



# RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

Course of study and Scheme of Examination

B. E Information Technology

Semester V

s.n.	Course category	Course codes	Subject	Period per week				Distribution of marks					
								Theory	Practical	Internal Assessment		Total	Total
				I	II	MST	TW	III	I+II+III				
L	T	P	C										
1	DC-8	IT 501	Data Communication	3	1	2	6	100	50	20	30	50	200
2	DC-9	IT 502	IT Enabled Services, Ethics and Management	3	1	0	4	100	-	20	-	20	120
3	DC-10	IT 503	Computer Networks	3	1	2	6	100	50	20	30	50	200
4	DC-11	IT 504	System Programming and Operating System	3	1	2	6	100	50	20	30	50	200
5	DC-12	IT 505	JAVA Programming	3	1	0	4	100	-	20		20	120
6	IT-4	IT 506	JAVA Programming (Lab)	0	0	4	4	-	50	-	50	50	100
7	NECC-5	IT 507	Self Study	0	0	1	1	-	-	-	30	30	30
8	NECC-6	IT 508	Seminar/Group Discussion	0	0	1	1	-	-	-	30	30	30
			<b>Total</b>	15	5	12	32	500	200	100	200	300	1000

**Minimum Pass marks**  
(A)Theory: 35 Percent  
Percent

**Duration**  
[c] Duration of Theory paper 3hrs (B)Practical:50



# RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

## Course of study and Scheme of Examination

### B. E Information Technology

#### Semester VI

s.n.	Course category	Course codes	Subject	Period per week				Distribution of marks					
				L	T	P	C	Theory	Practical	Internal Assessment		Total	Total
										MST	TW		
								I	II	III		I+II+III	
1	DC-13	IT 601	Unix & Shell Programming	3	1	2	6	100	50	20	30	50	200
2	DC-14	IT 602	Computer Graphics & Multimedia	3	1	2	6	100	50	20	30	50	200
3	DC-15	IT 603	Internet Technology & Network Management	3	1	0	4	100	-	20	-	20	120
4	DC-16	IT 604	Web Technology	3	1	2	6	100	50	20	30	50	200
5	DC-17	IT 605	Software Engineering & Project Management	3	1	0	4	100	-	20	-	50	120
6	DC-18	IT 606	Minor Project	0	0	4	4	-	50	-	50	50	100
7	NECC-7	IT 607	Self Study	0	0	1	1	-	-	-	30	30	30
8	NECC-8	IT 608	Seminar /Group Discussion	0	0	1	1	-	-	-	30	30	30
<b>Total</b>				<b>15</b>	<b>5</b>	<b>12</b>	<b>32</b>	<b>500</b>	<b>200</b>	<b>100</b>	<b>200</b>	<b>300</b>	<b>1000</b>

**Minimum Pass marks**  
(A) Theory: 35 Percent  
Percent

**Duration**  
[c] Duration of Theory paper 3hrs (B) Practical:50

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

PROGRAMME: B.E. Information Technology, V Semester

Course: IT - DataCommunication

## Course Contents

Category of Course	Course Title	Course Code	Credit-6C			Theory Paper
			L	T	P	
Departmental Core	Data Communication	IT 501	L	T	P	Max.Marks-100 Min.Marks-35  Duration-3hrs.
DC-8			3	1	2	

**Branch :** Information Technology V sem

**Course :** IT 501 Data Communication

### Unit I

Data and signal-Analog and digital signals, Time and frequency domain, Composite signals, - Bandwidth, bit rate, bit length, Baseband and broadband transmission, Attenuation, distortion, noise, Nyquist bit rate, Shannon capacity, Throughput, delay, Jitter, Bandwidth delay product.

### Unit II

Data communication concepts – Data transmission – Parallel and serial transmission, synchronous, and Asynchronous transmission, Simplex, half duplex and full duplex, unipolar and polar line codes, Non return to zero codes, return to zero codes, bipolar line codes, bauds, modem, Line configurations-Point to point and point to multipoint configuration.

### Unit III

Telephone Network-Network topology, signaling- SS7, dial-up modems, modem standard, digital subscriber line – ADSL, SDSL, VDSL. Multiplexing, Frequency division multiplexing, time division multiplexing and wavelength division multiplexing, pulse code modulation, pleisochronous digital hierarchy (PDH), synchronous digital hierarchy (SDH), STM -1 frame, virtual container, mapping of data signals on STM- 1.

### Unit IV

Switching techniques- Circuit, packet and hybrid switching, Types of error, single bit error, burst error, Error detection, Vertical redundancy check, Longitudinal redundancy check, cyclic redundancy check, error correction, Integrated services digital network, ISDN interface, ISDN devices, reference points, ISDN services, ISDN Protocols

### Unit V

Transmission media-Guided and unguided media, twisted pair, Unshielded twisted pair and Shielded twisted pair, coaxial cable and fiber optic cable, radio waves, microwaves and infrared transmission RJ-45, Network interface card, rack, cable standard-Category 5, 6, and 7, cross connection, straight connection cable coding standards.

**References:-**

1. “Data communication and networking”, Forouzan, TMH 4 th edition
2. Data communication and Computer Networks, Prakash C Gupta ,PHI Learning
3. “Computer Networks” - Tanenbaum ,PHI Learning.
4. “Communication Networks-Fundamental concepts and key Architectures”, Leon-Garcia,Widjaja, TMH
5. “Computer Communications & Networking Technologies”-Michael A. Gallo & William M. Hancock -Cengage pearson publications
6. “Network for computer scientists & engineers” –Youlu zheng & shakil akhtar , Oxford pub.

### **Suggested List of Experiment**

1. Case Study of digital interface RS-232
2. Case Study of Synchronous and asynchronous transmission
3. Case Study of various multiplexing techniques
4. Case Study of Parallel and serial transmission
5. ISDN implementation for internet
6. ISDN Devices
7. Study of SDH
8. Study of Network Interface Card
9. Study of twisted pair,coaxial cable and Fiber optic cable
10. Study of cross cable connection and straight cable connection
11. Study of digital subscriber line-ADSL for broadband connection
12. Study of NRZ and RZ Codes

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

**PROGRAMME:** B.E. Information Technology, V Semester

**Course:** IT- IT enabled services, Ethics and Management

Category of Course	Course Title	Course Code	Credit-4C			Theory Paper (ES)
			L	T	P	
DC-9	IT enabled services, Ethics and Management	IT 502				<b>Max.Marks-100</b> Min.Marks-35  Duration-3hrs.
			3	1	–	

## **Unit I: Business Strategy: Challenges and Opportunities for IT**

Business Strategy: Challenges and Opportunities in the Globalized, Interconnected, Convergent World, Establish Principles before Practice, IT Strategy, Application Strategy, Technology Strategy for IT, IT Management Strategy, Developing IT Strategy for Competitive Advantage, Stages of IT Strategy Development and Implementation, Challenges of IT and Business Strategy Alignment, Inhibitors of Business and IT Strategy Alignment, Three-D Framework for Business and IT Strategy Alignment

## **Unit II : Strategic IT Planning**

Business Implications for IT Strategic and Planning, Strategic IT Planning Motivations, SITP Process: Prevalent Planning Approaches, Difficulties in Developing and Executing SITP, Best Practices for Achieving Good SITP, SITP Approaches: Prevalent Researches, Defining EITA, Contents of a Typical Enterprise IT Architecture, Standard for Enterprise IT Architecture, Technology Management strategy Framework, Prevalent Technology Reference Architectures Framework and Standards, Program Management, Benefits of PMO, Desired Qualities of a Program Office Manager, Maturity of PMO, Implementation of PMO Strategy, Measuring PMO Performance, Success Factors for PMO, Project Scope Management, PMO Dashboard and Reporting

## **Unit III : IT Service Management Strategy**

Information Technology Infrastructure Library (ITIL), ITIL Overview, ITIL Service Support Processes, Incident Management, Problem Management, Service Delivery, Service Level Management, Financial Management, Capacity Management, IT Service Continuity Management (ITSCM), Availability Management, Imperatives for Outsourcing, IT Management Layers, Variants of Outsourcing, Business Process Outsourcing, Insourcing.

## **Unit IV : Copyright and IPR**

Understanding the concepts of Copyright, Intellectual Property Law, Patents, Indian Standards Institution and its role Indian copyright law of 1957 and its most important amendment from a software viewpoint, Understanding Intellectual property, Caution with Internet , Email Etiquette, Spamming. Broadcasting.

#### **Unit V : IT ethics**

Theoretical basis of Computer Ethics, defining Computer Ethics, computer professional's behavior, and social conduct, ease of misuse, do and don'ts with proprietary data, Understanding computer crime, Social Networking, Understanding Software Compliance, Software Piracy, Understanding Professional Responsibility

#### **References**

IT strategy and Management by Sanjiva Shankar Dubey, PHI

Marketing of Information Technology, by K.Venkatesh, TMH

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

PROGRAMME: B.E. INFORMATION TECHNOLOGY, V SEMESTER

Course: IT- Computer Networks

## Course Contents

Category of Course	Course Title	Course Code	Credits-6C			Theory Paper (DC)
			L	T	P	
Departmental Course DC-10	Computer Networks	IT 503	L	T	P	Max.Marks-100 Min.Marks-35 Duration-3hrs.
			3	1	2	

**Branch:-**Information Technology

**Course:-**IT 503 Computer Networks

### Unit I

Importance of computer networks, broadcast and point to point networks, Local area networks and Wide area networks , Introduction to ISO-OSI reference model, TCP/IP reference model , function of each layer, interfaces and services, Protocol data unit, connection oriented and connectionless services, service primitives, comparison of TCP/IP and ISO-OSI reference model, Novel Netware, Arpanet , X.25

### Unit II

Data-Link layer: - Data link layer design issues, framing , flow & error control , physical addressing, Stop & Wait protocol ,Go back N ARQ ,selective repeat ARQ ,piggybacking and pipelining ,HDLC LAN Protocol stack-Logical link control and Media Access Control sublayer, IEEE 802.2 LLC Frame format

Data link layer in the internet, Serial line IP and Pont to point protocol

### Unit III

MAC layer Protocols- , static and dynamic allocation , Pure and slotted ALOHA protocols, Carrier sense multiple access, Persistent and non persistent CSMA, IEEE standard 802.3 and Ethernet,802.3 cabling, IEEE 802.4, IEEE 802.5, FDDI

Wireless LAN , Comparison of wired and wireless LAN, WIMAX

### Unit IV

The Network layer- logical addressing, classful & classless addressing , address mapping ,packet delivery & forwarding. unicast routing protocols , multicast routing protocols, Routing algorithm-Least Cost, Dijkstra's, Bellman-ford, congestion control algorithms, Internetworking devices, Introduction to Internet protocol IPv4

### Unit V

Transport layer-Transport services , Process to process delivery, UDP ,TCP ,congestion control , quality of service , Integrated services, Differentiated services

LAN-WAN Design and implementation-Configuring TCP/IP, using Ipconfig, ping command , study of structured LAN , study of internetworking devices and their configuration– switches, hubs, Bridges, routers and Gateways

### References:-

1. “Local area networks ”, Forouzan, TMH, 1st edition
2. “Computer Networks” - Tanenbaum ,PHI Learning.

3. “Computer Networks” ,N Olifer and V Olifer ,Wiley publication
4. “Computer Communications & Networking Technologies”-Michael A. Gallo & William M. Hancock -Cengage pearson publications  
pub.

Computer Networks: Protocols, Standards and Interfaces By Black, PHI learning

### **Suggested List of Experiment**

1. Establishment and configuration of LAN
2. Colour coding standard of CAT 5,6,7 and crimping of cable in RJ-45
3. Study of WAN
4. Case study of STOP AND WAIT Protocols
5. Study of sliding window protocol
6. study of IEEE 802.3 , 802.4 ,802.5
7. Study of FDDI
8. Study of basic networking commands like ping, ipconfig, etc
9. Case study of various Routing Strategies
10. Case studies of various Network Topologies
11. Establishing & studying the various parameters of a home LAN Network
12. Study of IOS of routers
13. Configuring routers, bridges and switches and gateways

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

PROGRAMME: B.E. INFORMATION TECHNOLOGY, V SEMESTER

COURSE: IT -System Programming and Operating System

## Course Contents

Category of Course	Course Title	Course Code	Credits-6C			Theory Papers (DC)
			L	T	P	
Departmental Course (DC-11)	System Programming and Operating System	IT 504				Max.Marks-100 Min.Marks-35 Duration-3 hrs.
			3	1	2	

**Branch:** Information Technology V Semester

**Course:** System Programming and Operating System

### Unit I

Introduction Language Processors, Language Processing Activities and Language Processors Development Tools, Assemblers, Compiler, Macros and Macro Processors, Linkers, Software Tools . Introduction to Operating Systems, Types of operating Systems, system protection, Operating system services.

### Unit II

Basic concepts of CPU scheduling, Scheduling criteria, Scheduling algorithms, algorithm evaluation, multiple processor scheduling. Process concept, operations on processes, threads, interprocess communication, precedence graphs, critical section problem, semaphores, classical problems of synchronization,

### Unit III

Deadlock problem, deadlock characterization, deadlock prevention, deadlock avoidance, deadlock detection, recovery from deadlock, Methods for deadlock handling. Concepts of memory management, logical and physical address space, swapping, Fixed and Dynamic Partitions, Best-Fit, First-Fit and Worst Fit Allocation, paging, segmentation, and paging combined with segmentation.

### Unit IV

Concepts of virtual memory, Cache Memory Organization, demand paging, page replacement algorithms, allocation of frames, thrashing, demand segmentation, Role of Operating System in Security, Security Breaches, System Protection, and Password Management.

### Unit V

Disk scheduling, file concepts, File manager, File organization, access methods, allocation methods, free space managements, directory systems, file protection, file organization & access mechanism, file sharing implement issue, File Management in Linux, introduction to distributed systems.

**References:**

1. M. Flynn “ Operating Systems”. Cengage Learning.
2. Silberschatz ,”Operating system”, Willey Pub
3. Tanenbaum “ Modern Operating System” PHI Learning.
4. Dhamdhere, ”System Programming and Operating System”,TMH.
5. Stuart,”Operating System Principles, Design & Applications”,Cengage Learning
6. Operating System : Principle and Design by Pabitra Pal Choudhury, PHI Learning

**Suggested List of Experiment**

1. Program to implement FCFS CPU scheduling algorithm.
2. Program to implement SJF CPU scheduling algorithm.
3. Program to implement Priority CPU Scheduling algorithm.
4. Program to implement Round Robin CPU scheduling algorithm.
5. Program to implement classical inter process communication problem(producer consumer).
6. Program to implement classical inter process communication problem(Reader Writers).
7. Program to implement classical inter process communication problem(Dining Philosophers).
8. Program to implement FIFO page replacement algorithm.
9. Program to implement LRU page replacement algorithm
10. Program to implement LFU page replacement.
11. Program to implement Optimal page replacement.

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

**PROGRAMME:** B.E. Information Technology, V Semester

**Course:** IT- JAVA Programming

## COURSE CONTENTS

CATEGORY OF COURSE	COURSE TITLE	COURSE CODE	CREDIT-6C			THEORY PAPER ( DC)
			L	T	P	
Departmental Course DC-12	JAVA Programming	IT 505				Max.Marks-100 Min.Marks-35 Duration-3hrs.
			3	1	2	

**Branch:-** Information Technology

**Course:-**IT 505 JAVA Programming

## UNIT-I

**The Java Environment:** Java Development Kit (JDK) ,Java virtual machine , Java programming environment (compiler, interpreter, appletviewer, debugger), , Java Applications Programming Interface (API), Basic idea of application and applet.

Java as an object oriented language:objects, classes, encapsulation, inheritance,and software reuse, polymorphism, abstract classes and abstract methods, : defining an interface, implementing & applying interfaces, variables in interfaces, extending interfaces, Packages,scope and lifetime; Access specifies; Constructors; Copy constructor; this pointer; finalize () method; arrays; Memory allocation and garbage collection

## UNIT-II

**AWT:**Containers and components,AWT classes, window fundamentals: Component,Container,Panel,Window,Frame,Canvas,AWT Controls,Layout Managers and Menus:adding and removing control,Labels, Button, Check Box, Radio Button, Choice ,menu, Text area, Scroll list, Scroll bar; Frame; Layout managers- flow layout, Grid layout, Border layout, Card layout.

**Java Event Handling Model:** Java's event delegation model – Ignoring the event, Self contained events, Delegating events; The event class hierarchy; The relationship between interface, methods called, parameters and event source; Adapter classes; Event classes action Event, Adjustment Event, Container Event, Focus Event, Item Event, Eye Event, Mouse Event, Text Event, Window Event.

**Applets:** Applet security restrictions; the class hierarchy for applets; Life cycle of applet; HTML Tags for applet

**Introduction to Swing:** swing library, Building applications using Swings

## **UNIT-III**

### **Multithreading and Exception Handling:**

Overview of simple threads, Basic idea of multithreaded programming, Thread synchronization: Locks, synchronized methods, synchronized block, Thread scheduling, Producer-consumer relationship, Daemon thread, Basic idea of exception handling, stack based execution and exception propagation, Exception types:, Exception Handling: Try, Catch, Finally, Throw statement, Assertions

## **UNIT-IV**

**Input/Output** : Exploring Java I/O., Directories, stream classes

The Byte stream : Input stream, output stream, file input stream, file output stream, print stream, Random access file, the character streams, Buffered reader, buffered writer, print writer, serialization.

**JDBC**: JDBC-ODBC bridge; The connectivity model; The driver manager; Navigating the result set object contents; java.sql Package; The JDBC exception classes; Connecting to Remote database.

## **UNIT-V**

Java Networking : exploring java.net package  
Networking Basics : Socket, Client server, reserved sockets, proxy servers, Internet addressing, TCP sockets, UDP sockets.

RMI: Client/Server architecture, RMI registry services; Steps of creating RMI Application and an example.

## **REFERENCES:-**

1. Naughton & Schildt "The Complete Reference Java 2", Tata McGraw Hill
2. Deitel "Java- How to Program:" Pearson Education, Asia
3. Horstmann & Cornell "Core Java 2" (Vol I & II ) , Sun Microsystems
4. Ivan Bayross "Java 2.0" : BPB publications
5. Ivor Horton's "Beginning Java 2, JDK 5 Ed., Wiley India.
6. Java Programming for the absolute beginners By Russell, PHI Learning

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

PROGRAMME: B.E. Information Technology, V Semester

Course: IT 506 CP V

## COURSE CONTENTS

CATEGORY OF COURSE	COURSE TITLE	COURSE CODE	CREDIT-4C			PRACTICAL
			L	T	P	
Information Technology  IT-4	JAVA Programming (Lab)	IT 506	L -	T -	P 4	Max.Marks-50 Min.Marks-25

### Unit I

JDK Installation and setting the path, JDK Tool(Java Compiler, Java Virtual Machine, Debugger, Appletviewer, Javadoc, Jar), Compile and run java program, Compiler options and JVM options, Data type, Operators, Control Statement (if, if...else, switch ...case, while, for, do...while, break, continue, labeled break, labeled continue), Arrays, Memory allocation and garbage collection, Classes and object scope and life time, Access specifier, Constructor and finalize method, this keyword, instance block, static block, static data member, static method, Inheritance, method overriding, dynamic method dispatch, constructors in Inheritance, super keyword, abstract method and abstract class, final method, final data member, final class, defining an Interface, Implementing and applying interface, extending Interface.

### Unit-II

creating package, using package. Try, catch, throw, throws, finally, Object Class, String Class, String Buffer class, Math Class, Wrapper Classes, StringTokenizer Class, Collection, Set, List Map, ArrayList, SortedSet, Iterator, File Class, Thread class and its method, Creating Thread, lifecycle of a thread, Runnable Interface, thread synchronization, wait, notify, ThreadGroup class.

### Unit -III

Command Line Arguments, InputStream, OutputStream, Reader, Writer, FileInputStream, FileOutputStream, DataOutputStream, DataInputStream, FileReader, FileWriter, InputStreamReader, BufferedReader, ObjectOutputStream, ObjectInputStream, Object Serialization, Scanner, RandomAccessFile.

### Unit -IV

Abstract Window toolkit, awt package, Applet, Lifecycle of an Applet, GUI Component (Button, Label, TextField, TextArea, List, Choice, CheckBox), Panel, Event Source, Event handlers, Event classes, Containers, Frame class, Panel, Dialog, Layout Manager, Swing, swing components, JFrame, JApplet, JPanel, JButton, JLabel, JTable, JTextField, JTextArea, JRadioButton, JCheckBox, JList, JTree, Icon, LookAndFeel, Graphics2D and drawing Image.

## **Unit-V**

Networking basics, Socket, port, Proxy servers, Internet addressing and URL, java.net – networking classes and interfaces, Implementing TCP/IP based Server and Client.

Classes to be covered Socket, ServerSocket, IPAddress, URL connections; Programs on chatting 1-1 & 1-M (Threading), Implementing UDP based Server and Client DatagramPacket and DatagramSocket. Introduction of RMI & Architecture ,Implementing RMI ,Writing RMI Server, Designing Remote Interface, Implementing Remote Interface, Passing Object in RMI, Creating RMI Client.

Types of JDBC Drivers, Writing JDBC applications using select, insert, delete, update;

Types of Statement objects (Statement, PreparedStatement and CallableStatement);

ResultSet, ResultSetMetaData; Inserting and updating records, Connection Pooling.

## **Reference Books:-**

1. Java 2 Complete Reference (5th Ed ), Herbert Schildt, TMH
2. Core Java Volume-I, Horstman and Cornell, Pearson Education
3. Core Java Volume-II, Horstman and Cornell, Pearson Education

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

**PROGRAMME:** B.E. Information Technology, VI Semester

**Course:-IT- UNIX AND SHELL PROGRAMMING**

## Course Contents

CATEGORY OF COURSE	COURSE TITLE	COURSE CODE	CREDIT-6C			THEORY PAPER
			L	T	P	DC
Departmental Course DC-13	Unix And Shell Programming	IT- 601	L	T	P	Max.Marks-100 Min.Marks-35
			3	1	2	Duration-3hrs.

**Branch:-** Information Technology

**Course:-** IT 601 Unix And Shell Programming

### UNIT-I

General Overview of the System: System structure, user perspective, O/S services assumption about Hardware The Kernel and buffer cache architecture of Unix O/S, System concepts, Kernel data Structure, System administration, Buffer headers, Structure of the buffer pool, Scenarios for retrieval of the buffer, Reading and writing disk block, Advantage and disadvantage of buffer cache.

### UNIT-II

Internal Representation of Files: Inodes, Structure of regular, Directories conversions of a path name to an inode, Super block, Inode assignment to a new file, Allocation of disk blocks, Open read write file and record close, File creation, Operation of special files change directory and change root, change owner and change mode. STAT and FSTAT, PIPES mounting and unmounting files system, Link Unlink

### UNIT-III

Structures of Processes and process control: Process states and transitions layout of system memory, the context of a process, manipulation of process address space, Sleep process creation/termination. The user Id of a process, changing the size of a process. Killing process with signals, job control, scheduling commands: AT and BATCH, TIME, CORN.

### UNIT-IV

Introduction to shell scripts: shell Bourne shell, C shell, Unix commands, permissions, editors, grep family, shell variables, scripts, metacharacters and environment, if and case statements, for while and until loops. Shell programming.

### UNIT-V

Introduction of Awk and perl Programming: Awk pattern scanning , BEGIN and END patterns, Awk arithmetic and variables, and operators, functions, perl; the chop() function, variable and operators. Networking tools: Resolving IP addressing, TELNET, FTP, Socket programming, introduction of Linux structure .

**References:-**

1. M.J. Bach “Design of UNIX O.S. “, PHI Learning
2. Y.Kanetkar “Unix shell programming”, BPB Pub.
3. B.W. Kernighan & R. Pike, “The UNIX Programming Environment”, PHI Learning
4. S.Prata “Advanced UNIX: A Programming's Guide”, BPB Publications, New Delhi.
5. Beck “Linux Kernel, Pearson Education, Asia.
6. Sumitabha Das “ Unix concepts and Applications”.Tata McGraw Hill,Second Edition,2001

### **Suggested list of experiments**

#### Installation of Unix/Linux

- 1.Study about the General Purpose utilities
  - a) Banner b)cal c)date d)calender e)tty f)bc
  - g) spell & fspell
- 2.Implement WE Command in C
- 3.Implement Grep command in C
- 4.Implement More command in C
- 5.Implement Link & Unlink in C
- 6.Implement LS command in C
- 7.Study about the Unix system variables
- 8.Write the program to find biggest among 3 numbers using shell
- 9.Write a shell program to find factorial
- 10.Write a shell program to check the given string is Palindrome (or) not
- 11.Write a shell program to check whether the user is logged (or) not
- 12.Write a shell program to wish the user those who login to the system
- 13.Write your own profile
- 14.Write a shell program to find the biggest among numbers using positional parameters
- 15.Write a shell program to sort the strings using arrays

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

**PROGRAMME: B.E.** Information Technology, VI Semester

**Course:** IT- Computer Graphics and Multimedia

## Course Contents

CATEGORY OF COURSE	COURSE TITLE	COURSE CODE	CREDIT-6C			THEORY PAPER (DC)
			L	T	P	
Departmental Course DC-14	Computer Graphics and Multimedia	IT 602	L	T	P	Max.Marks-100 Min.Marks-35  Duration-3hrs.
			3	1	2	

**Branch:-** Information Technology

**Course:-** IT 602 Computer Graphics & Multimedia

### Unit I

Introduction to Raster scan displays, Storage tube displays, refreshing, flickring, interlacing, colour monitors, display processors resolution, working principle of dot matrix, inkjet laser printers, working principles of keyboard, mouse scanner, digitizing camera, track ball, tablets and joysticks, graphical input techniques, positioning techniques, rubber band techniques, dragging etc.

### Unit II

Scan conversion techniques, image representation, line drawing, simple DDA, Bresenham's Algorithm, Circle drawing, general method, symmetric DDA, Bresenham's Algorithm, curves, parametric function, Bezier Method, B-spline Method.

### Unit III

2D & 3D Co-ordinate system, Translation, Rotation, Scaling, Reflection Inverse transformation, Composite transformation, world coordinate system, screen coordinate system, parallel and perspective projection, Representation of 3D object on 2D screen. Point Clipping. Line Clipping Algorithms, Polygon Clipping algorithms, Introduction to Hidden Surface elimination, Basic illumination model, diffuse reflection, specular reflection, phong shading, Gourand shading ray tracing, color models like RGB, YIQ, CMY, HSV etc.

### Unit IV

An Introduction – Multimedia applications – Multimedia System Architecture – Evolving technologies for Multimedia – Defining objects for Multimedia systems – Multimedia Data interface standards – Multimedia Databases.

Multimedia components, Multimedia Hardware, SCSI, IDE, MCI, Multimedia -Tools, presentation tools, Authoring tools .

### Unit V

Compression & Decompression – Multimedia Data & File Format standards :-TIFF, MIDI, JPEG, DIB, MPEG,RTF, – Multimedia I/O technologies - Digital voice and audio – Video image and animation– Full motion video – Storage and retrieval technologies.

### **References:-**

1. Donald Hearn and M.Pauline Baker, "Computer Graphics C Version", Pearson Education, 2003.
2. Prabat K Andleigh and Kiran Thakrar, "Multimedia Systems and Design", PHI Learning, 3rd Indian reprint edition , 2008.
- 3.. Tay Vaughan, "Multimedia making it work", Tata McGraw Hill edition.
4. Amarendra N Sinha & Arun D Udai , "Computer Graphics", McGraw Hill publication .  
Fundamental of Computer Graphics and Multimedia, Mukherjee, PHI Learning

### **Suggested list of experiment**

1. Write a program to implement DDA line drawing algorithm
2. Write a program to implement Bresenhames' line drawing algorithm.
3. Write a program to implement Bresenhames' circle drawing algorithm.
4. Write a program to draw an ellipse using Bresenhames' algorithm.
5. Write a program to perform various transformations on line , square & rectangle.
6. Write a program to implement Cohen Sutherland line clipping algorithm.
7. Write a program to implement Liang-Bersky line clipping algorithm.
8. Write a program to implement Cohen-Sutheland polygon clipping algorithm to clip a polygon with a Pattern.
9. Write a program to convert a color given in RGB space to it's equivalent CMY color space.
10. Study of various Multimedia file formats:-RTF,MIDI,GIF,JPEG,MPEG,TIFF etc.
11. Write a program to implement JPEG compression scheme for still images.
12. Write a program to perform Packbits compression & decompression.
13. Write a short program to create a TIFF file using bitmap segments and text files as the TIFF  
File components.
14. Write a program to convert a BMP file into either JPEG or GIF file.
15. Study of various Multimedia Authoring Tools.

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

**PROGRAMME:** B.E. Information Technology, VI Semester  
**Course:** IT- Internet Technology and Network Management

## COURSE CONTENTS

CATEGORY OF COURSE	COURSE TITLE	COURSE CODE	CREDIT-4C			THEORY PAPER (DC)
			L	T	P	
Departmental Course DC-15	Internet Technology and Network Management	IT 603	L	T	P	Max.Marks-100 Min.Marks-35  Duration-3hrs.
			3	1	0	

**Branch:-** Information Technology

**Course:-**IT 603 Internet Technology & Network management

### Unit-I

Binding Protocol Address- Address Resolution Protocol & RARP, ARP & RARP , packet format, Encapsulation.

Internet protocol: Introduction, Ipv4 header, Ipv4Datagrams, Encapsulation, Fragmentation and Reassembly, IP routing, Subnet addressing, Subnet mask, Supernetting- special case of IP addresses

Ipv6-Motivation, frame format and addressing, comparison of Ipv4 and Ipv6.

### Unit-II

ICMP: Introduction, ICMP Header, ICMP message types, ICMP timestamp request and reply, trace route, ping program .

Intra & inter domain routing-distance vector routing,RIP,Link State Routing,OSPF,Path

Vector Routing ,BGP.Unicast Routing protocols .

IGMP-IGMP message,operation,encapsulation.

### Unit-III

TCP: Introduction, services, headers, connection establishment and termination, timeout of connection establishment, maximum segment size- half, close, state transition diagram, port no. and socket addresses , TCP timers

UDP: Introduction, UDP header, UDP checksum,UDP operations , encapsulation & decapsulation ,queuing ,SCTP-Services ,transmission sequence number,stream identifier ,stream sequence number,packet format. .

### Unit-IV

BOOTP:-operation ,packet format.DHCP:-Address allocation,configuration & packet

Format,DNS:Distribution of name spaces , DNS in the internet . FTP:-Connection,

Communication ,command processing , TFTP. E-Mai:-SMTP ,POP & IMAP .

SNMP:-Management components,SMI,MIB.

### Unit-V

Network management applications:-Configuration management, Fault Management , Performance management , Security management , Accounting management , Report Management , policy based management .

**References:-**

1. "TCP/IP-Protocol suite", Forouzan, TMH 3<sup>rd</sup> edition
  2. "Computer Networks and Internets", D.E.Comer, Pearson
  3. "Network management- principles & practice" Mani Subramaniam , Pearson education.
  4. "TCP/IP Illustrated" Volume I ,W. Richard Stevens, Addison Wesley
- Internetworking with TCP/IP Vol. I, II & III, Comer, PHI Learning

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

**PROGRAMME:** B.E. Information Technology, VIII semester

**Course:** IT- Web Technologies

## Course Contents

CATEGORY OF COURSE	COURSE TITLE	COURSE CODE	Credit-6C			THEORY PAPER (DC)
			L	T	P	
Departmental Course DC-16	Web Technologies	IT 604	L	T	P	Max.Marks-100
			3	1	2	Min.Marks-35 Duration-3hrs.

**Branch:-** Information Technology

**Course:-** IT 604 Web Technologies

### UNIT I

History of the internet, internetworking concepts, architecture, and protocol: switch, router, protocols for internetworking, internet address and domains. Introduction World Wide Web (WWW), working of web browser and web server, Web server and its deployment, N-tier architecture, services of web server, Common gateway interface (CGI), Uniform Resource Locator (URL), format of the URL, Hyper Text Transfer Protocol (HTTP), feature of HTTP protocol HTTP request-response model, Hyper Text Transfer Protocol Secure (HTTPS).

### UNIT II

Introduction to Hyper Text Markup Language (HTML), HTML elements, XHTML syntax and Semantics, eXtensible Markup Language (XML), element, attributes, entity declarations. DTD files and basics of Cascading Style Sheet (CSS). Document object Model (DOM) history and levels, Document tree, DOM event handling.

### UNIT III

Introduction to Java Script, Basic concepts, variables and data types, functions, conditional statements, Loops, Operators, Arrays, Standard Objects and form processing in Java

### UNIT IV

Evaluation of web applications, type of web documents, feature of web pages, multitier web applications, introduction to Apache web server. Security in application: authentication, authorization, auditing, security issues, security on the web, proxy server, Firewall. Middleware Concepts, CORBA, Java Remote Method Invocation (RMI) , Message Oriented Middleware(MOM), EJB, Microsoft's Distributed Component Object Model( DCOM) Web Servers HTTP request types System Architecture Server side Scripting. Web server and its deployment, Web client, services of web server, mail server proxy server, multimedia server.

## **UNIT V**

Introduction to servlet, Overview Architecture Handling HTTP Request, Get and post request, redirecting request multi-tier applications. Introduction to JSP, basic JSP, Java Bean class and JSP. Setting up an Open Data Base Connectivity (ODBC) data source.

### **References:-**

1. Web Technologies- A computer science perspective By Jeffrey C. Jackson, Pearson Education .
2. Web Technologies-TCP/IP Architecture, and Java Programming By Achyut S. Godbole and Atul Kahate
3. An introduction to Web Design+Programming by Paul S. Wang Sanda, S Katila, CENGAGE Learning.
4. Web Technology- A developer's Perspective by N.P.Gopalan, J.Akilandeswari , PHI Learning

# Rajiv Gandhi Proudyogiki Vishwavidyalaya

**PROGRAMME: B.E.** Information Technology, VI Semester

**Course: IT Software Engineering and Project Management**

## Course Content

Category of Course	Course Title	Course Code	Credits-4C			Theory Papers (DC)
			L	T	P	
Departmental Course DC-17	Software Engineering and Project Management	IT605	L	T	P	Max.Marks-100
			3	1	0	Min. Marks- 35 Duration-3 hrs.

**Branch:** Information Technology-VI Semester

**Course:** IT605 Software Engineering and project management

### Unit I

Introduction, Software- problem and prospects Software development process: Software life cycle models, Open source software development, the unified process, documentation, configuration management, Safety, risk assessment.

### Unit II

Measures, Metrics and Indicators, Metrics in the Process and Project Domains, Software Measurement, Metrics of Software Quality, S/W reliability, Software estimation techniques, loc and FP estimation. Empirical models like COCOMO, project tracking and scheduling, reverse engineering.

### Unit III

Software requirements and specification: feasibility study, Informal/ formal specifications, pre/post conditions, algebraic specification and requirement analysis models, Specification design tools. Software design and implementation: Software design objectives, design techniques, User interface design, modularity Functional decomposition Data flow design, Data structure design, Object-oriented design, Design patterns implementation strategies like top-down, bottom-up, team etc.

### Unit IV

Coding standard and guidelines, programming style, code sharing, code review, software components, rapid prototyping, specialization, construction, class extensions, intelligent software agents, reuse performance improvement, debugging. Software Testing Strategies: Verification and Validation, Strategic Issues, test plan, white box, black-box testing, unit and integration testing, system testing test case design and acceptance testing, maintenance activities.

## **Unit V**

Organizing: Alternatives for project managers, matrix organization, Staffing, Directing: leadership, delegation, motivation, Controlling risk analysis and RMMM plan, project scheduling and tracking plan, SQA and quality planning, SCM activities and plan, project management plan. Re-engineering, reverse, forward engineering, web engineering, Software project management standards

### **References:**

1. Software Engineering. A Practitioner's Approach by P.S. Pressman New edition McGraw.
2. Software project Management from concept to development Black Book by Kieron Conway, Dreamtech Press.
3. Software Engineering principle and practices- Deepak Jain Oxford University Press.
4. Software Engineering for students 4/e - Bell Douglas Pearson Education
5. Software Project Management, Kelkar, PHI Learning