



# TKR COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY-R17

### COURSE STRUCTURE & SYLLABUS

#### B.TECH. III Year I semester

S. No	Course Code	Course Title	L	T	P	Credits
1	A65PC1	Design and Analysis of Algorithms	4	0	0	4
2	A65PC2	Data Communication & Computer Networks	4	0	0	4
3	A65PC3	Software Engineering	4	0	0	4
4	A65HS4	Fundamentals of Management	3	0	0	3
5		<b>Open Elective-I</b>	3	0	0	3
6	A65PE6	<b>Professional Elective-I</b> 1. Distributed Systems 2. Image Processing and Pattern Recognition 3. Information Security	3	0	0	3
7	A65PC7	Design and Analysis of Algorithms Lab	0	0	3	2
8	A65PC8	Computer Networks Lab	0	0	3	2
9	A65PC9	Software Engineering Lab	0	0	3	2
10	A65MC5	*Professional Ethics	0	3	0	0
<b>Total Credits</b>						<b>27</b>

#### B.TECH. III Year II semester

S. No	Course Code	Course Title	L	T	P	Credits
1	A66PC1	Compiler Design	4	0	0	4
2	A66PC2	Web Technologies	4	0	0	4
3	A66PC3	Cryptography and Network Security	4	0	0	4
4		<b>Open Elective-II</b>	3	0	0	3
5	A66PE5	<b>Professional Elective-II</b> 1. Mobile Computing 2. Information Security Management 3. Introduction to Analytics	3	0	0	3
6	A66PE6	<b>Professional Elective-III</b> 1. Object Oriented Analysis and Design 2. Computer Forensics 3. Advanced Operating Systems	3	0	0	3
7	A66HS7	Advanced Communication Skills Lab	0	0	3	2
8	A66PC8	Web Technologies Lab	0	0	3	2
9	A66PC9	Cryptography and Network Security Lab	0	0	3	2
10	A66MC6	*Constitution of India	0	3	0	0
<b>Total Credits</b>						<b>27</b>

\* Satisfactory/ Unsatisfactory



# TKR COLLEGE OF ENGINEERING & TECHNOLOGY

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## DEPARTMENT OF INFORMATION TECHNOLOGY -R17

### DESIGN AND ANALYSIS OF ALGORITHMS – A65PC1

**B.TECH. III Year I Semester**

**L/T/P/C**

**4/0/0/4**

#### **COURSE OBJECTIVES:**

1. To analyze performance of algorithms.
2. To choose the appropriate data structure and algorithm design method for a specified application.
3. To understand how the choice of data structures and algorithm design methods impacts the performance of programs.
4. To solve problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound.
5. To understand the differences between tractable and intractable problems.
6. To introduce P and NP classes.

#### **COURSE OUTCOMES:**

1. Ability to analyze the performance of algorithms.
2. Ability to choose appropriate algorithm design techniques for solving problems.
3. Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs.

#### **UNIT I:**

**Introduction:** What is an Algorithm, Algorithm specification, Performance analysis.

**Divide and conquer-** General method, applications - Binary search, Merge sort, Quick sort, Strassen's Matrix Multiplication.

#### **UNIT – II:**

Disjoint set operations, union and find algorithms, AND/OR graphs, Connected Components and Spanning trees, Bi-connected components **Backtracking**-General method, applications- The 8-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

#### **UNIT – III:**

**Greedy method-** General method, applications- Knapsack problem, Job sequencing with deadlines, Minimum cost spanning trees, Single source shortest path problem.

#### **UNIT – IV:**

**Dynamic Programming-** General Method, applications- Chained matrix multiplication, All pairs shortest path problem, Optimal binary search trees, 0/1 knapsack problem, Reliability design, Traveling sales person problem.

#### **UNIT – V:**

**Branch and Bound-** General Method, applications- 0/1 Knapsack problem, LC Branch and Bound solution, FIFO Branch and Bound solution, Traveling sales person problem.

**NP-Hard and NP-Complete problems-** Basic concepts, Non-deterministic algorithms, NP-Hard and NP-Complete classes, Cook's theorem.

## **TEXT BOOKS**

1. Fundamentals of Computer Algorithms, 2nd Edition, Ellis Horowitz, Sartaj Sahni and S. Rajasekharan, Universities Press.
2. Design and Analysis of Algorithms, P. H. Dave, H. B. Dave, 2<sup>nd</sup> edition, Pearson Education.

## **REFERENCE BOOKS**

1. Algorithm Design: Foundations, Analysis and Internet examples, M. T. Goodrich and R. Tamassia, John Wiley and Sons.
2. Design and Analysis of Algorithms, S. Sridhar, Oxford Univ. Press
3. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson Education.
4. Foundations of Algorithms, R. Neapolitan and K. Naimipour, 4<sup>th</sup> edition, Jones and Bartlett Student edition.
5. Introduction to Algorithms, 3<sup>rd</sup> Edition, T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, PHI



# T K R COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY - R17

### DATA COMMUNICATION & COMPUTER NETWORKS - A65PC2

**B.Tech III Year I Semester**

**L /T /P/ C**

**4 /0 /0 / 4**

#### **COURSE OBJECTIVES:**

1. To introduce the fundamental various types of computernetworks.
2. To demonstrate the TCP/IP and OSI models with merits anddemerits.
3. To explore the various layers of OSIModel.
4. To introduce UDP and TCPModels.

#### **COURSE OUTCOMES:**

1. Students should be understand and explore the basics of Computer Networks and Various Protocols. He/ She will be in a position to understand the World Wide Webconcepts.
2. Studentswillbeinapositiontoadministrateanetworkandflowofinformationfurtherhe/she can understand easily the concepts of network security, Mobile and ad hocnetworks.

#### **UNIT-I:**

**Data Communications:** Components – Direction of Data flow – Networks – Components and Categories – Types of Connections – Topologies –Protocols and Standards – ISO / OSI model, Example Networks such as ATM, Frame Relay, ISDN Physical layer: Transmission modes, Multiplexing, Transmission Media, Switching, Circuit Switched Networks, Datagram Networks, and Virtual Circuit Networks.

**Physical layer:** Transmission modes, Multiplexing, Transmission Media, Switching, Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks.

#### **UNIT-II:**

**Data link layer:** Introduction, Framing, and Error – Detection and Correction – Parity – LRC– CRCHammingcode,FlowandErrorControl,NoiselessChannels,NoisyChannels,HDLC,Point to Point Protocols. 111 Medium Access sub layer: ALOHA, CSMA/CD, LAN– Ethernet IEEE 802.3, IEEE 802.5 – IEEE 802.11, Random access, Controlled access,Channelization.

#### **UNIT-III:**

**Network layer:** Logical Addressing, Internet working, Tunneling, Address mapping, ICMP, IGMP, Forwarding, Uni-Cast Routing Protocols, Multicast Routing Protocols.

#### **UNIT-IV:**

**Transport Layer:** Process to Process Delivery, UDP and TCP protocols, Data Traffic, Congestion, Congestion Control, QoS, Integrated Services, Differentiated Services, QoS in Switched Networks.

#### **UNIT-V:**

**Application Layer:** Domain name space, DNS in Internet, TELNET, electronic mail, SMTP, FTP, WWW, HTTP, SNMP.

**TEXTBOOKS**

1. Data Communications and Networking, Behrouz A. Forouzan, Fourth Edition TMH, 2006.
2. Computer Networks Andrew S Tanenbaum, 4<sup>th</sup> Edition. Pearson Education, PHI.

**REFERENCE BOOKS**

1. Data communications and Computer Networks, P.C. Gupta, PHI.
2. An Engineering Approach to Computer Networks, S. Keshav, 2<sup>nd</sup> Edition, Pearson Education.
3. Understanding communications and Networks, 3 Edition, W.A. Shay, Cengage



# TKR COLLEGE OF ENGINEERING & TECHNOLOGY

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## DEPARTMENT OF INFORMATION TECHNOLOGY- R17

### SOFTWARE ENGINEERING - A65PC3

B.TECH. III Year I semester

L /T /P/ C

4 /0 / 0 /4

#### COURSE OBJECTIVES:

1. To understanding of software process models such as waterfall and evolutionary models.
2. To understanding of software requirements and SRS document.
3. To understanding of different software architectural styles.
4. To understanding of software testing approaches such as unit testing and integration testing.
5. To understanding on quality control and how to ensure good quality software.

#### COURSE OUTCOMES:

1. Ability to identify the minimum requirements for the development of application.
2. Ability to develop, maintain, efficient, reliable and cost-effective software solutions
3. Ability to critically thinking and evaluate assumptions and arguments.

#### UNIT-I:

**Introduction to Software Engineering:** The evolving role of software, Changing Nature of Software, legacy software, Software myths.

**A Generic view of process:** Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Process models: perspective and specialized process models, COCOMO model.

#### UNIT-II:

**Software Requirements:** Functional and non-functional requirements, User requirements, System requirements, the software requirements document.

**Requirements engineering process:** Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System models: Context Models, Behavioral models, Data models, Object models, structured methods, data dictionary.

#### UNIT-III:

**Design Engineering:** Design process and Design quality, Design concepts, the design model, pattern-based software design.

**Creating an architectural design:** software architecture, Data design, Architectural styles and patterns, Architectural Design, mapping data flow into a software architecture.

**Modeling component-level design:** Designing class-based components, designing conventional components.

**Performing User interface design:** Golden rules, interface analysis, interface design steps.

#### UNIT-IV:

**Testing Strategies:** A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

**Product metrics:** Software Quality, Framework for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

**Metrics for Process and Products:** Software Measurement, Metrics for software quality.

## **UNIT-V:**

**Riskmanagement:** Reactive vs Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

**Quality Management:** Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

### **TEXTBOOKS**

1. Software engineering practitioner's Approach, Roger S Pressman, sixth edition, McGraw Hill International Edition.
2. Software Engineering, Ian Sommerville, seventh edition, Pearson education.

### **REFERENCEBOOKS**

1. Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India, 2010.
2. Software Engineering: A Primer, Waman S Jawadkar, Tata McGraw-Hill, 2008
3. Fundamentals of Software Engineering, Rajib Mall, PHI, 2005
4. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
5. Software Engineering 1: Abstraction and modeling, Diner Bjorner, Springer International edition, 2006.
6. Software Engineering 2: Specification of systems and languages, Diner Bjorner, Springer International edition, 2006.
7. Software Engineering Foundations, Yingxu Wang, Auerbach Publications, 2008.
8. Software Engineering Principles and Practice, Hans Van Vliet, 3<sup>rd</sup> edition, John Wiley & Sons Ltd.



# T K R COLLEGE OF ENGINEERING & TECHNOLOGY

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## DEPARTMENT OF INFORMATION TECHNOLOGY -R17

### FUNDAMENTALS OF MANAGEMENT -A65HS4

**B.TECH. III Year I semester L / T / P / C**

**3 / 0 / 0 / 3**

**COURSE OBJECTIVE:** To understand the Management Concepts, applications of Concepts in Practical aspects of business and development of Managerial Skills.

#### **COURSE OUTCOME:**

The students understand the significance of Management in their Profession. The various Management Functions like Planning, Organizing, Staffing, Leading, Motivation and Control aspects are learnt in this course. The students can explore the Management Practices in their domain area.

#### **UNIT – I:**

**Introduction to Management:** Definition, Nature and Scope, Functions, Managerial Roles, Levels of Management, Managerial Skills, Challenges of Management; Evolution of Management- Classical Approach- Scientific and Administrative Management; The Behavioral approach; The Quantitative approach; The Systems Approach; Contingency Approach, IT Approach.

#### **UNIT – II:**

**Planning and Decision Making:** General Framework for Planning - Planning Process, Types of Plans, Management by Objectives; Development of Business Strategy. Decision making and Problem Solving - Programmed and Non Programmed Decisions, Steps in Problem Solving and Decision Making; Bounded Rationality and Influences on Decision Making; Group Problem Solving and Decision Making, Creativity and Innovation in Managerial Work.

#### **UNIT – III:**

**Organization and HRM:** Principles of Organization: Organizational Design & Organizational Structures; Departmentalization, Delegation; Empowerment, Centralization, Decentralization, Recentralization; Organizational Culture; Organizational Climate and Organizational Change. Human Resource Management & Business Strategy: Talent Management, Talent Management Models and Strategic Human Resource Planning; Recruitment and Selection; Training and Development; Performance Appraisal.

#### **UNIT – IV:**

**Leading and Motivation:** Leadership, Power and Authority, Leadership Styles; Behavioral Leadership, Situational Leadership, Leadership Skills, Leader as Mentor and Coach, Leadership during adversity and Crisis; Handling Employee and Customer Complaints, Team Leadership.

Motivation - Types of Motivation; Relationship between Motivation, Performance and Engagement, Content Motivational Theories - Needs Hierarchy Theory, Two Factor Theory, Theory X and Theory Y.

**UNIT – V:**

**Controlling:** Control, Types and Strategies for Control, Steps in Control Process, Budgetary and Non- Budgetary Controls. Characteristics of Effective Controls, Establishing control systems, Control frequency and Methods.

**TEXT BOOKS**

1. Management Fundamentals, Robert N Lussier, 5e, Cengage Learning, 2013.
2. Fundamentals of Management, Stephen P. Robbins, Pearson Education, 2009.

**REFERENCE BOOKS**

1. Essentials of Management, Koontz Kleihrich, Tata McGraw Hill.
2. Management Essentials, Andrew DuBrin, 9e, Cengage Learning, 2012.



# TK R COLLEGE OF ENGINEERING & TECHNOLOGY

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## DEPARTMENT OF INFORMATION TECHNOLOGY-R17

### DISTRIBUTED SYSTEMS -A65PE6

B.TECH. III Year I semester

L /T /P/C

3 /0 /0/3

#### COURSE OBJECTIVES:

1. To understand what and why a distributed system is.
2. To understand theoretical concepts, namely, virtual time, agreement and consensus protocols.
3. To understand IPC, Group Communication & RPC Concepts.
4. To understand the DFS and DSM Concepts.
5. To understand the concepts of transaction in distributed environment and associated concepts, namely, concurrency control, deadlocks and error recovery.

#### COURSE OUTCOMES:

1. Understand basic concepts of a distributed system and sharing of resources in distributed manner.
2. Describe the theoretical concepts, namely, virtual time, agreement and consensus protocols.
3. Demonstrate the concepts of IPC, Group communication & RPC
4. Illustrating the methods of the DFS and DSM concepts.
5. Understand the concepts of transaction in distributed environment and associated concept, namely, concurrency control, deadlocks and error recovery

#### UNIT-I:

**Characterization of Distributed Systems:** Introduction, Examples of Distributed Systems, Resource Sharing and the Web, Challenges.

**System Models:** Introduction, Architectural Models, Fundamental Models.

#### UNIT-II:

**Time and Global States:** Introduction, Clocks, Events and Process States, Synchronizing Physical Clocks, Logical Time and Logical Clocks, Global States, Distributed Debugging.

**Coordination and Agreement:** Introduction, Distributed Mutual Exclusion, Elections, Multicast Communication, Consensus and Related Problems.

#### UNIT-III:

**Inter Process Communication:** Introduction, The API for the Internet Protocols, External Data Representation and Marshalling, Client-Server Communication, Group Communication, Case Study: IPC in UNIX.

**Distributed Objects and Remote Invocation:** Introduction, Communication between Distributed Objects, Remote Procedure Call, Events and Notifications, Case Study: JAVARMI.

#### UNIT-IV:

**Distributed File Systems:** Introduction, File Service Architecture, Case Study 1: Sun Network File System, Case Study 2: The Andrew File System.

**Name Services:** Introduction, Name Services and the Domain Name System, Directory Services, Case Study of the Global Name Services.

**Distributed Shared Memory:** Introduction, Design and Implementation Issues, Sequential Consistency, Release Consistency.

**UNIT- V:**

**Transactions and Concurrency Control:** Introduction, Transactions, Nested Transactions, Locks, Optimistic Concurrency Control, Timestamp Ordering, Comparison of Methods for Concurrency Control.

**Distributed Transactions:** Introduction, Flat and Nested Distributed Transactions, Atomic Commit Protocols, Concurrency Control in Distributed Transactions, Distributed Deadlocks, Transaction Recovery.

**TEXT BOOK**

1. Distributed Systems, Concepts and Design, George Coulouris, J Dollimore and Tim Kindberg, Pearson Education, 41" Edition. 2009.

**REFERENCE BOOKS**

1. Distributed Systems, Principles and Paradigms, Andrew S. Tanenbaum, Maarten VanSteen, 2nd Edition, PHI.
2. Distributed Systems, An Algorithm Approach, Sukumar Ghosh, Chapman&Hall/CRC, Taylor &Fransis Group,2007.



# T K R COLLEGE OF ENGINEERING & TECHNOLOGY

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## DEPARTMENT OF INFORMATION TECHNOLOGY -R17

### IMAGE PROCESSING AND PATTERN RECOGNITION -A65PE6

B.TECH. III Year I semester

L /T /P/C

3 /0 /0/3

#### COURSE OBJECTIVES:

1. Adequate background knowledge about image processing and pattern recognition
2. Practical knowledge and skills about image processing and pattern recognition tools
3. Necessary knowledge to design and implement a prototype of an image processing and pattern recognition application.

#### COURSE OUTCOMES:

1. Ability to apply computer algorithms to practical problems.
2. Ability to implement image segmentation.
3. Ability to implement image compression
4. Ability to implement image representation and description.
5. Ability to perform the classification of patterns.

#### UNIT—I:

Fundamental steps of image processing, components of an image processing system. The image model and image acquisition, sampling and quantization, relationship between pixels, distance functions, scanner. Statistical and spatial operations, Intensity functions transformations, histogram processing, smoothing & sharpening — spatial filters Frequency domain filters, homomorphic filtering, image filtering & restoration, Inverse and weiner filtering, FIR weiner filter, Filtering using image transforms, smoothing splines and interpolation.

#### UNIT —II:

Morphological and other area operations, basic morphological operations, opening and closing operations, dilation erosion, Hit or Miss transform, morphological algorithms, extension to grey scale images. Segmentation and Edge detection region operations, basic edge detection, second order detection, crack edge detection, gradient operators, compass and Laplace operators, edge linking and boundary detection, thresholding, region-based segmentation, segmentation by morphological watersheds.

#### UNIT —III:

**Image compression:** Types and requirements, statistical compression, spatial compression, contour coding, quantizing compression, image data compression-predictive technique, pixel coding, transfer coding theory, lossy and lossless predictive type coding, Digital Image Water marking.

#### UNIT —IV:

**Representation and Description:** Chain codes, Polygonal approximation, Signature Boundary Segments, Skelton's, Boundary Descriptors, Regional Descriptors, Relational Descriptors, Principal components for Description, Relational Descriptors

## **UNIT- V:**

**Pattern Recognition Fundamentals:** Basic Concepts of pattern recognition, Fundamental problems in pattern recognition system, design concepts and methodologies, example of automatic pattern recognition systems, a simple automatic pattern recognition model Pattern classification.

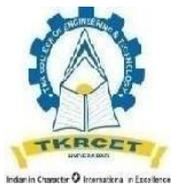
Pattern classification by distance function: Measures of similarity, Clustering criteria, K-means algorithm, and Pattern classification by likelihood function: Pattern classification as a Statistical decision problem, Bayes classifier for normal patterns.

## **TEXT BOOKS**

1. Digital Image Processing Third edition, Pearson Education, Rafael C. Gonzalez, Richard E. Woods.
2. Pattern recognition Principles: Julius T. Tou, and Rafael C. Gonzalez, Addison-Wesley Publishing Company.
3. Digital Image Processing, M. Anji Reddy, Y. Hari Shankar, BS Publications.

## **REFERENCE BOOKS**

1. Image Processing, Analysis and Machine Vision, Second Edition, Milan Sonka, Vaclav Hlavac and Roger Boyle. Thomson Learning
2. Digital Image Processing — William K. Pratt — John Wiley Edition.
3. Fundamentals of digital image processing — by A.K. Jain, PHI.
4. Pattern classification, Richard Duda, Hart and David Stork John Wiley Publishers.
5. Digital Image Processing, S. Jayaraman, S. Esakkirajan, T. Veerakumar, TMH.
6. Pattern Recognition, R. Shinghal, Oxford University Press.



# TKR COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY -R17

### INFORMATION SECURITY -A65PE6

**B.TECH. III Year I semester**

**L /T /P/ C**

**3 /0 /0/ 3**

#### **COURSE OBJECTIVES:**

1. Explain the objectives of information security
2. Explain the importance and application of each of confidentiality, integrity, authentication and availability
3. Understand various cryptographic algorithms.
4. Understand the basic categories of threats to computers and networks
5. Describe public-key cryptosystem.

#### **COURSE OUTCOMES:**

1. Understand the difference between threats and attacks.
2. Know the KEY Elements and Logical Elements of Networks
3. Able to handle authentication algorithms.
4. Understand the Policies, Guideline and Framework of E-mail and IP Security.
5. Understand the Policies, Guideline and Framework of Web Security.

#### **UNIT—I:**

**Attacks on Computers and Computer Security:** Introduction, The need for security, Security approaches, Principles of security, Types of Security attacks, Security services, Security Mechanisms, A model for Network Security

**Cryptography: Concepts and Techniques:** Introduction, plain text and cipher text, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography, stenography, key range and key size, possible types of attacks.

#### **UNIT-II:**

**Symmetric key Ciphers:** Block Cipher principles & Algorithms (DES, AES, Blowfish), Differential and Linear Cryptanalysis, Block cipher modes of operation, Stream ciphers, RC4, Location and placement of encryption function, Key distribution

**Asymmetric key Ciphers:** Principles of public key cryptosystems Algorithms (RSA, Diffie-Hellman, ECC), Key Distribution.

#### **UNIT-III:**

**Message Authentication Algorithms and Hash Functions:** Authentication requirements, Functions, Message authentication codes, Hash Functions, Secure hash algorithm, Whirlpool, HMAC, CMAC, Digital signatures, knapsack algorithm

**Authentication Applications:** Kerberos, X.509 Authentication Service, Public — Key Infrastructure, Biometric Authentication.

#### **UNIT –IV:**

**E-Mail Security: Pretty Good Privacy, S/MIME**

**IP Security:** IP Security overview, IP Security architecture, Authentication Header, encapsulating security payload, combining security associations, key management.

## **UNIT—V:**

**Web Security:** Web security considerations, Secure Socket Layer and Transport Layer Security, Secure electronic transaction

**Intruders, Virus and Firewalls:** Intruders, Intrusion detection, password management, Virus and related threats, Countermeasures, Firewall design principles, Types of firewalls

**Case Studies on Cryptography and security:** Secure Inter-branch Payment Transactions, Cross site Scripting Vulnerability, Virtual Elections.

## **TEXT BOOKS**

1. Cryptography and Network Security: William Stallings, Pearson Education, 4thEdition.
2. Cryptography and Network Security: AtulKahate, McGraw Hill, 2<sup>nd</sup>Edition.

## **REFERENCE BOOKS**

1. Cryptography and Network Security: C K Shyamala, N Harini, Dr T R Padmanabhan,Wiley India, 1<sup>st</sup>Edition.
2. Cryptography and Network Security: ForouzanMukhopadhyay, McGraw Hill, 2<sup>nd</sup>Edition.
3. Information Security, Principles and Practice: Mark Stamp, WileyIndia.
4. Principles of Computer Security: WM.Arthur Conklin, Greg White, TMH.
5. Introduction to Network Security: Neal Krawetz, CENGAGELearning.
6. Network Security and Cryptography: Bernard Menezes, CENGAGELearning.



# TKRC COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY -R17 DESIGN AND ANALYSIS OF ALGORITHMS LAB -A65PC7

**B.TECH. III Year I semester**

**L /T /P/C**

**0 /0 /3/2**

### **COURSE OBJECTIVES:**

1. To write programs in java to solve problems using divide and conquer strategy.
2. To write programs in java to solve problems using backtracking strategy.
3. To write programs in java to solve problems using greedy and dynamic programming techniques.

### **COURSE OUTCOMES:**

1. Ability to write programs in java to solve problems using algorithm design techniques such as Divide and Conquer, Greedy, Dynamic programming, and Backtracking.

### **LIST OF EXPERIMENTS:**

1. Write a java program to implement Quick sort algorithm for sorting a list of integers in ascending order.
2. Write a java program to implement Merge sort algorithm for sorting a list of integers in ascending order.
3. Write a java program to implement the DFS algorithm for a graph.
4. Write a java program to implement the BFS algorithm for a graph.
5. Write a java program to implement backtracking algorithm for the N-queens problem.
6. Write a java program to implement the backtracking algorithm for the sum of subsets problem.
7. Write a java program to implement the backtracking algorithm for the Hamiltonian Circuits problem.
8. Write a java program to implement greedy algorithm for job sequencing with deadlines.
9. Write a java program to implement Dijkstra's algorithm for the Single source shortest path problem.
10. Write a java program that implements Prim's algorithm to generate minimum cost spanning tree.
11. Write a java program that implements Kruskal's algorithm to generate minimum cost spanning tree.
12. Write a java program to implement Floyd's algorithm for the all pairs shortest path problem.
13. Write a java program to implement Dynamic Programming algorithm for the 0/1 Knapsack problem.
14. Write a java program to implement Dynamic Programming algorithm for the Optimal Binary Search Tree Problem.

### **REFERENCE BOOKS**

1. Data structures, Algorithms and Applications in java, 2nd Edition, S. Sahani, Universities Press.
2. Data structures and Algorithms in java, 3<sup>rd</sup> edition, A. Drozdek, Cengage Learning.
3. Data structures with Java, J. R. Hubbard, 2nd edition, Schaum's Outlines, TMH.
4. Data structures and algorithms in Java, 2<sup>nd</sup> Edition, R. Lafore, Pearson Education.
5. Data Structures using Java, D. S. Malik and P.S. Nair, Cengage Learning.



# TK R COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

DEPARTMENT OF INFORMATION TECHNOLOGY- R17

COMPUTER NETWORKS LAB -A65PC8

**B.TECH. III Year I semester**

**L /T /P/C**

**0 /0 /3/2**

**COURSE OBJECTIVES:**

1. To understand the functionalities of various layers of OSI model.
2. To understand the operating system functionalities.

**COURSE OUTCOMES:**

1. Ability to understand the encryption and decryption concepts in Linux environment.
2. Ability to apply appropriate algorithm for the finding of shortest route.
3. Ability to configure the routing table.

**List of Experiments:**

1. Implement the data link layer framing methods such as character stuffing, and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials—CRC12, CRC16 and CRC32.
3. Implement Dijkstra's algorithm to compute the shortest path through a graph.
4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table at each node using distance vector routing algorithm.
5. Take an example subnet of hosts. Obtain broadcast tree for it.
6. Take a 64-bit playing text and encrypt the same using DES algorithm.
7. Write a program to break the above DES coding.
8. Using RSA algorithm encrypts a text data and Decrypt the same.



# T K R COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY - R17

### SOFTWARE ENGINEERING LAB - A65PC9

**B.TECH. III Year I semester**

**L /T /P/C**

**0/ 0 /3/2**

#### **COURSE OBJECTIVES:**

1. To understand the software engineering methodologies involved in the phases for project development.
2. To gain knowledge about open source tools used for implementing software engineering methods.
3. To exercise developing product-startups implementing software engineering methods.
4. Open source Tools: StarUML / UMLGraph / Topcased.

#### **COURSE OUTCOMES:**

1. Ability to translate end user requirements into system and software requirements.
2. Ability to generate a high-level design of the system from the software requirements.
3. Aware of testing problems and will be able to develop a simple testing report.

Prepare the following documents and develop the software project startup, prototype model, using software engineering methodology for at least two real time scenarios or for the sample experiments.

- 1) Problem Analysis and Project Planning- Thorough study of the problem–Identify Project scope, Objectives and Infrastructure.
- 2) Software Requirement Analysis – Describe the individual Phases/modules of the project and identify deliverables. Identify functional and non-functional requirements.
- 3) Data Modeling–Use work products–data dictionary.
- 4) Software Designing-Develop use case diagrams and activity diagrams, build and test class diagrams, sequence diagrams and add interface to class diagrams.
- 5) Proto type model– Develop the proto type of the product.

The SRS and proto type model should be submitted for end semester examination.

#### **List of Sample Experiments:**

##### **1. Course management system(CMS)**

A course management system (CMS) is a collection of software tools providing an online environment for course interactions. A CMS typically includes a variety of online tools and environments, such as:

- 1) An area for faculty posting of class materials such as course syllabus and handouts
  - 2) An area for student posting of papers and other assignments
  - 3) A grade book where faculty can record grades and each student can view his or her grades
  - 4) An integrated email tool allowing participants to send announcement email messages to the entire class or to a subset of the entire class
  - 5) A chat tool allowing synchronous communication among class participants
  - 6) A threaded discussion board allowing asynchronous communication among participants
- In addition, a CMS is typically integrated with other databases in the university so that students enrolled in a particular course are automatically registered in the CMS as participants in that course.

The Course Management System (CMS) is a web application for department personnel, Academic

Senate, and Registrar staff to view, enter, and manage course information formerly submitted via paper. Departments can use CMS to create new course proposals, submit changes for existing courses, and track the progress of proposals as they move through the stages of online approval.

## **2. Easy Leave**

This project is aimed at developing a web-based Leave Management Tool, which is of importance to either an organization or a college.

The **Easy Leave** is an Intranet based application that can be accessed throughout the organization or a specified group/Dept. This system can be used to automate the workflow of leave applications and their approvals. The periodic crediting of leave is also automated. There are features like notifications, cancellation of leave, automatic approval of leave, report generator set in this Tool.

### **Functional components of the project:**

There are registered people in the system. Some are approvers. An approver can also be a requestor. In an organization, the hierarchy could be Engineers/Managers/Business Managers/Managing Director. In a college, it could be Lecturer/Professor/Head of the Department/Dean/Principal etc.

Following is a list of functionalities of the system: A person should be able to

- 1) login to the system through the first page of the application
  - 2) change the password after logging into the system
  - 3) see his/her eligibility details (like how many days of leave he/she is eligible for etc.)
  - 4) query the leave balance
  - 5) see his/her leave history since the time he/she joined the company/college.
- 
1. apply for leave, specifying the from and to dates, reason for taking leave, address for communication while on leave and his/her superior's email id
  2. see his/her current leave applications and the leave applications that are submitted to him/her for approval or cancellation
  3. approve/reject the leave applications that are submitted to him/her
  4. withdraw his/her leave application (which has not been approved yet)
  5. Cancel his/her leave (which has been already approved). This will need to be approved by his/her Superior
  6. Get help about the leave system on how to use the different features of the system
  7. As soon as a leave application/cancellation request/withdrawal/approval/rejection password-change is made by the person, an automatic email should be sent to the person and his superior giving details about the action
  8. The number of days of leave (as per the assumed leave policy) should be automatically credited to everybody and a notification regarding the same be sent to them automatically
  9. An automatic leave-approval facility for leave applications which are older than 2 weeks should be there. Notification about the automatic leave approval should be sent to the person as well as his superior

## **3. E-Bidding**

Auctions are among the latest economic institutions in place. They have been used since antiquity to sell a wide variety of goods, and their basic form has remained unchanged. In this dissertation, we explore the efficiency of common auctions when values are interdependent- the value to a particular bidder may depend on information available only to others- and a symmetric. In this setting, it is well known that sealed-bid auctions do not achieve efficient allocations in general since they do not allow the information held by different bidders to be shared.

Typically, in an auction, say of the kind used to sell art, the auctioneer sets a relatively low initial price. This price is then increased until only one bidder is willing to buy the object, and the exact manner in which this is done varies. In my model a bidder who drops out at some price can "reenter" at a higher price.

With the invention of E-commerce technologies over the Internet the opportunity to bid from the comfort of one's own home has seen a change like never seen before. Within the span of a few short years, what may have begun as an experimental idea has grown to an immensely popular hobby, and in some cases, a means of livelihood, the Auction Patrol gathers tremendous response every day, all day. With the point and click of the mouse, one may bid on an item they may need

or just want, and in moments they find that either they are the top bidder or someone else wants it more, and you're outbid! The excitement of an auction all from the comfort of home is a completely different experience.

Society cannot seem to escape the criminal element in the physical world, and so it is the same with Auction Patrols. This is one area where a question can be raised as to how safe Auction Patrols.

Proposed system

To generate the quick reports

To make accuracy and efficient calculations

To provide proper information briefly

To provide data security

To provide huge maintenance of records

Flexibility of transactions can be completed in time.

#### **4. Electronic Cashcounter**

This project is mainly developed for the Account Division of a Banking sector to provide better inter face of the entire banking transactions. This system is aimed to give a better out look to the user interfaces and to implement all the banking transactions like:

- 1) Supply of Account Information
- 2) New Account Creations
- 3) Deposits
- 4) Withdraws
- 5) Cheque book issues
- 6) Stop payments
- 7) Transfer of accounts
- 8) Report Generations.

#### **Proposed System:**

The development of the new system contains the following activities, which try to automate the entire process keeping in view of the database integration approach.

1. User friendliness is provided in the application with various controls.
2. The system makes the overall project management much easier and flexible.
3. Readily upload the latest updates, allows user to download the alerts by clicking the URL.
4. There is no risk of data mismanagement at any level while the project development is under process.
5. It provides high level of security with different level of authentication



# T K R COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY -R17

### PROFESSIONAL ETHICS -A65MC5

**B.TECH. III Year I semester**

**L /T /P/C**

**0 /3 /0/0**

#### **COURSE OBJECTIVES:**

To enable the students to imbibe and internalize the values and ethical behavior in the personnel and professional lives.

#### **COURSE OUTCOME:**

1. The student will understand the importance of values and ethics in their personal lives and professional carrier.
2. The student will learn the rights and responsibility as an employee, team member and a global citizen.

#### **UNIT – I:**

**Introduction to Professional Ethics:** Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thought of Ethics, Value Education, Dimensions of Ethics, Professional Success, Ethics and Profession

#### **UNIT –II:**

**Basic Theories:** Basic Ethical Principles, Moral Developments, Deontology, Utilitarianism, Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism, Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy.

#### **UNIT – III:**

**Professional Practices in Engineering:** Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics, the limits of predictability and responsibilities of the engineering profession.

#### **UNIT – IV:**

**Central Responsibilities of Engineers** - The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

Work Place Rights & Responsibilities, Ethics in changing domains of Research, Engineers and Managers.

#### **UNIT – V:**

Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, Business Ethics and Corporate Governance, Ethics in Manufacturing and Marketing, Media Ethics.

### **TEXT BOOKS**

1. Professional Ethics: R. Subramanian, Oxford University Press,2015.
2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press2015.

### **REFERENCE BOOKS**

1. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard, Michael J Rabins, 4e ,Cengage learning,2015.
2. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI,2008.
3. Marianne moody Jennings, “The Legal, Ethical and Global Environmentof Business”,Sharma, J.P. Business Ethics & CSR, Ane Books Pvt Ltd, NewDelhi.



# TKR COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

DEPARTMENT OF INFORMATION TECHNOLOGY -R17

## COMPILER DESIGN -A66PC1

B.TECH. III Year II semester

L /T /P/C

4 /0 /0/4

### COURSE OBJECTIVES:

1. To understand the various phases in the design of a compiler.
2. To understand the design of top-down and bottom-up parsers.
3. To understand syntax directed translation schemes.
4. To introduce lex and yacc tools.
5. To learn to develop algorithms to generate code for a target machine.

### COURSE OUTCOMES:

1. Ability to design, develop, and implement a compiler for any language.
2. Able to use lex and yacc tools for developing a scanner and a parser.
3. Able to design and implement LL and LR parsers.
4. Able to design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity.
5. Ability to design algorithms to generate machine code.

### UNIT – I:

**Introduction:** Language Processors, the structure of a compiler, the science of building a compiler, programming language basics.

**Lexical Analysis:** The Role of the Lexical Analyzer, Input Buffering, Recognition of Tokens, The Lexical-Analyzer Generator Lex, Finite Automata, From Regular Expressions to Automata, Design of a Lexical-Analyzer Generator, Optimization of DFA-Based Pattern Matchers.

### UNIT – II:

**Syntax Analysis:** Introduction, Context-Free Grammars, writing a Grammar, Top-Down Parsing, Bottom-Up Parsing, and Introduction to LR Parsing: Simple LR, More Powerful LR Parsers, Using Ambiguous Grammars, and Parser Generators.

### UNIT – III:

**Syntax-Directed Translation:** Syntax-Directed Definitions, Evaluation Orders for SDD's, Applications of Syntax-Directed Translation, Syntax-Directed Translation Schemes, and Implementing L-Attributed SDD's.

**Intermediate-Code Generation:** Variants of Syntax Trees, Three-Address Code, Types and Declarations, Type Checking, Control Flow, Back patching, Switch-Statements, Intermediate Code for Procedures.

### UNIT – IV:

**Run-Time Environments:** Storage organization, Stack Allocation of Space, Access to Nonlocal Data on the Stack, Heap Management, Introduction to Garbage Collection, Introduction to Trace-Based Collection.

**Code Generation:** Issues in the Design of a Code Generator, The Target Language, addresses

in the Target Code, Basic Blocks and Flow Graphs, Optimization of Basic Blocks, A Simple Code Generator, Peephole Optimization, Register Allocation and Assignment, Dynamic Programming Code-Generation.

#### **UNIT – V:**

**Machine-Independent Optimizations:** The Principal Sources of Optimization, Introduction to Data-Flow Analysis, Foundations of Data-Flow Analysis, Constant Propagation, Partial Redundancy Elimination, Loops in Flow Graphs.

#### **TEXT BOOKS**

1. Compilers:Principles,TechniquesandTools,SecondEdition,AlfredV.Aho,MonicaS. Lam, Ravi Sethi, Jeffrey D. Ullman,Pearson.

#### **REFERENCE BOOKS**

1. Compiler Construction-Principles and Practice, Kenneth C Louden, CengageLearning.
2. Modern compiler implementation in C, Andrew W Appel, Revised edition,Cambridge UniversityPress.
3. The Theory and Practice of Compiler writing, J. P. Tremblay and P. G. Sorenson,TMH



# TKRCET COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

DEPARTMENT OF INFORMATION TECHNOLOGY -R17

WEB TECHNOLOGIES -A66PC2

**B.TECH. III Year II semester**

**L /T /P/ C**

**4 /0 /0/4**

## **COURSE OBJECTIVES:**

1. To introduce Client-Side scripting with JavaScript and AJAX.
2. To introduce PHP language for Server-Side Scripting.
3. To introduce XML and XML data with Java
4. To introduce server-side programming with Java Servlets and JSP.

## **COURSE OUTCOMES:**

1. Able to design a static web page using forms and frames with physical tags in html and validate client side scripting using onClick(), onSubmit(), onChange() events in javascript
2. Able to construct a validation page which connects to a database given and able to perform the DML functionalities by using mysql\_connect(), mysql\_query(), mysql\_fetch\_array(), mysql\_close() in php
3. Students can analyze how to develop a well formed and valid xml document by using DTDs and Schemas which allows the validation of text elements.
4. Able to write server side program by using servlets for given problem and able to develop a connection between both the ends by doGet() and doPost() methods.
5. Develop JSP applications implementing Session Management and Database Connectivity.

## **UNIT-I:**

**Introduction to HTML:** HTML basic tags, list, table, image, forms, frames, cascading style sheets.

**Introduction to Java script:** Java script language- declaring variables, scope of variables, functions, Javascript objects, event handlers (onclick, onsubmit etc.), Document Object Model. Simple AJAX application.

## **UNIT-II:**

**Introduction to PHP:** Declaring variables, data types, arrays, strings, operators, expressions, control structures, functions, reading data from web form controls like textboxes, radio buttons, list etc., Handling File Uploads, connecting to database (My SQL as reference), executing simple queries, handling results, Handling sessions and cookies.

## **UNIT-III:**

**XML:** Introduction to XML, Defining XML tags, their attributes and values, Document Type Definition, XML Schemas, Document Object Model, XHTML

**Parsing XML Data-** DOM and SAX Parsers in java.

## **UNIT-IV:**

**Introduction to Servlets:** Common Gateway Interface (CGI), Lifecycle of a Servlet, deploying a servlet, The Servlet API, Reading Servlet parameters, Reading Initialization parameters, Handling Http Request & Responses, Using Cookies and Sessions, connecting to a database using JDBC.

**UNIT– V:**

**Introduction to JSP:** The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

**TEXTBOOKS**

1. Web Technologies, Uttam K Roy, OxfordUniversityPress
2. The Complete Reference PHP–Steven Holzner, TataMcGraw-Hill.

**REFERENCEBOOKS**

1. Web Programming, building internet applications, Chris Bates 2<sup>nd</sup>edition, Wiley Dreamtech.
2. Java Serve rPages– Hans Bergsten, SPDO'Reilly.
3. JavaScript, D. Flanagan, O'Reilly,SPD.
4. Beginning Web Programming- Jon DuckettWROX.
5. Programming World Wide Web, R. W. Sebesta, Fourth Edition,Pearson.
6. Internet and World Wide Web– How to program, Dietel and Nieto,Pearson.



# T K R COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY-R17

### CRYPTOGRAPHY AND NETWORK SECURITY - A66PC3

**B.TECH. III Year II semester**

**L /T /P/C**

**4 /0 /0/4**

#### **COURSE OBJECTIVES:**

1. Explain the objectives of information security
2. Explain the importance and application of each of confidentiality, integrity, authentication and availability
3. Understand various cryptographic algorithms.
4. Understand the basic categories of threats to computers and networks
5. Describe public-key cryptosystem.

#### **COURSE OUTCOMES:**

1. Student will be able to understand basic cryptographic algorithms, message and web authentication and security issues.
2. Ability to identify information system requirements for both of them such as client and server.
3. Ability to understand the current legal issues towards information security.

#### **UNIT-I:**

**Security Concepts:** Introduction, The need for security, Security approaches, Principles of security, Types of Security attacks, Security services, Security Mechanisms, A model for Network Security.

**Cryptography Concepts and Techniques:** Introduction, plaintext and ciphertext, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography, steganography, key range and key size, possible types of attacks.

#### **UNIT-II:**

**Symmetric key Ciphers:** Block Cipher principles, DES, AES, Blowfish, RC5, IDEA, Block cipher operation, Stream ciphers, RC4.

**Asymmetric key Ciphers:** Principles of public key crypto systems, RSA algorithm, Elgamal Cryptography, Diffie Hellman Key Exchange, Knapsack Algorithm.

#### **UNIT-III:**

**Cryptographic Hash Functions:** Message Authentication, Secure Hash Algorithm (SHA-512), Message authentication codes: Authentication requirements, HMA, CMAC, Digital signatures, Elgamal Digital Signature Scheme.

**Key Management and Distribution:** Symmetric Key Distribution Using Symmetric & Asymmetric Encryption, Distribution of Public Keys, Kerberos, X.509 Authentication Service, Public-Key Infrastructure.

#### **UNIT–IV:**

**Transport-level Security:** Web security considerations, Secure Socket Layer and Transport Layer Security, HTTPS, Secure Shell (SSH)

**Wireless Network Security:** Wireless Security, Mobile Device Security, IEEE 802.11 Wireless LAN, IEEE802.11i Wireless LAN Security.

#### **UNIT–V:**

**E-Mail Security:** Pretty Good Privacy, S/MIME

**IP Security:** IP Security overview, IP Security architecture, Authentication Header, encapsulating security payload combining security associations, Internet Key Exchange.

#### **TEXTBOOKS**

1. Cryptography and Network Security - Principles and Practice: William Stallings, Pearson Education, 6<sup>th</sup> Edition
2. Cryptography and Network Security: Atul Kahate, McGraw Hill, 3<sup>rd</sup> Edition

#### **REFERENCE BOOKS**

1. Cryptography and Network Security: CK Shyamala, N Harini, Dr TR Padmanabhan, Wiley India, 1<sup>st</sup> Edition.
2. Cryptography and Network Security: Forouzan Mukhopadhyay, McGraw Hill, 3<sup>rd</sup> Edition
3. Information Security, Principles, and Practice: Mark Stamp, Wiley India.
4. Principles of Computer Security: WM. Arthur Conklin, Greg White, TMH
5. Introduction to Network Security: Neal Krawetz, CENGAGE Learning
6. Network Security and Cryptography: Bernard Menezes, CENGAGE Learning



# TKR COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

DEPARTMENT OF INFORMATION TECHNOLOGY – R17

MOBILE COMPUTING -A66PE5

(Professional Elective – II)

B.TECH. III Year II semester

L /T /P/ C

3 /0 /0/3

## COURSE OBJECTIVES:

1. To make the student understand the concept of mobile computing paradigm, its novel applications and limitations.
2. To understand the typical mobile networking infrastructure through a popular GSM protocol
3. To understand the issues and solutions of various layers of mobile networks, namely MAC layer, Network Layer & Transport Layer
4. To understand the database issues in mobile environments & data delivery models.
5. To understand the ad hoc networks and related concepts.

## COURSE OUTCOMES:

1. Able to think and develop new mobile application.
2. Able to take any new technical issue related to this new paradigm and come up with a solution(s).
3. Able to develop new ad hoc network applications and/or algorithms/protocols.
4. Able to understand & develop any existing or new protocol related to mobile environment.

## UNIT – I:

**Introduction to Mobile Communications and Computing:** Mobile Computing (MC): Introduction to MC, novel applications, limitations, and architecture. GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

## UNIT – II:

**(Wireless) Medium Access Control:** Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA.

**Mobile Network Layer:** Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).

## UNIT-III:

**Mobile Transport Layer:** Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

## UNIT-IV:

**Database Issues:** Hoarding techniques, caching invalidation mechanisms, client server computing with adaptation, power-aware and context-aware computing, transactional models, query processing, recovery, and quality of service issues.

**Data Dissemination:** Communications asymmetry, classification of new data delivery mechanisms, push based mechanisms, pull-based mechanisms, hybrid mechanisms, selective tuning (indexing) techniques.

## **UNIT – V:**

**Mobile Ad hoc Networks (MANETs):** Overview, Properties of a MANET, spectrum of MANET applications, routing and various routing algorithms, security in MANETs.

**Protocols and Tools:** Wireless Application Protocol-WAP. (Introduction, protocol architecture, and treatment of protocols of all layers), Bluetooth (User scenarios, physical layer, MAC layer, networking, security, link management) and J2ME.

## **TEXT BOOKS**

1. Jochen Schiller, “Mobile Communications”, Addison-Wesley. second edition, 2004.
2. Stojmenovic and Cacute, “Handbook of Wireless Networks and Mobile Computing”, Wiley, 2002, ISBN 0471419028.

## **REFERENCE BOOKS**

1. Reza Behravanfar, “Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML”, ISBN: 0521817331, Cambridge University Press, October 2004,
2. Adelstein, Frank, Gupta, Sandeep KS, Richard III, Golden, Schwiebert, Loren, “Fundamentals of Mobile and Pervasive Computing”, ISBN: 0071412379, McGraw-Hill Professional, 2005.
3. Hansmann, Merk, Nicklous, Stober, “Principles of Mobile Computing”, Springer, second edition, 2003.
4. Martyn Mallick, “Mobile and Wireless Design Essentials”, Wiley DreamTech, 2003.



# TKRC COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY -R17

### INFORMATION SECURITY MANAGEMENT -A66PE5

(Professional Elective- II)

B.TECH. III Year II semester

L /T /P/ C

3 /0 /0/3

#### COURSE OBJECTIVES:

1. To introduce the terminology, technology and its applications
2. To introduce the concept of Security Analyst
3. To introduce the tools, technologies & programming languages which are used in day to day security analyst job role.

#### COURSE OUTCOMES:

1. Able to manage various types of attacks.
2. Able to understand various fundamentals.
3. Ability to identify data leakage and resolve data leakage problem.
4. Able to implement various procedures for information security and maintain standards.
5. Ability to respond in emergency risk situations and analyze the risk.

#### UNIT-I:

**Information Security Management:** Information Security Overview, Threats and Attack Vectors, Types of Attacks, Common Vulnerabilities and Exposures (CVE), Security Attacks, Fundamentals of Information Security, Computer Security Concerns, Information Security Measures etc.,

#### UNIT-II:

**Fundamentals of Information Security:** Key Elements Of Network, Logical Elements of Network, Critical Information Characteristics, Information states.

#### UNIT-III:

**Data Leakage:** What is Data Leakage and Statistics, Data Leakage Threats, Reducing the Risk of Data Loss, Key Performance Indicators (KPI), Database Security etc.

#### UNIT-IV:

**Information Security Policies, Procedures and Audits:** Information security Policies- necessity- key Elements and characteristics, Security Policy Implementation, Configuration, Security Standards- Guidelines & Frame Works Etc.

#### UNIT-V:

**Information Security Management Roles And Responsibilities:** Security Roles And Responsibilities, Accountability, Roles and Responsibilities of Information Security management, team-responding to emergency situation- risk analysis process etc.

## **TEXT BOOK**

1. Management of Information Security by Michael E. Whitman and Herbert J. Mattord.

## **REFERENCE BOOKS**

1. <http://www.iso.org/iso/home/standards/management-standards/iso2007.htm>
2. <http://www.csrc.nist.gov?publications/nistpubs/800-55-Rev1/SP800-55-Rev1.pdf>



# T K R COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

DEPARTMENT OF INFORMATION TECHNOLOGY -R17

## INTRODUCTION TO ANALYTICS - A66PE5

(Professional Elective – II)

B.TECH. III Year II semester

L /T /P/ C

3 /0 /0/3

### COURSE OBJECTIVES:

1. To introduce the terminology, technology and its applications.
2. To introduce the concept of Analytics for Business.
3. To introduce the tools, technologies & programming languages which is used in day today analytics cycle.

### COURSE OUTCOMES:

1. Able to work on R language and prioritized the work according to the requirements.
2. Able to summarize the data.
3. Able to implement database connectivity
4. Able to analyze the various regressions.
5. Able to Understand the Engineering design.

### UNIT-I:

**Introduction to Analytics and R Programming**- Introduction to R, R studio (GUI): R windows Environment, introduction to various data types, Numeric character, date, data frame, array, matrix etc., Reading Datasets, Working with different file types.txt, .csv etc. outliers, Combining Datasets, R functions and Loops.

**Manage Your Work to Meet Requirements**- Understanding Learning Objectives, Introduction to work & meeting requirements, Time Management, Work Management and Prioritization, Quality & Standards Adherence.

### UNIT-II:

**Summarizing Data & Revisiting Probability**- Summary Statistics- Summarizing data with R, Probability, Expected, Random, Bivariate Random Variables, Probability Distribution, Central Limit Theorem etc.

**Work Effectively with Colleagues**- Introduction to Work Effectively, Team Work, Professionalism, And Effective Communication Skills.

### UNIT-III:

**SQL Using R**- Introduction To NoSQL, Connecting R to NoSQL Databases. Excel and R integration with R Connector.

### UNIT-IV:

**Correlation and Regressive Analysis**- Regression Analysis, Assumptions of OLS Regression, Regression Modeling. Correlation, ANOVA, Forecasting, Heteroscedasticity, Autocorrelation, Introduction to Multiple Regression etc.

**UNIT-V:**

**Understand the Verticals- Engineering, Financial and others-** Understanding Systems viz. Engineering Design, Manufacturing, Smart utilities, Production lines, Automotive, Technology etc, Understanding Business Problems related to various businesses. Requirement Gathering- Gathering all the Data Related to Business Objective.

**TEXT BOOKS**

1. Student Handbook for Associative Analytics.

**REFERENCE BOOKS**

1. Introduction to Probability and Statistics using R, is a textbook written for an undergraduate course in probability and statistics.
2. An Introduction to R by, Venables and Ripley and the R development core team. This may be downloaded for free from the R project website (<http://www.r-project.org/seematerials>).
3. Montgomery, Douglas C., and George C. Runger, Applied Statistics and Probability for Engineers. John Wiley & Sons, 2010.
4. Time Series Analysis and Mining with R, Yan Chang Zhao.



# TKRC COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY R17

### OBJECT ORIENTED ANALYSIS AND DESIGN -A66PE6

(Professional Elective – III)

**B.TECH. III Year II semester**

**L /T /P/C**

**3 /0 /0/3**

#### **COURSE OBJECTIVES:**

1. Concisely define the following key terms: class, object, state, behavior, object class, class diagram, object diagram, operation, encapsulation, constructor operation, query operation, update operation, scope operation, association, association role, multiplicity, association class, abstract class, concrete class, class-scope attribute, abstract operation, method, polymorphism, overriding, multiple classification, aggregation, and composition.
2. Describe the activities in the different phases of the object-oriented development lifecycle.
3. State the advantages of object-oriented modeling vis-à-vis structured approaches.
4. Compare and contrast the object-oriented model with the E-R and EER models.
5. Model a real-world application by using a UML class diagram.

#### **COURSE OUTCOMES:**

Graduate can able to take up the case studies and model it in different views with respect user requirement such as use case, logical, component and deployment and etc, and preparation of document of the project for the unified Library application.

#### **UNIT– I:**

Introduction to UML: Importance of modelling, principles of modelling, object-oriented modelling, conceptual model of the UML, Architecture, Software Development Life Cycle.

#### **UNIT– II:**

Basic Structural Modelling: Classes, Relationships, common Mechanisms, and diagrams. Advanced Structural Modelling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages. Class & Object Diagrams: Terms, concepts, modelling techniques for Class & Object Diagrams.

#### **UNIT– III:**

Basic Behavioural Modelling-I: Interactions, Interaction diagrams. Basic Behavioural Modelling-II: Use cases, Use case Diagrams, Activity Diagrams.

#### **UNIT– IV:**

Advanced Behavioural Modelling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams Architectural Modelling: Component, Deployment, Component diagrams and Deployment diagrams.

#### **UNIT– V:**

Patterns and Frameworks, Artificer Diagrams. Case Study: The Unified library application, ATM application.

## **TEXT BOOKS**

1. Grady Booch, James Rumbaugh, Ivar Jacobson: The Unified Modeling Language User Guide, Pearson Education 2nd Edition
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt.Ltd.

## **REFERENCE BOOKS**

1. Meilir Page-Jones: Fundamentals of Object-Oriented Design in UML Pearson Education.
2. Pascal Rogues: Modeling Software Systems Using UML2, WILEY- Dreamtech India Pvt. Ltd.
3. AtulKahate: Object Oriented Analysis & Design, The McG raw HillsCompanies.
4. Mark Priestley: Practical Object-Oriented Design with UML, TMH.
5. Applying UML and Patterns: An introduction to Object —Oriented
6. Analysis and Design and Unified Process, Craig Larman, Pearson Education.
7. Object-Oriented Analysis and Design with the Unified Process by John W. Satzinger, Robert B Jackson and Stephen D Burd, Cengage Learning.
8. UML and C++, R.C. Lee, and W.M.Tepfenhart, PHI.
9. ObjectOrientedAnalysis, DesignandImplementation, B.Dathan.S.Ramnath, Universities Press.
10. Design with UML and Java, K.Barclay, J.Savage, Elsevier. Learning UML 2.0, RussMiles and Kim Hamilton, O'Reilly, SPD.
11. Learning UML 2.0, Russ Miles and Kim Hamilton, O'Reilly, SPD.



# TKR COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY-R17

### COMPUTER FORENSICS -A66PE6

(Professional Elective – III)

**B.TECH. III Year II semester**

**L /T /P/C**

**3 /0 /0/3**

#### **COURSE OBJECTIVES:**

1. A brief explanation of the objective is to provide digital evidences which are obtained from digital media.
2. In order to understand the objectives of computer forensics, first of all, people have to recognize the different roles computer plays in a certain crime.
3. According to a snippet from the United States Security Service, the functions computer has in different kinds of crimes.

#### **COURSE OUTCOMES:**

1. Students will understand the usage of computers in forensic, and how to use various forensic tools for a wide variety of investigations.
2. It gives an opportunity to students to continue their zeal in research in computer forensics.

#### **UNIT I:**

**Computer Forensics Fundamentals:** Introduction to Computer Forensics, Use of Computer Forensics in Law Enforcement, Computer Forensics Assistance to Human Resources/Employment Proceedings, Computer Forensics Services, Benefits of Professional Forensics Methodology, Steps Taken by Computer Forensics Specialists, Who Can Use Computer Forensic Evidence? Types of Computer Forensics Technology: Types of Military Computer Forensic Technology, Types of Law Enforcement Computer Forensic Technology, Types of Business Computer Forensics Technology.

#### **UNIT II:**

**Computer Forensics Evidence and Capture:** Data Recovery: Data Recovery Defined, Data Backup and Recovery, The Role of Backup in Data Recovery, The Data-Recovery Solution, Case Histories.

**Evidence Collection and Data Seizure:** Why Collect Evidence? Collection Options, Obstacles, Types of Evidence, The Rules of Evidence, Volatile Evidence, General Procedure, Collecting and Archiving, Methods of Collection, Artifacts, Collection Steps, Controlling Contamination: The Chain of Custody.

#### **UNIT III:**

**Duplication and Preservation of Digital Evidence:** Preserving the Digital Crime Scene, Computer Evidence Processing Steps, Legal Aspects of Collecting and Preserving Computer Forensic Evidence. Computer Image Verification and Authentication: Special Needs of Evidential Authentication, Practical Considerations, Practical Implementation.

#### **UNIT IV:**

**Computer Forensics Analysis:** Discovery of Electronic Evidence: Electronic Document Discovery: A Powerful New Litigation Tool, Identification of Data: Timekeeping, Time Matters, Forensic Identification and Analysis of Technical Surveillance Devices. Reconstructing Past Events: How to Become a Digital Detective, Useable File Formats, Unusable File Formats, Converting Files.

## **UNIT V:**

**Networks:** Network Forensics Scenario, A Technical Approach, Destruction of Email, Damaging Computer Evidence, International Principles Against Damaging of Computer Evidence, Tools Needed for Intrusion Response to the Destruction of Data, Incident Reporting and Contact Forms.

**Current Computer Forensics Tools:** Evaluating Computer Forensics Tool Needs, Computer Forensics Software Tools, Computer Forensics Hardware Tools, Validating and Testing Forensics Software.

## **TEXT BOOKS**

1. "Computer Forensics: Computer Crime Scene Investigation", JOHN R. VACCA, Firewall Media.
2. "Guide to Computer Forensics and Investigations" 4e, Nelson, Phillips Enfinger, Steuart, Cengage Learning.

## **REFERENCE BOOKS**

1. "Computer Forensics and Cyber Crime", Marjie T Britz, Pearson Education.
2. "Computer Forensics", David Cowen, McGraw Hill.



# T K R COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

DEPARTMENT OF INFORMATION TECHNOLOGY-R17

ADVANCED OPERATING SYSTEMS -A66PE6

(Professional Elective – III)

**B.TECH. III Year II semester**

**L /T /P/C**

**3 /0 /0/3**

## **COURSE OBJECTIVES:**

1. To understand main components of Real time Operating system and their working.
2. To study the operations performed by OS as a resource manager.
3. To understand the scheduling policies of DOS.
4. To implement the working principles of OS.
5. To study different OS and compare their features.

## **COURSE OUTCOMES:**

1. Able to understand various design issues.
2. Ability to work on distributed operating systems.
3. Able to understand and work on network operating systems.
4. Able to understand the development of kernel.
5. Able to solve various issues like protection and security.

## **UNIT- I:**

Real-time operating systems: Design issues, principles and case study.

## **UNIT -II:**

Distributed operating system: Design issues, features and principles of working, case study.

## **UNIT -III:**

Network operating system: Design issues, working principles and characteristic features, case study.

## **UNIT –IV:**

Kernel development: Issues and development principles, case study.

## **UNIT –V:**

Protection, privacy, access control and security issues, solutions.

## **TEXT BOOKS**

1. A. Silberschatz - Applied Operating System Concepts, Wiley, 2000.
2. Lubemir F Bic and Alan C. Shaw - Operating System Principles, Pearson Education, 2003.

## **REFERENCE BOOKS**

1. Operating Systems: Internal and Design Principles - Stallings, 6th ed.,PE.
2. Modern Operating Systems, Andrew S Tanenbaum 3rd ed.,PE.
3. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne, 7thed., JohnWiley
4. UNIX User Guide – Ritchie &Yates.
5. UNIX Network Programming - W.Richard Stevens, 1998,PHI.
6. The UNIX Programming Environment – Kernighan & Pike,PE.



# TKR COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY- R17

### ADVANCED COMMUNICATION SKILLS LAB -A66HS7

**B.TECH. III Year II semester**

**L /T /P/C**

**0 /0 /3/2**

#### INTRODUCTION

A course on Advanced Communication Skills (ACS) Lab is considered essential at the third year level of B.Tech and Pharmacy courses. At this stage, the students need to prepare themselves for their career which requires them to listen to, read, speak and write in English both for their professional and interpersonal communication. The main purpose of this course is to prepare the students of Engineering for their placements.

#### COURSE OBJECTIVES:

1. To improve students' fluency in spoken English.
2. To enable them to listen to English spoken at normal conversational speed.
3. To help students develop their vocabulary.
4. To read and comprehend texts in different contexts.
5. To communicate their ideas relevantly and coherently in writing.
6. To make students industry-ready.
7. To help students acquire behavioral skills for their personal and professional life.
8. To respond appropriately in different socio-cultural and professional contexts.
9. To sensitize the importance of Soft Skills and people skills.

#### COURSE OUTCOMES:

Students will be able to:

1. Acquire vocabulary and use it contextually.
2. Listen and speak effectively.
3. Develop proficiency in academic reading and writing.
4. Increase possibilities of job prospects.
5. Communicate confidently in formal and informal context
6. Develop interpersonal communication skills

#### SYLLABUS

The following course activities will be conducted as part of the Advanced English Communication Skills (AECS) Lab:

#### UNIT-I:

**Inter-personal Communication and Building Vocabulary** – Starting a Conversation – Responding Appropriately and Relevantly – Using Appropriate Body Language – Role Play in Different Situations – Synonyms and Antonyms, One-word Substitutes, Prefixes and Suffixes, Idioms and Phrases and Collocations.

#### UNIT-II:

**Reading Skills and Group Discussion** – General Vs Local Comprehension, Reading for Facts, Guessing Meanings from Context, Skimming, Scanning, Inferring Meaning and practice with different texts.

### **UNIT-III:**

**Writing Skills** – Structure and Presentation of Different Types of Writing – Letter writing / Resume Writing/ e-correspondence/statement of purpose/ Technical Report Writing/Styles-Types-Report in Manuscript format.

### **UNIT-IV:**

#### **Group Discussion and Presentation Skills**

Group Discussions-Dynamics of Group Discussion, Intervention, Summarizing, Modulation of Voice, Body Language, Relevance, Fluency and Organization of Ideas and Rubrics of Evaluation- Concept and Process

**Presentation Skills**–Oral Presentations(individualorgroup)throughJAMSessions/Seminars/ PPTs and Written Presentations through Posters/ Projects/ Reports/ emails/Assignment.

### **UNIT-V:**

**Interview Skills** – Pre-interview Planning, Opening Strategies, Answering Strategies, Interview through Tele-conference & Video-conference and Mock Interviews.

#### **Minimum Hardware Requirement**

**Advanced English Communication Skills (AECS) Laboratory shall have the following infrastructural facilities to accommodate at least 35 students in the lab:**

Spacious room with appropriate acoustics

Eight round tables with five movable chairs for each table.

Audio-visual aids

LCD Projector

Public Address system

Computer with suitable configuration

Suggested Software: The software consisting of the prescribed topics elaborated above should be procured and used.

Oxford Advanced Learner's Compass, 8th Edition DELTA's key to the Next Generation

TOEFL Test: Advanced Skill Practice.

### **REFERENCE BOOKS**

1. Rizvi, M Ashraf. Effective Technical Communication. McGraw –Hill
2. Kumar, Sanjay and PushpLata. English for Effective Communication,OUP,2015
3. Konar, Nira. English Language Laboratories – A Comprehensive Manual, PHILearningPvt Ltd,2011.
4. Shiv Khera, You can Win, Macmillan Books, New York,2003.
5. Jeff Butterfield, Soft Skills for Everyone, Cengage Learning,2015



# TK R COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY- R17

### WEB TECHNOLOGIES LAB -A66PC8

**B.TECH. III Year II semester**

**L /T /P/C  
0 /0 /3/2**

#### **COURSE OBJECTIVES:**

To enable the student to program web applications using the following technologies HTML, JavaScript, AJAX, PHP, Tomcat Server, Servlets, JSP.

#### **COURSE OUTCOMES:**

1. Able to create the web pages using HTMLtags
2. Able to implement varioustags.
3. Able to create web page usingPHP.
4. Ability to establish database connectivity usingServlets.
5. Ability to use AJAX to modify the existingpage.

#### **NOTE:**

1. Use LAMP Stack (Linux, Apache, MySQL and PHP) for the LabExperiments. Though not mandatory, encourage the use of Eclipse platform whereverapplicable
2. The list suggests the minimum program set. Hence, the concerned staff is requested toadd more problems to the list asneeded.

#### **1. Install the following on the localmachine**

- 1) Apache Web Server (if notinstalled)
- 2) Tomcat Application Serverlocally
- 3) Install MySQL (if notinstalled)
- 4) Install PHP and configure it to work with Apache web server and MySQL (if not already configured)

**2. WriteanHTMLpageincludingjavascriptthattakesagivensetofintegernumbersandshows them after sorting in descendingorder.**

**3. Write an HTML page including any required Java script that takes a number from one text field in the range of 0 to 999 and shows it in another text field in words. If the number isout of range, it should show “out of range” and if it is not a number, it should show” not a number” message in the resultbox.**

**4. Write a n HTML page that has one input, which can take multi-line text and a submit button. Once the user clicks the submit button it should show the number of characters, words and lines in the text entered using an alert message. Words are separated with white space and lines are separated with new linecharacter.**

**5. Write an HTML page that contains a selection box with a list of 5countries.When the user selects a country, its capital should be printed next to the list. Add CSS to customize the properties of the font of the capital (color, bold and fontsize).**

**6. Create an XML document that contains 10users information. Write a Java program, which takes User Id as input and returns the user details by taking the user information from the XML document using (a) DOM Parser and (b) SAX parser Implement the following web applications using (a) PHP (b) Servlets and(c)JSP:**

**7. A user validation web application, where the user submits the login name and password to the server. The name and password are checked against the data already available in Database and if the data matches, a successful login page is returned. Otherwise a failure message is shown to theuser.**

8. Modify the above program to use an XML file instead of database.
9. Modify the above program to use AJAX to show the result on the same page below the submit button.
10. A simple calculator web application that takes two numbers and an operator (+, -, /, \* and %) from an HTML page and returns the result page with the operation performed on the operands.
11. Modify the above program such that it stores each query in a data base and checks the data base first for the result. If the query is already available in the DB, it returns the value that was previously computed (from DB) or it computes the result and returns it after storing the new query and result in DB.
12. A web application takes a name as input and on submit it shows a hello <name> page where <name> is taken from the request. It shows the start time at the right top corner of the page and provides a logout button. On clicking this button, it should show a logout page with Thank You <name> message with the duration of usage (hint: Use session to store name and time).
13. A web application that takes name and age from an HTML page. If the age is less than 18, it should send a page with "Hello <name>, you are not authorized to visit this site" message, where <name> should be replaced with the entered name. Otherwise it should send "Welcome <name> to this site" message.
14. A web application for implementation:  
The user is first served a login page which takes user's name and password. After submitting the details, the server checks the values against the data from a database and takes the following decisions.  
If name and password match, serves a welcome page with user's full name.  
If name matches and password doesn't match, then serves "password mis match" page  
If name is not found in the database, serves a registration page, where user's full name is asked and on submitting the full name, it stores, the login name, password and full name in the data base (hint: use session for storing the submitted login name and password)
15. A web application that lists all cookies stored in the browser on clicking "List Cookies" Button. Add cookies if necessary.

## REFERENCE BOOKS

1. The Complete Reference PHP– Steven Holzner, Tata McGraw-Hill
2. Web Programming, building internet applications, Chris Bates 2<sup>nd</sup> edition, Wiley Dreamtech
3. Java Server Pages– Hans Bergsten, SPDO' Reilly
4. Java Script, D. Flanagan, O' Reilly, SPD.
5. Internet and World Wide Web– How to program, Dietel and Nieto, Pearson.



# TKR COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

## DEPARTMENT OF INFORMATION TECHNOLOGY-R17

### CRYPTOGRAPHY AND NETWORK SECURITY LAB - A66PC9

**B.TECH. III Year II semester**

**L /T /P/ C**

**0 /0 /3/2**

#### **COURSE OBJECTIVES:**

1. To study different algorithms used in modern day cryptography.
2. To understand the design objectives, tradeoffs, and their implementation.
3. To understand the logical operations used in the string manipulation.

#### **COURSE OUTCOMES:**

1. Able to implement java code for various algorithms.
2. Able to write code for key exchange mechanism in various platforms.

#### **Programs**

1. Write a C program that contains a string (char pointer) with a value 'Hello world'.  
The program should XOR each character in this string with 0 and display the result.
2. Write a C program that contains a string (char pointer) with a value 'Hello world'. The program should AND and XOR each character in this string with 127 and display the result.
3. Write a Java program to perform encryption and decryption using the following algorithms  
Caesar cipher  
Substitution cipher c. Hill Cipher
4. Write a C/JAVA program to implement the DES algorithm logic.
5. Write a C/JAVA program to implement the Blowfish algorithm logic.
6. Write a C/JAVA program to implement the Rijndael algorithm logic.
7. Write the RC4 logic in Java Using Java cryptography; encrypt the text "Hello world" Using Blowfish. Create your own key using Java keytool.
8. Write a Java program to implement RSA algorithm.
9. Implement the Diffie-Hellman Key Exchange mechanism using HTML and JavaScript.
10. Calculate the message digest of a text using the SHA-1 algorithm in JAVA.



**T K R COLLEGE OF ENGINEERING & TECHNOLOGY**  
**(Autonomous)**  
**DEPARTMENT OF INFORMATION TECHNOLOGY- R17**  
**CONSTITUTION OF INDIA -A66MC6**

**B.TECH. III Year II semester L /T /P/ C**

**3 /0 /0/0**

**COURSE OBJECTIVES:**

1. To create an awareness about the Constitution of India, Fundamental Rights and Duties, Directive Principles.
2. To Learn the role of Prime Minister, President and the Council of Ministers and the State Legislature.
3. To learn the divisions of executive, legislative and judiciary and so on.
4. To know how a municipal office, panchayat office etc. works.
5. To understand the importance and role of Election Commission Functions.

**COURSE OUTCOMES:**

1. Able to know the importance of Constitution and Government.
2. Able to become Good Citizens and know their fundamental rights, duties and principles.
3. To learn about the role of PM, President, Council of Ministers and Local Administration.
4. Able to understand the importance of Election Commission.
5. They will know about Secularism, Federalism, Democracy, Liberty, Freedom of Expression, Special Status of States etc.,

**UNIT I:**

**Introduction:** ‘Constitution’ meaning of the term, Indian Constitution: Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy.

**UNIT II:**

**Union Government and its Administration:** Structure of the Indian Union: Federalism, Centre - State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha

**UNIT III:**

**State Government and its Administration:** Governor: Role and Position, CM and Council of ministers, State Secretariat: Organization, Structure and Functions

**UNIT IV:**

**Local Administration:** District’s Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Panchayati raj: Introduction, PRI: Zila Panchayat, Elected officials and their roles, CEO Zila Panchayat: Position and role, Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy

**UNIT V:**

**Election Commission:** Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women

**TEXT/REFERENCE BOOKS**

1. 'Indian Polity' by Laxmikanth 5th Edition, McGraw Hill Edition.
2. Indian Constitution by Subhash C. Kashyap, Vision Books Publisher
3. 'Introduction to Indian Constitution' by D.D. Basu, 21st Edition, LexisNexis Publisher
4. 'Indian Administration by avasthi and avasthi-by lakshminarainagarwal publication