Subject Name: Computer Networks Subject Code: TMC 301

Unit	CONTENT	CONTACT
No.		HOURS
1	Introduction: Data Communication Basics, History of Computer Networking and the Internet. Internet, Protocol, Services. Computer Network: Hardware, Media and topology. Protocol layering: The OSI Reference Model and the TCP/IP protocol stack. Internet Access Networks. Circuit and Packet Switching, Delays: Processing, Queuing,	8
	Transmission and Propagation delays.	
2	Application Layer : Principles and Architectures of Network Applications.	10
	Application Layer Protocols - The Web and http: Persistent and Non-persistent connections, http message format, cookies, proxy server, conditional GET, File Transfer Protocol. Email : SMTP, mail message	
	formats, mail access protocols: POP3, IMAP, MIME.	
	DNS : Services, how it works, Root, Top-Level and Authoritative DNS servers, Resource Records, DNS messages. A simple Introduction to p2p files distribution: Bit Torrent	
3	Transport Layer: Introduction and Services, Transport layer in internet,	8
	Difference between Connection Oriented and Connectionless services.	
	UDP : Segment structure, checksum in UDP.	
	TCP : the principles behind connection-oriented data transfer, designing a connection-oriented protocol, stop-and-wait, Go Back N, Selective Repeat. Connection Establishment, TCP header, Sequence and acknowledgement numbers, Round Trip Time, Flow Control.	
4	Network Layer: Network Layer Design Issues, Difference between Virtual Circuits and Datagram networks, The Internet Protocol (IP), Datagram format, IP fragmentation, IPv4 addressing, subnets, CIDR, classful addressing, DHCP, Network Address Translation (NAT). IPv6 Header, Moving from IPv4 to IPv6: tunneling, dual stack and header translation. Routing Algorithms: Link state (LS), Distance Vector (DV). Routing in the Internet: RIP, OSPF & BGP.	10
5	Link Layer and Local Area Network: Introduction and Services:	12
	Service provided by the LL, Implemented. Error-Detection and Correction Techniques: Parity checks, Cyclic Redundancy Check (CRC). Multiple Access protocols: Channel partitioning, Random access. Ethernet: CSMA/CD, Ethernet technologies, Ethernet Frame structure. Signals- analog and digital signals, periodic and a periodic signal, Digital Data Conversion: unipolar, polar, bipolar. Analog data conversion: - PAM, PCM, sampling. Modulation techniques: - ASK, FSK, PSK, AM, FM, PM.	
	TOTAL	48

Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICATION
1	"Computer Networking – A Top Down Approach", James F. Kurose and Keith W. Ross, Pearson Fifth Edition.	2014
2	"Computer Networks" 4th Edition, Andrew S. Tanenbaum, Pearson.	2006

NAME OF DEPARTMENT: Computer Applications

Subject Name: Internet Technologies and Applications Subject Code: TMC 303

Details of the Course:

Unit	CONTENT	CONTACT
	CONTENT	HOURS
No.	T-4	
1	Internet & HTML Basic - Introduction to Internet, Client Server	7
	architecture, WWW, Web Browsers. Web Servers, Domain Name System	
	(DNS), HTTP, Plug-ins, FTP, Telnet, DHCP, E-Mail architecture,	
	Searching tools and Search engine, Security on Web.	
	HTML -Structure of HTML documents, HTML Elements, Linking in	
	HTML, Anchor Attributes, Image Maps, Meta Information, Layouts,	
	Tables, Audio and Video Support with HTML.	
	Basic Interactivity and HTML: Interactive Layout with Frames,	
	FORMS, Form Control, New and emerging Form Elements. use of <div></div>	
	& .	
2	CSS: Introduction, Benefits of CSS, types of CSS, Selector and types, text	10
	formatting properties, CSS Border, margin properties, Positioning, color	
	properties, Classes in CSS, concept of Ids pseudoclasses.	
	XML understanding Introduction, Syntax, Document structure,	
	Document type definitions, Namespaces, XML schemas.	
3	Overview of Javascript, Object orientation and Javascript, JavaScript	7
	identifiers, operators, control & Looping structure, Intro of Array, Array	,
	with methods, User defined & Predefined functions, Errors and Exception	
	Handling. DOM objects, Event handling, Validations on Forms, The DOM	
4	2 event model, DOM tree traversal and modification.	10
4	jQuery – Overview , Syntax, Selectors, Attributes, traversing, jQuery-	12
	HTML, jQuery-CSS, jQuery-DOM, jQuery-Events, jQuery-effects.	
5	Introduction to PHP, A First PHP Web Page, Variables, Operators and	12
	Expressions, Control Statements, Functions, Arrays, String Handling in	
	PHP, Using Ms-Access/MySQL Databases in PHP Pages.	
	TOTAL	48

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Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF
		PUBLICATION
1	Computer Networks and Internets with Internet Applications (Third Edition)	2001
	Author: Douglas E. Comer Publisher: Prentice Hall, ISBN: 0-13-091449-5.	
2	Ivan Bayross," HTML, DHTML, Java Script, Perl & CGI", BPB	2002
	Publication.	
3	Thomas A Powell, HTML-The Complete Reference, Tata McGraw Hill.	2003
4	Deitel M., Deitel P. J., Goldberg, A. B.: Internet & World Wide Web How	2004
	to Program, 3rd Edition, Pearson education.	

Subject Name: Database Management System Subject Code: TMC 304

Unit No.	CONTENT	CONTACT HOURS
1	Introduction to DBMS: An overview of database management system, Database System Vs File System, Database system concepts and architecture, data models, schema and instances, data independence and data base language and interfaces, Data definitions language, DML, Overall Database Structure.	6
2	Data Modeling and Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationships of higher degree.	10
	Relational Data Base Model (RDBMS) : Relational data model concepts, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra.	
3	Introduction to SQL: Characteristics of SQL, Advantages of SQL, SQL data types and literals, Types of SQL commands, DDL, DML & DCL statements, SQL operators and their use, Tables, views and indexes, Queries and sub queries, Aggregate functions, Insert, update and delete operations, Joins, Unions, Intersection, Minus.	14
	Overview of PL/SQL, Triggers and cursors.	
4	High Level Data Base Design & Normalization: Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependencies, loss less join decompositions, normalization using FD, MVD, and JDs.	8
5	Transaction Processing Concepts: Transaction system, Testing of serializability, Serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures, log based recovery, checkpoints, deadlock handling. Concurrency Control : Concurrency control mechanism, locking Techniques for concurrency control.	10
	TOTAL	48

11	Suggested Dooks:	
Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICATION
1	Elmasri and Navathe: Fundamentals of Database Systems, 5th Edition,	2007
	Pearson Education.	
2	Silberschatz, Korth and Sudharshan: Data base System Concepts, 5 th	2006
	Edition, Mc-GrawHill.	
3	C.J. Date, A. Kannan, S. Swamynatham: A Introduction to Database Systems, 8th	1996
	Edition, Pearson education.	
4	Raghu Ramakrishnan and Johannes Gehrke: Database Management	2003
	Systems, 3 rd Edition, McGraw-Hill.	

Subject Name: JAVA Programming Subject Code: TMC 302

	i Name: JAVA Frogramming Subject Code	
Unit	CONTENT	CONTACT
No.		HOURS
1	Introduction and Evolution of Java:	10
	Evolution of Java, Byte Code, JDK, JVM, JRE, Data type, Variable, Arrays,	
	Operator, Control Statements, Classes & Objects, Constructor, Methods, this,	
	super keyword, Inheritance, static blocks.	
	Packages, Defining Packages, Using Packages, import and static import, jar	
	utility, classes modifiers: abstract, final; member modifiers: public, protected,	
	default, private, static, final, abstract, synchronized, native, transient, volatile,	
	strictfp, instance of operator.	
2	Interface: Defining Interfaces, abstract methods declarations, implementing	8
	interfaces, extended interfaces, interface references and constants in interfaces	
	Fundamental Classes: Object class, Wrapper classes, String class, immutability,	
	StringBuffer and StringBuilder.	
	Exception handling: Exception Types, Exception class, RuntimeException	
	Class, Error Class, Checked and unchecked Exceptions, Defining new exceptions;	
	Handling: try, catch and finally; throw statement, throws clause.	
3	Thread: Overview of threads, thread Creation; implementing the runnable	10
	interfaces, extending the thread class, Thread States, methods: Running, Yielding,	
	sleeping, joining, waiting and notifing. Synchronized and static synchronized	
	threads. Object Lifetime: Garbage Collection, Reachable Objects, Object	
	Finalization. Nested and Inner Classes	
4	I/O: The File class, FilenameFilter, Byte Streams: Input and Output streams,	12
	Character streams: readers and writers; object serialization	
	Applet: Applet basics, Applet Architecture, Applet Life cycle;	
	Event Handling: Event handling mechanisms, the Delegation Event Model, Event	
	classes, sources of events, Event Listener Interfaces, Adapter classes	
	AWT: AWT Controls, Layout Managers, Frame, Images, Graphics, Fonts,	
	Cursors, Colors, FileDialog box.	
	Swing- Introduction, Advantages over AWT, Swing applications.	
5	Networking: Networking Basics, Java and the Net, TCP/IP Client sockets, URL,	8
	URLConnection, TCP/IP Server sockets, Datagram	
	Introduction to RMI (Remote Method Invocation): RMI, remote Interfaces,	
	Stubs and skeletons, RMI registry, Bind and Rebind, a simple client server	
	application using RMI.	
	Introduction to Generic Classes and Collection (List, Set, Map) Vector,	
	ArrayList etc.	40
	TOTAL	48

Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICATION
1	Naughton, Schildt, "The Complete Reference JAVA2", TMH, 7 th edition	2007
2	Khalid A. Mughal: A Programmer's Guide To JAVA, Addison Wesley, 3 rd	2008
	edition.	

Subject Name: Theory of Computation **Subject Code:** TMC 305(1)

Unit	CONTENT	CONTACT
No.		HOURS
1	Introduction to Sets, logic, relation, Predicate Calculus, Finite Automata	10
	(FA), Nondeterministic finite Automata (NFA), Deterministic finite	
	Automata (DFA), Construction of DFA from NFA and Minimization of	
	Automata, Myhill-Nerode theorem.	
2	FA with output: Moore machine, Mealy machine and Equivalence,	8
	Applications and Limitation of FA, Introduction to languages – Chomsky	
	hierarchy. Regular Grammar- Regular expressions, Arden Theorem,	
	Pumping Lemma for regular language.	
3	Context free grammar: Ambiguity, Simplification of CFGs, Normal forms	9
	for CFGs, Decidability of CFGs, and Ambiguous to Unambiguous CFG.	
	Properties of recursive and recursively enumerable languages	
4	Push Down Automata (PDA): Description and definition, Working of	10
	PDA, Acceptance of a string by PDA, PDA and CFG.	
5	Turing machines (TM): Basic model, definition and representation,	11
	Language acceptance by TM, properties of TM, unsolvable Decision	
	problem, undecidability of Post correspondence problem, Church's Thesis.	
	TOTAL	48

Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICA TION
1	Hopcroft, Ullman, "Introduction to Automata Theory, Language and	1979
	Computation", Nerosa Publishing House	
2	K.L.P. Mishra and N.Chandrasekaran, "Theory of Computer	2008
	Science(Automata, Languages and Computation)", PHI	

Subject Name: Career skill – I Subject Code: TMC 306

Unit	CONTENT	CONTACT
No.		HOURS
1	Written communication	10
	Paragraphing, Paraphrasing.	
	Email writing,	
	Proof reading	
2	Soft skills	8
	Presentation Skills	
	Group Discussions.	
3	Introduction to Reasoning, basics, concepts and practice of arrangement-based	9
	questions (Linear, Vertical, Circular, any other). Concepts and practice of Tabular	
	or Grid based questions.	
	Blood Relations concepts, types of questions and their practice. Concepts and	
	practice of Grouping or condition-based questions.	
4	Concepts and practice of direction sense, coding-decoding and series completion.	10
	Syllogism, visual reasoning and mathematical reasoning.	
5	Miscellaneous problems including set theory, cubes and dice and puzzles.	11
	Introduction to Data Interpretation (DI), quick calculations, concepts and practice.	
	Introduction to Data Sufficiency concepts and practice.	
	TOTAL	48

Sl. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICA TION
1	Advanced Technical communication by Malti Agarwal	2011
2	R.S.Aggarwal, Verbal and Non-Verbal Reasoning for competitive exams.	2008