function, C++ program with class, Making an outside function inline, Nesting of member functions, access modifier, memory allocation for object, static data member, static member function.<br>Array of objects, objects as function argument, Friend function, Friend class, returning objects. |
| III | Polymorphism: Types of polymorphism, Virtual functions, Function overloading, Operator Overloading:- Concepts, overloading unary operators, overloading binary operators, overloading binary operators using friend, Manipulation of string using operator, rules for overloading operators , type conversion. |
| IV | Constructors:- Constructors, parameterize constructor, Multiple constructor in a class, constructors with default argument, Dynamic initialization of object, copy constructor, dynamic constructor, constructing two dimensional array, const object, Destructors and its concepts. |
| V | Inheritance: - Concepts of inheritance, defining derived classes, types of inheritance: Single inheritance, Multilevel inheritance, Multiple inheritance, Hierarchical inheritance, Hybrid inheritance, Multipath inheritance. Virtual base classes, Abstract classes, Constructor in derived classes, Member classes: Nesting of classes, Template: Concepts and introduction to friend and function templates. |

| Unit | BSCS211: Programming in C++ |
|---|---|
| I | Principles of Object -Oriented Programming:-Object-Oriented Programming Paradigm, Basic concepts of Object-Oriented programming, Benefits of OOPS, Object-Oriented Language, Application of OOPS, Application of C++, Simple C++ Program, Structure of C++ program, Creating Source file. Compiling and linking, Tokens, Keywords, Identifiers, constants, Basic data types, User-defined data types, derived data type, Symbolic constants, Type compatibility, Declaration of Variables, Dynamic initialization of variable, Reference variable, Operator in C++, Scope resolution operator, Member dereferencing operator, Memory management operator, manipulator, Type cast operator. |
| II | Expressions and their type, Special assignment expression, implicit conversion, operator overloading, Operator precedence, control structure Function in C++:- Function prototype, call by reference, Return by reference, Inline function, Default arguments, const Argument, Function overloading, Classes and Object:- Specifying a class, Defining member function, C++ program with class, Making an outside function inline, Nesting of member functions, access modifier, array with in class, memory allocation for object, static data member, static member function, Array of objects, Objects as function argument, Friend function, Friend class, Returning objects, const member function, pointer to member. |
| III | Constructors:- Constructors, parameterize constructor, Multiple constructor in a class, constructors with default argument, Dynamic initialization of object, copy constructor, dynamic constructor, constructing two dimensional array, const object, Destructors, Operator Overloading:- Operator overloading, overloading unary operators, overloading binary operators, overloading binary operators using friend, Manipulation of string using operator, Rules for overloading operators , type conversion. |
| IV | Inheritance: - Defining derived classes, Single inheritance, Private member inheritance, Multilevel inheritance, Multiple inheritance, Hierarchical inheritance, Hybrid inheritance, Virtual base classes, Abstract classes, Constructor in derived classes, Member classes: Nesting of classes, Template, generic function, generic classes. |
| V | Working with file:- Classes for file stream operations, opening and closing a file, Detecting End-of file, Open(): file mode, File pointer and their manipulation, Sequential input and output operation. |

*Suggested Readings*

- Object- Oriented Programming with C++ by E Balagurusamy, Tata Mcgraw hill

| Unit | BSCS212: Data Structure |
|---|---|
| I | Elementary data structure: Data types, Arrays and their representation, records and record structures. Linked lists: Representation of linked list in memory, insertion, deletion and searching of linked list, circular linked list, doubly linked list. |
| II | Stacks: Definition, array and linked implementation, operations on stack, application of stack, arithmetic expressions and recursion, prefix and postfix notations, evaluation of polish notation using stack. Queues: Queue data structure, implementation, operation on queues, operations on circular queue, priority queues. |
| III | Trees: Concept and terminology, Binary trees, linear and linked representation of binary trees, binary search tree, insertion and deletion operations on a binary search tree, Tree traversal techniques- In order, Preorder, Post order traversal and their recursive algorithms. |
| IV | Graphs and their representations, adjacency matrix, path matrix, graph traversal, breadth first search and depth first search algorithms. |
| V | Sorting and Searching: Sequential, Binary Search, Internal and external sorting techniques, Bubble sort, Insertion sort, Selection sort, Merge sort and quick sort algorithms. |

*Suggested Readings-*

- Schaum's outline of Data Structure.

| BSCS221: C++ and Data Structure Lab |
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| **Practical Exercises** |
| **Exercises based on** Concept of Class, Data Member, Member Function, Constructor, Implicit Pointer, New Operator, Friend Function & Friend Class, Inheritance, Function Overloading, Operator Overloading, Polymorphism Using Virtual Class, File Handling<br>Exercises based on Linear array and Multidimensional array, Linked list: insertion, deletion ,searching a item, Stack implementation using Array, Stack implementation using Linked list, Queue implementation, Tree traversal : pre order, In order, Post order, Searching : Linear , Binary, Sorting: Bubble, Insertion, Selection |

| BSc - III Semester | | | | | | |
|---|---|---|---|---|---|---|
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS311 | Web Design | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS312 | Operating System | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS321 | Web Design Lab | 4 | 3 hrs | 20 | 80 | 100 |

| Unit | BSCS311: Web Design |
|---|---|
| I | Creating Forms, The <FORM> tag, Named Input fields, Multiple, lines text windows, Drop down and list boxes, Hidden, Text, Text Area, Password, File Upload, Button, Submit, Reset, Radio, Checkbox, Select, Option, Forms and Scripting, Action Buttons, Grouping related fields, Disabled and read-only fields, Form field event handlers, Passing form data. |
| II | Java Script: Introduction, Client-Side JavaScript, JavaScript Objects. Operators: Assignment Operators, Comparison Operators, Arithmetic Operators, % (Modulus), ++(Increment), -- (Decrement), -(Unary Negation), Logical Operators, Short-Circuit Evaluation, String Operators, Special Operators, ? (Conditional operator), (Comma operator), delete, new, this, void. Statements: Break, comment, continue, delete, do … while, export, for, for…in, function, if…else, import, labelled, return, switch, var, while. |
| III | Properties and Methods of Each: Array, Boolean, Date, Function, Math, Number, Object, String, regExp Document and its associated objects : document, Link, Area, Anchor, Image, Applet, Layer Events and Event Handlers : General Information about Events, Defining Event, Handlers, event, onAbort, onBlur, onChange, onClick, onDblClick, onDragDrop, onError, onFocus, onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove, onReset, onResize, onSelect, onSubmit, onUnload. |
| IV | VB script: Introduction ,client side vb script,Operators: : Assignment Operators, Comparison Operators, Arithmetic Operators ,Various data types,control structures : Decisional (conditional/alternative) statements If … Then … Else ,Case of, Looping structures like for each ,do while/until, , VBScript Procedures **:** Scope of Variables, VB script functions, arrays, string manipulation classes and objects. |
| V | Dynamic HTML: object model and collections: introduction, object referencing, collections all and children, dynamic style, dynamic positioning, using the frames collection, navigator object. event model : introduction, various events and coding, tracking the mouse with event, Various Filters and Transitions. |

*Suggested Readings*

- HTML complete, BPB Publication(Sybex)
- Deitel and Deitel

| Unit | BSCS312: Operating System |
|---|---|
| I | Introduction: Definition of Operating System, Types of operating systems: Batch Systems, Multi programming, Multiuser, Multitasking, Time–sharing, Spooling, Parallel, Distributed and Real-time systems, Operating System Concepts, Operating System Services, System calls**.** |
| II | Process Management: Process concept, Process States, Representation of process (PCB), Process Scheduling, CPU Scheduling: Scheduling Criteria, Scheduling Algorithms, Algorithm evaluation. |
| III | Memory Management: Contiguous, Non contiguous, Swapping, Fragmentation, Compaction, Paging, Segmentation, Virtual memory management, Demand paging, Page replacement and Virtual memory concepts, Introduction to Thrashing. |
| IV | The Deadlock problem, Characterization (Hold and wait, Circular Wait, No Pre-emption, No sharing of resources), Prevention, Avoidance: (RAG And Wait for Graph), Detection and Recovery from Deadlock: (Banking algorithm and detection algorithm), Concept of Fork and Join methods. |
| V | Process concurrency, Concept of concurrency, cooperating process, precedence graph, Critical section problem, Mutual exclusion , semaphores, classical process (Reader Writer problem, Consumer producer problem, Dining Philosopher problem),Inter Process Communication |

*Suggested Readings*

- Operating System Concepts Abraham Silberschatz, Peter Baer Galvin, Greg Gagne John Wiley & Sons Inc.

| BSCS321:Web Design Lab |
|---|
| **Practical Exercises** |
| Exercises based on Events such as Click, Indexchanged etc (at least 2 ), Controls like button, textbox, checkbox, etc (at least 6), on Javascript control structures such as while (at least 4) javascript Arrays so as to accept the input and process the data, VBscript control structures such as while (at least 2), vbscript Arrays so as to accept the input and process the data , on DHTML objects(all and children) |

| BSc - IV Semester | | | | | | |
|---|---|---|---|---|---|---|
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS411 | Database management System | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS412 | Computer graphics | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS421 | DBMS Lab | 4 | 3 hrs | 20 | 80 | 100 |

| Unit | BSCS411: Database Management System |
|---|---|
| I | Introduction to Database: Need for DBMS, advantages of DBMS, views of data, instances and schema data independence, database administrator, database manager, database languages, overall structure of DBMS. |
| II | Entity Relationship Model: Entities, attributes, relationship, constraints, keys, E-R diagram. Concept of strong and weak entity sets, generalization, specialization and aggregation. |
| III | Relational Model: Structure of Relational Databases, Relational Databases, Modification of the Databases, Tuple Relational Calculus, Domain Relational Calculus. |
| IV | SQL – Basic structure – Clauses, data types, creating tables. Modification of the database – deletion, insertion, updates. Retrieving data from tables, ordering, set operations – union, intersect, except, concept of NULL values, nested subqueries – set membership, set comparison, exist and not exist operator, unique, not unique construct. |
| V | Joins, equi-joins, non-equi-joins, self joins, outer joins. Aggregate functions – group by and having clause. Math functions, string functions, group by clause. Indexes, views, granting and revoking permissions. |

*Suggested Readings*

- Database Concepts, Korth, Silbertz, Sudarshan, McGraw Hill.
- Database Management System, Suresh Fatehpuria.
- SQL/PL-SQL The Programming Language of Oracle, IVAN BAYROSS.

| Unit | BSCS412: Computer Graphics |
|---|---|
| I | Introduction: fundamentals of Computer Graphics, point, dot, pixel, Resolution, Elements of graphics workstation. Video Display Devices-Raster Scan Systems Random Scan systems. Input devices. Graphics Software Coordinate Representations, Fundamental Problems in Geometry, Concepts of video memory and frame buffer. |
| II | Algorithms: Line drawing algorithms- DDA Algorithm, Bresenham's Line Algorithm, Circle: Midpoint Circle Algorithm. Polygons, convex and convex polygons. Inside-Outside tests, Polygon fill algorithms: Boundary fill Algorithm, Flood fill Algorithm. Character generation. Attributes of lines, curves, characters. etc. |
| III | Graphics Primitives: Primitive Operations, The display file interpreter-Normalized Device Coordinates, Display-File structure. Display – file algorithm. Display control and Polygon representation. Attributes of output primitives: Line attributes - Line type. Line width. Pen and Brush options. Line Color. Color and gray scale levels. Color-tables. Gray scale. Area- Fill Attributes- Fill styles. Pattern fill. Soft fill. Character Attributes. Text attributes. |
| IV | Geometric Transformations: Matrices. Translation, Scaling Transformations. Sine and Cos Rotation. Homogeneous Co-ordinates . Composite Transformation. Rotation and scaling about an arbitrary point. Inverse Transformations, Transformations Routines. |
| V | 2-D Viewing- The viewing pipeline. Viewing co-ordinate, Reference Frame. Window to viewports co-ordinate transformation, 2-D Viewing functions. Clipping operations point clipping, Cohen- Sutherland Line Clipping algorithm, Sutherland Hodgmann polygon clipping algorithm |

*Suggested Readings*

- Computer graphics Donald,Hearn, M.Pauline Baker
- Computer graphics Steven Harrington.

| BSCS421:DATABASE MANAGEMENT SYSTEM LAB |
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| **Practical Exercises** |
| Exercises based on creating table, inserting data into tables, viewing data in the tables, sorting data in table, deleting tuples from table, updating the contents of a table, modifying the structure of table, applying primary key, foreign key and unique key constraints, computations on table data, oracle functions, grouping data from tables, subqueries, Joins |

| BSc - V Semester | | | | | | |
|---|---|---|---|---|---|---|
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS511 | Java Programming | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS512 | Computer Networks | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS521 | Java Lab | 4 | 3 hrs | 20 | 80 | 100 |

| Unit | BSCS511: Java Programming |
|---|---|
| I | Object Oriented Concepts in Java, Comparison of Java and C++, Java features like security, portability, byte code, java virtual machine, object oriented, robust, multithreading, architectural neutral, distributed and dynamic. Java Source File Structure, Compilation, Execution. |
| II | Class Fundamentals, Object & Object reference, Creating and Operating Objects, Use of Tokens, Identifiers, Keywords, Literals, Comments, Primitive Data Types, Operators-precedence and associativity, Type conversion, Command line argument,-decision making – if, if..Else, switch; loops – for, while, do…while; special statements– return, break, continue. |
| III | Array – single and two dimension array. Object Life time & Garbage Collection, Access Modifiers, Constructors , Object Life time & Garbage Collection, Defining Methods, Argument Passing Mechanism, Method Overloading, Recursion, Finalize() Method, Use of this keyword |
| IV | Inheritance – Advantages of Inheritance in OOP, types of Inheritance, constructors in inheritance, use of super keyword, polymorphism; Abstract Class, Interfaces - defining an interface, implementing and applying interfaces, using variables in interfaces, extending interfaces; Method overriding – use, need, advantage. |
| V | Use of super, final and static keyword, Package - Organizing Classes and Interfaces in Packages, Package as Access Protection, defining Package, CLASSPATH Setting for Packages and Introduction to Applet programming. Introduction to Exception Handling: try..catch..throw..throws...finally, Accepting input from keyboard |

*Suggested Readings*

- Programming with Java -E Balaguruswamy, IV Edition.

| Unit | BSCS512: Computer Networks |
|---|---|
| I | Principles of Data Communication: Evolution of computer networks, General features and tasks of a communication system, Fundamentals of signals, carrier waves, modes of transfer : simplex , half duplex ,full duplex, types of networks : LAN, WAN, MAN, SAN, PAN, CAN, VPN, EPN. Introduction to serial communication. |
| II | Networking Architecture : ISO-OSI, IBM SNA architecture –their functions of each layer and implementation. Concepts of circuit switching, packet switching and message switching. Fundamentals of datagrams. Flow and Error Control – Stop and Wait, Sliding Window, Automatic Repeat Request |
| III | Data communication concepts: Connecting devices, hub, switch, bridge, routers and gateways, Signal encoding and decoding techniques - Amplitude Modulation, Frequency Modulation, Phase Modulation, signal bandwidth requirements, signal formats used in LAN, Network Protocols: LAN cabling standards : IEEE LAN standards. |
| IV | Error detection and correction codes: Parity bit, Checksum, Hamming codes, CRC, single error detection and correction. Introduction to Network security Model, concepts of key, Ceaser cipher, transposition cipher, DES. |
| V | Transmission media - twisted pair, coaxial cable, optical-fibre. LAN topologies: STAR, BUS and RING network, LAN access techniques: ALOHA, CSMA, token ring and token bus. Issues related with network reliability and fault redundant network systems. |

*Suggested Readings*

- Stalling, Data & Computer Communication.
- Tanenbaum, Computer Network, Pearson.Ed., Pearson
- Kurose, Computer Networking, Pearson
- Peterson, Davie; Computer Networks, Elsevier

| BSCS521:JAVA PROGRAMMING LAB |
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| **Practical Exercises** |
| Exercises based on Input/output, loops, if,switch, array(1d-2d), Use of different types of constructors, Implement Method Overloading, Use of static and this and final keyword, Implement Single and Multilevel (using super), Use of String and its inbuilt functions, Use of inbuilt mathematical functions, Implement Method Overriding, Implement Abstract Class, Implement Exception Handling, Implement finally block, Implement package |

| BSc - VI Semester | | | | | | |
|---|---|---|---|---|---|---|
| Code | Description | Pd/w | Exam | CIA | ESE | TOTAL |
| BSCS611 | ASP.NET | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS612 | E-commerce and cyber law | 3 | 3 hrs | 20 | 80 | 100 |
| BSCS621 | ASP.NET Lab | 4 | 3 hrs | 20 | 80 | 100 |

| Unit | BSCS611: ASP.NET |
|---|---|
| I | Anatomy of .NET, .NET Base Classes, Microsoft Intermediate Language,CLR, Client Server model, IIS Web Server, Namespaces, ASP.NET: How the ASP.NET works, Basics of ASP.NET, Creating and Deploying the ASP.NET applications, Concept of Code behind, Use of Web Applications using ASP.NET, Difference between Windows and Web Applications.ASP.NET directives. |
| II | ASP.NET: Web forms, Web Controls categories: server Controls and Web Controls: Label, Textbox, CheckBox and CheckBoxList, RadioButton and RadioButton List, ListBox and DropDownList, Table, Image, Hyperlink, HiddenField, FileUpload. RichWeb Controls: AdRotator, Calendar, TreeView, TabStrip.<br>Concept of Master Page and Navigation Controls. |
| III | Validation Controls: Need of Validation Control, Various Controls like Require Field, Compare, Range, RegularExpression, Custom, ValidationSummary, Dynamic controls. Debugging ASP.NET pages: Error Handling: Custom Error Page, Using Debugging Tools: Debugger and Trace Facility. |
| IV | ASP.NET Database Programming, Introducing ADO.NET, ADO .NET Object Models, Communicating with OLEDB Data Sources Using ADO.NET, Working with Datagrids.<br>Data binding with different controls. Data Command, Data Reader objects. |
| V | Web Services: Concept of web services, Infrastructure for Web services.<br>ASP.NET Security: IIS security: Authentication, Authorization and Impersonation using Session State. ASP.NET Application Configuration, Web.Config, Global.asax file. |

*Suggested Readings*:

- ASP.NET Bible
- Professional ASP.NET 4, Wiley Publication

| Unit | BSCS612: Ecommerce and Cyber Law |
|---|---|
| I | Electronic Commerce, Scope of the Internet and Web, Using the web to reach the customer, Benefits of E-Commerce markets, Type of E-Commerce Technology, Types of E-Business Models and Markets, Types of E-Commerce Providers and Vendors. |
| II | E-Commerce Website Creation, Managing E-Commerce Website Development- Website Server, Developing Commerce Site, Requirement for Site, Building the Site, Implementation of Site, Building Shopping Cart Application, Mobile E-Commerce, Enhancing a Web Server with E-Commerce Application Development. |
| III | Implementing and Managing E-Commerce Site- Strategies, Techniques and Tools, Implementing merchandising strategies, E-Commerce Databases, Applying and Managing E-Business Intelligence Tools for application development, Types of Security Techniques, Building E-Commerce Trust Infrastructure. |
| IV | E-Payments Technology- Payment Technologies Issues, E-payment through Smart Cards, E-payment system, Digital Currencies, International E-Commerce Solutions- Auction resources, Smart Cards, Digital Wallets, Person to Person payments, Micropayment System (eCash), Token value and store based credits. |
| V | Introduction to IT and Cyber laws , Cyber Crimes – Internet, Hacking, Cracking, Viruses, Virus Attacks, Pornography, Software Piracy, Intellectual property rights , Legal System of Information Technology, Social Engineering, Mail Bombs, Bug Exploits, Cyber Crime Investigation and Cyber Security etc. , E-Mail Tracking, IP Tracking, E-Mail Recovery. |

***Suggested Readings***

- Electronic Commerce : Pete Joshin, John Vacca.

| BSCS621:ASP.NET LAB |
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| **Practical Exercises** |
| Exercises based on Serverside web form controls: label, textbox, button, radiobutton, checkbox, dropdownlist, listbox with their events, Client side validation controls: required filed, range, compare, regular expression, custom , validation summary, Database handling with MS-Access. Insert, update, delete and select operation, Login and logout implementation using session. |