

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – FIRST YEAR**  
**BCA 101 Communication Skills-I**

**Course Objective** : To improve your proficiency in English by developing your skill reading, listening and Speaking

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs.	Max Marks	Hrs	Max Marks		
BCA101	Communication Skills-I	3	-	-	3	70	-	-	30	100

**Course Content:**

**Effective Communication**

[20%]

- What is communication?
- Types and Forms of Communication,
- Media and Modes of Communication,
- Process of Communication and Importance of feedback
- Barriers to Effective Communication
- Features of Effective Communication
- 7 C's of communication

**No. of Lectures:- 15**

**Textbook**

[30%]

**Unit: 1**

Chapter 1 : A CHAT WITH MRS. SMILES

Chapter 4 : WHAT! NO BOOKS!

Chapter 12 : DOLLY AT THE DENTIST

**No of Lectures: - 05**

**Unit 2:**

Chapter 2 : A DIFFICULT CUSTOMER

Chapter 11: FIFTEEN PACES

**No of Lectures: - 03**

**Unit 3:**

Chapter 3 : LOVER'S REUNION

Chapter 7: THE CONJURER'S REVENGE

**No of Lectures: - 03**

**Unit 4:**

Chapter 5: QUICKSAND

Chapter 6: BLOOD TOIL TEARS & SWEAT

**No of Lectures: - 03**

**Unit 5:**

Chapter 8 :A SNAKE IN THE GRASS

Chapter 9THE TOPAZ CUFFLINK MYSTERY

**No of Lectures: - 03**

**Unit 6:**

Chapter 10 : LETTER TO INDU

**No of Lectures: - 02**

**Unit 7:**

Chapter 13: A SENSE OF THE FUTURE

Chapter 14:A THEIF'S STORY

**No of Lectures: - 03**

## **Writing skills:-**

[20%]

- Writing application for business
- Application for job, loan. Advance salary, refund etc.
- Composition
- comprehension

**No. of lectures:- 08**

## **Grammar**

[30%]

- Articles
- Preposition
- Tenses
- Types of sentence:- Affirmative, negative, exclamatory, interrogative, assertive sentences, question tag
- Change of voice
- Modal Auxiliary
- Clauses
- Reported speech
- Word-meanings and Idioms/ Phrases

**No. of lectures:- 15**

**Total No of Theory Lectures: - 60 Hrs.**

## **Methodology of Teaching**

Classroom discussions  
Individual exercises  
Group exercises/project  
Group Discussions

## **TEXT BOOK:**

- Developing English Skills, P. K. Thaker, S. D. Desai, T. J. Purani; Oxford

## **REFERENCE BOOKS**

- English Online, Mohanraj & Mohanrah, Orient Longman
- The Good Grammar Book Swan M & Catherine Walter, Oxford
- Basic Communication Skills for Technology, Andrea Rutherford, Person
- English Grammar Composition and Effective Business Communication, Pink and Thomas, S Chand
- Business Communication, Meenakshi Raman & Sangeeta Sharma, Oxford
- Basic English Usage, Michael Swan, Oxford
- Oxford Business English Dictionary, Oxford
- New Avenues, Orient Longman
- Technical Communication: Principles and Practice, Meenakshi Raman & Sangeeta Sharma, Oxford
- Selections from English Prose, Oxford

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – FIRST YEAR**  
**BCA 102 Programming in “C”**

**Course Objective** : To develop the basic concepts of programming using popular programming Language “C”

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs	Max Marks		
BCA102	Programming in “C”	3	2	-	3	70	3	50	30	150

**Course content** :

**Unit 1:**

**Introduction to Programming: Algorithms and Flowcharts:** [5%]

Programs and Programming, Programming Languages, Compiler, Interpreter, Loader & Linker, Program Execution, Generations of Languages, Classification of Programming Languages, Structured Programming Concept, Algorithm & Flowchart.

**No of Lectures: - 05**

**Unit 2:**

**Basics of C** [5%]

Introduction, Basic Structure of C & Simple Programs ,C Tokens, Data Type, printf, scanf, Variable, Constants, Operators and Expressions, Precedence and Associativity of Operators, Type Conversions.

**No of Lectures: - 04**  
**No of Practical: - 06**

**Unit 3:**

**Input and Output** [5%]

Introduction, Basic Screen and Keyboard I/O, Non-formatted Input and Output Functions, Formatted Input and Output Functions, Worked-out Examples using scanf() & printf(), Library Functions.

**No of Lectures: - 03**  
**No of Practical: - 03**

**Unit 4:**

**Control Statements:** [15%]

Introduction, Specifying Test Condition for Selection and Iteration, Writing Test Expression, Conditional Execution and Selection, Iteration and Repetitive Execution, Switch Statement, Looping Statements, goto Statement, Special Control Statements, Nested Loops.

**No of Lectures: - 10**  
**No of Practical: - 10**

**Unit 5:**

**Arrays and Strings:** [10%]

Introduction, One-dimensional Array, Strings: One-dimensional Character Arrays, Multidimensional Arrays, Arrays of Strings: Two dimensional Character Array.

**No of Lectures: - 06**  
**No of Practical: - 07**

**Unit 6:**

**Functions:** [15%]

The Concept of Function, User Defined & Library Functions, Using Functions, Nested Function, Scope, Storage Classes Recursion, Comparing Recursion & Iteration, Common Error.

**No of Lectures: - 10**  
**No of Practical: - 05**

**Unit 7:****Pointers in 'C':****[15%]**

Introduction, Understanding Memory Addresses, Null & void Pointer, Use of Pointers, Arrays and Pointers, Pointers and Strings, Pointer Arithmetic, Pointers to Pointers, Array of Pointers, Pointers to an Array, Pointers to Functions, Dynamic Memory Allocation, Offsetting a Pointer, Memory Leak and Memory Corruption, Deciphering Pointer Declaration in C.

**No of Lectures: - 06****No of Practical: - 05****Unit 8:****User defined Data types and Variables:****[10%]**

Introduction, Structures, Union, type def, Enumeration Type, Bit fields.

**No of Lectures: - 06****No of Practical: - 06****Unit 9:****File in 'C'****[10%]**

Introduction, Using Files in C, Working with Text Files, Working with Binary Files, Direct File Input and Output, File of Records, Random Access to Files, Other File Management Functions, Low Level I/O.

**No of Lectures: - 07****No of Practical: - 06****Unit 10:****Advanced 'C':****[10%]**

Introduction, Bitwise Operator, Command Line Arguments, The C Preprocessor, Type Qualifier

**No of Lectures: - 04****No of Practical: - 02****Total No of Theory Lectures: - 61 Hrs.****Total No of Practical Lab.: - 54 Hrs.****Text Book:**

- Programming in C by Pradip Dey & Manas Ghosh (Oxford)

**Reference**

- Programming In C by E. Balaguruswamy (TMH)
- Let us C by Yashwant Kanetkar (BPB)
- Mastering C by K. R. Venugopal & S. R. Prasad (TMH)

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – FIRST YEAR**  
**BCA 103 Fundamental Mathematics for Computer Science**

**Course objective** : To improve logic by Practicing with basic concepts of mathematics such as set Theory, functions, Calculus and Geometry.

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs	Max Marks		
BCA103	Fundamental Mathematics for Computer Science	3	-	-	3	70	-	-	30	100

**Course Content:**

**Unit 1 :**

**Set Theory & Functions:** [10%]

**Set theory:-**

Introduction, Operations, Properties on operation with logical proof, Venn Diagram, Cartesian product

**Functions:-**

Definition, Domain and Range, Linear, Quadratic and higher degree polynomials, Introduction of Trigonometric functions, Graph of the functions including trigonometric functions, .Idea of convex and concave function by means of graph, . Application to Break Even Analysis

**No of Lectures: -10**

**Unit 2 :**

**Differentiation & It's Application:** [15%]

**Differentiation:-**

Definition with short introduction of limit, . Rules of Differentiation [without proof Derivatives of Algebraic, Trigonometric, Parametric, Logarithmic, Explicit/Implicit functions,. Second order derivative with examples.

**Application**

Maxima and Minima of Functions,. Business Application

**No of Lectures: -14**

**Unit 3 :**

**Integration & It's Application:** [15%]

**Integration:-**

Definition and Formulas, Method of substitution, Rules of Integration [without proof]

**Application:**

-Area bounded by the curve, Business Application.

**No of Lectures: -14**

**Unit 4 :**

**Co-ordinate Geometry** [10%]

Introduction, line, Quadrants and Coordinates,. Distance formula between two points [without proof], Section formula [without proof], Area of triangle [without proof], Co linearity of three points, Equation of straight line, General equation of a straight line, Angle between two lines [without proof].

**No of Lectures: -8**

**Unit 5 :**

**Matrices** [20%]

Introduction, Algebraic Operations on Matrices,. Computations of Inverse,. Rank of a Matrix,. Solution of Simultaneous Linear Equations, using Cramer's , Rule, Gauss elimination Method, Matrix Inverse Method.

**No of Lectures: -10**

**Unit 6 :**

**Relation and Ordering** [10%]

Introduction, Relation, Relation in set, Binary relation in set,. Domain and Range of a relations, Total No. of relations from a set A to B, .Graph of Relations. Types of Relations in a set, Properties of relations in a set, 5.Equivalence Relation, Equivalence classes of equivalence sets,. Upper and Lower Bounds, Minimal and Maximal elements.

**No of Lectures: -8**

**Unit 7 :**

**Posets, Lattice and Boolean Algebra :**

**[20%]**

Posets, Has Diagram. Lattices, Lattice as a Algebraic system, sublattices, Complete lattice, Bounded lattices, Modular and Distributive lattices, Complemented lattices, Definition and Important Properties of Boolean Algebra, Subboolean Algebra, Atoms, Antiatoms, Irreducible, Stone's representation theorem [without proof]. Boolean expression and their equivalence, Min and Max terms, Value of Boolean expressions and Boolean functions

**No of Lectures: -10**

**Total No of Theory Lectures: - 74 Hrs.**

**Text Book:**

1. Advance Mathematics by Heena Trivedi

**References :**

1. SCHAUM'S OUTLINES ESSENTIAL COMPUTER MATHEMATICS  
BY: SEYMOUR LIPSCHUT - TATA-MCGRAW-HILL
2. DISCRETE MATHEMATICAL STRUCTURE [3<sup>RD</sup> ED.]  
BY: BERNARDKOLMAN, ROBERT C. BUSBY AND SHARON ROASS - PRINTICE –HALL OF INDIA
3. SCHAUM'S SERIES - DISCRETE MATHEMATICS
4. THE ESSENCE OF MATHEMATICS FOR BUSINESS  
BY: H.A.SPOONER AND D.A.L.WILSON - PRINTICE-HALL OF INDIA
5. "DISCRETE MATHEMATICS STRUCTURES WITH APPLICATIONS TO COMPUTER SCIENCE"  
BY: J.P.TREMBLAY AND R.MANO HAR- TATA-MCGRAW-HILL
6. BUSINESS MATHEMATICS  
BY: D.C.SANCHETI AND V.K.KAPOOR – S CHAND

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – FIRST YEAR**  
**BCA 104 Office Automation Tools**

**Course objective** : It presents an overview of the technology relating to computer system & application packages

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs.	Max Marks	Hrs	Max Marks		
BCA 104	Office Automation Tools	3	-	-	3	70	-	-	30	100

**Course content** :  
**PART 1: Computer Fundamentals** [30%]

**Unit 1:**  
**Basics of Computer Introduction to Computer** [05%]  
 Application of Computer, Characteristics of Computer ,Evolution of Computer,Block Diagram of Computer.

**No of Lectures: - 03**

**Unit 2:**  
**Computer H/W and S/W Introduction to H/W:** [15%]  
 Input Devices: Keyboard, Mouse, Scanner, OCR, OMR, BCR, MICR etc.Output Devices: Monitor, Printers, Plotter, etc.Storage Devices: HDD, FDD, CDROM, DVD.Introduction to S/W, Types of S/W: Application Software, System Software, Utility SoftwareDifference of H/W & S/W.

**No of Lectures: - 07**

**Unit 3:**  
**Computer Memory** [05%]  
 Introduction to Memory, Types of Memory: Primary & Secondary Memory, Classification of RAM, Classification of ROM, Introduction to Cash Memory, Flash Memory.

**No of Lectures: - 05**

**Unit 4:**  
**Computer Virus** [05%]  
 Introduction about virus, How it spread & control, Types of virus.

**No of Lectures: - 03**

**Part 2 : PC SOFTWARE** [70%]

**Unit 5:**  
**DOS & Windows,** [15%]

- What is OS? – Application of OS,
- Booting - Warm – Cold booting ,
- History of DOS,
- DOS : Internal – External commands [ dir [it's options] ,copy con, type , md, cd , rd, delete , copy , prompt , date, time , vol , ver, chkdisk, xcopy , scandisk , prn , attrib , format .....etc ],
- Advantages of Windows - Difference: DOS – Windows,
- Windows different terms [ Desktop , Icon , Wallpaper, Taskbar, My computer , Network Neighborhood , My document , Recycle bin , Control panel & it's setting , Find , Shutdown, Logoff,
- Typing Tutor , Notepad , Paint ..... etc

**No of Lectures: - 08**  
**No of Practical: - 10**

## Unit 6: Word Processing ,Spreadsheet Applications and Presentations

### MS-WORD

[15%]

- MS-World, What is MS Word? - Applications of MS Word
- ,Basic operation [ New , open , save , save as , pages setup, print , print preview, undo , redo , find , replace , goto , diff. Views , Header-footer,... etc ]
- ,Formatting operation [ Bold , Italic , Font , paragraph , bullets-numbering , Border shading , Change case , column, text direction , drawing toolbar .... Etc ],
- Miscellaneous operation [ comment , hyper link , auto text , auto correct , macro , spell – check , drop cap , customize , option , mail merge, protect document , table , windows menu & it's setting .. etc]

**No of Lectures: - 12**  
**No of Practical: - 15**

### MS Excel

[30%]

- What is MS Excel? - Applications of MS Excel [ workbook, worksheet, & workspace
- Spreadsheet's Interface & Entering data in Excel,
- Absolute , Relative , Mix cell address & Range
- Editing & Formatting worksheet,
- Dates , Formulas & Functions [ Numeric, Text , Statistical , Date , Logical , Financial & Database,
- Productivity with excel by [ macro , table , goal seek , charts , pivot table & chart
- Analyzing data with excel by countif , sumif , whatif , vlookup, hlookup.... etc
- Practical based on : Address mode, functions, chart , pivot table ,

**No of Lectures: - 14**  
**No of Practical: - 20**

### MS Power Point

[10%]

- What is MS PowerPoint? – Applications of Presentation
- Interface of PowerPoint
- Creating presentation [add slide , formatting , resizing frames, adding colors , background & shading
- Special Features [ custom animation , slide transition , slide sorter, insert sound & videos .....etc
- Practical based on : Develop skill for an ideal presentation with mini project

**No of Lectures: - 07**  
**No of Practical: - 05**

### MS Outlook

[05%]

- What is MS Outlook ? – Advantages of outlook express
- Interface of Outlook
- Creating account for outlook [ POP server setup
- Feature of Address book / Contacts
- Sending / Receiving single / group mail to/from your inbox

**No of Lectures: - 04**

**Total No of Lecture :- 68 Hrs.**

**Total No of Lab :- 50 Hrs.**

### Text Book:

- Comdex Computer Course Kit by Vikas Gupta [Dream Tech]

### Reference Books:

- Foundations of Computing by P.K. Sinha [BPB]
- Computer Science by E BalaguruSwami [TMH]
- Fundamentals of Computers by V. Rajaraman [PHI]
- PC Softwares for Windows by TAXALI [TMH]

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – FIRST YEAR**  
**BCA 105- Database Management System-1**

**Course objective** : This is an introductory course to a subject of MS-Access database including all conventional databases & current features of database

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs.	Max Marks	Hrs	Max Marks		
BCA105	Database Management System-I	3	2	-	3	70	3	50	30	150

**Course content** :

**Unit 1:**

**Introduction to data processing**

[15%]

Data, Information, Data Processing

Need of Data Processing,

Types of Data Processing: Online, Batch Processing, Real-time etc.

Data Storage Hierarchy, Data Organization, File Management System: File Types, File Organization, Files

Utility

**No of Lectures: - 12**

**Unit 2:**

**Data base management system**

[10%]

File Based approach and Database approach, Database model, main components of DBMS

**No of Lectures: - 10**

**Unit 3:**

**DBMS concepts**

[15%]

Database tables and their components, entity integrity and referential integrity, attribute characteristics, relationship types, Normalization

**No of Lectures: - 10**

**No of Practical: - 15**

**Unit 4:**

**Implementing the database design through MS-ACCESS,**

[15%]

Create the new database, modify the table structure, indexes, data entry, edit and delete, import and exporting tables, creating relation-ships between tables.

**No of Lectures: - 10**

**No of Practical: - 05**

**Unit 5:**

**Queries**

[20%]

Query basics: select query, cross tab query, action query, query wrap-up

**No of Lectures: - 07**

**No of Practical: - 15**

**Unit 6:**

**Form development**

[10%]

Forms : definition, use and functions, creating a form with form wizard, modifying the form's presentation format, list boxes on forms, main form, sub form creation and use, dialog boxes, menu.

**No of Lectures: - 07**

**No of Practical: - 05**

**Unit 7:****Reports and labels****[15%]**

Creating a report, creating report with subtotal and total, report based on cross tab queries, mailing labels, Macros

**No of Lectures: - 05**  
**No of Practical: - 05**

**Total No of Lectures: - 61 Hrs.**

**Total No of Practical: - 45 Hrs.**

**Text Book:**

Databases: Design, Development using Access by Peter Rob & Elie Semaan [TMH]

**Reference Books:**

- Introduction to Computer Data Processing & System Analysis : V. K. Kapoor [Sultan Chand & Sons]
- Teach Yourself Access 97, Seigal [BPB]
- Fundamentals of database management design : by Renu Vig, Ekta Walia [ISTE]
- Foundations of Computing by P.K. Sinha [BPB].

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – FIRST YEAR**  
**BCA 106 Introductions to Internet Programming & HTML**

**Course objective** : Overview of most Useful global network & basic concepts how to develop web Sites & be Familiar with Scripting language also.

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs.	Max Marks	Hrs.	Max Marks		
BCA106	Introduction to Internet Programming (HTML)	3	2	-	3	70	3	50	30	150

**Course Content.....**

**Unit 1 :**

**Introduction to Internet [15%]**

What is the Internet ? & it's uses – What is Network – Network types : LAN, WAN & MAN - Network topology : Bus , Star , Ring , Hierarchical , Hybrid, - Internet Connections : Dial Up connection , Direct Connection & Broad band connection – Internet Address : URL , ISP , Intranet , Extranet , VPN

**No of Lectures: - 10**

**Unit 2 :**

**Application of Internet [10%]**

WWW , Search Engine – News Group – E-mail & It's Protocol , Web portals, Chat , Audio & Video Streaming, FTP , TELNET, Remote Login , Introduction to E-Commerce , E-Learning , - E-Governance , E Banking , blogging

**No of Lectures: - 08**

**Unit 3 :**

**Static Web Page Development [45%]**

Introduction to HTML – HTML Document structure tags , HTML text formatting , Inserting special characters, Anchor tag, Adding images, and sound , lists types of lists, Tables , Frames and Floating , frames, Developing forms,

**No of Lectures: - 25**

**No of Practical: - 28**

**Unit 4 :**

**Dynamic Web Page Development [05%]**

Cascading Style Sheet, , Introduction to CSS , Types of CSS , Implementation of Font & Color to text

**No of Lectures: - 04**

**Unit 5 :**

**Java Script [25%]**

Introduction to Java Script, Using operators, control statements, javascript loops , JavaScript function , Working with built-in objects, Windows object, Document object, string object,

**No of Lectures: - 15 .**

**No of Practical: - 17.**

**Total No of Theory Lectures: - 62 Hrs.**

**Total No of Practical Lab.: - 45 Hrs.**

**Text books:**

- Introduction to Internet & HTML scripting by Bhaumik Shrof

**Reference books:**

- The Internet Book by Douglas , E Comer, PHI Publication
- Enabled commercial application development Using HTML, DHTML JavaScript, Perl CGI by Ivan Bayross ( Publication : BPB )

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – FIRST YEAR**  
**BCA 107- Basic Electronics**

**Course objective** : To create awareness about basics of electronics which is necessary part of Computer hardware

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs	Max Marks		
BCA107	Basic Electronics	2	-	-	2	35	-	-	15	50

**Course Content** :

**Unit 1:**

**INTRODUCTION TO DIGITAL SYSTEM**

[10%]

Overview, The integrated circuit, Design and analysis, analysis VS design

**No of Lectures: 02**

**Unit 2:**

**BINARY SYSTEMS AND LOGIC CIRCUITS**

[20%]

Number systems , the binary system conversion of integers, conversion of non integers, octal and binary-coded octal, Hexadecimal code, binary coded decimal code alphanumeric codes, the use of binary in digital systems, Logic gates, OR, AND, The inverter, NOR, NAND, logical families , current and voltage definitions, fan-out, noise margin, switching times

**No of Lectures: 10**

**Unit 3:**

**BOOLEAN ALGEBRA AND MAPPING METHODS**

[30%]

Boolean algebra, OR, AND, Other relations, DeMorgan's Law, dependency laws, assertion levels, polarized mnemonics, Karnaugh maps, Standard Sum-of-products form, constructing a K-Map, Reducing an expression, don't care conditions, factoring, realizing, variable entered maps, realizing logic functions with gates, combinational design examples

**No of Lectures: 10**

**Unit 4:**

**LOGIC FUNCTION REALIZATION WITH MSI CIRCUITS**

[10%]

Combinational logic with multiplexers and decoders, standard logic functions with MSI circuits, design problems using MSI circuits

**No of Lectures: 08**

**Unit 5:**

**FLIP-FLOPS, COUNTERS, REGISTERS**

[30%]

The bistable multivibrator, Direct input flip-flops ( SR, D), clocked flip-flops (T, JK, D), edge-triggered Vs level-triggered, Flip-flop applications

**No of Lectures: 08**

**Total No of Lectures: 38 Hrs.**

**Text Books:**

Digital logic and State machine design by David J Comer

**Reference books:**

Digital Logic and Computer design by M . Morismano

Digital Principles and applications by Albert Paul Malvino

**BCA – FIRST YEAR**  
**BCA 108- Science and Technology**

**Course objective** : Course attempt to make aware of what science and technology is & what it can do

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs.	Max Marks	Hrs	Max Marks		
BCA108	Science & Technology	2	-	-	2	35	-	-	15	50

**Course Content:**

**Unit 1**

[20%]

Ch 1 :Role of Science and Technology in Today's World  
Ch 2 : Science and Technology in India  
Ch 3 :Institutional Structure for Science and Technology

**No. of Lectures: 06**

**Unit 2**

[20%]

Ch 4: Science and Technology Education and Research in India  
Ch 5: Energy Resources  
Ch 31:Global Environmental Issues

**No. of Lectures: 06**

**Unit 3**

[20%]

Ch 32:Environment and India  
Ch 33: Earth Sciences in India  
Ch 34: Meteorological Science

**No. of Lectures: 08**

**Unit 4**

[20%]

Ch 28: NANoscience and Nanotechnology  
Ch 30:Laser and Photonics

**No. of Lectures: 06**

**Unit 5**

[20%]

Ch 36:Defence Technology in India  
Ch 37:Biotechnology  
Ch 38: Applications of Bio Technology

**No. of Lectures: 08**

**Total No of lectures: 34 Hrs.**

**Text Book:**

Science and Technology, for civil services TMH winning edge series  
Ashokkumar Sing

**References:**

FST : Foundation course in Science and Technology ( IGNOU – BCA )

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SECOND YEAR**  
**BCA201- COMMUNICATION SKILLS-II**

**OBJECTIVES:**

It has been observed that linguistic competence is essential to understand the basic concepts of various subjects. Therefore, this course is designed with an aim to make learners proficient and efficient in the use of English Language. A sincere effort is being made to expose the learners to the four basic linguistic skills - Listening, Writing, Speaking and Reading

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs	Max Marks		
BCA201	<b>Communication Skills-II</b>	3	-	-	3	70	-	-	30	100

**Course Content:**

**UNIT-I**

**[15%]**

- ⌚ Nouns: Countable, Uncountable
- ⌚ Pronoun: Personal, Relative and others
- ⌚ Linking Devices
- ⌚ Subject verb agreement
- ⌚ Common errors

**No of Lectures: 11**

**UNIT-II**

**[20%]**

- ⌚ Adverbs and adverb phrases, Comparisons and Intensification
- ⌚ Adjectives and Adjective Phrases
- ⌚ Clauses: Coordinate, subordinate, relative adverbs.

**No of Lectures: 12**

**UNIT-III**

**[15%]**

Synonyms Antonyms & Homonyms – Word Power

- ⌚ Spelling rules
- ⌚ Word building
- ⌚ Common errors

**No of Lectures: 07**

**UNIT-IV**

**[25%]**

- ⌚ Developing ability of questions and answers
- ⌚ Body language and its use in speaking
- ⌚ Technical reports
- ⌚ Group Discussion
- ⌚ Interview skills
- ⌚ E-mails and text messages composing

**No of Lectures: 28**

**UNIT-V**

**[25%]**

Time management – The importance of time, characteristics of management tasks, determining time elements, time management techniques.

Entrepreneurship – Entrepreneur and its role, how to become an entrepreneur, essentials steps to become an entrepreneur, EDP training.

**No of Lectures: 07**

**Total No of Lectures: 65**

**TEXT & REFERENCE BOOKS :**

- ⌚ Business Communication, Meenakshi Raman & Sangeeta Sharma, Oxford
- ⌚ S.K.Basandra, "Computers Today", Galgotia Publications

- ⌚ Mazda, Engineering Management, Addison Wesley
- ⌚ Koontz H, "Essentials Of Management", TMH Publications.

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SECOND YEAR**  
**BCA-202 Computer Oriented Numerical & Statistical Method**

**Course Objective** : To learn about some numerical methods and statistical importance of probability, correlation & regression.....etc

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs.	Max Marks		
BCA202	Computer Oriented Numerical & Statistical Method	3	-	-	3	70	-	-	30	100

**Course content:**

**Unit 1: Error and Normalized Floating point**

**[10%]**

Different types of errors in numerical computation – Floating point numbers, - Normalized Floating Point Representation

**No of Lectures: - 4**

**Unit-2 Interpolation and curve fitting.**

**[20%]**

Finite differences, Interpolation and extrapolation, Newton's Forward and Backward Difference Interpolation Formulas, Divided Difference Interpolation Formula, Lagrange Interpolation Formula, Inverse Interpolation Formula-Method of Least Square, Fitting a straight line, Polynomial, Geometric curve and Exponential curve.

**No of Lectures:-12**

**Unit-3 Numerical solution of Non-linear equations.**

**[20%]**

Introduction of roots of an Algebraic and Transcendental Equation, Bisection Method, False Position Method, Secant Method, Newton-Raphson Method, General discussion on convergence of these methods (No mathematical derivation)

**No of Lectures:-12**

**Unit-4 Frequency distribution and Center Tendency**

**[15%]**

Introduction of frequency Distribution – Central Tendency – Mean – Median – Mode – Variance and Standard Deviation

**No of Lectures:-10**

**Unit-5 Probability and Expected Value**

**[15%]**

Introduction & Various related terms of probability – Conditional Probability – Baye's Rule and its application – Mathematical Expectation

**No of Lectures:- 10**

**Unit-6 Probability Distribution**

**[10%]**

Binomial Distribution – Poisson Distribution – Normal Distribution

**No of Lectures:- 6**

**Unit-7 Correlation and Regression**

**[10%]**

Definitions, Properties, Application of Correlation and Regression – Various Methods of correlation – Regression Equation

**No of Lectures: - 8**

**Total No of Lectures: - 62 Hrs.**

**Text Book :**

1. Computer oriented Numerical Methods  
Author: Salariya Publication: Khanna publication
2. Statistical Methods  
Author: S.P. Gupta Publication: S.Chand

**Reference Book :**

1. Introductory methods of Numerical Analysis by :- S.S. Sharti (Pub. :- Printice – Hall of India)
2. Mathematics for Computer Studens by :- Rex Wilton (Pub. :- BPB )

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SECOND YEAR**  
**BCA-203 Computer Organization & Architecture**

**Course Objective** : To provide the understanding of various computer hardware, CPU architecture and its functionality, memory design and architecture and processor overview.

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hr s.	Max Marks	Hr s.	Max Marks		
BCA 203	<b>Computer Organization and Architecture</b>	3	-	-	3	70	-	-	30	100

**Unit1: Modern Computer Organization**  
**[10%]**

**No. of**  
**Lectures: 02**

Introduction, user and computer, computer organization, main memory, CPU operation, Interrupt concept, bus concept, booting sequence

**Unit 2: CPU Architecture and instruction set**  
**[10%]**

**No. of**

**Lectures: 06**

Introduction, CISC and RISC, Instruction set design, addressing modes, data representation, binary data

**Unit 3: Number systems and conversion**  
**[05%]**

**No. of**

**Lectures: 05**

Introduction, common number systems, decimal number system, conversion of numbers, addition, subtraction, multiplication,

**Unit 4: Digital integrated circuits**  
**[10%]**

**No. of**

**Lectures: 05**

Introduction, Latch, Flip-Flop, register, multiplexer, Demultiplexer, Decoder, Encoder, counters, Shift registers

**Unit 5: Processor design, data path and control unit**  
**[15%]**

**No. of**

**Lectures: 08**

Introduction, processor role, processor design goals, processor design process, main memory interface, role of control unit, reset sequence hardwired control unit, micro programmed control unit

**Unit 6: Main memory design and memory management techniques**  
**[15%]**

**Lectures: 10**

**No. of**

Introduction, memory parameters, classification of memory, main memory allocation, Static RAM, Dynamic RAM, main memory drawbacks, instruction pre fetch, memory interleaving, cache memory, virtual memory, associative memory

**Unit 7: Advanced Computer Architecture**  
**[10%]**

**No. of**  
**Lectures: 08**

Introduction, high performance computer architecture, RISC systems, Superscalar Architecture, VLIW Architecture, EPIC Architecture, multiprocessor systems

**Unit 8 : Introduction to microprocessors**  
**[10%]**

**No. of**  
**Lectures: 04**

Evolution, Single-chip microcomputer, embedded microprocessor, micro programming, Von-Neumann Architecture

**Unit 9: 16bit intel microprocessor**  
**[15%]**

**Lectures: 10**

**No. of**

Intel-8086 , pin description, minimum mode and maximum mode, operating modes, register organization, BIU and EU, interrupts, addressing modes, introduction to Pentium, Pentium pro, Cyrix, AMD

**Total No. of Lectures: 58**

**Text book:**

- (1) Computer Architecture and organization by B Govindrajalu (TMH)
- (2) Advanced microprocessor and interfacing by Badri Ram

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SECOND YEAR**  
**BCA-204 Database Management System II (ORALCE)**

**Course Objective** : To develop the basic concepts of Database Management & implementing practical skill on ORACLE for Theory as well as practical development

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs	Max Marks		
BCA-204	Database Management System II (ORALCE)	3	2	-	3	70	3	50	30	150

**Course Content:**

**Part I Database Concepts**

**Unit 1: File Systems and Databases [10%]**  
 Introducing the database, the historical roots of the database, a file system critique, database systems, database mod  
**No. of Lecture: 4**

**Unit 2: The Relational Database Model [20%]**  
 Logical view of data, keys, integrity rules, relational database operators, the data dictionary and system catalog, relationship within the relational database, data redundancy, index  
**No. of Lecture: 6**

**Part II Design and Implementation Concepts**

**Unit 3: E-R Modeling [10%]**  
 Basic modeling concepts, data models: degree of data abstraction, the E-R model [with example]  
**No. of Lecture: 5**

**Unit 4: Normalization of Database Tables [10%]**  
 Database tables and normalization, normalization and database design [with example], higher level of normal forms, de-normalization.  
**No. of Lecture: 10**

**Unit 5: Structured Query Language [SQL] [20%]**  
 Introduction to SQL, Data Definition commands, data manipulation commands, queries, advanced data management commands, complex queries, updatable views, converting and E-R model into a Database structure[with example], rules governing relationship among tables.  
**No. of Lecture: 20**

**Part III Advanced Database Concepts**

**Unit 6: Transaction Management and Concurrency Control [20%]**  
 What is a Transaction? - Transaction Properties- The Transaction Log - Concurrency Control with locking methods,-Concurrency Control with Time Stamping Methods, - Concurrency Control with Optimistic methods, - Database Recovery.  
**No. of Lecture: 10**

**Unit 7: Distributed Database Management System [10%]**

Advantages, disadvantages, distributed database and distributed processing, DDBMS components.

**No. of Lecture: 10**

**[100%]**

**Total No of Lectures: - 65**

**Total No of Practical :-30**

TEXT BOOK :

Database Systems Forth Edition, by Peter Rob and Corlos Coronal  
SQL and PL/SQL Programming by Irwan Byras

References:

1. An Introduction to Database Management Systems, C. J. DATA, NAROSA PUBLISHING HOUSE.
2. Computer Database Organization, James Martin, PHI.
3. Database System Concepts, KORTH.
4. Database Management and Design. Garry W Hanson & James V Hanson, PHI [1999]
5. Fundamentals of Database Management Systems, Second Edition, ELMASRI & NAVATE. BENJAMIN, CUMMINGS [1944].
6. Database Design Using Entity-Relationship Diagrams by Sikha Bagui and Richard Earp ISBN:0849315484  
Auerbach Publications © 2003 [242 pages]

**Course Objective** : Understanding most useful concept of Object Oriented Programming using C++ & implementing practical skill for future use.

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs.	Max Marks		
BCA 205	<b>Object Oriented Programming with C++</b>	3	2	-	3	70	3	50	30	150

### Course Content:

#### Unit 1

##### Introduction to Object Oriented Programming

[10%]

Object Oriented Programming Systems, Comparison of C++ with C, Console Input output in C++, Variables in C++, Reference variables in C++, function prototyping, function overloading, default values for formal arguments of functions, inline functions.

**No of Lectures: - 07**

**No of Practical: - 05**

#### Unit 2

##### Classes and Objects

[15%]

Introduction to classes and objects, number function and member data, Access specifications, objects and functions, objects and arrays, namespaces, nested classes, static members, nested classes, 'this' pointer.

**No of Lectures: - 09**

**No of Practical: - 10**

#### Unit 3

##### Dynamic Memory Management

[10%]

Introduction to dynamic memory management, dynamic memory de-allocation, the set\_new\_handler() function.

**No of Lectures: - 04**

**No of Practical: - 03**

#### Unit 4

##### Constructors and Destructors

[10%]

Constructors: Zero argument constructor, parameterized constructor, copy constructor, destructors, the philosophy of OOPS.

**No of Lectures: - 06**

**No of Practical: - 05**

#### Unit 5

##### Inheritance.

[15%]

Introduction to Inheritance, base class and derived class pointers, function overloading, base class initialization, the protected access specifier, deriving by different access specifier, different kinds of inheritance, order of invocation of constructors and destructors.

**No of Lectures: - 09**

**No of Practical: - 10**

#### Unit 6

##### Virtual functions and Dynamic Polymorphism

[10%]

The need for virtual function, Virtual functions, the mechanism of virtual functions, pure virtual functions, virtual destructors and virtual constructor.

**No of Lectures: - 07**

**No of Practical: - 04**

**Unit 7**  
**Stream Handling**  
**[10%]**

Streams, the class hierarchy for handling streams, text and binary input/ output, opening and closing files, files as objects of the fstream class file pointers, random access to files, object input/ output through member functions, error handling manipulators.

**No of Lectures: - 07**  
**No of Practical: - 05**

**Unit 8**  
**Operator Overloading , Type Conversion, New style caste and RTTI**  
**[10%]**

Operator overloading, overloading the various operators, type conversion, new style casts, the typeid operator.

**No of Lectures: - 08**  
**No of Practical: - 03**

**Unit 9**  
**Templates**  
**[4%]**

Introduction, function templates, class templates, the standard template library (STL)

**No of Lectures: - 07**

**Unit 10**  
**Exception Handling**  
**[6%]**

Introduction, C-style handling of error generation code, C++ style solution, the try, throw, catch construct, limitation of exception handling.

**No of Lectures: - 04**

**Total No of Lectures :- 62 Hrs**

**Text Books.**

Object Oriented Programming with C++. By Sourav Sahay, OXFORD.

Object Oriented Programming with C++. By Balagurusamy, TMH publications.

**Reference Books.**

The Complete Reference – Herbert Schildt. TMH publications.

Object Oriented Programming with Turbo C++. By Robert Lafore.

C++ and Object Oriented Programming Paradigm – Debashish Jana, PHI.

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SECOND YEAR**  
**BCA 206 System Analysis and Design**

**Course Objective** : To provide broad coverage of system development life cycle, business information system concepts, system development tools and techniques, system architecture.

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs.	Max Marks		
BCA206	<b>System Analysis And Design</b>	3	-	-	3	70	-	-	30	100

**PART I**  
**[25%]**

**Unit 1**  
**Introduction to System Analysis and Design**

Business process modeling, information system components, business information system, types of business information system, organizational structure, system development techniques and tools, overview of system development methodologies, the system development life cycle, information technology department, the system analyst position.

**No Of Lectures : 04**

**Unit 2**  
**Preliminary Investigation**

The importance of strategic planning, a framework for systems development, information system projects, evaluation of system request, preliminary investigation overview, steps in preliminary investigation.

**No Of Lectures : 03**

**Unit 3**  
**Requirements Modeling**

Systems analysis phase overview, systems development methods, modeling tools and techniques, system requirements checklist, scalability and total cost of ownership, fact finding, interviews, other fact finding techniques, documentation, preview of data, processes and object modeling.

**No Of Lectures : 05**

**Part II**  
**[30%]**

**Unit 4**  
**Data and Process Modeling**

Data Flow Diagrams, Data Dictionary, Process description tools, Logical Vs Physical Models.

**No Of Lectures : 05**

**Unit 5**  
**Object Modeling**

Object Oriented terms and concepts, Relationship among Objects and Classes, Object Modeling with the Unified Modeling Language.

**No Of Lectures : 03**

**Unit 6**  
**Transition to System Design**

Evaluating Software Alternatives, Step in evaluating and purchasing software packages, Completion of system analysis, Transition to system design, Prototyping, Overview of System Design, Designing and using codes.

**No Of Lectures : 04**

**Part III**  
**[15%]**

**Unit 7**

**User Interface, Input and Output Design.**

User interface design, input design, output designing issues, printed output

**No Of Lectures : 01**

**Unit 8**

**Data Design**

Data design concepts, data design terminologies, data relationships, normalization, steps in database design, database models, data storage and control.

**No Of Lectures : 04**

**Part IV**  
**[30%]**

**Unit 9**

**Application Architecture**

Design checklist, planning architecture, client/server architecture, impact of the internet, processing methods, network models, modeling application architecture, system management support and System design completion.

**No Of Lectures : 06**

**Unit 10**

**Application Development**

Quality assurance, overview of application development, structured application development, other application development tools, coding, object oriented application development, testing the application, documentation, management approval.

**No Of Lectures : 04**

**Unit 11**

**Installation and Evaluation**

Operational and test environment, training, data conversion, system change over, post implementation task, final report to management.

**No Of Lectures : 03**

**Unit 12**

**System Operation and Support**

Overview of system support and maintenance, user support activities, maintenance activities, managing system operation and support , managing system performance, system obsolescence.

**No Of Lectures : 02**

**Total No Of Lectures : 61**

**Text Books.**

System Analysis and Design , 4<sup>th</sup> edition, by Shelly, Cashman, Rosenblatt (Thomson)

**Reference:**

System Analysis and Design , 3<sup>rd</sup> edition, by Elias Awad (Galgotia Publications)

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SECOND YEAR**  
**BCA-207 Data Structure through “C”**

**Course Objective** : To develop the basic concepts of programming using List, Queue , Trees & Graphs using concepts of C & C++.

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs.	Max Marks		
BCA207	<b>Data &amp; File Structure</b>	3	2	-	3	70	3	50	30	150

**Course content** :

**Unit 1:**

**Introduction of Data Structure, Stack & Queue:** [25%]

The concept of data structure, Abstract data type, Concept of list & array Introduction to stack, Stack as an abstract data type, primitive operation on stack, Stacks application: Infix, post fix, Prefix and Recursion, Multiple Stack.

Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular queue, Dequeue, Priority queue, Applications of queue

**No of Lectures: - 12**

**No of Practical: - 12**

**Unit 2:**

**Linked List** [15%]

Introduction to the Linked List , Basic operations on linked list, Stacks and queues linked list, Header nodes, Doubly Linked List, Circular Linked List, Stacks & Queues as a Circular Linked List, Application of Linked List.

**No of Lectures: -**

15

**No of Practical: -**

15

**Unit 3:**

**Tree** [20%]

TREES - Basic Terminology, Binary Trees, Tree Representations using Array & Linked List, Basic operation on Binary tree, Traversal of binary trees:- In order, Preorder & post order, Application of Binary tree, Threaded binary tree, B-tree & Height balanced tree, Binary tree representation of trees, Binary Searched Tree, convert general tree to binary tree.

**No of Lecturer: - 10**

**No of Practical: -**

10

**Unit 4:**

**Searching & Sorting:** [20%]

Analysis of algorithm, complexity using big 'O' notation. Searching: linear search, Binary search, their comparison.

Sorting :Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods.

Hash Table, Collision resolution Techniques.

**No of Lecturer: - 14**

**No of Practical: - 13**

**Unit 5:**

**Graph:** [20%]

Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Graph Traversal-Depth first & Breadth first search. Spanning Trees, minimum spanning Tree, Shortest path algorithm, topological sorting, Kruskal & prim's method.

**Total No of Theory Lecturer: - 61 Hrs.**

**Total No of Practical Lab.: - 50 Hrs.**

**Text Book:**

- Classical Data Structure – D. Samanta – PHI Publication

**Reference**

- Data Structure - Tanenbaum
- Data Structure using C – B. Baluja Dhanpatrai Publication

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SECOND YEAR**  
**BCA 208 Operating System & UNIX**

**Course Objective** : To aware the working and the concepts of the operating system and to develop the programming skills in UNIX environment.

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Th.	Pr.	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs	Max Marks	Hrs	Max Marks		
BCA 208	<b>Operating System &amp; UNIX</b>	3	2	-	3	70	2	50	30	150

**Course Content:**

**PART – I OPERATING SYSTEM----- [70%]**

**Introduction to operating systems [05%]**

**No Of Lectures : 02**

what is operating system, system components, operating-system services, system calls, system programs, system structure, virtual machines,

**Processes and process synchronization [15%]**

**No Of Lectures : 08**

Process concept, process scheduling, operations on processes, cooperating processes, threads, inter process communication, the critical-section problem, synchronization hardware, semaphores, classical problems of synchronization critical regions, monitors

**CPU scheduling [10%]**

**No Of Lectures : 05**

Basic concepts, scheduling criteria, scheduling algorithms (FCFS, SJF, Priority scheduling, RR)

**Deadlocks [05%]**

**No Of Lectures : 05**

Deadlock characterization, methods for handling deadlocks, deadlock prevention, deadlock avoidance, deadlock detection, recovery from deadlock

**Memory management [15%]**

**No Of Lectures : 08**

Logical and physical address space, swapping, contiguous allocation, paging, segmentation, segmentation with paging, demand paging, performance of demand paging, page replacement, page-replacement algorithms, thrashing, demand segmentation

**File management [05%]**

**No Of Lectures : 05**

File concept, access methods, directory structure, protection, file-system structure, allocation methods, free-space management, directory implementation, recovery

**Device management [10%]**

**No Of Lectures : 06**

Overview, system devices, direct access storage components of I/O subsystem, disk scheduling(FCFS, SSTF etc), disk management

**Introduction to Distributed systems [05%]**

**No Of Lectures : 04**

Network operating systems, distributed operating systems, remote services, design issues, stateful and stateless services, event ordering, atomicity, deadlock handling

**PART – II UNIX/LINUX OPERATING SYSEM----- [30%]**

**Introduction [05%]**

**No Of Lectures : 02**

The UNIX operating system, LINUX and GNU, The UNIX architecture, features of UNIX

**Understanding the UNIX command and UNIX basic commands [08%]**

**No Of Lectures : 05**

**No Of Practical : 08**

Locating commands, internal and external commands, command structure, flexibility of command usage, mkdir, cp, mv, ls, rmdir, cal, date, cat, cd, find, head, tail, ps, passwd, nohup, touch, sh, who

**UNIX commands [07%]**

**No Of Lectures : 05**

**No Of Practical : 08**

Finding patterns in files( grep, egrep, fgrep, look), working with columns and fields ( cut, paste, colrm, join), tools for sorting (sort, uniq), comparing files ( cmp, comm, diff, patch, dircmp), changing information in files (tr, sed, tac), examining file contents with "od", chmod

**Shell programming – I [05%]**

**No Of Lectures : 06**

**No Of Practical : 10**

Creating a simple script, executing a script, other ways to execute scripts, putting comments in scripts, providing arguments to shell programs, shell output and input

**Shell programming – II [05%]**

**No Of Lectures : 06**

**No Of Practical : 10**

Conditional execution, if command , test command, if...elif... else command, case command, the && and || operators, the for loop, while and until command, break and continue command, select command, true and false command, the expr command,

**Total No Of Lectures : 60**

**Total No Of Practical : 38**

**Text books:**

Operating system concepts, Silberschatz & Galvin, Addison Wesley  
Unix shell programming, Yashwant Kanitkar

**Reference books:**

Operating system internal & design principles, Willim Stallings Pearson education  
Unix concepts and Applications , Sumitabha Das, TMH  
The complete reference UNIX, Kenneth rosen, Douglas Host, James Farber TMH