SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,
NANDED [M.S.]
Choice Based Credit System (**CBCS Pattern**)
Faculty of Science and Technology
Syllabus of BCA SECOND YEAR
Under-Graduate (UG) Programs

Semester	Subject Code	Course Name	Credit		Total Credits
			Internal	External	
Semester – III	S3.AEC.1	1. **Logical Reasoning**	1	3	4
	S3.CC.2	2. Object Oriented Programming using C++	1	3	4
	S3.CC.3	3. Data Structure	1	3	4
	S3.CC.4	4. System Analysis and Design	1	3	4
	S3.CC.5	5. **Elective** 1) Multimedia and Applications 2) Data Communications 3) E-Commerce Technologies & Cyber Security	1	3	4
	S3.Lab 1	6. Lab Course – 1 (OOC)	-	2	2
	S3.Lab 2	7. Lab Course – 2 (Data Structure)	-	2	2
	S3.Lab 3	8. Lab Course – 3 (Elective)		**2**	**2**
	S3.SEC.1	9. 1. Desktop Publishing I 2. Web Development and PHP Programming 3. PC Installation.		**2**	**2**
		TOTAL			**28**
Semester – IV	S4. AEC.1	1) Numerical Aptitude	1	3	4
	S4.CC.2	2) Java Programming	1	3	4
	S4.CC.3	3) Relational Database Management System	1	3	4
	S5.CC.4	4) Operating System	1	3	4
	S5.CC.4	5) **Elective** 1) Computer Graphics. 2) Computer Architecture and Microprocessor 3) **Event Driven Programming**	1	3	4
	S4.Lab 1	6) Lab Course – 1 (Java Programming)	-	2	2
	S4.Lab 2	7) Lab Course – 2 (RDBMS)	-	2	2
	S4.Lab 3	8) Lab Course – 3 (Elective)		2	2
	S4.SEC-1	9) 1. Desktop Publishing II 2. XML Programming 3. System Administration and Maintenance		2	2
		TOTAL			**28**

Note: S3➔Semester 3, S4➔ Semester 4, **AEC➔ Ability Enhancement Course**, **CC➔ Core Course, SEC➔ Skill Enhancement Course**

Name of Course	**BCA Second Year**
Semester	**III**
Name of Subject	**Logical Reasoning**
Subject Code	**S3.AEC.1**

UNIT I

1	**Series, Analogy and Classification**		**Lectures Required**	**Ref no**
	A	**Series:** Types of series**,** Alphabet series, Alpha numeric series, Examples on continues pattern series.	03	1
	B	**Analogy:** Completing the Analogous Pair, Direct/Simple Analogy, Choosing the Analogous Pair, Double Analogy, Number analogy, Alphabet analogy, Correlation between letters/numbers.	02	1
	C	**Classification:** Choosing the odd word, Choosing the odd numeral, Choosing the odd letter group.	02	1

References

Sr. No.	**Name of the book**	**Author**	**Publication**
1	A Modern Approach to Verbal & Non-Verbal Reasoning	Dr.R.S Aggarwal	S. Chand and Company Publications

UNIT II

2	**Coding-Decoding**		**Lecturers Required**	**Ref no**
	A	**Coding-Decoding:** Letter coding, Direct Letter Coding, Number/Symbol Coding.	03	1
	B	**Substitution:** Concept of substitution, Problem solving by using substitution.	01	1
	C	**Deciphering**: Deciphering messages word codes, Deciphering numbers/symbol codes for messages.	02	1

References

Sr. No.	**Name of the book**	**Author**	**Publication**
1	A Modern Approach to Verbal & Non-Verbal Reasoning	Dr.R.S Aggarwal	S. Chand and Company Publications

UNIT III

3	**Blood Relation**		**Lectures Required**	**Ref no**
	A	Introduction to relations	01	1
	B	Concepts of deciphering relations based problems	02	1
	C	Problems on deciphering jumbled up descriptions	01	1
	D	Relation puzzle	02	1
	E	Coded relations.	01	1

References

Sr. No.	**Name of the book**	**Author**	**Publication**
1	A Modern Approach to Verbal & Non-Verbal Reasoning	Dr.R.S Aggarwal	S. Chand and Company Publications

UNIT IV

4	Seating or Placing Arrangement		Lectures Required	Ref no
	A	Problems based on linear and circular based arrangement.	06	1

References

Sr. No.	Name of the book	Author	Publication
1	A Modern Approach to Verbal & Non-Verbal Reasoning	Dr.R.S Aggarwal	S. Chand and Company Publications

UNIT V

5	Direction Sense Test		Lectures Required	Ref no
	A	Introduction	01	1
	B	Problems based on angular changes in direction	02	1
	C	Problems on Shadows	01	1
	D	General Problems based on Pythagoras Theorem	01	1

References

Sr. No.	Name of the book	Author	Publication
1	A Modern Approach to Verbal & Non-Verbal Reasoning	Dr.R.S Aggarwal	S. Chand and Company Publications

UNIT VI

6	Syllogism and Data Sufficiency		Lectures Required	Ref no
	A	**Syllogism:** Introduction of logic, Rules of syllogism, Two statement problem, Three statement problem	07	1
	B	**Data Sufficiency**: Problems of Data sufficiency based on all Chapters.	03	1

References

Sr. No.	Name of the book	Author	Publication
1	A Modern Approach to Verbal & Non-Verbal Reasoning	Dr.R.S Aggarwal	S. Chand and Company Publications
2	Test of Reasoning	Edgar Thorpe	McGraw Hill Education
3	**www.practiceaptitudetests.com**		
4	**www.allindiaexams.in**		

Name of Course	**BCA Second Year**
Semester	**III**
Name of Subject	**OBJECT ORIENTED CONCEPT USING C++**
Subject Code	**S3.CC.2**

UNIT-I

1.	Introduction to OOP's		Lectures Required	Ref. No.
	a)	Object Oriented Programming	02	1,2
	b)	Basic concepts of OOPS	02	1,2
	c)	Benefits of OOPs.	01	1,2

References:

Sr.No	Name of Book	Author	Publication
1.	OBJECT ORIENTED PROGRAMMING WITH C++	E. BALGURUSWAMI	BPB Publication
2.	C++ COMPLETE REFERENCE	H. SHEILD	BPB Publication

UNIT II

2.	Introduction to C++		Lectures Required	Ref. No.
	a)	Tokens Identifiers Keywords	02	1,2
	b)	Constant variable data types	02	1,2
	c)	Scope Resolution Operator	01	1,2
	d)	I/O statements Structure of C++ program	01	1,2
	e)	Control statements Looping	01	1,2
	f)	Type casting · Arrays, Pointer, References	02	1,2
	g)	Structure and Unions	01	1,2
	h)	Function: Call by value, Call by reference	01	1,2
	i)	Inline function, Default arguments	01	1,2
	j)	Function Overloading	01	1,2

References:

Sr.No	Name of Book	Author	Publication
1.	OBJECT ORIENTED PROGRAMMING WITH C++	E. BALGURUSWAMI	BPB Publication
2.	C++ COMPLETE REFERENCE	H. SHEILD	BPB Publication

UNIT III

3.	Class & Object		Lectures Required	Ref. No.
	a)	Define Class	01	1,2
	b)	Members Object	01	1,2
	c)	Visibility modes	01	1,2
	d)	Static members	02	1,2
	e)	Pointer to members	01	1,2
	f)	Pointer to objects	01	1,2
	g)	Constructors & Destructors	01	1,2
	h)	Friend Function	01	1,2

References:

Sr.No	Name of Book	Author	Publication
1.	OBJECT ORIENTED PROGRAMMING WITH C++	E. BALGURUSWAMI	BPB Publication
2.	C++ COMPLETE REFERENCE	H. SHEILD	BPB Publication

UNIT IV

4.	Operator Overloading & Type Conversions		Lectures Required	Ref. No.
	a)	Concept of Operator Overloading	02	1,2
	b)	Unary & Binary operator overloading	02	1,2
	c)	Rules for Overloading	01	1,2
	d)	Type conversions – Basic to Class	02	1,2
	e)	Class to basic Class to Class	02	1,2

References:

Sr.No	Name of Book	Author	Publication
1.	OBJECT ORIENTED PROGRAMMING WITH C++	E. BALGURUSWAMI	BPB Publication
2.	C++ COMPLETE REFERENCE	H. SHEILD	BPB Publication

UNIT V

5.	Inheritance & Polymorphism		Lectures Required	Ref. No.
	a)	Concept of Inheritance	01	1,2
	b)	Types of Inheritance	01	1,2
	c)	Polymorphism	01	1,2
	d)	Virtual Base Classes	02	1,2
	e)	Pointer to Derived class	01	1,2
	f)	Virtual functions	01	1,2
	g)	Rules for Virtual function	01	1,2
	h)	Pure Virtual functions	01	1,2

References:

Sr.No	Name of Book	Author	Publication
1.	OBJECT ORIENTED PROGRAMMING WITH C++	E. BALGURUSWAMI	BPB Publication
2.	C++ COMPLETE REFERENCE	H. SHEILD	BPB Publication

UNIT VI

6.	C++ I/O System		Lectures Required	Ref. No.
	a)	C++ Streams Stream classes	02	1,2
	b)	Unformatted I/O operations	02	1,2
	c)	Formatted I/O operations	01	1,2
	d)	Manipulators	01	1,2
	e)	Opening and closing file	01	1,2
	f)	file modes	01	1,2
	g)	Updating file	01	1,2

References:

Sr.No	Name of Book	Author	Publication
1.	OBJECT ORIENTED PROGRAMMING WITH C++	E. BALGURUSWAMI	BPB Publication
2.	C++ COMPLETE REFERENCE	H. SHEILD	BPB Publication

Name of Course	**BCA Second Year**
Semester	**III Semester**
Name of Subject	**Data Structure**
Subject Code	S3.CC.3 (Core Course)

UNIT I

1	**Introduction**		Lecturer Required	Ref no
	a	Introduction	01	01
	b	Basic terminology, elementary data organization	01	01
	c	Data structure	01	01,02
	d	Data structure operation	01	01
	e	Algorithm complexity	01	01,02

References

Sr. No.	Name of the book	Author	Publication
1	Data Structure	Seymour Lipschutz	MC GRAW-HILL
2	Data Structures And Algorithms Concepts, Techniques And Applications	G.A.V. Pai	MC GRAW-HILL

UNIT II

2	**Array, Records and Pointers**		Lecturer Required	Ref no
	a	Linear array	01	01
	b	Representation of linear array in memory	01	01,02
	c	Traversing linear array	01	01,02
	d	Inserting and Deleting	02	01,02
	e	Searching methods (Binary and linear search)	02	01,02
	f	Sorting Method (selection sort, bubble sort and Insertion sort)	03	01,02

References

Sr. No.	Name of the book	Author	Publication
1	Data Structure,	Seymour Lipschutz	MCGRAW HILL
2	Data Structures Through 'C' Language	Samiram Chattopadhyay Debabrata Ghosh Dastidar, Matangini Chattopadhyay	BPB PUBLICATIONS

UNIT III

3	**Linked List**		Lecturer Required	Ref no
	a	Introduction	01	01
	b	Linked list	01	01
	c	Representation of Linked list in memory	01	01
	d	Searching a linked list	02	01
	e	Memory allocation, Garbage collection	01	01
	f	insertion & Deletion into Linked List	02	01
	g	Two way Linked List	01	01

References

Sr. No.	Name of the book	Author	Publication
1	Data Structure,	Seymour Lipschutz	MCGRAW HILL

UNIT IV

4	**Stack**		Lecturer Required	Ref no
	a	Introduction	01	01
	b	stack	01	01,02
	c	Representation of stack (sequential & linked)	02	01,02
	d	Push & pop operation	01	01,02
	e	Arithmetic expression	01	01,02
	f	Infix, postfix & prefix	01	01,02
	g	Evaluation of postfix expression	01	01,02
	h	Recursion :factorial, Fibonacci	01	01

References

Sr. No.	Name of the book	Author	Publication
1	Data Structure	Seymour Lipchitz	MCGRAW HILL
2	DATA STRUCTURE USING C	M. TENENBAUM, YEDIDYAH LANGSAM,MOSHE J. AUGENSTEN	AARON PEARSON PRENTICE HALL

UNIT V

5	**Queue**		Lecturer Required	Ref no
	a	Introduction	01	01
	b	Queues	01	01
	c	Memory Representation of Queue. (sequential & linked)	02	01
	d	Insertion & Deletion on Queue.	02	01
	e	D-queue	01	01
	f	Priority Queue	01	01

References

Sr. No.	Name of the book	Author	Publication
1	Data Structure	Seymour Lipschutz	MCGRAW HILL

UNIT VI

6	**Tree & graph**		Lecturer Required	Ref no
	a	Binary Tree	01	01,02
	b	Types of Binary tree	01	01,02
	c	Traversing of binary tree(pre-order, post-order, in-order)	02	01,02
	d	Header Nodes, Threads	01	01,02
	e	Graph	01	01,02
	f	Representation of graph	01	01,02
	g	Operations on graph	02	01,02

References

Sr. No.	Name of the book	Author	Publication
1	Data Structure	Seymour Lipschutz	MCGRAW HILL
2	An Introduction to Data Structure With Application	JEANPAUL, TREMBLAY PAUL, G. SORENSON	TATA MCGRAW HILL

Name of Course	**BCA Second Year**
Semester	**III Semester**
Name of Subject	**System Analysis & Design**
Subject Code	S3.CC.4 (Core Course)

UNIT – I

1.	System Concept & System Development Life Cycle		Lecturers Required	Ref. No.
	a)	System Concept: Definition, Characteristics,	02	1, 2, 3, 4
	b)	Elements of system, Physical and abstract system,	02	1, 2, 3, 4
	c)	Open and closed system, man-made information systems.	02	1, 2, 3, 4
	d)	System Development Life Cycle: Various phases of system development,	03	1, 2, 3, 4
	e)	Considerations for system planning and control for system success.	02	1, 2, 3, 4
	f)	Role of system analyst	02	1, 2, 3, 4

References :

1)	Igor Hawryszkiewyez, "Introduction to System Analysis and Design", 4th edition, Prentice-Hall.
2)	Jeffrey L. Whitten, and Lonnie D. Bentey, "Systems analysis and Design Methods", 4th edition, Tata McGraw-Hill.
3)	Mark Lejk, and David Deeks, "An Introduction to System Analysis Techniques", Prentice Hall.
4)	Don Yeates, Maura Shields and David Helmy, "System Analysis and Design", Longman group limited, 1994.

UNIT – II

2.	System Planning		Lecturers Required	Ref. No.
	a)	Basis for planning in system analysis: Dimensions of Planning.	03	1, 2, 3, 4
	b)	Initial Investigation: Determining user's requirements and analysis,	03	1, 2, 3, 4
	c)	fact finding process and techniques.	03	1, 2, 3, 4

References :

1)	Igor Hawryszkiewyez, "Introduction to System Analysis and Design", 4th edition, Prentice-Hall.
2)	Jeffrey L. Whitten, and Lonnie D. Bentey, "Systems analysis and Design Methods", 4th edition, Tata McGraw-Hill.
3)	Mark Lejk, and David Deeks, "An Introduction to System Analysis Techniques", Prentice Hall.
4)	Don Yeates, Maura Shields and David Helmy, "System Analysis and Design", Longman group limited, 1994.

UNIT – III

3.	Tools of structured Analysis		Lecturers Required	Ref. No.
	a)	Data Flow diagram	01	1, 2, 3, 4
	b)	Data dictionary	01	1, 2, 3, 4
	c)	IPO charts	01	1, 2, 3, 4
	d)	HIPO charts	01	1, 2, 3, 4
	e)	Gantt charts	01	1, 2, 3, 4
	f)	Pseudo codes	01	1, 2, 3, 4
	g)	Flow charts,	01	1, 2, 3, 4
	h)	Decision tree,	01	1, 2, 3, 4
	i)	Decision tables.	01	1, 2, 3, 4

References :

1)	Igor Hawryszkiewyez, "Introduction to System Analysis and Design", 4th edition, Prentice-Hall.
2)	Jeffrey L. Whitten, and Lonnie D. Bentey, "Systems analysis and Design Methods", 4th edition, Tata McGraw-Hill.
3)	Mark Lejk, and David Deeks, "An Introduction to System Analysis Techniques", Prentice Hall.
4)	Don Yeates, Maura Shields and David Helmy, "System Analysis and Design", Longman group limited, 1994.

UNIT – IV

4.	Feasibility study & Cost-Benefit Analysis		Lecturers Required	Ref. No.
	a)	Feasibility study: Technical	02	1, 2, 3, 4
	b)	Operational & Economic Feasibilities.	02	1, 2, 3, 4
	c)	Cost/Benefit Analysis introduction.	02	1, 2, 3, 4
	d)	Data analysis cost and benefit analysis of a system.	03	1, 2, 3, 4

References:

1)	Igor Hawryszkiewyez, "Introduction to System Analysis and Design", 4th edition, Prentice-Hall.
2)	Jeffrey L. Whitten, and Lonnie D. Bentey, "Systems analysis and Design Methods", 4th edition, Tata McGraw-Hill.
3)	Mark Lejk, and David Deeks, "An Introduction to System Analysis Techniques", Prentice Hall.
4)	Don Yeates, Maura Shields and David Helmy, "System Analysis and Design", Longman group limited, 1994.

UNIT– V

5.	Form and database design		Lecturers Required	Ref. No.
	a)	Input/ Output and Form Design, File Organization and database design: Introduction to files and database	03	1, 2, 3, 4
	b)	File structures and organization,	02	1, 2, 3, 4
	c)	Objectives of database design,	02	1, 2, 3, 4
	d)	Logical and physical view of data.	02	1, 2, 3, 4

References:

1)	Igor Hawryszkiewyez, "Introduction to System Analysis and Design", 4th edition, Prentice-Hall.
2)	Jeffrey L. Whitten, and Lonnie D. Bentey, "Systems analysis and Design Methods", 4th edition, Tata McGraw-Hill.
3)	Mark Lejk, and David Deeks, "An Introduction to System Analysis Techniques", Prentice Hall.
4)	Don Yeates, Maura Shields and David Helmy, "System Analysis and Design", Longman group limited, 1994.

UNIT – VI

6.	**System implementation**		**Lecturers Required**	**Ref. No.**
	a)	System testing: Introduction,	01	1, 2, 3, 4
	b)	objectives of testing,	01	1, 2, 3, 4
	c)	test planning,	01	1, 2, 3, 4
	d)	testing techniques.	02	1, 2, 3, 4
	e)	Quality assurance: Goal of quality assurance,	02	1, 2, 3, 4
	f)	levels of quality assurance,	02	1, 2, 3, 4
	g)	System implementation and software maintenance: primary activities in maintenance,	02	1, 2, 3, 4
	h)	Reducing maintenance costs.	02	1, 2, 3, 4

References :

1)	Igor Hawryszkiewyez, "Introduction to System Analysis and Design", 4th edition, Prentice-Hall.
2)	Jeffrey L. Whitten, and Lonnie D. Bentey, "Systems analysis and Design Methods", 4th edition, Tata McGraw-Hill.
3)	Mark Lejk, and David Deeks, "An Introduction to System Analysis Techniques", Prentice Hall.
4)	Don Yeates, Maura Shields and David Helmy, "System Analysis and Design", Longman group limited, 1994.

Name of Course	**BCA Second Year**
Semester	**III**
Name of Subject	**Multimedia and Applications**
Subject Code	**S3.5 Elective (I)**

UNIT –I

1.	**Introduction**	**Lecturers Required**	**Ref. No.**
1.1	Definition of Multimedia elements	1	1
1.2	Multimedia Elements	1	1
1.3	Multimedia Applications	1	1
1.4	Global structure of Multimedia	1	1

References:

Sr. No.	**Name of the Book**	**Author**	**Publication**
1	Multimedia System Design	By P. K. ANDLEIGH, KIRAN THAKRAR	Dhanpat Rai Publications

UNIT –II

2.	**Data Compression**	**Lecturers Required**	**Ref. No.**
2.1	Storage space	1	1
2.2	Coding requirements	2	1
2.3	Basic compression techniques (Run length& Huffman encoding	2	1
2.4	Introduction to following compression techniques: JPEG, MPEG	2	1

References:

Sr. No.	Name of the Book	Author	Publication
1	Multimedia : Computing Communications & Applications	By Ralf Steinmetz And Klara Nehrstedt	Pearson Education

UNIT –III

3.	**Optical Storage Media &Retrieval Technologies**	LecturersRequired	Ref. No.
3.1	Basic Technology	1	1
3.2	Video Disk & other WORMS	2	1
3.3	CD-ROM and Multimedia Highway	2	1
3.4	DVD- ROM	1	1

References:

Sr. No.	Name of the Book	Author	Publication
1	Multimedia : Computing Communications & Applications	By Ralf Steinmetz And Klara Nehrstedt	Pearson Education

Unit –IV

4.	**Sound / Audio**	Lecturers Required	Ref. No.
4.1	Basic Concept of Sound	1	1
4.2	MIDI	2	1
4.3	Digital audio	2	1
4.4	Audio file formats	1	1

References:

Sr. No.	Name of the Book	Author	Publication
1	Multimedia : Computing Communications & Applications	By Ralf Steinmetz And Klara Nehrstedt	Pearson Education

Unit –V

5.	. **Image And Graphics**	Lecturers Required	Ref. No.
5.1	Making Still Images : BITMAPS , Vector Drawing	3	1
5.2	Colors	1	1
5.3	Image Formats	1	1
5.4	Graphics Formats	1	1
5.5	Image File Formats: BMP, JPEG, TIFF, PNG.	4	1

References:

Sr. No.	Name of the Book	Author	Publication
1	Multimedia : Computing Communications & Applications	By Ralf Steinmetz And Klara Nehrstedt	Pearson Education

Unit –VI

6.	**Video& Animation**	Lecturers Required	Ref. No.
6.1	Basic concepts (Using Video)	1	1
6.2	Broadcast Video Standards	1	1
6.3	Television (Conventional systems, Enhanced definition systems, High Definition system)	2	1
6.4	Computer based Animation	1	1

References:

Sr. No.	Name of the Book	Author	Publication
1	Multimedia : Computing Communications & Applications	By Ralf Steinmetz And Klara Nehrstedt	Pearson Education

Name of Course	BCA Second Year
Semester	III Semester
Name of Subject	Data Communication
Subject Code	S3.5 Elective (II)

UNIT – I

1.	Data Communication Concepts		Lecturers	Ref. No.
	a)	A Communication model	02	1, 2
	b)	Data Communication Task	01	1, 2
	c)	Networks:- LAN, WAN	03	1, 2
	d)	Wireless LAN Client Server model Peer to Peer Network Analog Signal Digital Signal	05	1, 2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Data and Computer Communications	William Stallings	Pearson Education India
2.	Local Area Network	Gerd Keiser	Tata McGraw-Hill

UNIT – II

2.	Protocol Architecture / Multiplexing		Lecturers	Ref. No.
	a)	The need for protocol architecture Network architecture OSI Model TCP/IP Reference Model	04	1, 2
	b)	Multiplexing FDM TDM	03	1, 2
	c)	Connection Oriented & Connectionless	01	1, 2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Data and Computer Communications	William Stallings	Pearson Education India
2.	Computer Networks	Andrew S. Tanenbaum	Prentice Hall of India

UNIT III

3.	Transmission Media and Network Topology		Lecturers	Ref. No.
	a)	Transmission Media- Magnetic media. Twisted Pair Coaxial cable Fiber optics	04	1, 2
	b)	Topologies with advantages & disadvantages:-Bus, Ring, Star, Tree, Mesh.	03	1, 2
	c)	Infrared. Microwave.	01	1, 2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Local Area Network	Gerd Keiser	Tata McGraw-Hill
2.	Computer Networks	Andrew S. Tanenbaum	Prentice Hall of India

UNIT IV

4.	Ethernet & Circuit Switching and Packet Switching:		Lecturers Required	Ref. No.
	a)	Switching Circuit Switching Packet Switching Message Switching	04	1, 2
	b)	Ethernet Overview of Ethernet	03	1, 2
	c)	CSMA/CD	01	1, 2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Data and Computer Communications	William Stallings	Pearson Education India
2.	Computer Networks	Andrew S. Tanenbaum	Prentice Hall of India

Unit V

	Network Devices & Protocol		Lecturers	Ref. No.
	a)	Network Devices Hub, Switch , Repeaters Router , Gateway ,Bridge	04	1, 2
	b)	Protocol: FTP, HTTP, SMTP , DNS	03	1, 2
	c)	IP address	01	1, 2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Local Area Network	Gerd Keiser	Tata McGraw-Hill
2.	Computer Networks	Andrew S. Tanenbaum	Prentice Hall of India

UNIT-VI

6.	Internet & Other Technologies		Lectures	Ref. No.
	a)	Internet Internet & Intranet Internet Service Providers E-Mail	04	1, 2
	b)	ISDN, Token Ring FDDI	03	1, 2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Local Area Network	Gerd Keiser	Tata McGraw-Hill
2.	Computer Networks	Andrew S. Tanenbaum	Prentice Hall of India

Name of Course	BCA Second Year
Semester	III Semester
Name of Subject	E-Commerce Technologies and Cyber Security
Subject Code	S3.5 Elective (III)

UNIT I

1		E-Commerce	Lecture Required	Ref.No
	a)	Electronic Commerce-Introduction.	2	1
	b)	E-Commerce Types.	2	1
	c)	Value Added Networks.	2	1
	d)	Electronic commerce over the Internet.		1

References:-

Name of Book	Author	Publication
E-commerce (The cutting Edge of Business)	Kamlesh K. bajaj and Debjani Nag	Tata McGraw Hill publication

UNIT II

2		Internet & Bandwidth Issues	Lecture Required	Ref.No
	a)	Bandwidth issues.	2	1
	b)	Technology issues for Internet: ATM Technology, ATM/fiber optic		1
	c)	Internet-Introduction		1
	d)	Internet Engineering Task Force.	2	1
	e)	Internet Architecture Board.	1	1
	f)	Internet Communication Protocols	2	1
	g)	Internet Search Tools: Telnet, FTP, World Wide Web. Gopher, HTTP.	2	1
	h)	Concerns about Internet.		

References:-

Name of Book	Author	Publication
E-commerce (The cutting Edge of Business)	Kamlesh K. bajaj and Debjani Nag	Tata McGraw Hill publication

UNIT III

3		Electronic Data Interchange	Lecture Required	Ref.No
	a)	EDI introduction	2	1
	b)	Benefit: Cost & Benefits of EDI.	1	1
		Components of EDI Systems: EDI Standards, EDI Softwares, EDI Communication Networks	2	1

References:-

Name of Book	Author	Publication
E-commerce (The cutting Edge of Business)	Kamlesh K. bajaj and Debjani Nag	Tata McGraw Hill publication

UNIT IV

4		Identification & Tracking tools for E-commerce	Lecture Required	Ref.No
	a)	EAN system, EAN/COM,	2	1

	b)	Article numbering system, Bar-coding, Serial Shipping Container Code & EAN label	2	1

References:-

Name of Book	Author	Publication
E-commerce (The cutting Edge of Business)	Kamlesh K. bajaj and Debjani Nag	Tata McGraw Hill publication

UNIT V

5	Cyber security		Lecture Required	Ref.No
	a)	Cyber Attack	2	1
	b)	Hacking	3	1
	c)	Secure Socket Layer protocols.	1	1
	d)	Security concerns of Internet: confidentiality, Integrity, Availability,Authenticity/Non-repudiability, Auditability.	2	1
	e)	Security Solutions: Cryptography based-Symmetric & Asymmetriccryptosystem, Digital Signatures.	1	1
	f)	The IT Act. 2000.	2	1

References:-

Name of Book	Author	Publication
E-commerce (The cutting Edge of Business)	Kamlesh K. bajaj and Debjani Nag	Tata McGraw Hill publication

UNIT VI

6	Electronic Payment systems & Internet Banking		Lecture Required	Ref.No
	a)	Electronic payment systems (payment gateway, Internet banking	2	1
	b)	Secure Electronic Transaction (SET) protocol.	1	1
	c)	E-cash	2	1
	d)	Electronic Cheque	2	1
	e)	Elements of Electronic payments	2	1

References

Name of Book	Author	Publication
E-commerce (The cutting Edge of Business)	Kamlesh K. bajaj and Debjani Nag	Tata McGraw Hill publication

Name of Course	**BCA Second Year**
Semester	**III Semester**
Name of Subject	**Lab Course – 1 (OOC)**
Subject code	**S3.Lab1**

List of Practical's

1) Simple C++ program
2) Program on data types
3) Program for looping and branching statement
4) Program for Reference variable
5) Program for function overloading
6) Program for friend function and inline function
7) Program for static data member and function
8) Program for operator overloading
9) Program for Inheritance
10) Program for virtual function
11) Program for File handling
12) Program for Template classes
13) Program for File IO to read Entire File.
14) Program on Virtual Classes
15) Program on Template Function

Name of Course	**BCA Second Year**
Semester	**III Semester**
Name of Subject	**Lab Course – 2 (Data Structure)**
Subject code	**S3.Lab2**

Sr.No	Title of program	Required Hour
1	Write a program traversing the array.	1
2	Write a program to insert the element into array at given position.	2
3	Write a program to delete the element from array.	1
4	Write program to search an element from array.	1
5	Write a program to find element in the array using binary search.	2
6	Write a program to sort the array using for bubble sort.	1
7	Write a program to perform insertion sort on array.	2
8	Write a program to implement the selection sort on array.	2
9	Write a program to implement stack using linked list.	1
10	Write a program to implement stack using array.	1
11	Write a program to perform push & pop operations on stack.	2
12	Write a program to convert an infix expression into postfix expression.	2
13	Write a program to evaluation of postfix expression using stack.	2
14	Write a program to implement queue using linked list.	1
15	Write a program to implement queue using array.	1
16	Write a program to perform queue operation	2
17	Write a program to create a linked list & performing traversing operation.	2
18	Write a program for insertion & deletion of linked list.	2
19	Write a program to simulate tree traversing techniques.	2

References

1	Data structures through C language	samiran chattopadhyay Debabrata Ghosh Dastidar matangini Chattopadhyay	BPB publication s
2	Data Structures Using C & C++	Yedidyah Langsam Moshe j.Augenstein Aaron M. Tenanbaum	PHI Learning
3	Data Structures, algorithms and applications In C++	Sartaj Sahni	MC Graw-Hill

Name of Course	**BCA Second Year**
Semester	**III Semester**
Name of Subject	**Lab Course – 3 (Multimedia and Applications)**
Subject code	**S3.Lab3 –(Elective –I)**

Practical NO.	**Name of Practical**
1	Study of Multimedia Elements
2	Study of Opening Screen of Power Point
3	Study of Power Point Presentation of MM Elements
4	Study of Opening Screen of Adobe Photoshop
5	Study to change back ground color of image in Adobe Photoshop.
6	Study to Effect to back ground image in Adobe Photoshop.
7	Study to clear underexposed in Adobe Photoshop.
8	Study to apply canvas effect in Adobe Photoshop.
9	Study to enlarge your image with minimal visible Loss.
10	Study to create user defined brush in Adobe Photoshop.
11	Study to apply sketch effect in Adobe Photoshop.
12	Study to apply wind effect to text in Adobe Photoshop.
14	Study to create bouncing ball in Macromedia Flash.
15	Study to create Rolling ball in Macromedia Flash.

Name of Course	**BCA Second Year**
Semester	**III Semester**
Name of Subject	**Lab Course – 3 (Data Communications)**
Subject code	**S3.Lab3 –(Elective –II)**

Sr. No.	Title of program	Require Hours
1	Lab: Design LAN for workgroup	2
2	Cable Coding (Straight Over, Crossover)	2
3	Study of Network Devices.	2
4	Study of Resource Sharing	2
5	Study of IP addressing	2
6	Study of Assigning IP address	2
7	Study of group policy	2
8	Creating an share Folder	2
9	Study of Remote desktop configuration	2
10	Study of Network related command	2
11	Study of Internet	2
12	Study of E-mail	2

References:

Sr.No	Book	Author	Publication
1	Data and Computer Communications	William Stallings	Pearson Education India
2	Local Area Network	Gerd Keiser	Tata McGraw-Hill
3	Computer Networks	Andrew S. Tanenbaum	Prentice Hall of India

Name of Course	**BCA Second Year**
Semester	**III Semester**
Name of Subject	**Lab Course – 3 (E-Commerce Technologies & Cyber Security)**
Subject code	**S3.Lab3 –(Elective –III)**

Sr. No.	Title of program	Require Hours
1	Study of E-Commerce Types	1
2	Study of Electronic Commerce over the Internet	1
3	Study of Creating online Purchasing account on online shopping Websites.	1
4	Study of how to book a product with COD option.	1
5	Study of how to book a product with online Payment.	1
6	Study of Purchasing a product with internet search tools.	2
7	Study of Generating a Bar-Code by using Corel Draw.	1
8	Study of to Prevent from Cyber Attacks.	2
9	Study of Ethical hacking of E-Mail account.	2
10	Study of Payment Gateway and how to identify genuine payment Gateway.	2
11	Study of Electronic Payment :- a) IMPS b) NEFT c) RTGS d) DD e) Wallet	2
12	Study of Creating Free Electronic Payment Gateway :- a) Payumoney	2

Name of Course	BCA Second Year
Semester	III Semester
Name of Subject	Desktop Publishing -I
Subject Code	S3.SEC1 (1)

1. INTRODUCTION

Introduction to Desk Top Publishing, Introduction to Page Maker Advantages, Using the Mouse, Components of the Page Maker Window

2. CREATING A NEW DOCUMENT

Setting the Margins, Setting the Page Size, Changing the page Orientation, Setting Page Numbers, Changing the Page Size view, Creating New Document Windows: Displaying the Rulers, Changing the Rulers, Using Rulers, Using Guidelines, Positioning Guidelines., Adding Guidelines to Master Pages. Aligning to Guidelines, Displaying Guidelines, Locking Guidelines. Formatting Types: Changing Font Families, Changing Font Sizes, Changing Typeface Style, Changing Character Specifications : Changing Type leading, Changing Character Widths, Changing Tracking, Changing Type Options. Saving Your Document: Saving a new Document, Saving an existing Document, Saving a Document as another document, Reverting to a Previously Saved Version. Developing Paragraphs: Typing Text, Adding special Characters to Text, Aligning Text. Formatting paragraphs: Changing Indents, Changing the space around Paragraphs, Changing paragraph Alignment, controlling How Paragraphs Break Between Pages and Columns, Adding lines Above or Below Your Paragraphs.

3. INTRODUCTION TO CREATING FRAMES

Converting Other Objects to Frames, Threading and Unthreading Text. Threading additional Text, Threading Text to Different Page, Unthreading Text Blocks, Rethreading Text Blocks, Making Text Blocks Disappear Without Deleting them, Selecting and Dragging Text, Editing Deleting Text, Cut, Copying, Pasting Text, Viewing the Contents of Clipboard, Using Undo and Revert. Inserting and Removing Pages: Inserting and Removing Pages, Adjusting Spacing of Characters, Words, Lines : Adjusting, Spacing and Leading, Setting and changing Tabs.

4. Introduction to Auto Flow, page maker Plug-Ins, Drop Cap, Change Case, Bullets and Numbering.

5. ADDING DESIGN ELEMENTS- INTRODUCTION

Adding Graphics to your Document, Adding Lines, Changing Lines Specifications, Adding Shapes, changing Shape specifications, Changing Line and fill, Specifications together (Fill and Stroke), Changing Round Corners, Creating Drop-Shadow, Boxes, Text wrap, Changing page maker Options: Adjusting Margins, Setting and Adjusting Columns, Setting Unequal Width Columns, Creating headers and Footers, Creating Graphics in page maker, Rotating Text, Skewing and Mirroring objects with Control Palette. Importing Graphics into page maker : Placing, Sizing, aligning Graphics, Cropping Graphics.Introduction to Using layers,

Moving and creating objects. Introduction to Printing- Selecting a Printer, Printing your Document, Printing Document Dialog Box Options.

7. DEVELOPING LONG DOCUMENTS

Introduction – Using Story Editor: Opening Story Editor, How the Story Editor names, Tories, Switching Between Story Editor and Layout Editors, Closing Story Editor and Placing the Story Editor, Differences between Story Editor and layout Editors.

8. SPELLINGS:

Starting the speller, Correcting Misspelled Words, Correcting Duplicate Words, Adding Words to the different Dictionaries, Correcting Duplicate Words, using find Feature, Using the change Feature, using page Maker Help.

BOOKS

1. Adobe PageMaker 7.0 Contributor: Adobe Systems Edition: illustrated Publisher Adobe Press, 2002 ISBN 0201756250, 9780201756258

Name of Course	BCA Second Year
Semester	III Semester
Name of Subject	Web Development and PHP Programming
Subject Code	S3.SEC1 (2)

S3.SEC.1 (2) Web Development and PHP Programming

1. Introduction to PHP

- 1.1 Basic Syntax
- 1.2 Sending Data to the Web Browser
- 1.3 Understanding PHP, HTML, and White Space
- 1.4 Writing Comments
- 1.5 What Are Variables?
- 1.6 About Strings
- 1.7 About Numbers
- 1.8 About Constants

2. Programming with PHP

- 2.1 Creating an HTML Form
- 2.2 Handling an HTML Form
- 2.3 Managing Magic Quotes
- 2.4 Conditionals and Operators
- 2.5 Validating Form Data
- 2.6 What Are Arrays?
- 2.7 For and While Loops

3. String Manipulation and Regular Expression

- 3.1 Creating and accessing String, Searching & Replacing String
- 3.2 Formatting, joining and splitting String, String Related Library functions
- 3.3 Use and advantage of regular expression over inbuilt function

4. Creating Dynamic Web Sites

- 4.1 Including Multiple Files
- 4.2 Handling HTML Forms with PHP Redux
- 4.3 Making Sticky Forms
- 4.4 Creating and Calling Your Own Functions
- 4.5 Variable Scope
- 4.6 Date and Time Functions
- 4.7 Sending Email

5. Using PHP with MySQL

- 5.1 Connecting to MySQL and Selecting the Database
- 5.2 Executing Simple Queries
- 5.3 Retrieving Query Results
- 5.4 Ensuring Secure SQL
- 5.5 Counting Returned Records
- 5.6 Updating Records with PHP

6. Cookies and Sessions

- 6.1 Using Cookies
- 6.2 Using Sessions
- 6.3 Sessions and Cookies
- 6.4 Improving Session Security

References

1. PHP and MySQL for Dynamic Web Sites: Visual Quickpro Guide, Second Edition by Larry Ullman

2. Programming PHP By Rasmus Lerdorf, Kevin Tatroe, Peter MacIntyre

Practical Assignments

1. Creating HTML FORM
2. Validating Form Data
3. Date and Time Functions
4. Sending Email.
5. Program based on arrays.
6. Program based on loops.
7. Making Sticky Forms
8. Creating and Calling Your Own Functions
9. Including multiple files.
10. Using the MySQL Client
11. Creating Databases and Tables
12. Connecting to MySQL and Selecting the Database , Executing Simple Queries , Retrieving Query Results , Ensuring Secure SQL , Counting Returned Records , Updating Records with PHP
13. Using Cookies
14. Using Sessions.

Name of Course	BCA Second Year
Semester	III Semester
Name of Subject	PC Installation
Subject Code	S3.SEC.1 (3)

S3.SEC.1 (3) (PC Installation)

Sr. No.	Title of Programme	Required Hours
1)	Study of Hardware Component on Motherboard	4 hours
2)	Study of identifying RAM type and Installation of RAM SD, DDR, DDR1, DDR2, DDR3	2 hours
3)	Study of HDD Drive and installation of HDD	1 hours
4)	Study of Assemble a Computer System.	4 hours
5)	Study of Installing Windows 7 OS	2 hours
6)	Study of BIOS options	1 hour
7)	Study of Installing Windows 8 OS	2 hours
8)	Study of Installing Application Packages/Software – Microsoft Word, PDF reader, Browsing Software's	2 hours
9)	Study of Transmission Medias – Twisted Pair Cable, Co-ax Cable, Fiber-optic Cable.	1 hours
10)	Study of Crimping CAT-5 Straight Cable	1 hours
11)	Study of Crimping CAT-5 Cross over Cable	1 hours
12)	Study of Networking Devices – Hub, Switch, Router	1 hours
13)	Study of IP addresses- IPV4, IPV6.	2 hours
14)	Study of assigning IPV4 and IPV6 addresses to computer system	1 hour
15)	Study of Windows Firewall and Windows Defender	1 hour
16)	Troubleshoot to find connectivity problem	1 hour
17)	Performing another computer using Remote Desktop	1 hour
18)	Performing another computer using Team Viewer/Ammy Admin	1 hour
19)	Installing any Local Printer	1 hour
20)	To share a printer	1 hour
21)	To share a Folder/Map a Drive	1 hour

References:

Sr. No.	Name of the book	Author	Publication
1.	COMP INSTALL AND SERVICING ISBN 1259082466, 9781259082467	BALASUBRAMANIAN D	Tata McGraw Hill Edition
2.	PC Installation and LAN Setup	J.C.Shaikh	J S Publication
3.	https://en.wikibooks.org/wiki/How_To_Assemble_A_Desktop_PC/Software	Wikibooks	Website Link

Name of Course	BCA Second Year
Semester	IV Semester
Name of Subject	Numerical Aptitude
Subject Code	S4.AEC.1

1.	**Introduction of Number system**		Lectures Required	Ref. No.
	a)	**Numbers**: Types of numbers	02	1,2
	b)	Divisibility tests of numbers	02	1,2
	c)	arithmetic progression	01	1,2
	d)	Geometric progression	02	1,2
	e)	Relationship between Arithmetic progression and Geometric progression	01	1,2
	f)	**HCF and LCM** : Methods of calculating highest common factor and greatest common divisor	01	1,2
	g)	factorization method, Division method, Finding HCF and LCM more than two numbers	01	1,2
	h)	LCM and HCF of fractions and decimal numbers, Applications of LCM and HCF.	01	1,2

UNIT I

References:

Sr.No	Name of Book	Author	Publication
1.	1) Quantitative Aptitude by Dr.R.S Aggrawal , S. Chand and Company Publications	Dr.R.S Aggrawal , S. Chand	Company Publication
2.	Quantitative Aptitude	Abijit Guha	Tata McGraw Hill Publications
3.	Objective Arithmetic	S.L Gulati	Cosmos book hive Pvt,5th edition2015

UNIT II

2.	**Average, Problem on ages, Percentage, and Profit and Loss**		Lectures Required	Ref. No.
	a)	**Average**: Definition of average, Formulae and theoretical problem on average.	02	1,2
	b)	**Problem on ages**: simultaneous equations and their applications	02	1,2
	c)	Theoretical problems on ages, Theoretical problems on numbers.	01	1,2
	d)	**Percentage**: Concept of percentage, Application of percentage, Results on populations, Result on depreciations, Theoretical problem on percentage.	02	1,2
	e)	**Profit and Loss:** Definition of cost price, selling price and profit, Formulae of profit and loss, Theoretical problems on profit and loss.	01	1,2

Sr.No	Name of Book	Author	Publication
1.	1) Quantitative Aptitude by Dr.R.S Aggrawal , S. Chand and Company Publications	Dr.R.S Aggrawal , S. Chand	Company Publication
2.	Quantitative Aptitude	Abijit Guha	Tata McGraw Hill Publications
3.	Objective Arithmetic	S.L Gulati	Cosmos book hive Pvt,5th edition2015

UNIT III

3.	**Percentage,**		Lectures Required	Ref. No.
	a)	**Percentage**: Concept of percentage, Application of percentage, Results on populations,	02	1,2
	b)	Result on depreciations, Theoretical problem on percentage.	02	1,2

Sr.No	Name of Book	Author	Publication
1.	1) Quantitative Aptitude by Dr.R.S Aggrawal , S. Chand and Company Publications	Dr.R.S Aggrawal , S. Chand	Company Publication
2.	Quantitative Aptitude	Abijit Guha	Tata McGraw Hill Publications
3.	Objective Arithmetic	S.L Gulati	Cosmos book hive Pvt,5th edition2015

UNIT IV

4.	**Time and Work, Time and Distance and Problems on Train**		Lectures Required	Ref. No.
	a)	**Time and Work:** Concept of time and work, Relationship between time and work, Theoretical problems on time and work	02	1,2
	b)	**Time and Distance:** Concept of time and distance, Formulae of time and distance, Theoretical problems on time and distance.	02	1,2
	c)	**Problems on Train:** Formulae of problems on train, Theoretical problems on train.	01	1,2

Sr.No	Name of Book	Author	Publication
1.	1) Quantitative Aptitude by Dr.R.S Aggrawal , S. Chand and Company Publications	Dr.R.S Aggrawal , S. Chand	Company Publication
2.	Quantitative Aptitude	Abijit Guha	Tata McGraw Hill Publications
3.	Objective Arithmetic	S.L Gulati	Cosmos book hive Pvt,5th edition2015

UNIT V

5.	**Boat and streams, Allegations and Mixtures, and Calendar**		Lectures Required	Ref. No.
	a)	**Boat and streams:** Concept of boat and streams, Formulae of boat and streams, Theoretical problems on boat and streams.	02	1,2
	b)	**Allegations and Mixtures:** Definition of allegation and mixtures, Rules of allegation's, Theoretical problems on mixture and allegation.	02	1,2
	c)	**Calendar:** Concept of odd days, Leap years and ordinary years, Problems on Calendar.	01	1,2

Sr.No	Name of Book	Author	Publication
1.	1) Quantitative Aptitude by Dr.R.S Aggrawal , S. Chand and Company Publications	Dr.R.S Aggrawal , S. Chand	Company Publication
2.	Quantitative Aptitude	Abijit Guha	Tata McGraw Hill Publications
3.	Objective Arithmetic	S.L Gulati	Cosmos book hive Pvt,5th edition2015

UNIT VI

6.	**Simple and Compound Interest, Probability, and Permutations and combinations**		Lectures Required	Ref. No.
	a)	**Simple and Compound Interest:** Definition of simple and Compound interest, Formulae of simple and compound interest, Relationship between simple and compound interest, Theoretical problems on simple and compound interest.	02	1,2
	b)	**Probability:** Definition of probability, Examples of performing a random experiment, Probability of occurrence of an event, Results on probability, Theoretical problems on probability.	02	1,2
	c)	**Permutations and combinations:** Definition of permutations and combinations, Formulae of permutation and combinations, Relationship between permutation and combinations, Problems on permutations and combinations.	01	1,2

Sr.No	Name of Book	Author	Publication
1.	1) Quantitative Aptitude by Dr.R.S Aggrawal , S. Chand and Company Publications	Dr.R.S Aggrawal , S. Chand	Company Publication
2.	Quantitative Aptitude	Abijit Guha	Tata McGraw Hill Publications
3.	Objective Arithmetic	S.L Gulati	Cosmos book hive Pvt,5th edition2015

Name of Course	BCA Second Year
Semester	IV Semester
Name of Subject	Java Programming
Subject code	S4.CC.2

UNIT-I

Sr. No.		Introduction	Lectures Required	Ref. No
1	1.1	Java History	1	1,2,3,4
	1.2	Java Features	2	1,2,3,4
	1.3	How Java Differ from C and C++	2	1,2,3,4
	1.4	JVM	1	3,4
	1.5	Java Environment	1	4
	1.6	Java Programming Structure	1	4

References:

Sr. No	Name of Book	Writer	Publication
1	Complete Reference	Herbert Schildt	Tata McGraw- Hill Publishing company Ltd.
2	Java 2 programming black books	Steven Horlzner	DreamTech Press
3	Core Java Volume-I-Fundamentals Eighth Edition	Cay S. Horstmann, Gary Cornell, Prentice Hall	Sun Microsystems Press
4	Programming with Java	E Balagurusamy	The McGraw Hill Education Pvt. Ltd. New Delhi

UNIT-II

Sr. No.		Overview of Java Language	Lectures Required	Ref. No
2)	2.1	Introduction, Types of Comment	1	1,2,3,4
	2.2	Java Tokens - Reserve Keywords - Identifiers - Literals - Operators - Separators	3	1,2,3,4
	2.3	Variables, Constant, Data Types, Array	3	1,2,3,4
	2.4	Type Casting	1	1,2,3,4
	2.5	Control Statement - Branching statement - Looping statement	3	1,4

References:

Sr. No	Name of Book	Writer	Publication
1	Complete Reference	Herbert Schildt	Tata McGraw- Hill Publishing company Ltd.
2	Java 2 programming black books	Steven Horlzner	DreamTech Press
3	Core Java Volume-I-Fundamentals Eighth Edition	Cay S. Horstmann, Gary Cornell, Prentice Hall	Sun Microsystems Press
4	Programming with Java	E Balagurusamy	The McGraw Hill Education Pvt. Ltd. New Delhi

UNIT-III

Sr. No.	Classes, Objects and Methods		Lectures Required	Ref. No
3)	3.1	Introduction, Defining Class - Fields Declaration - Methods Declaration - Creating Objects - Visibility Control	1	1,2,3,4
	3.2	Use of 'this' Keyword	1	1,2,3,4
	3.3	Method Parameters	1	1,2,3,4
	3.4	Method Overloading	1	1,2,3,4
	3.5	Constructor and Constructor Overloading	1	1,2,3,4
	3.6	Static Members	1	1,2,3,4
	3.7	Finializer Method	1	1,2,3,4
	3.8	Inheritance and It's Types	1	1,2,3,4
	3.9	Method Overriding	1	1,2,3,4
	3.10	Final Variable, Method and Final Class	1	1,2,3,4

References:

Sr. No	Name of Book	Writer	Publication
1	Complete Reference	Herbert Schildt	Tata McGraw- Hill Publishing company Ltd.
2	Java 2 programming black books	Steven Horlzner	DreamTech Press
3	Core Java Volume-I-Fundamentals Eighth Edition	Cay S. Horstmann, Gary Cornell, Prentice Hall	Sun Microsystems Press
4	Programming with Java	E Balagurusamy	The McGraw Hill Education Pvt. Ltd. New Delhi

UNIT-IV

Sr. No.		Interface, Package and Exception Handling	Lectures Required	Ref. No
4)	4.1	Defining and implementing interface	2	2,3,4
	4.2	Inner Classes	1	2,3,4
	4.3	Package - Create Package - Accessing Package	2	2,3,4
	4.4	Exception - Types of Error - Multiple catch statement - Creating User defined Exception - Finally clause	3	2,3,4

References:

Sr. No	Name of Book	Writer	Publication
1	Complete Reference	Herbert Schildt	Tata McGraw- Hill Publishing company Ltd.
2	Java 2 programming black books	Steven Horlzner	DreamTech Press
3	Core Java Volume-I-Fundamentals Eighth Edition	Cay S. Horstmann, Gary Cornell, Prentice Hall	Sun Microsystems Press
4	Programming with Java	E Balagurusamy	The McGraw Hill Education Pvt. Ltd. New Delhi

UNIT-V

Sr. No.		String and Stream	Lectures Required	Ref. No
5)	5.1	Introduction	1	1,2,3,4
	5.2	String Classes	1	1,2,3,4
	5.3	String Buffer Class	1	1,2,3,4
	5.4	Stream Classes - Types of Streams - Byte Stream Classes - Character Stream Classes	2	1,2,3,4

References:

Sr. No	Name of Book	Writer	Publication
1	Complete Reference	Herbert Schildt	Tata McGraw- Hill Publishing company Ltd.
2	Java 2 programming black books	Steven Horlzner	DreamTech Press
3	Core Java Volume-I-Fundamentals Eighth Edition	Cay S. Horstmann, Gary Cornell, Prentice Hall	Sun Microsystems Press
4	Programming with Java	E Balagurusamy	The McGraw Hill Education Pvt. Ltd. New Delhi

UNIT-VI

Sr. No.	File I/O and JDBC		Lectures Required	Ref. No
	6.1	Reading and Writing to Files	1	1,2,3,4
	6.2	Date & Times	1	1,2,3,4
	6.3	Regular Expression	2	1,2,3,4
	6.3	Serialization & Deserialization	1	1,2,3,4
	6.4	Introduction to JDBC	1	1,2,3,4
	6.5	JDBC Drivers & Architecture	1	1,2,3,4
	6.6	Create, Select, Update, Delete operation Using JDBC	3	1,2,3,4

References:

Sr. No	Name of Book	Writer	Publication
1	Complete Reference	Herbert Schildt	Tata McGraw- Hill Publishing company Ltd.
2	Java 2 programming black books	Steven Horlzner	DreamTech Press
3	Core Java Volume-I-Fundamentals Eighth Edition	Cay S. Horstmann, Gary Cornell, Prentice Hall	Sun Microsystems Press
4	Programming with Java	E Balagurusamy	The McGraw Hill Education Pvt. Ltd. New Delhi

Name of Course	BCA SECOND YEAR
Semester	IV Semester
Name of Subject	Relational Database Management System
Subject Code	S4.CC.3

Unit – I

1.	Introduction and Basic Concepts		Lecturers Required	Ref. No.
	a)	Structure of DBMS	2	1
	b)	Advantages and Disadvantages of DBMS	1	1
	c)	Users of DBMS	1	1
	d)	Relational Database: Entities, Attributes and Domains	1	1
	e)	Tuples, Relations and their schemes.	1	1

References:

1)	"An Introduction to Database Systems": -by Bipin C Desai Revised Edition Galgotia Publication

Unit – II

2.	SQL Statements & Working With Tables		Lecturers Required	Ref. No.
	a)	What is SQL?	01	1
	b)	Types of SQL Commands (DDL, DML, DQL, DCL, Transaction Control Commands	03	1
	c)	Data types in SQL	03	1
	d)	Creating Tables	03	1
	e)	Selecting from tables, WHERE Clause	01	1
	f)	Selecting from tables, DISTINCT Clause, Column aliasing	03	1
	g)	Manipulation Table data	03	1
	h)	Altering Table structure	03	1
	i)	Data Constraints: Unique, Not Null, Primary Key, Foreign Key, Check, Default Constraint	03	1

References:

1)	"Oracle Database 10g PL/SQL Programming" by Scott Urman , Ron Hardman, MichaleMc Laughlin, Oracle Press, TMH, ISBN-0-07-059779-0.
2)	"Oracle Database 10g The Complete Reference" By Kevin Loney, Bob Bryla Oracle Press (TATA McGraw Hill Edition) ISBN-13:978-0-07-059425-8, ISBN-10: 0-07-059425-2
3)	SQL, PL/SQL the programming language of ORACLE 4th Edition by Ivan Bayross ISBN-81-7656964-X

Unit – III

3.	Operators & SQL Functions & Views		Lecturers Required	Ref. No.
	a)	Arithmetic Operators, Relational Operators	1	1
	b)	Comparison Operators BETWEEN , IN, LIKE, IS NULL	02	1
	c)	LOGICAL Operators: AND OR NOT	01	1
	d)	SQL Functions: Single, Multiple Row Functions	01	1
	e)	Single Row Character , Single Row Number, Single Row Date, Single Row Conversion, Single Row General Functions	05	1
	f)	Multiple Row Functions	03	1
	g)	Views	02	

References:

1)	"Oracle Database 10g PL/SQL Programming" by Scott Urman , Ron Hardman, MichaleMc Laughlin, Oracle Press, TMH, ISBN-0-07-059779-0.
2)	"Oracle Database 10g The Complete Reference" By Kevin Loney, Bob Bryla Oracle Press (TATA McGraw Hill Edition) ISBN-13:978-0-07-059425-8, ISBN-10: 0-07-059425-2
3)	SQL, PL/SQL the programming language of ORACLE 4th Edition by Ivan Bayross ISBN-81-7656964-X

Unit – IV

4.	Sorting & Grouping Data and Joining Tables & Subqueries in ORACLE		Lecturers Required	Ref. No.
	a)	What is Sorting?	01	1
	b)	ORDER BY & ORDER BY DESC Clauses	02	1
	c)	GROUP BY & GROUP BY HAVING Clauses	02	1
	d)	What is Join? Join Styles: Theta , ANSI , Using clause	01	1
	e)	Types of Joins: Equi Joins, Non Equi Join, Outer Join: Left, Right, Full	04	1
	f)	Self Join Cross Join, Joining three tables	03	1
	g)	Subqueries & its types	03	

References :

1)	"Oracle Database 10g PL/SQL Programming" by Scott Urman , Ron Hardman, MichaleMc Laughlin, Oracle Press, TMH, ISBN-0-07-059779-0.
2)	"Oracle Database 10g The Complete Reference" By Kevin Loney, Bob Bryla Oracle Press (TATA McGraw Hill Edition) ISBN-13:978-0-07-059425-8, ISBN-10: 0-07-059425-2
3)	SQL, PL/SQL the programming language of ORACLE 4th Edition by Ivan Bayross ISBN-81-7656964-X

Unit – V

5.	Introduction to PL/SQL		Lecturers Required	Ref. No.
	a)	PL/SQL Overview	02	1
	b)	Declarations Section	02	1
	c)	Executable Commands Section	02	1
	d)	Exception Handling Section	02	1

References :

1)	"Oracle Database 10g PL/SQL Programming" by Scott Urman , Ron Hardman, MichaleMc Laughlin, Oracle Press, TMH, ISBN-0-07-059779-0.
2)	"Oracle Database 10g The Complete Reference" By Kevin Loney, Bob Bryla Oracle Press (TATA McGraw Hill Edition) ISBN-13:978-0-07-059425-8, ISBN-10: 0-07-059425-2
3)	SQL, PL/SQL the programming language of ORACLE 4th Edition by Ivan Bayross ISBN-81-7656964-X

Unit – VI

6.	Database Triggers & Cursors		Lecturers Required	Ref. No.
	a)	What are Triggers? Triggers Syntax	02	1
	b)	Types of triggers Row Level Statement Level, Before , After Instead of Triggers	03	1
	c)	Enabling and Disabling Triggers Replacing and Dropping Triggers	02	1
	d)	Working with Cursor % TYPE Variable % ROWTYPE Variable	02	1

References :

1)	"Oracle Database 10g PL/SQL Programming" by Scott Urman , Ron Hardman, MichaleMc Laughlin, Oracle Press, TMH, ISBN-0-07-059779-0.
2)	"Oracle Database 10g The Complete Reference" By Kevin Loney, Bob Bryla Oracle Press (TATA McGraw Hill Edition) ISBN-13:978-0-07-059425-8, ISBN-10: 0-07-059425-2
3)	SQL, PL/SQL the programming language of ORACLE 4th Edition by Ivan Bayross ISBN-81-7656964-X

Name of Course	BCA Second Year
Semester	IV Semester
Name of Subject	Operating System
Subject Code	S4.CC.4

Unit – I

1.	Introduction		Lecturers Required	Ref. No.
	a)	What Operating System Do – 1) User View 2) System View 3) Defining OS	1	1
	b)	Computer System Organization	2	1
	c)	Computer System Architecture – 1) Single Processor System 2) Multiprocessor System	2	1
	d)	Extended Machine Concept	1	2
	e)	Operating System Structure	1	1
	f)	An Operating System Resource Manager	2	2

References:

Sr. No.	Name of the Book	Author	Publication
1	Operating System Concepts	Abraham Silberschatz, Peter Galvin, Greg Gagne	WILEY India Edition 8th Edition
2	Operating Systems	Stuart E. Madnick, John J. Donovan	Tata McGraw-Hill Publishing Limited

Unit – II

2.	System Structure		Lecturers Required	Ref. No.
	a)	Operating System Services	1	1
	b)	User Operating System Interface – 1) Command Interpreter 2) GUI	1	1, 2
	c)	System Boot	1	1, 2
	d)	System Calls	1	1, 2
	e)	Types of System Calls – 1) Process Control 2) File Management 3) Device Management 4) Information Maintenance 5) Communication 6) Protection	3	1

References:

Sr. No.	Name of the Book	Author	Publication
1	Operating System Concepts	Abraham Silberschatz, Peter Galvin, Greg Gagne	WILEY India Edition 8th Edition
2	Operating Systems	Achyut Godbole, Atul Kahate	McGraw Hill Education Third Edition

Unit – III

3.	Process Management		Lecturers Required	Ref. No.
	a)	Process Concept – 1) The Process 2) Process States 3) Process Control Block	3	1, 2
	b)	Process Scheduling – 1) Scheduling Queues 2) Schedulers 3) Context Switching	3	1, 2
	c)	Scheduling Criteria	1	1
	d)	Scheduling Algorithms – 1) FCFS 2) SJF 3) Priority Scheduling 4) Round-Robin Scheduling	4	1

References:

Sr. No.	Name of the Book	Author	Publication
1	Operating System Concepts	Abraham Silberschatz, Peter Galvin, Greg Gagne	WILEY India Edition 8th Edition
2	Operating Systems	Achyut Godbole, Atul Kahate	McGraw Hill Education Third Edition

Unit – IV

4.	Multithreaded Programming		Lecturers	Ref. No.
	a)	Overview	1	1, 2
	b)	Multithreading Models	2	1, 2
	c)	Thread Libraries – pthreads	1	1

References:

Sr. No.	Name of the Book	Author	Publication
1	Operating System Concepts	Abraham Silberschatz, Peter Galvin, Greg Gagne	WILEY India Edition 8th Edition
2	Operating Systems	Achyut Godbole, Atul Kahate	McGraw Hill Education Third Edition

Unit – V

5.	Memory Management		Lecturers	Ref. No.
	a)	Introduction	1	2
	b)	Contiguous Memory Allocation 1) Memory Allocation 2) Fragmentation	2	1
	c)	Paging 1) Basic Method 2) Hardware Support	2	1
	d)	Segmentation 1) Basic Method 2) Hardware Support	3	1

References:

Sr. No.	Name of the Book	Author	Publication
1	Operating System Concepts	Abraham Silberschatz, Peter Galvin, Greg Gagne	WILEY India Edition 8th Edition
2	Operating Systems	Achyut Godbole, Atul Kahate	McGraw Hill Education Third Edition

Unit – VI

6.	File System		Lecturers	Ref. No.
	a)	File concept	1	1
	b)	Access Methods 1) Sequential 2) Direct	2	1
	c)	Directory and Disk Structure 1) Directory Overview 2) Single Level Directory 3) Two Level Directory 4) Tree Structure Directory	3	1
	d)	Allocation Methods 1) Contiguous Allocation 2) Linked Allocation 3) Indexed allocation	3	1
	e)	Free Space Management 1) Bit Vector 2) Linked List 3) Grouping 4) Counting	2	1

Reference:

Sr. No.	Name of the Book	Author	Publication
1	Operating System Concepts	Abraham Silberschatz, Peter Galvin, Greg Gagne	WILEY India Edition 8th Edition

Name of Course	BCA Second Year
Semester	IV Semester
Name of Subject	Computer Graphics
Subject Code	S4.CC.5 Elective (1)

UNIT I

1	**Introduction to computer graphics**		Lectures Required	Ref no
	a	Introduction	01	01
	b	Advantages of CG	01	01
	c	Applications of CG	01	01,02
	d	Display Devices	01	01
	e	Cathode ray tubes	02	01,02

	f	Color CRT monitors	01	01,02
	g	Direct View Storage Tube	01	01

Sr.No.	Name of the book	Author	Publication
1	Principles of interactive computer graphics	William Newman & Robert Sproull	THM
2	Procedural elements for computer graphics	david f. Rogers	THM

UNIT II

2	**Raster Scan graphics & Transformation**		Lecturers Required	Ref no
	a	Line drawing algorithm	01	01,02
	b	Digital Differential Analyzers	02	01,02
	c	Bresenham`s Line algorithms	02	01,02

Sr.No.	Name of the book	Author	Publication
1	Principles of interactive computer graphics	William Newman & Robert Sproull	THM
2	procedural elements for computer graphics	david f. Rogers	THM

UNIT III

3	**Transformation**		Lecturers Required	Ref no
	d	Two dimensional transformation	01	01,02
	e	Matrix representation	01	01,02
	f	Translation	01	01,02
	g	Rotation	01	01,02
	h	Scaling	01	01,02
	i	Reflection	01	01,02
	j	Shearing	01	01,02

Sr.No.	Name of the book	Author	Publication
1	Principles of interactive computer graphics	William Newman & Robert Sproull	THM
2	procedural elements for computer graphics	david f. Rogers	THM

UNIT IV

4	**Segmented Display Files**		Lecturer Required	Ref no
	a	Segment table	01	01,02
	b	Functions for segmenting display file	01	01,02
	c	Posting & unposting segments	01	01,02
	d	Segment naming scheme	01	01,02
	e	Default error conditions	01	01,02
	f	Appending to segments	01	01,02

Sr.No.	Name of the book	Author	Publication
1	Principles of interactive computer graphics	William Newman & Robert Sproull	THM
2	Computer graphics	-A.P.Gogse	

UNIT V

5	Clipping window & display file Compilation		Lecturer Required	Ref no
	b	2-D clipping	01	01,02
	c	Simple visibility algorithm	02	01,02
	d	End point codes	01	01,02
	e	Midpoint subdivision algorithm	01	01,02
	h	Display File Compiler	01	01,02
	i	Refresh concurrent with reconstruction	01	01,02
	j	Free storage allocation	01	01,02
	k	Display file structure	01	01,02

Sr.No.	Name of the book	Author	Publication
1	Principles of interactive computer graphics	William Newman & Robert Sproull	THM
2	Computer graphics	-A.P.Gogse	

UNIT VI

6	Geometrics Model & Graphics package		Lecturer Required	Ref no
	b	Geometric modeling	01	01,02
	c	Symbols & instances	02	01,02
	d	Implementation of Instance transformation	02	01,02
	e	Ground rules for graphics s/w design	01	01,02
	f	Function domains	02	01,02
	g	Graphics primitives	02	01,02

Sr.No.	Name of the book	Author	Publication
1	Principles of interactive computer graphics	William Newman & Robert Sproull	THM
2	procedural elements for computer graphics	david f. Rogers	THM

Name of Course	BCA Second Year
Semester	IV Semester
Name of Subject	Computer Architecture and Microprocessor
Subject Code	S4.CC.5 Elective (II)

Unit – I

1.	Introduction to Processor Design		Lectures Required	Ref. No.
	a)	Processor level components.	01	1
	b)	Processor organization	01	1
	c)	Information representation	01	1

	d)	Instruction types: Depending on address, operation and design complexity.	03	1
	e)	Vector concepts	02	1

References:

Sr. No.	Name of the Book	Author	Publication
1.	Computer Architecture and Organization	J.P. Hayes (MGH)	McGraw-Hill International editions

Unit – II

2.	Control Unit and Memory Organization		Lectures Required	Ref. No.
	a)	Hardwired control unit	03	1
	b)	Microprogrammed control unit	01	1
	c)	Virtual Memory	02	1
	d)	Memory: Hierarchies, Allocation and Segmentation.	03	1
	e)	High speed Memories: Interleaved and Associative memory	02	1

References:

Sr. No.	Name of the book	Author	Publication
1.	Computer Architecture and Organization	J.P. Hayes (MGH)	McGraw-Hill International editions

Unit – III

3.	8085 Microprocessor Architecture		Lectures Required	Ref. No.
	a)	Features of 8085 microprocessor	01	1
	b)	Block diagram of 8085 microprocessor	03	1
	c)	Pin diagram of 8085 microprocessor	02	1
	d)	De-multiplexing of address and data bus	01	1
	e)	Instruction cycle: Fetch and Executive cycle	01	1

References:

Sr. No.	Name of the book	Author	Publication
1.	Microprocessor 8085	B.RAM	Dhanpat Rai publications

Unit – IV

4.	Addressing modes of 8085 Microprocessor		Lecturers Required	Ref. No.
	a)	Register addressing mode	01	1
	b)	Direct addressing mode	01	1
	c)	Register indirect addressing mode	01	1
	d)	Immediate addressing mode	01	1
	e)	Implicit/Implied addressing mode	01	1

References:

Sr. No.	Name of the book	Author	Publication
1.	Microprocessor 8085	B.Ram	Dhanpat Rai publications

Unit – V

5.	Instruction set of Intel 8085 Microprocessor		Lecturers Required	Ref. No.
	a)	Data Transfer group of instructions	02	1
	b)	Arithmetic group of instructions	02	1
	c)	Logical group of instructions	02	1
	d)	Branch group of instructions	02	1
	e)	I/o and machine control group of instructions	02	1

References:

Sr. No.	Name of the book	Author	Publication
1.	Microprocessor 8085	B.Ram	Dhanpat Rai publications

Unit – VI

6.	Assembly Language Programming of 8085 Microprocessor	Lecturers Required	Ref. No.
	Assembly language programming	**06**	**1**

References:

Sr. No.	Name of the book	Author	Publication
1.	Microprocessor 8085	B.Ram	Dhanpat Rai publications

Name of Course	BCA SECOND YEAR
Semester	IV Semester
Name of Subject	Event Driven Programming
Subject Code	S4.CC.5 Elective (III)

Unit – I

1.	Introduction to Event Driven Programming		Lectures Require	Ref. No.
	a)	What is Event	01	1, 2
	b)	Event Handling in .Net Framework	02	1, 2

	c)	Event Handler Arguments	02	1, 2
	d)	Creating and Using Events	03	1, 2

References:

Sr. No.	Name of the Book	Author	Publication
1.	Professional VB.Net 2003	Bill Evjen, Bills Hollis	Wrox Publication
2.	Mastering Visual	Evangelos Patroutsos	BPB Publication

Unit – II

2.	Visual Basic : Language		Lectures Require	Ref. No.
	a)	Variables and Data Types	03	1, 2
	b)	Arrays	02	1, 2
	c)	Flow Control Statements	03	1, 2
	d)	Subroutines and Functions	02	

References:

Sr. No.	Name of the Book	Author	Publication
1.	Mastering Visual Basic.Net	Evangelos Patroutsos	BPB Publication
2.	Visual Basic. Net	Billy Hollis, Rockford	Wrox Publication

Unit- III

3.	Building Windows Application		Lectures Require	Ref. No.
	a)	Properties and Events of Form	02	1, 2
	b)	Designing Menus	02	1, 2
	c)	Building Dynamic Form	01	1, 2
	d)	Windows Controls	04	
	e)	SDI and MDI Application		

References:

Sr. No.	Name of the Book	Author	Publication
1.	Mastering Visual Basic.Net	Evangelos Patroutsos	BPB Publication
2.	Visual Basic.Net Programming Black Book	Steven Holzner	Dreamtech Press

Unit- IV

4.	Building Custom Classes and Controls	Lectures Require	Ref. No.

	a)	Creating and Using Custom Class	02	1, 2
	b)	Inheritance	01	1, 2
	c)	Polymorphism	01	1, 2
	d)	Creating and Using Custom Control	02	

References:

Sr. No.	Name of the Book	Author	Publication
1.	Mastering Visual Basic.Net	Evangelos Patroutsos	BPB Publication
2.	Visual Basic. Net	Billy Hollis, Rockford	Wrox Publication

Unit V

5.	Working with String, DateTime and Error Handling		Lectures Require	Ref. No.
	a)	Char Class	01	1, 2
	b)	String Class	02	1, 2
	c)	DateTime Class	01	1, 2
	d)	Types of Errors	01	
	e)	Structured Exception Handling	02	

References:

Sr. No.	Name of the Book	Author	Publication
1.	Mastering Visual Basic.Net	Evangelos Patroutsos	BPB Publication
2.	Visual Basic.Net Programming Black Book	Steven Holzner	Dreamtech Press

Unit VI

6.	Database Connectivity Using ADO.Net		Lectures Require	Ref. No.
	a)	ADO.Net Architecture	02	1, 2
	b)	Characteristics of ADO.Net	01	1, 2
	c)	Data Set	01	
	d)	Data Grid Control	01	
	e)	Connected Mode Database Connection	03	
	f)	Disconnected Mode Database Connection	03	

References:

Sr. No.	Name of the Book	Author	Publication
1.	Mastering Visual Basic.Net	Evangelos Patroutsos	BPB Publication
2.	Visual Basic.Net Programming Black Book	Steven Holzner	Dreamtech Press

Name of Course	BCA Second Year
Semester	IV Semester
Name of Subject	Lab Course – 1 (Java Programming)
Subject code	S4.Lab1

PRACTICAL List:

1) Program to demonstrate Constant Variable.
2) Program to demonstrate scope of Variable
3) Program to demonstrate branching statement
4) Program to demonstrate Looping statement
5) Program to demonstrate simple class
6) Program to demonstrate method parameter
7) Program to demonstrate method overloading
8) Program to demonstrate constructor
9) Program to demonstrate static member
10) Program to demonstrate Method overriding
11) Program to demonstrate Final variable, Method and Final Class.
12) Program to demonstrate Finilize method()
13) Program to demonstrate Array and It's types.
14) Program to demonstrate String class and it's method.
15) Program to demonstrate String Buffer and it's method.
16) Program to demonstrate inheritance and its Types
17) Program to demonstrate Abstract method and Abstract Class.
18) Program to demonstrate Multiple catch statement
19) Program to demonstrate finally clause
20) Program to demonstrate package
21) Program to demonstrate interface
22) Program to demonstrate Applet life cycle
23) Program to demonstrate param tag
24) Program to demonstrate Graphics class

Name of Course	BCA SECOND YEAR
Semester	IV Semester
Name of Subject	Lab Course – 2 (RDBMS)
Subject Code	**S4.Lab 2**

Sr. No.	Title of Programme	Required Hours
1)	What is SQL? Types of SQL Commands	3 hours
2)	Study of Datatypes in ORACLE	3 hours
3)	Creating Tables & Retrieving , Manipulating Data from tables	3 hours
4)	Study of Altering Tables IN ORACLE	3 hours
5)	Study of Data Constraints in ORACLE	3 hours
6)	Study of Operators	3 hours
7)	Study of SQL Functions	3 hours
8)	Study of Views in ORACLE	3 hours
9)	Study of Joining Tables in ORACLE	3 hours
10)	Study of Subqueries in ORACLE	3 hours
11)	Study of in PL/SQL Blocks in ORACLE	3 hours
12)	Study of in Triggers in ORACLE	3 hours
13)	Study of in Cursors in ORACLE	3 hours

References:

1)	"Oracle Database 10g PL/SQL Programming" by Scott Urman , Ron Hardman, MichaleMc Laughlin, Oracle Press, TMH, ISBN-0-07-059779-0.
2)	"Oracle Database 10g The Complete Reference" By Kevin Loney, Bob Bryla Oracle Press (TATA McGraw Hill Edition) ISBN-13:978-0-07-059425-8, ISBN-10: 0-07-059425-2
3)	SQL, PL/SQL the programming language of ORACLE 4th Edition by Ivan Bayross ISBN-81-7656964-X

Name of Course	BCA SECOND YEAR
Semester	IV Semester
Name of Subject	Lab Course – 3 (Elective) Computer Graphics
Subject Code	**S4.Lab 3** Elective -I

Practical List

1. Study of Graphics Library Function in C
2. Program to draw a line, circle, rectangle etc.
3. Program to draw multiple shapes using loops.
4. Program to implements DDA algorithm.
5. Program to implements Bresenhams, Algorithms.
6. Program to implements Integer Bresenhams Algorithms.
7. Program to implements General Bresenhams Algorithms.
8. Program to implements Simple Visibility mode.
9. Program to implements Mid-Point sub division algorithm.
10. Program to implements Translation Transformation.
11. Program to implements Rotation Transformation
12. Program to implements Scaling Transformation
13. Program to implements Shearing Transformation
14. Program to implements Reflection Transformation
15. Program for demonstration of setfillstyle and floodfill functions.
16. Program for demonstration of getimage and putimage function.
17. Program for creating simple animations.
18. Program for demonstration of setting font style, font name and size.

Name of Course	BCA SECOND YEAR
Semester	IV Semester
Name of Subject	Lab Course – 3 (Elective) Computer Architecture and Microprocessor
Subject Code	**S4.Lab 3** Elective II

List of Practical's of 8085 Microprocessor

Sr. No.	Aim of practical
1.	Write an ALP to add two 8-bit numbers, whose sum is also 8-bit.
2.	Write an ALP to add two 8-bit numbers, whose sum is 16-bit.
3.	Write an ALP to add two 16-bit numbers, whose sum is also 16-bit.
4.	Write an ALP to add two 16-bit numbers, whose sum is more than 16-bits.
5.	Write an ALP to perform subtraction of two 8-bit numbers.
6.	Write an ALP to find 1's complement of 8-bit number.
7.	Write an ALP to find 1's complement of 16-bit number.
8.	Write an ALP to find 2's complement of 8-bit number.
9.	Write an ALP to find 2's complement of 16-bit number.
10.	Write an ALP to find larger number between two 8-bit numbers.
11.	Write an ALP to find larger number between array of numbers.
12.	Write an ALP to find smaller number between two 8-bit numbers.
13.	Write an ALP to find larger number between array of numbers.
14.	Write an ALP to arrange a series of numbers in ascending order.
15.	Write an ALP to arrange a series of numbers in descending order.
16.	Write an ALP to find a square of number from look-up table.

Steps for using 8085 simulator IDE software:

- **Click on start button.**
- **Now select programs.**
- **Then select 8085 Simulator IDE.**
- **Click on tools and select assembler, a window will appear .Now type the program.**
- **Then assemble the program.**
- **Finally execute the program by using step-by-step mode or run at a time method.**

Name of Course	BCA SECOND YEAR
Semester	IV Semester
Name of Subject	Lab Course – 3 (Elective) Event Driven Programming
Subject Code	**S4.Lab 3** Elective -III

Practical List

1. Design an application for demonstration of looping statements.
2. Design an application for demonstration of Array.
3. Design an application for demonstration of Subroutines and Functions.
4. Design an application for demonstration of designing menus.
5. Design an application for demonstration of Dynamic form.
6. Design an application for demonstration of MDI Application.
7. Design an application for demonstration of custom class.
8. Design an application for demonstration of Inheritance.
9. Design an application for demonstration of Polymorphism.
10. Design an application for demonstration of Custom controls.
11. Design an application for demonstration of exception handling.
12. Design an application for demonstration of Database connection.

Name of Course	**BCA Second Year**
Semester	**IV** Semester
Name of Subject	**Desktop Publishing II**
Subject Code	**S4.SEC.1 (1)**

Contents:

Lesson 1: Introduction to Adobe Photoshop

1. About Photoshop
2. Navigating Photoshop
3. Menus and panels
4. Opening new files
5. Opening existing files

Lesson 2: Getting Started with Photoshop

1. Exploring the Toolbox
2. The New CS4 Applications Bar & the Options Bar
3. Exploring Panels & Menus
4. Creating & Viewing a New Document
5. Customizing the Interface
6. Setting Preferences

Lesson 3: Working with Images

1. Zooming & Panning an Image
2. Working with Multiple Images, Rulers, Guides & Grids
3. Undoing Steps with History
4. Adjusting Color with the New Adjustments Panel
5. The New Masks Panel & Vibrance Color Correction Command
6. The New Note Tool & the Save for Web & Devices Interface
7. The New Auto-Blend & Auto-Align Layers Commands
8. The New 3D Commands\

Lesson 4: RESIZING & CROPPING IMAGES

1. Understanding Pixels & Resolution
2. The Image Size Command
3. Interpolation Options
4. Resizing for Print & Web
5. Cropping & Straightening an Image
6. Adjusting Canvas Size & Canvas Rotation

Lesson 5: WORKING WITH BASIC SELECTIONS

1. Selecting with the Elliptical Marquee Tool
2. Using the Magic Wand & Free Transform Tool
3. Selecting with the Regular & Polygonal Lasso Tools
4. Combining Selections
5. Using the Magnetic Lasso Tool
6. Using the Quick Selection Tool & Refine Edge
7. Modifying Selections

Lesson 6: GETTING STARTED WITH LAYERS

1. Understanding the Background Layer
2. Creating, Selecting, Linking & Deleting Layers
3. Locking & Merging Layers
4. Copying Layers, Using Perspective & Layer Styles
5. Filling & Grouping Layers
6. Introduction to Blending Modes
7. Blending Modes, Opacity & Fill
8. Creating & Modifying Text

Practical: Photo Shop Lab

1. Create your Visiting card

2. Create Cover page for any text book
3. Create a Paper add for advertising of any commercial agency
4. Design a Passport photo
5. Create a Pamphlet for any program to be conducted by an organization
6. Create Broacher for you college
7. Create Titles for any forthcoming film
8. Custom shapes creation
9. Create a Web template for your college
10. Convert color photo to black and white photo
11. Enhance and reduce the given Image size
12. Background changes
13. Design Box package cover
14. Design Texture and patterns
15. Filter effects & Eraser effects

REFERENCES

1. Adobe Photoshop 7.0, Contributor:Adobe Systems, Edition: illustrated, Publisher: Adobe Press, 2002, ISBN 0321115627, 9780321115621

CORELDRAW

1. BASICS OF CORELDRAW

Introduction-Getting Started-Creating A New File - Title Bar-Menu Bar-Work Area-Printable Page-Property Bar-Page Counter Bar-Colour Palette-Toolbox-Status Bar-Drawing Figures-Lines-Ellipse-Circles-Rectangle-Square-Polygon-Saving-Closing-Opening-Views-Normal View-Preview-Wire Frame View-Draft View-Zoom-View Manager-Creating a View.

2. DRAWING

Introduction - Toolbox-Selecting an Object-Resizing an Object-Moving an Object-Changing the Shape-Combining Two Objects-Skewing-Welding the Objects-Blending-Curve Lines-Straight Lines-Continuing a Line-View Mode-Changing-Media Tool-Rotating An Object-Grouping-Fill Tool Fly Out-Filling-Spray Mode.

3. TEXT

Introduction-Text Tool-Entering Artistic Text-Entering Paragraph Text-Converting Text-Formatting Text-Changing the Font Size-Arranging Objects-Ordering The Objects-Changing the Font-Bullets-Decorating the Text-Webdings-Text Editor-Opening-Changing the Alignment-Type Style-Spell Checking-Grammer-Searching Synonyms-Find-Replace-Editing-Kerning-Formatting Characters.

4. IMAGE

Bitmap Images-Vector Image-Resizing-Rotating-Skewing-Moving-Cropping-Importing Images-Adding Special Effects-Converting to Bitmap-Exporting Images.

5. PAGE LAYOUT

Changing the Page Size-Changing the Layout-Applying Styles-Applying Bitmaps to the Background - Changing the Background-Adding a Page Frame-Moving Between Pages.

Practical: Corel draw

1. How to insert a picture in the existing image background?
2. Create a 3D text in Corel Draw
3. Create an advertisement for a Admission process for colleges in Corel
4. Design a business card for a company embed photo in it.
5. Design a banner for a marriage function

Name of Course	BCA Second Year
Semester	IV Semester
Name of Subject	**Web Development using XML**
Subject Code	S3.SEC.1 (2)

1. Introduction to XML

- How is XML used?
- Rules of XML
- XML Syntax
- XML Declarations
- XML tags
- XML Document
- Elements
- Tags and attributes
- Entity references
- Comments
- Processing instructions
- CDATA sections
- Well Formed XML Documents
- XML DTD's
- XML Schemas
- Using XML Parser
- XSL

2. XML DOM

- DOM Introduction
- DOM Nodes
- DOM Accessing
- DOM Node Info
- DOM Node List
- DOM Traversing
- DOM Navigating
- DOM Get Values -
- DOM Change Nodes
- DOM Remove Nodes
- DOM Replace Nodes
- DOM Create Nodes
- DOM Add Nodes
- DOM Clone Nodes
- DOM Examples

3. XML DTD

- DTD Introduction
- DTD Building Blocks
- DTD Elements
- DTD Attributes
- DTD Elements vs Attribute
- DTD Entities
- DTD Examples

4. XSLT

- XSLT Introduction
- XSL Languages
- XSLT Transform
- XSLT <template>
- XSLT <value-of>
- XSLT <for-each>
- XSLT <sort>

XSLT <if>
XSLT <choose>
XSLT Apply
XSLT on the Client
XSLT on the Server
XSLT Edit XML
XSLT Examples

References

1. XML in a Nutshell by Harold, Elliotte Rusty and W. Scott Means. 2004. , 3rd Edition. O'Reilly & Associates. 689 p. ISBN 0596007647.
2. Beginning XML by Danny Ayers, Joe Fawcett, and Liam R. E. Quin, 5th Edition, Wrox Publication, January 2012.
3. Learning XML by Erik T. Ray O'Reilly Media 1st edition 2001.

Name of Course	BCA Second Year
Semester	IV Semester
Name of Subject	**System Administration and Maintenance**
Subject Code	S3.SEC.1 (3)

Part I (Linux/Unix) (8L)

1. Basics of operating system, services,
2. Installation and configuration, maintenance
3. What is linux/unix Operating systems
4. Kernel, API, cli, gui,
5. Difference between linux/unix and other operating systems
6. Features and Architecture
7. Linux features, advantages, disadvantages

Part II (Windows)(8L)

1. Windows as operating system, history, versions.
2. PC hardware, BIOS, Devices and drivers,
3. Kernal Configuration and building
4. Application installation, configuration and maintenance
5. Server services and Client services
6. Difference between WindowsXP/windows7 and windows server 2003/2008

Software Lab Based on System Administration and Maintenance

Linux:

1. Linux Desktop tour. Configuring desktop environment and desktop settings.
2. Basic Commands
3. Terminal, shell
4. Cat, ls, cd, date, cal, man, echo, pwd, Mkdir, rm, rmdir Ps, kill
5. Package Installation
6. Synaptic package manager

Windows:

1. Creating users: Admin and regular.
2. Path of their personal files. Adding and changing passwords.
3. Difference between workgroup and domain.
4. Concept of roles.
5. user profiles – creating and roaming
6. Concept of Active Directory. Creating active directory in windows 2003/2008.
7. Process and Disk management
8. Windows Task manager. File systems – NTFS, FAT.
9. Services
10. Control Panel
11. C:/program Files, C:/system C:/windows Add /remove new hardware (like printer),
12. Add/remove new programmes.
13. Network Administration
14. Ipconfig,Ping, tracert, route, hostname
15. net, netstat, whoami
16. Set manual IP address, check connectivity – ipv4, ipv6
17. Administrator Tools
18. Control Panel -Administrative Tools
19. Computer Management, Local security Policy, Performance Monitor, Task
20. Scheduler, Antivirus and firewall.
21. Misc -> Start->Accessories->System tools -> All options (Remote desktop,
22. backup/restore etc.)
23. LAN sharing printer, files and folder over the network.