# Bhavan's Vivekananda College

Accredited with 'A' Grade by NAAC

Department of Computer Science

Academic Organizer for 2016 - 2017

**M.Sc(CS) I SEMESTER - CBCS**

**ADVANCED JAVA PROGRAMMING**

**LESSON PLAN**

| Unit | Sub Unit | Topic | Periods per subunit | Total periods |
|---|---|---|---|---|
| I | a) | Event Handling: The Delegation Event Model, Events, Event Classes, Event Listener Interfaces, Using the Delegation Event Model, Adaptor Classes. | 3 | 15 |
| | b) | AWT: Windows Fundamentals, Working with Frame Windows,Control Fundamentals, Labels, Buttons, Checkbox, Radio Button(CheckboxGroup), TextField, Understanding Layout Manager(FlowLayout, GridLayout, BorderLayout, CardLayout). | 4 | |
| | c) | Swing: Introduction, Swing Features, Components and Containers, JLabel, JTextField, JButton, JToggleButton, JCheckBox, JRadioButton, | 4 | |
| | d) | JTabbedPane, JScrollPane, JList, JComboBox, JTree, JTable, JMenuBar, JMenu, JMenuItem, JRadioButtonMenuItem, JCheckBoxMenuItem, JPopupMenu, JToolBar. | 4 | |
| II | a) | JDBC: Design of JDBC Configuration, Executing SQL statement, Query Execution, Scrollable and Updatable result sets, row sets, metadata, Transaction. | 6 | 15 |
| | b) | Servlets: Need for Dynamic Content, Java Servlet Technology, Servlet API, servletConfig interface, servletRequest and servletResponse Interfaces, Genericservlet Class. | 4 | |
| | c) | ServletInputStream–ServletOutputStream Classes, requestDispatcher Interface, HttpServlet Class, HttpServletRequest and HttpServletResponse Interfaces, HttpSession Interface, Servlet Lifecycle. | 5 | |

| Unit | Sub Unit | Topic | Periods per subunit | Total periods |
|---|---|---|---|---|
| III | a) | JSP: Introduction, Disadvantages, JSP Vs Servlets, Lifecycle of JSP, Comments, JSP documents, JSP elements, Action elements, implicit objects, Scope, Character Quoting Conventions | 6 | 15 |
| | b) | Java server Faces: Need of MVC, what is JSF?, components of JSF, JSF as an application, JSF lifecycle, JSF configuration, JSF web applications(login form, JSF pages). | 4 | |
| | c) | EJB: Enterprise Bean Architecture, Benefits of Enterprise Bean, Types of Beans, Accessing Beans, Packaging Beans, Creating Web Applications, Creating Enterprise Bean, Creating Web Client, Creating JSP File, Building and Running Web Application. | 5 | |
| IV | a) | HIBERNATIVE: Introduction, Writing the application, application development approach, creating database and tables in MySQL, | 6 | 15 |
| | b) | creating a web application, Adding the required library files, creating a java bean class, creating hibernate configuration and mapping file, adding a mapping resource, creating JSPs. | 5 | |
| | c) | STRUTS: Introduction, Struts framework core components. | 4 | |
| TOTAL | | | | 60 |

# Department of Computer Science

## Academic Organizer 2016-2017

## M.Sc I Semester Operating Systems

| Unit | Sub Unit | Details | Total |
|---|---|---|---|
| I | a) | Unit-I Computer-System Architecture, Operating-System Structure, Operating-System Operations,Process Management, Memory Management, Storage Management, Protection- Security, Kernel Data Structures,Computing Environments, Open-Source Operating Systems. | 5 |
| | b) | **Operating-System Structures**: Operating-System Services, User Interface for Operating-System, System Calls,Types of System Calls, Operating-System Design and Implementation, Operating-System Structure, Operating-System Debugging. | 5 |
| | c) | **Process Management**: Process Concept, Process Scheduling, Operations on Processes, Inter processCommunication, Examples of IPC Systems, Communication in Client–Server Systems | 5 |
| II | d) | **Unit – II Threads**: Overview, Multithreading Models, Threading Issues.**Process Synchronization:** Concept, Critical-Section Problem, Peterson's Solution, Synchronization, ClassicProblems of Synchronization, Semaphores, Monitors. | 5 |
| | a) | **CPU Scheduling:** Concepts, Scheduling Criteria, Scheduling Algorithms, Thread Scheduling, Real-Time CPUScheduling, Algorithm Evaluation. | 5 |
| | b) | **Deadlocks:** System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention,Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock. | 5 |
| III | c) | **Unit – III**<br>**Memory Management:**Main Memory - Swapping, Contiguous Memory Allocation, Segmentation, Paging,Structure of the Page Table. Virtual Memory: Demand Paging, Page Replacement, Allocation of Frames,Thrashing, Memory-Mapped Files. | 5 |
| | d) | **Mass-Storage Structure:** Overview, Disk Structure, Disk Scheduling, Disk Management, Swap-Space Management,RAID Structure, Stable-Storage Implementation. | 5 |
| | e) | **File SystemInterface**: File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, Protection | 5 |
| IV | f) | **Unit – IV File- System Implementation:** Directory Implementation, Allocation Methods, Free-Space Management,Recovery, Network File System. | 5 |
| | g) | **Protection :** Goals of Protection, Principles of Protection, Domain of Protection,Access Matrix, Access Control, Revocation of Access Rights. | 5 |
| | h) | **Security:**Security Problem, Program Threats, System andNetwork Threats, Cryptography as a Security Tool, User Authentication, Implementing Security Defenses,Firewalling to Protect Systems and Networks, Computer-Security Classifications. Case Study: Windows 7 andLinux System. | 5 |
| Total | | | 60 |

# Bhavan's Vivekananda College

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Department of Computer Science

Academic Organizer for 2016 - 2017

## M.Sc(CS) I-YEAR I SEMESTER (CBCS)

## SOFTWARE ENGINEERING

| Unit | Sub Unit | Topic | Periods per subunit | Total periods |
|---|---|---|---|---|
| I | a) | Unit – I<br>Software Engineering: The Nature of Software, Software Process, Software Engineering Practice. | 5 | 15 |
| | b) | Software Process: A Generic Process Model, Defining a Framework Activity, Process Assessment and Improvement, | 5 | |
| | c) | Prescriptive Process Models, Specialized Process Models, Unified Process, Personal and Team Process Models. Defining Agility, Agile Process, Extreme Programming. | 5 | |
| II | a) | Unit – II<br>Requirements: Requirements Engineering, Establishing the Groundwork, Eliciting Requirements, Developing Use Cases, Building the Requirements Model, | 5 | 15 |
| | b) | UML Models That Supplement the Use Case, Identifying Analysis Classes, Specifying Attributes, Defining Operations, Class- Responsibility-Collaborator Modeling, Associations and Dependencies, Analysis Packages. | 5 | |
| | c) | Design Concepts: Design within the Context of SE, Design Process, Design Concepts, Design Model, Software Architecture, Architectural Styles, Architectural Design. Component, Designing Class-Based Components, Conducting Component-Level Design, Component-Based Development, User Interface Design Rules. | 5 | |

| Unit | Sub Unit | Topic | Periods per subunit | Total periods |
|---|---|---|---|---|
| III | a) | Unit – III<br>Quality Management: Quality, Software Quality, Software Quality Dilemma, Achieving Software Quality, Defect Amplification and Removal, Reviews, Informal Reviews, Formal Technical Reviews, | 5 | 15 |
| | b) | Elements of Software Quality Assurance, SQA Tasks, Goals, and Metrics, Software Reliability, A Strategic Approach to Software Testing,Validation Testing, System Testing, | 5 | |
| | c) | Debugging, Software Testing Fundamentals, White-Box Testing, Basis Path Testing, Control Structure Testing, Black-Box Testing, Object-Oriented Testing Strategies& Methods. | 5 | |
| IV | a) | Unit – IV<br>Software Configuration Management, SCM Process, Product Metrics for Requirements Model, Design Model, Source Code, Testing and Maintenance. | 5 | 15 |
| | b) | Managing Software Projects: The Project Management Spectrum, W5HH Principle, Metrics in the Process and Project Domains, Software Measurement, Metrics for Software Quality, Integrating Metrics within the Software Process, | 5 | |
| | c) | Software Project Estimation, Decomposition Techniques, Project Scheduling – basics, scheduling, Software Risks, Risk Mitigation, Monitoring, and Management, Software Maintenance, Software Reengineering, Reverse Engineering, Forward Engineering. | 5 | |
| TOTAL | | | | 60 |

Academic Advisor

M.SC(CS) 1st year, 2nd semester 2016-2017

**DESIGN and ANALYSIS OF ALGORITHMS**

| UNIT | SUB TOPIC | TOPIC | NO. OF HOURS | TOTAL HOURS |
|---|---|---|---|---|
| I | 1 | Algorithm, Fundamentals of Algorithmic Problem Solving, Important Problem Types. | 4 | 15 |
| | 2 | The Analysis Framework, Asymptotic Notations and Basic EfficiencyClasses, Mathematical Analysis of Non-recursive & Recursive Algorithms. | 3 | |
| | 3 | **Brute Force Search:** Selection Sort,Bubble Sort, Sequential Search, Brute-Force String Matching, | 4 | |
| | 4 | Exhaustive Search, Depth-First Search, Breadth-First Search. | 4 | |
| II | 1 | **Decrease–&–Conquer:** Insertion Sort, Topological Sorting, Binary Search, Interpolation Search | 4 | 19 |
| | 2 | **Divide-and-Conquer:** Merge Sort, Quick Sort, Multiplication of Large Integers, Strassen's Matrix Multiplication | 5 | |
| | 3 | Transform-and-Conquer: Presorting, Balanced Search Trees, Heaps and Heap Sort, Problem Reduction, Space and Time Trade-Offs, Hashing, B-Trees | 5 | |
| | 4 | Space and Time Trade-Offs, Hashing, B-Trees | 5 | |
| III | 1 | **Dynamic Programming:** Knapsack Problem | 3 | 11 |
| | 2 | Optimal Binary Search Trees | 3 | |
| | 3 | Warshall's and Floyd's Algorithms | 5 | |
| IV | 1 | **Greedy Technique:** Prim's Algorithm, Kruskal's Algorithm, Dijkstra's Algorithm, Huffman Trees and Codes | 5 | 15 |
| | 2 | **Iterative Improvement:** Simplex Method, Maximum-Flow Problem | 3 | |
| | 3 | **Limitations of Algorithm Power:** Lower-Bound Arguments, Decision Trees, P, NP, and NP-Complete Problems.Backtracking: n-Queens Problem, Hamiltonian Circuit Problem, Subset-Sum Problem | 3 | |
| | 4 | .**Branch-and-Bound:**Assignment Problem, Knapsack Problem, Traveling Salesman Problem, Approximation Algorithms for theKnapsack Problem | 4 | |
| | | **TOTAL CLASSES** | | 60 |

# Bhavan's Vivekananda College

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Department of Computer Science

Academic Organizer for 2016 - 2017

**M.Sc(CS) II SEMESTER - CBCS**

**PROGRAMMING USING PYTHON**

**LESSON PLAN**

| Unit | Sub Unit | Topic | Periods per subunit | Total periods |
|---|---|---|---|---|
| I | a) | Introduction to Python Programming: How a Program Works, Using Python, Program Development Cycle, Input,Processing, and Output, Displaying Output with the Print Function, Comments, Variables, Reading Input from theKeyboard, Performing Calculations (Operators. Type conversions, Expressions), More about Data Output. | 5 | 15 |
| | b) | Decision Structures and Boolean Logic: if, if-else, if-elif-else Statements, Nested Decision Structures, ComparingStrings, Logical Operators, Boolean Variables. | 5 | |
| | c) | Repetition Structures: Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops,Nested Loops. | 5 | |
| II | a) | Functions: Introduction, Defining and Calling a Void Function, Designing a Program to Use Functions, LocalVariables, Passing Arguments to Functions, Global Variables and Global Constants | 6 | 15 |
| | b) | Value-Returning Functions-Generating Random Numbers, Writing Our Own Value-Returning Functions, The math Module, StoringFunctions in Modules. | 4 | |
| | c) | **File and Exceptions:** Introduction to File Input and Output, Using Loops to Process Files, Processing Records,**Exceptions.** | 5 | |

| Unit | Sub Unit | Topic | Periods per subunit | Total periods |
|---|---|---|---|---|
| III | a) | **Lists and Tuples:** Sequences, Introduction to Lists, List slicing, Finding Items in Lists with the in Operator, ListMethods and Useful Built-in Functions, Copying Lists, Processing Lists, Two-Dimensional Lists, Tuples. | 6 | 15 |
| | b) | **Strings:** Basic String Operations, String Slicing, Testing, Searching, and Manipulating Strings. | 4 | |
| | c) | **Dictionaries and Sets:** Dictionaries, Sets, Serializing Objects.**Recursion:** Introduction, Problem Solving with Recursion, Examples of Recursive Algorithms. | 5 | |
| IV | a) | **Object-Oriented Programming:** Procedural and Object-Oriented Programming, Classes, Working with Instances,Techniques for Designing Classes, Inheritance, Polymorphism. | 6 | 15 |
| | b) | GUI Programming: Graphical User Interfaces, Using the tkinter Module, Display text with Label Widgets,Organizing Widgets with Frames, Button Widgets and Info Dialog Boxes | 6 | |
| | c) | Getting Input with Entry Widget, Using Labels as Output Fields, Radio Buttons, Check Buttons. | 3 | |
| | | **TOTAL** | | 60 |

Department of Computer Science

M.Sc I Year II Sem, Automata Languages and Computation

Year-wise Lesson Plan

2016-17

| UNIT | Details | Periods Per Sub Unit | Total |
|---|---|---|---|
| I | Strings, alphabets and languages - Graphs and Trees, Finite automata | 4 | 16 |
| | Regular Expression - Finite state systems - Non deterministic finite automata | 6 | |
| | Finite automata with E-moves-Regular expression. | 6 | |
| II | Two-way Finite automata - Finite automata with output | 4 | 16 |
| | Pumping lemma for regular sets - Closure properties of regular sets - Decision algorithms for regular sets | 7 | |
| | The Myhill-Nerode theorem and minimization of finite automata. | 5 | |
| III | Context-free grammars - Motivation and Introduction - Context-free grammars -Derivation trees | 6 | 17 |
| | Chomosky normal form - Greibach normal form | 5 | |
| | Push down automata, Properties of CFL. | 6 | |
| IV | Turning machines - Introduction - Truing machine model - Computable languages and functions | 4 | 11 |
| | Church's hypothesis - Regular grammars - Unrestricted grammars | 4 | |
| | Context - Sensitive languages - Chomosky hierarchy. | 3 | |
| | TOTAL NO OF CLASSES | | 60 |

Department of Computer Science
Academic Organizer 2016-2017
M.Sc IIyear I Sem, Artificial Intelligence
Year-wise Lesson Plan

| UNIT | Details | Periods Per Sub Unit | Total |
|---|---|---|---|
| I | Definition, Introduction to AI techniques, Problems, Problem spaces & search, Production system, Problem characteristics Heuristic Search: Generate & Test, Hill Climbing, Breadth-First search, Problem reduction, Constraint Satisfaction | 5 | 15 |
| | Knowledge Representation, issues, representation & mapping, approaches, issues Frame Problem | 5 | |
| | Knowledge representation using predicate logic, predicate logic, | 5 | |
| II | Procedural v/s Declarative knowledge Logic programming, Forward v/s Backward reasoning, matching Declarative knowledge representation, Semantic nets, Frames, Conceptual dependency, scripts , CYC | 8 | 15 |
| | Symbolic reasoning under uncertainty, non-monotonic reasoning, logic for nonmonotonic reasoning Implementation of depth-first search & breadth-first search | 4 | |
| | Statistical reasoning, Certainty factors & rule based systems Bayesian networks, Dempster-Shafer theory Fuzzy Logic | 3 | |
| III | Game playing, minmax search, alpha-beta heuristics, iterative deepening Planning, non-linear planning, hierarchical planning | 6 | 15 |
| | Learning, Rote learning, Learning by taking advice, from examples & explanation based learning Connectist models, Neural Networks ,applications | 4 | |
| | Natural Language Processing, syntax, semantic & pragmatic processing, perception Expert system representation & using domain knowledge, Expert system shells Explanation knowledge acquisition | 5 | |
| IV | The brain as a dynamical system Neurons as functions, signal monotonicity, Biological activations & signals, neuron fields | 5 | 15 |
| | Theory of fuzzy sets: Definition, dilation, Concentration, Normalization | 5 | |
| | Reasoning with fuzzy logic, Natural Language Computations, Fuzzy Matching algorithms | 5 | |
| | TOTAL NO OF CLASSES | | 60 |

Department of Computer Science
Academic Organizer 2016-2017
M.Sc IIyear I Sem, Network Security
Year-wise Lesson Plan

| UNIT | Details | Periods Per Sub Unit | Total |
|---|---|---|---|
| I | Conventional encryption, security attacks, security, model for network security | 5 | 15 |
| | conventional encryption model, encryption techniques, DES, triple DES | 7 | |
| | key distribution, random number generation. | 3 | |
| II | Public-key cryptology, principles of public - key cryptosystems | 5 | 15 |
| | RSA algorithm, key management | 6 | |
| | distribution of public keys, public key - distribution of s | 4 | |
| III | Authentication and digital systems authenticate requirements - functions cryptographic checksum, hash function, digital signatures | 6 | 15 |
| | authentication protocols, kerboros, x-509 directory, authentication services | 4 | |
| | Diffie-Hellman key exchange, digital signature standards. | 5 | |
| IV | Cryptographic algorithms, the MD 5 message digest algorithm, secure has algorithm, international data encryption algorithm | 7 | 15 |
| | LUC public key encryption - Electronic mail and management security | 5 | |
| | pretty good privacy (PGP), privacy enhanced mail | 3 | |
| | TOTAL NO OF CLASSES | | 60 |

Department of Computer Science
Academic Organizer 2016-2017
M.Sc II year- I Semester,00SD & UML
Year-wise Lesson Plan

| UNIT | Details | Periods Per Sub | Total |
|---|---|---|---|
| I | An overview of OOSD, Object oriented Methodologies,00SD life cycle | 3 | 15 |
| | Object basics ,Importance of modeling, Object oriented modeling | 3 | |
| | An overview of UML, A conceptual model of the UML, SDLC | 4 | |
| | Building Blocks of UML, Rules of UML, Common Mechanisms, UML | | |
| | Architecture. | 5 | |
| II | Structuraln modeling: classes, Relationships, Common Mechanisms, Diagrams | 3 | 15 |
| | Class Diagrams, Advanced Structural ModelingAdvanced Classes,Advanced Relationships, | 6 | |
| | Interfaces, Types, Roles, Instances, Object Diagrams | 6 | |
| III | Behavioral Modeling: Interactions, Use Cases, Use Case Diagrams | 4 | 15 |
| | Activity Diagrams, Advanced Behavioral Modeling, Events and Signals | 6 | |
| | State Machines, Processes and | | |
| | Threads,Time and Space, Space Chart | 5 | |
| IV | Architectural Modeling: Components, Deployment, Collaborations | 3 | 10 |
| | Patterns and FrameWorks, Component Diagrams | 4 | |
| | Deployment Diagrams, Systems and Models | 3 | |
| | Revision Classes | 5 | 5 |
| | TOTAL NO OF CLASSES | | 60 |

Department of Computer Science
Academic Organizer 2016-2017
M.Sc IIyear- I Semester
**.NET TECHNOLOGY**

| UNIT | SUB TOPIC | TOPIC | NO. OF HOURS | TOTAL HOURS |
|---|---|---|---|---|
| I | 1 | .NET Introduction, advantages, features. | 4 | 15 |
| | 2 | NET Frame Work – Architecture, CLR, MSIL, JIT | 3 | |
| | 3 | C# introduction – data types, variables, constants, literals, operators | 4 | |
| | 4 | condition and looping statements. Arrays & String operations | 4 | |
| II | 1 | Name spaces – creation, accessing, standard namespaces, versioning and inheritance. | 5 | 15 |
| | 2 | . I/O statements. Windows form controls | 5 | |
| | 3 | event handling. ADO.NET and database connectivity | 5 | |
| III | 1 | ASP.NET – Introduction, creating web form | 4 | 15 |
| | 2 | web controls, server controls. | 4 | |
| | 3 | Web services and windows services | 3 | |
| | 4 | . IIS, AJAX technology, MVC. | 4 | |
| IV | 1 | XML – Creating XML file, reading XML document | 5 | 15 |
| | 2 | Writing data from XML documents. | 3 | |
| | 3 | .NET Assemblies & attributes. | 3 | |
| | 4 | Introduction , features and format of Crystal Reporting. | 4 | |
| Total | | | | 60 |

Department of Computer Science
Academic Organizer 2016-2017
# M.Sc IIyear- I Semester, Image Processing
Year-wise Lesson Plan

| UNIT | Details | Total |
|---|---|---|
| I | Image formation and description-Digital image representation — Elements of Visual perception — Sampling and quantisation — Elements of digital image processing systems | 15 |
| II | Image transform, Digital Image transforms — Fourier transform — Extension to | 15 |
| | 2D.DCT Walsh, Hadamard Transforms | |
| III | Image Enhancements and Segmentation — Histograms modification — Image smoothing — Image Sharpening — Thresholding — Edge detection — segmentation point and region dependent techniques | 15 |
| | Color image processing: Color fundamentals, color models psuedu- color image processing — intensity slicing gray level to color transformation, filtering approach , full — color image processing | |
| IV | Image encoding — fidelity criteria — transform compression — K.L., Fourier, | 15 |
| | DCT spatial compression run length coding —Hoffman coding —contour coding | |
| | restoration — Restoration models, inverse filtering — Least squares filtering — Recursive Filtering | |
| | TOTAL NO OF CLASSES | 60 |

| Department of Computer Science | | | |
|---|---|---|---|
| Academic Organizer 2016-2017 | | | |
| M.Sc IIyear II Sem, Data Warehousing and Data Mining | | | |
| Year-wise Lesson Plan | | | |
| **UNIT** | **Details** | **Periods Per Sub Unit** | **Total** |
| I | Basic elements of DW,Dimension Modeling: Bus Architecture, Dimensional Modeling Techniques. | 5 | 15 |
| | Fact Table design, ROLAP querying and reporting and building dimensional models. | 5 | |
| | DW Architecture, Frameworks and approach. | 5 | |
| II | Back room data stores, services, management. Front room data stores, services for data access. | 5 | 14 |
| | Aggregation goals, risks, design goals of aggregate navigation system. | 4 | |
| | Physical design develop standards, data model, index plan, storage structure. Fact table loads and warehouse operations. | 5 | |
| III | Data mining(DM), definitions, KDD, DM techniques, applications. Methods: Priori, partition, pincer-search, FP-tree growth, border algorithm | 8 | 14 |
| | Clustering techniques and algorithms. | 6 | |
| IV | Decision trees introduction, splitting indices and criteria. Decision construction algorithms, Pruning techniques. | 7 | 17 |
| | Neural networks introduction, learning. Temporal mining, association rules, sequence mining. | 5 | |
| | Sequence mining algorithms: | | |
| | episode discovery, event prediction, spatial mining, clustering trends. | 5 | |
| Total Classes | | | 60 |

Department of Computer Science
M.Sc IIyear IISem, Mobile Computing
Academic Organizer 2016-2017
Year-wise Lesson Plan

| UNIT | Details | Periods Per Sub Unit | Total |
|---|---|---|---|
| I | Introduction: Applications, Wireless Transmission: Frequencies of radio Transmission | 4 | 16 |
| | Signals, Antennas, Signal Propogation | 2 | |
| | Multiplexing .Modulation, Spread Spectrum, Cellular System | 4 | |
| | MAC: Motivation for Specialized MAC, SDMA, TDMA CDMA, Comparisons | 6 | |
| II | Wireless LAN: Infrared vs radio transmission, infrastructure and adhoc networks | 4 | 17 |
| | 1EE802.ll, HiperLan, Bluetooth, Wireless ATM: WATM Services, Reference Model | 6 | |
| | Management, Addressing, Access point control protocol | 7 | |
| III | Mobile network layer: Mobile IP, DHCP, Adhoc networks, Mobile Transpoñ layer: | | 12 |
| | indirect Tcp, Snooping TCP | 6 | |
| | Mobile Tcp, fast transmit/fast recovery, transmission/timeout freezing | 3 | |
| | Selective retransmission, transaction oriented TCP | 3 | |
| IV | Wireless Application Protocol: WAP Architecture, Components of WAP standards | 4 | 10 |
| | Design principles, Wireless Markup Language(WML), | 2 | |
| | WML Basics, Events ,Tasks and Bindings | 4 | |
| | Revision classes | 5 | 5 |
| | TOTAL NO OF CLASSES | | 60 |

Department of Computer Science
Academic Organizer 2016-2017
M.Sc IIyear- II Semester
Year-wise Lesson Plan

**DISTRIBUTED SYSTEMS**

| UNIT | SUB TOPIC | TOPIC | NO. OF HOURS | TOTAL HOURS |
|---|---|---|---|---|
| I | 1 | Introduction to DS, Examples of Distributed Systems, Resource Sharing and the Web, Challenges | 4 | 15 |
| | 2 | Architectural Models, Fundamental Models. | 3 | |
| | 3 | Operating System Layer, Protection, Processes and Threads | 4 | |
| | 4 | Communication and Invocation, Operating System Architecture. | 4 | |
| II | 1 | The API for the Internet Protocols, External Data Representation and Marshalling | 4 | 15 |
| | 2 | Client Server Communication, Group Communication, Case Study : Interprocess Communication in UNIX | 4 | |
| | 3 | Communication Between Distributed Objects, Remote Procedure Call, Events and Notifications, Case Study : Java RMI | 4 | |
| | 4 | Name Services and the Domain Name System, Directory Services | 3 | |
| III | 1 | Introduction, Clocks Events and Process States, Synchronizing Physical Clocks | 4 | 15 |
| | 2 | Logical Time and Logical Clocks, Global States, Distributed Debugging | 4 | |
| | 3 | Distributed Mutual Exclusion, Election | 3 | |
| | 4 | Multicast Communication, Consensus and Related Problems | 4 | |
| IV | 1 | Introduction, Transactions, Nested Transactions, Locks Optimistic Concurrency control | 2 | 15 |
| | 2 | Ordering, Comparison of Methods for Concurrency Control | 3 | |
| | 3 | Introduction, Flat and Nested Distributed Transactions, Atomic Commit Process | 2 | |
| | 4 | Concurrency Control in Distributed Transactions, Distributed Deadlocks | 3 | |
| | 5 | Transaction Recovery. Introduction, System Model and Group Communication | 2 | |
| | 6 | Fault-Tolerant Services. Case Study: The Gossip Architecture, CODS. | 3 | |
| Total | | | | 60 |