Integral University Lucknow
Study & Evaluation Scheme
B. Tech. (Computer Science & Engg.)

YEAR III, Semester- V

S. No.	Subject Code	Category	Subject	Periods				Evaluation Scheme				Subject Total
								Sessional			Exam.	
				L	T	P	C	CT	TA	Total (CA)	ESE	
1	CS-301	DC	Design and Analysis of Algorithm	3	1	0	4	25	15	40	60	100
2	CS-303	DC	Principles of Operating System	3	1	0	4	25	15	40	60	100
3	CS-304	DC	Theory of Automata and formal Languages	3	1	0	4	25	15	40	60	100
4	CS-305	DC	Computer Networks	3	1	0	4	25	15	40	60	100
5		DE	Departmental Elective-4	3	1	0	4	25	15	40	60	100
6		DE	Departmental Elective-5	3	1	0	4	25	15	40	60	100
7	CS-306	DC	Computer Network Lab	0	0	2	1	30	30	60	40	100
8		DE	Departmental Elective-6	0	0	2	1	30	30	60	40	100
9	CS-302	DC	Design and Analysis of Algorithm Lab	0	0	2	1	30	30	60	40	100
			Total	**18**	**6**	**6**	**27**	**240**	**180**	**420**	**480**	**900**

L-Lecture   **T-T**utorial   **P-**Practical   **C**-Credits   **CT-**Class Test   **TA-**Teacher Assessment

Sessional Total (CA) = Class Test (CT) + Teacher Assessment (TA)

Subject Total = Sessional Total (CA) + End Semester Examination (ESE)

DC- Departmental Core   **HM-** Humanities   **DE-** Departmental Elective
ESA- Engineering Sciences & Arts (Foundation Course & Engineering Courses)

Departmental Elective-4
1. Advanced Java Programming (CS-307)
2. Open Source Software Technologies (CS-309)

Departmental Elective-5
1. Software Project & Quality Management (CS-311)
2. Digital Image Processing (CS-312)

Departmental Elective-6
1. Advanced Java Programming Lab (CS-308)   [Co-requisite CS-307]
2. Open Source Lab (CS-310)   [Co-requisite CS-309]

Design and Analysis of Algorithm
CS-301
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
3 1 0 4

UNIT 1
Introduction: Algorithms, Analysis of Algorithms, Growth of Functions: Asymptotic
Notations, Standard Notations and Common Functions; Recurrence Methods: Substitution Method,
Iteration Method, Recursion Tree Method, Master's Method.   [8]

UNIT 2
Designing of Algorithms: Divide & Conquer: Heap Sort, Quick Sort, Sorting in Linear Time, Medians and
Order Statistics.
Advanced Data Structure: Red-Black Trees, Augmenting Data Structure, Binomial Heaps, Fibonacci
Heaps.   [8]

UNIT 3
Advanced Design and Analysis Techniques:
Greedy Algorithms: Knapsack Problem, Travelling Salesperson Problem, Minimum Cost Spanning Trees:
Kruskal's Algorithm, Prim's Algorithm.
Dynamic Programming: Longest Common Subsequence, Matrix Chain Multiplication, 0/1 Knapsack
Problem, Single Source Shortest Path: Dijkstra's Algorithm, Bellman Ford Algorithm.   [8]

UNIT 4
Amortized Analysis: Accounting Method, Aggregate Method, Potential Method.
Back Tracking: Introduction, Subset Sum Problem, n-Queens problem.
Branch & Bound: Introduction, 0/1 Knapsack, 15 Puzzle problem.   [8]

UNIT 5
String Matching: The Naive String Matching Algorithm, The Rabin-Karp Algorithm, The Knuth-Morris-
Pratt Algorithm.
Complexity Theory: Class P and NP, NP-hard Problems, NP-Complete Problems, Polynomial Reduction,
Approximation Algorithms.   [8]

REFERENCES
  1. Coremen, Rivest, Lisserson, "Algorithms", PHI.
  2. Horwitz & Sahani, Fundamental of Computer Algorithm, Galgotia.
  3. Michael T. Goodrich and Roberto Tamassia, Algorithm Design: Foundation, Analysis and Internet
      Examples, John Wiley Publications.

Recommended Prerequisite – Data Structure using C (CS 204)   Co-requisite - None

Principles of Operating System
CS-303
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
3 1 0 4

UNIT 1
Overview: Importance of Operating Systems; Basic Concepts and Terminology; Evolution of Operating Systems: Batch, Interactive, Time Sharing & Real Time Systems. System Resource Manager: Memory Management Functions, Processor Management Functions, Device Manager Functions & Information Management Functions. Operating System Interface: Command Interpreter, GUI; System Calls. Operating System Structure: Simple Structure, Layered Approach.   [8]

UNIT 2
Memory Management: Single Contiguous Allocation – H/W Support, Software Support, Advantages, Disadvantages; Introduction to Multiprogramming: Concept of Multiprogramming, Measure of System I/O Wait Percentage, Partitioned Allocation, Relocatable Partitioned Memory Management, Paged Memory Management, DemandPaged Memory Management, Segmented Memory Management, Segmented – Paging Memory Management, Other Memory Management Schemes: Swapping, Overlays. Case Study: Windows Memory Manager.   [8]

UNIT 3
Process: Introduction, Process Model, Process State, Process Control Block, Threats. Process Scheduling: Scheduling Queues, Schedulers, Context Switch. Job Scheduling: Functions, Policies, Job Scheduling in Non Multiprogrammed Environment, Job Scheduling in Multiprogrammed Environment. CPU Scheduling: Basic Concepts, Scheduling Criteria, Types of Scheduling, Scheduling Algorithms: FCFS, SJF, Round Robin, Priority Scheduling, Multilevel Queue Scheduling, Multilevel, Feedback Scheduling, Multiprocessor Scheduling, Real Time Scheduling. Case Study: Scheduling in Windows Operating System.
                          [8]
UNIT 4
Process Synchronization: Principles of Concurrency, Race Condition, Critical Section, Critical Section Problem, Synchronization Mechanism, Semaphore, Classical Problem of Synchronization: Bounded Buffer Problem, Readers Writers Problem, Dinning Philosophers Problem. Deadlock: Principles, System Model, Deadlock Characterization, Methods of Deadlock Handling: Prevention, Avoidance, Detection & Recovery from Deadlock. Case Study: Synchronization in Windows Operating System.   [8]

UNIT 5
Device Management: Dedicated Devices, Share Devices, Virtual Devices; Device Characteristics: Input or Output Devices, Storage Devices. Disk Scheduling: FCFS, SSTF, SCAN, CSCAN, LOOK Scheduling. 6 File System: File Concept, File Organization and Access Mechanism, Directories, File Sharing. Case Study: Windows File System.   [8]

REFERENCES
1. Galvin, Silberchatz "Operating Systems Principles", Addision Wesley.
2. Milenekovie, "Operating System Concept", McGraw Hill.
3. Dietal, "An Introduction to Operating System", Addion Wesley.
4. Tannenbaum, "Operating System Design And Implementation", PHI.
5. Gary Nutt, "Operating System, A Modern Perspective", Addision Wesley

Recommended Pre requisite: None   Co requisite: None

Theory of Automata and Formal Languages
CS-304
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
3 1 0 4

UNIT 1
Introduction; Alphabets, Strings and Formal Languages & Grammar , Kleen Closure , Arithmetic Expressions, Automata, Deterministic finite Automata (DFA)-Formal Definition, Simplified Notation: State Transition Graph, Transition table, Acceptability Of String By Finite Automata , Nondeterministic finite Automata (NFA), NFA with epsilon transition, Language of NFA, Equivalence of NFA and DFA, Two Way Finite Automata , Minimization of Finite Automata, Distinguishing one string from other, Myhill-Nerode Theorem, FA with output: Moore and Mealy machine, Equivalence of Moore and Mealy Machine, Applications and Limitation of FA.   [10]

UNIT 2
Chomsky Hierarchy: Introduction to Chomsky Hierarchy, Regular Grammars, Unrestricted Grammars, Context Sensitive Language, Relation between Classes of Languages, Regular expression (RE) , Definition, Operators of regular expression and their precedence, Algebraic laws for Regular expressions, Kleen's Theorem, Regular expression to FA, DFA to Regular expression, Arden Theorem, Non Regular Languages, Pumping Lemma for regular Languages. Application of Pumping Lemma, Closure properties of Regular Languages, Decision properties of Regular Languages.   [8]

UNIT 3
Context free grammar (CFG) and Context Free Languages (CFL): Definition, Examples, Derivation , Derivation trees, Ambiguity in Grammar, Inherent ambiguity, Ambiguous to Unambiguous CFG, Useless symbols, Simplification of CFGs, Normal forms for CFGs: CNF and GNF, Closure properties of CFLs, Decision Properties of CFLs: Emptiness, Finiteness and Membership, Pumping lemma for CFLs. [8]

UNIT 4
Push Down Automata (PDA): Description and definition, Instantaneous Description, Language of PDA, Acceptance by Final state, Acceptance by empty stack, Deterministic PDA, Equivalence of PDA and CFG, CFG to PDA and PDA to CFG, Two stacks PDA, Non Deterministic Push Down Automata.   [8]

UNIT 5
Turing machines (TM): Basic model, definition and representation, Instantaneous Description, Language acceptance by TM, Variants of Turing Machine, TM as Computer of Integer functions, Universal TM, Church's Thesis, Recursive and recursively enumerable languages, Halting problem, Introduction to Undecidability, Undecidable problems about TMs. Post correspondence problem (PCP), Modified PCP, Introduction to recursive function theory.   [8]

REFERENCES
1. Hopcroft and Ullman, "Introduction to Automata Theory Languages and Computation",Addison Wesley.
2. Mishra & Chandrasekhar, "Theory of Computer Sciences", PHI.
3. Martin, "Introduction to Languages & Theory of Computation", TMH.
4. E V Krishanmoorthy, "Theory of Computer Science", East West Publishing.
5. Korral, "Theory of Computer Sciences".
6. Kohan, "Theory of Computer Sciences", John Wiley.
7. Avi Kohavi, "Switching & Finite Automata Theory", TMH.

Recommended Prerequisite – None   Co-requisite - None

Computer Networks
CS-305
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
3 1 0 4

UNIT 1
Data communication, Components, Data representation, Data flow. Performance criteria, topologies, category: LAN. MAN & WAN. OSI layered architecture, TCP/IP protocol suite. **Physical Layer:** Transmission Media Guided media, Twisted pair, coaxial cable, fiber optics. Unguided media: radio waves, microwaves & infrared waves. Circuit switching network, Packet Network & Virtual Circuit. Connecting Devices: Repeater, Hub, Switch, Bridge, Router & Gateway. [8]

UNIT 2
Data Link Layer: Error Handling: types of error, Block Coding, Hamming distance, Linear Block Codes, Cyclic Codes. Flow control: Stop & wait, Sliding Window Protocols: Designing and functioning of Go-Back-N, Selective Repeat method. Random Access protocol ALOHA, CSMA, CSMA/CD. Channelization: Frequency Division Multiple Access, Time Division Multiple Access, Code Division Multiple Access. Overview of Fast Ethernet: FDDI. [8]

UNIT 3
Network Layer: IPv4 Addressing, Classful addressing, netid, hosted, mask, subnet. Classless addressing, subnetting using classless addressing. Datagram formats for IPv4 and IPv6 addresses. Address maping protocols: ARP and RARP. Packet delivery and packet forwarding. Unicast routing: Distance vector routing-RIP and Link state routing-OSPF. Path vector routing-BGP. [8]

UNIT 4
Transport Layer: Process to process delivery, Connectionless versus connection oriented services. User data gram protocol, farme format of datagram. Transmission control protocol: TCP services, TCP features, Segment format. Congestion Control: Open loop techniques (Retransmission, window and acknowledgement policies.), Closed loop techniques (Back pressure and choke packet). [8]

UNIT 5
Quality of Service: Flow characteristics: Reliability, Delay, Jitter and bandwidth. Traffic Scheduling: FIFO technique, Weighted fair queuing. Traffic shaping: Leaky bucket and token bucket.
Application Layer: Domain name System: Name space, Domain Name space, Distribution of domain name space. DNS in internet, Resolution. Electronic Mail: SMTP, IMAP, POP3. File Transfer: FTP. Telnet, WWW: architecture, Client, URL, Cookies. [8]

REFERENCES:
1. Forouzen,"Data Communication and Networking",TMH
2. A.S.Tanenbaum,"Computer Networks",3rd Edition,Prentice Hall India,1997.
3. W.Stallings,"Data and Computer Communication",Macmillan Press,1989.

Recommended Prerequisite – None   Co-requisite - None

Advance Java Programming
CS-307
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
3 1 0 4

UNIT 1
Java Applet & AWT: Introduction of Java Applet, Life cycle of Java Applet, Networking, Introduction to AWT, AWT controls, Layout managers, Menus, Images, Graphics.   [9]

UNIT 2
Java Swing: Creating a Swing Applet and Application, Programming using Panes, Pluggable Look and feel, Labels, Text fields, Buttons, Toggle buttons, Checkboxes, Radio Buttons, View ports, Scroll Panes, Scroll Bars, Lists, Combo box, Progress Bar, Menus and Toolbars, Layered Panes, Tabbed Panes, Split Panes, Layouts, Windows, Dialog Boxes, Inner frame.
JDBC: The connectivity Model, JDBC/ODBC Bridge, java.sql package, connectivity to remote database, navigating through multiple rows retrieved from a database.   [8]

UNIT 3
Java Beans: Application Builder tools, The bean developer kit(BDK), JAR files, Introspection, Developing a simple bean, using Bound properties, The Java Beans API, Introduction to Enterprise Java beans (EJB), Session Beans, Entity Beans, Message Driven Bean, Introduction to RMI (Remote Method Invocation): A simple client-server application using RMI.   [8]

UNIT 4
Java Servlets: Servlet basics, Servlet API basic, Life cycle of a Servlet, Running Servlet, Debugging Servlets, Thread-safe Servlets, HTTP Redirects, HTTP Session. Cookies in Servlet.   [8]

UNIT 5
 Java Server Pages: Introduction to Java Server pages (JSP), Life Cycle of JSP.JSP API, JSP Scripting Elements, Implicit objects, JSP Directive Elements, JSP Exception,Action Elements.   [8]

REFERENCES:
1. Naughton, Schildt, "The Complete Reference JAVA2", TMH
2. Balagurusamy E, "Programming in JAVA", TMH
3. Dustin R. Callway, "Inside Servlets", Addison Wesley
4. Mark Wutica, "Java Enterprise Edition", QUE
5. Steven Holzner, "Java2 Black book", dreamtech

Recommended Prerequisite – Core Java (CS-215)   Co-requisite - None

Open Source Software Technologies
CS-309
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
3 1 0 4

UNIT 1: Open Source and Linux
Open Source Definition, The distribution terms of open source software, open source technology importance, Free and Open Source Software (FOSS), LAMP (Linux, Apache, MySQL, PHP, Python, and Perl.). Benefits, Perspectives of Open Source software Linux and Open Source. Development process and business model of companies involved in open source (e.g. Mozilla)

[8]

UNIT 2: Linux Administration
Linux Vs Windows, Installation of Linux interactively, Perform user and group administration, Administer the Linux printing subsystem, Automate tasks with at, cron, Install, update, query and remove software packages with RPM.
Linux Usage Basics: Logging into the system, changing users and editing text files. Running Commands and Getting Help, Browsing the File system, Users, Groups and Permissions.

[10]

UNIT 3: Open Source OS
Other open source OS: Android, structure of Android, Basics of Android Studio. Accessing and Running Applications on Linux: cc compiler, gcc Compiler, Mozilla Firefox. Multimedia in Linux: Listening to Audio, Playing video, Using Digital Camera, Recording music / video CDs. Publishing: Open office, Working with Graphics, Printing Documents, Displaying documents with Ghostscript and Acrobat, Using Scanners driven by SANE.

[6]

UNIT 4: Apache and PHP, Python
Introduction to Web server. Installing Apache on Linux: httpd service. PHP: Testing Installation. Basics of PHP scripts, Variables, Data types, Operators and Expressions, Constants, Flow control functions, If statement, Loops, Arrays, Strings, Dates and Times, Forms. Introduction to Python and Nginx.

[8]

UNIT 5: MySQL Server and Application
MySQL: Configuring MySQL Server, working with MySQL Databases, MySQL Tables, SQL Commands – INSERT, SELECT, UPDATE, REPLACE, DELETE. Date and Time functions in MySQL. PHP – MySQL Application Development : Connecting to MySQL with PHP, Inserting data with PHP, Retrieving data with PHP. Developing PHP scripts for dynamic web page like Feedback form, online admission form, online test.

[8]

Books:
1. Open Source Web Development with LAMP: Using Linux, Apache, MySQL, Perl, and PHP James Lee, Brent Ware. Pub: Addison Wesley
2. Professional LAMP: Linux, Apache, MySQL and PHP5 Web Development, Jason Gerner, Morgan Owens, Elizabeth Naramore, Matt Warden, Wrox Publication
3. Red Hat Linux Bible Christopher Negus Wiley Publishing ISBN : 0-7645-4333-4
4. PHP, MySQL and Apache Julie C Meloni Pearson Education ISBN : 81-297-0443-9
5. The Complete Reference Linux Peterson Tata McGRAW HILL ISBN : 0-07-044489-7
6. UNIX using Linux Jack Dent, Tony Gaddis, Pub: Course Technology (Thomson Learning), ISBN : 981-240-218-7.

Recommended Prerequisite – None   Co-requisite - None

Software Project & Quality Management
CS-311
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
3 1 0 4

UNIT 1
Overview of Software Project Planning Software Project, Categorization of Software Project, Introduction to Stepwise Project Planning: Identify Project Scope and objectives, Identify Project Infrastructure, Project Products and Activities, Activity risks, Resource Allocation, Project Plan Execution. [8]

UNIT 2
Project Evaluation: Strategic Program Management, Technical Assessment, Cost Benefit Analysis, Cash Flow Forecasting, Cost-Benefit Evaluation Techniques: Net profit, Payback Period, Return on Investment, Net Present Value, Internal Rate of Return, Risk Evaluation, Selection of Technologies, overview of software development models. [8]

UNIT 3
Software Effort Estimation an Overview, Project Schedules, Network Planning Models, Activity Duration Estimation, and Risk Management: Identification, Analysis and Abatement of Risk. [8]

UNIT 4
Resource Allocation: Nature of resources, Identifying Resource Requirements, Scheduling Resources, Creating Critical Path, Counting the Cost, Cost Schedules. Monitoring and Control: Visualizing progress, Cost Monitoring, Prioritizing Monitoring, Getting Project Back to Target, Change Control. [8]

UNIT 5
Contract Management, Human Resource Management, Software Quality Definition, Software Quality Assurance, Quality Assurance Plan, Quality Matrices, ISO Standards, CMM, Six Sigma Approach. [8]

REFERENCES
1. Software Project Management by Bob Hughes and Mike Cotterell, Third Edition, TMH.
2. Information Technology Project Management by Kathy Schwalbe, International Student Edition, THOMSON Course Technology, 2003.
3. Software Quality by Mordechai Ben-Menachem/Garry S Marliss. Thomson Learning Publication
4. Software Project Management A Unified Framework by Walker Royce. Pearson Education.

Recommended Prerequisite – Software Engineering (CS-211)　　　　　　Co-requisite - None

Digital Image Processing
CS-312
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
3 1 0 4

UNIT 1
Introduction and Fundamentals
Motivation and Perspective, Applications, Components of Image Processing System, Element of Visual Perception, A Simple Image Model, Sampling and Quantization.
Image Enhancement in Spatial Domain
Introduction; Basic Gray Level Functions – Piecewise-Linear Transformation Functions: Contrast Stretching; Histogram Specification; Histogram Equalization; Local Enhancement; Enhancement using Arithmetic/Logic Operations – Image Subtraction, Image Averaging; Basics of Spatial Filtering; Smoothing - Mean filter, Ordered Statistic Filter; Sharpening – The Laplacian. [8]

UNIT 2
Image Enhancement in Frequency Domain
Fourier Transform and the Frequency Domain, Basis of Filtering in Frequency Domain, Filters – Low-pass, Highpass; Correspondence Between Filtering in Spatial and Frequency Domain; Smoothing Frequency Domain Filters – Gaussian Lowpass Filters; Sharpening Frequency Domain Filters – Gaussian Highpass Filters; Homomorphic Filtering.
Image Restoration
A Model of Restoration Process, Noise Models, Restoration in the presence of Noise only-Spatial Filtering – Mean Filters: Arithmetic Mean filter, Geometric Mean Filter, Order Statistic Filters – Median Filter, Max and Min filters; Periodic Noise Reduction by Frequency Domain Filtering – Bandpass Filters; Minimum Mean-square Error Restoration. [8]

UNIT 3
Color Image Processing
Color Fundamentals, Color Models, ConvertingColors to different models, Color Transformation, Smoothing and Sharpening, Color Segmentation.
Morphological Image Processing
Introduction, Logic Operations involving Binary Images, Dilation and Erosion, Opening and Closing, Morphological Algorithms – Boundary Extraction, Region Filling, Extraction of Connected Components, Convex Hull, Thinning, Thickening. [8]

UNIT 4
Registration
Introduction, Geometric Transformation – Plane to Plane transformation, Mapping, Stereo Imaging – Algorithms to Establish Correspondence, Algorithms to Recover Depth Segmentation Introduction, Region Extraction, Pixel-Based Approach, Multi-level Thresholding, Local Thresholding, Region-based Approach, Edge and Line Detection: Edge Detection, Edge Operators, Pattern Fitting Approach, Edge Linking and Edge Following, Edge Elements Extraction by Thresholding, Edge Detector Performance, Line Detection, Corner Detection. [8]

UNIT 5
Feature Extraction
Representation, Topological Attributes, Geometric Attributes. Description Boundary-based Description, Regionbased Description, Relationship.
Object Recognition
Deterministic Methods, Clustering, Statistical Classification, Syntactic Recognition, Tree Search, Graph Matching [8]

Books:
1. Digital Image Processing 2nd Edition, Rafael C. Gonzalez and Richard E. Woods. Published by: Pearson Education.
2. Digital Image Processing and Computer Vision, R.J. Schalkoff. Published by: John Wiley and Sons, NY.
3. Fundamentals of Digital Image Processing, A.K. Jain. Published by Prentice Hall, Upper Saddle River, NJ.

Recommended Prerequisite – None   Co-requisite – None

Computer Networks Lab
CS-306
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
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SECTION – A (Study of LAN Trainer Kit)

(A) MAC LAYER

1. Simulate ALOHA protocol for packet transmission between a no. of Nodes connected to a common bus.

2. Simulate CSMA protocol for packet transmission between a no. of Nodes connected to a common bus.

3. Simulate CSMA/CD protocol for packet transmission between a no. of Nodes connected to a common bus.

4. Simulate TOKEN BUS for bus LAN.

5. Simulate TOKEN BUS for ring LAN.

(B) DATA LINK LAYER

6. Simulate PACKET TRANMISION from one Node to another Node.
7. Simulate SLIDING WINDOW protocol to provide reliable data transfer between two nodes over an unreliable Network.
8. Simulate STOP & WAIT protocol for packet transmission between a no. of nodes.

(C) APPLICATION LAYER

9. Simulate FILE TRANSFER protocol to check transfer of file and deceiving of file between two nodes.

SECTION – B (Study of Packet Tracer Simulator)

10. Simulation of setting up router name and password.

11. Simulation of setting up telnet, MOTD banner, etc.

12. Simulation of testing telnet connection.

13. Simulation of Cisco Password Encryption.

14. Simulation of switch configuration.

15. Simulation of basic router configuration.

16. Simulation of Cisco port security.

17. Simulation of Static Route.

18. Simulation of default Route.

19. Simulation of Rip Configuration

20. Simulation of Spanning Tree Protocol

Recommended Prerequisite – None   Co-requisite – Computer Networks (CS 305)

Advance Java Programming Lab
CS-308
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
0 0 2 1

1.   Create GUI application using AWT & Applet classes.

2.   Design & develop the client-server application using NET package.

3.   Implement database application using JDBC package.

4.   Create client server Application using RMI.

5.   Introduction to Java Beans and EJB program.

6.   Describe & develop Java Servlet ,HTTP request and response program.

7.   Create a Servlet program for cookies

8.   Create application using Java Swing package.

9.   Introduction to Java Server Pages and its sample programs.

10.   Design program for JSP by using JSP Exception and JSP Action Elements.

Recommended Prerequisite – Core Java Lab (CS-219)   Co-requisite – Advance Java Programming (CS-307)

Open Source Lab
CS-310
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
0 0 2 1

Week 1	Experiment No.	Name of the Experiments
	Objective◊	Overview of FOSS & Basic Command interface on Linux
1	1	Usage of Basic Linux Commands, File Utilities Commands
Week-2	Objective◊	Learning Administrative Commands
1	2	Vi Editor & its Modes, Introduction of Basic administrative commands
2	3	Usage of Basic Network Related Commands
Week-3	Objective◊	Learning Shell Scripting
1	4	A Script to check for a file existence in the file system
2	5	A Script to execute different command to demonstrate Switch cases statement
3	6	A Script to handle command line argument and other Special symbols
Week-4	Objective◊	Learn how to Compile, Debug & Execute C, C++ & Java Programming Code without IDEs
1	7	Create a sample C program for demonstrating the use of control statements then compile and execute the code
2	8	Create a sample C++ class based program for demonstrating the use of Object oriented Design Patterns, then compile and execute the code
3	9	Creating a sample java Program for demonstrating the use of control statements then compile and execute the code
Week-5	Objective◊	Learning Basics of LAMP Server
1	10	Installation And Configuration of LAMP Server on Linux (Ubuntu)
2	11	Creating simple Database in MySql Server performing queries
Week-6	Objective◊	Learning A Deep Dive in MySql
1	12	MySql Administrator: Monitoring the Server and User Administration
2	13	Mysql Admin, Backup and restore, User Account Rights Management
Week-7	Objective◊	Basics of PHP Web Programming
1	14	A PHP code to demonstrate the usage of Variable, String, Array and Control Structure
Week-8	Objective◊	Some Deep Dive in PHP Programming

1	15	A PHP Program to implement customized functions, Form Handling Strategies
2	16	A PHP Program to demonstrate the use of PHP mail () Function
Week-9	Objective◊	Learning Database Connectivity between PHP and MySql
1	17	Create a login Control for a web page to demonstrate the use of Connectivity and Basic retrieval of data from database
Week-10	Objective◊	A Sample Project to create a website for University Utilities
1	18	Allotment of already discussed Project like Database management Systems

Recommended Prerequisite – None   Co-requisite – Open Source Software Technologies (CS-309)

Design and Analysis of Algorithm Lab
CS-302
SYLLABUS REVISED-2017
w.e.f. July-2017

L T P C
0 0 2 1

1. Implement the algorithms for various sorting Techniques.

2. Implement the algorithms based on B-Tree and Red Black tree.

3. Implement algorithms based on Divide and Conquer, Dynamic programming, Greedy Method and Backtracking Techniques.

4. Implement algorithms based on Matrix Multiplications.

5. Implementation of Graph algorithms: Directed Graphs, Shortest paths & Minimum spanning trees.

6. Implement algorithms for searching for a pattern in a text.

Recommended Prerequisite – None   Co-requisite – Design and Analysis of Algorithm (CS-301)