

**PROGRAM / COURSE FRAME FOR B.Sc INFORMATION TECHNOLOGY**

**DEPARTMENT OF INFORMATION TECHNOLOGY  
CHOICE BASED CREDIT SYSTEM**

**Batch -2015**

<b>Sem</b>	<b>Part</b>	<b>Course No.</b>	<b>Course Title</b>	<b>Hrs</b>	<b>Credits</b>	<b>Marks</b>
1	I	TAM/FR E/HIN	Language	3	2	30
1	II	ENS 1201	Conversational Skills	3	2	30
1	IIIC	BIT 1501	C Programming	5	5	75
1	IIIC	BIT 1403	C Programming Lab	4	4	60
1	IIIC	BIT 1405	Principles of IT	4	4	60
1	IIIS	BIT 1407	Digital Principles and Applications	5	4	60
1	IVNME - I	BIT 1201	e –Commerce	3	2	30
1	IVLS - I	BIT 1203	HTML 5	3	2	30
<b>Total</b>				<b>30</b>	<b>25</b>	<b>375</b>
2	I	TAM/FR E/HIN	Language	3	2	30
2	II	ENS 1202	Reading & Writing Skills	3	2	30
2	IIIC	BIT 1502	C++Programming	5	5	75
2	IIIC	BIT 1404	C++ Programming Lab	4	4	60
2	IIIC	BIT 1406	Data Structures using C (TL)	4 (2+2)	4	60
2	IIIS	MAS xxxx	Statistics	5	4	60
2	IV NME- II	BIT 1202	Cyber law & Cyber security	3	2	30
2	IV LS-II	BIT 1204	Emerging Computing paradigms And Technologies	3	2	30
2	V		PED/NSS/SLP		1	15
<b>Total</b>				<b>30</b>	<b>26</b>	<b>390</b>

3	I	TAM/FR E/HIN	Language	3	2	30
3	II	ENS 2201	Study Skills	3	2	30
3	IIIC	BIT 2501	SAD (TL)	5(3+2)	5	75
3	IIIC	BIT 2503	Software Testing	5	5	75
3	IIIC	BIT 2505	Java Programming	5	5	75
3	IIIC	BIT 2407	Java Programming Lab	4	4	60
3	IIIS	MAS xxxx	Operational Research	5	4	60
<b>Total</b>				<b>30</b>	<b>27</b>	<b>405</b>
4	I	TAM/FR E/HIN	Language	3	2	30
4	II	ENG 2202	Career Skills	3	2	30
4	IIIC	BIT 2502	Operating System	5(3+2)	5	75
4	IIIC	BIT 2504	Computer Networks	5	5	75
4	IIIC	BIT 2506	Relational Database Management Systems	5	5	75
4	IIIC	BIT 2408	RDBMS Lab	4	4	60
4	IIIS	BIT 2410	S/W Project Management	5	4	60
4	V		PED/NSS/SLP		1	15
<b>Total</b>				<b>30</b>	<b>28</b>	<b>420</b>
5	IIIC	BIT 3601	Web Programming(TL)	6(3+3)	6	90
5	IIIC	BIT 3611	Python Programming (TL)	6 (3+3)	6	90
5	IIIC	BIT 3605	Software Engineering	6	6	90
5	IIIC	BIT 3507	Enterprise Resource Planning	5	5	75
5	IVLS – III	BIT 3209	Internet Technologies	3	2	30
5	IVVE	VAL	Value Education	4	2	30
<b>Total</b>				<b>30</b>	<b>27</b>	<b>405</b>

6	IIC	BIT 3602	.NET Programming(TL)	6(3+3)	6	90
6	IIC	BIT 3604	S/W Development Lab II	6	6	90
6	IIC	BIT 3606	DM & DW	6	6	75
6	IIC	BIT 3508	Mobile Technologies	5	5	90
6	IVEVS	BIT 3200	Environmental Studies	4	2	30
6	IVLS - IV	BIT 3210	Cloud Computing	3	2	30
<b>Total</b>				<b>30</b>	<b>27</b>	<b>405</b>
<b>Grand Total (Semester I – VI)</b>				<b>180</b>	<b>160</b>	<b>2400</b>

**C:MAJORCORE**

**S: MAJORSUPPORTIVE**

**I: INNOVATIVE**

**NME: NONMAJOR ELECTIVE**

**VAL :VALUEEDUCATION**

**LS:LIFESKILL**

**Course Offered to Non-Major Students by the Department of Information Technology**

**Part IV Non-Major Electives**

Sem	Course No.	Course Title	Hours	Credits	Marks
1	BIT 1201	E –Commerce	3	2	30
2	BIT 1202	Cyber Law& Cyber Security	3	2	30
		<b>Total</b>	<b>6</b>	<b>4</b>	<b>60</b>

**Part IV Life Skill Courses**

Sem	Course No.	Course Title	Hours	Credits	Marks
1	BIT 1203	HTML 5	3	2	30
2	BIT 1204	Emerging Computing Paradigms And Technologies	3	2	30
3	BIT 3209	Internet Technologies	3	2	30
4	BIT 3210	Cloud Computing	3	2	30
		<b>Total</b>	<b>12</b>	<b>8</b>	<b>120</b>

## Program Specific Outcomes (B.Sc. Information Technology)

<b>PSO</b>	<b>UPON COMPLETION OF THIS PROGRAMME THE STUDENTS WILL BE ABLE TO</b>
<b>PSO-1</b>	Acquire the basic fundamental domain knowledge for developing effective Information Technology solutions.
<b>PSO-2</b>	Develop the logical thinking to apply algorithmic principles and Information Technology theories in the modeling and design of computer-aided systems.
<b>PSO-3</b>	Attain holistic knowledge in Business Mathematics and Information Technology.
<b>PSO-4</b>	Create IT professionals through training in programming languages.
<b>PSO-5</b>	Inculcate the professional, ethical, legal knowledge on security and social issues with social responsibility.
<b>PSO-6</b>	Excel in the capability for self-learning to allow for life-long learning.
<b>PSO-7</b>	Adapt the technological changes and State of the art tools with necessary updated skill set.
<b>PSO-8</b>	Gain sound knowledge of design and development in the construction of software systems of dynamic requirements
<b>PSO-9</b>	Develop leadership qualities, good communication on teams to accomplish shared IT design and evaluation or implementation goals through projects.
<b>PSO-10</b>	Empower with analytical mind and critical thinking for employability and entrepreneurship skills.

### Mapping of PSOs with courses

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9	PSO 10
BIT 1501	✓	✓		✓			✓	✓		✓
BIT 1403	✓	✓		✓	✓			✓		✓
BIT 1405	✓		✓		✓	✓	✓			✓
BIT 1407	✓		✓		✓		✓	✓		✓
BIT 1201	✓				✓	✓	✓		✓	✓
BIT 1203	✓		✓	✓			✓	✓		✓
BIT 1502	✓	✓		✓		✓		✓	✓	
BIT 1404	✓	✓		✓		✓			✓	✓
BIT 1406	✓	✓		✓						
BIT 1202	✓		✓		✓	✓			✓	✓
BIT 1204	✓	✓				✓	✓	✓		✓
BIT 2501	✓	✓		✓	✓			✓		✓
BIT 2503	✓	✓					✓	✓	✓	✓
BIT 2505	✓	✓		✓			✓	✓		✓
BIT 2407	✓	✓		✓			✓	✓		✓
BIT 2502	✓	✓	✓			✓	✓		✓	✓
BIT 2504	✓	✓	✓		✓			✓		✓
BIT 2506	✓	✓		✓		✓		✓		✓
BIT 2408	✓	✓		✓		✓		✓		✓
BIT 2410	✓		✓		✓	✓	✓		✓	
BIT 3601	✓			✓			✓	✓	✓	✓
BIT 3603	✓			✓			✓	✓	✓	✓
BIT 3605	✓	✓	✓			✓	✓		✓	✓

BIT 3607	✓		✓		✓	✓	✓	✓		✓
BIT 3209	✓		✓		✓	✓	✓	✓		
BIT 3602	✓	✓		✓		✓		✓		✓
BIT 3604		✓				✓	✓			✓
BIT 3606	✓	✓	✓			✓			✓	✓
BIT 3508	✓		✓	✓			✓		✓	✓
BIT 3200	✓	✓		✓		✓	✓		✓	
BIT 3210	✓		✓	✓		✓	✓	✓		✓

**Mapping of PSOs with POs**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
PSO 1	✓	✓	✓		✓			✓		✓	
PSO 2	✓	✓	✓			✓	✓		✓		
PSO 3	✓	✓	✓	✓	✓			✓	✓		
PSO 4		✓	✓	✓		✓	✓		✓	✓	
PSO 5		✓	✓				✓	✓		✓	✓
PSO 6	✓	✓	✓		✓			✓	✓		
PSO 7			✓		✓	✓		✓	✓		✓
PSO 8	✓	✓		✓	✓				✓	✓	✓
PSO 9		✓	✓		✓		✓			✓	✓
PSO 10		✓	✓	✓	✓			✓	✓		✓

To study about flowchart algorithms and programs, and solve problems through logical thinking, and learn programming using C.

Upon completion of this course students will be able to:

- i. Acquire the basic knowledge of C programming language and develop simple applications in C using basic constructs.
- ii. Develop in depth knowledge in arrays and strings. Design and implement applications using arrays and strings.
- iii. Implement programming skills using C functions and pointers.
- iv. Acquire the knowledge of structure and union and write simple programs.
- v. Develop simple applications using sequential and random access files.

### Unit 1:

**Introduction to C:** History of C – The C Character Set – Tokens – Identifiers – Keywords – Data Types – Constants - Variables – Operators – Structure of a C program – Formatted input/output functions – Unformatted input/output functions – Data Type Conversions – Control statements – Looping statements.

### Unit 2:

**Arrays and Strings:** Arrays – Declaring Arrays – Accessing array elements – Initializing Arrays – Types of Arrays – Strings – String Library Functions.

### Unit 3:

**Functions and Pointers:** Functions – Function Prototyping – Return statement – Nested functions – Types of functions – Recursion – Storage classes – Command line arguments – Pointer – Initialization of Pointers – Pointer Arithmetic – Pointers and Arrays – Pointers to Functions – Pointers to Pointers – Passing values to functions – Passing arrays to functions – Memory allocation.

### Unit 4:

**Structures and Union:** Structures – Declaration – Definition – Initialization – Nested Structures – Array of Structures – Structures and functions – Structures and pointers – Bits field – Unions.

### Unit 5:

**Files:** Files – fscanf( ) and fprintf( ) – Character I/O from files – String I/O from files – Error Handling during I/O – Random Access – The Preprocessor.

### Text book:

1. Balagurusamy.E, **Programming in ANSI C**, Sixth Edition, Tata McGrawHill-2012.

Unit 1: page no (5-13) and (90 –118)

Unit 2: Operating System Concepts page no (19 - 23) and (105 - 129)

Unit 3: Operating System Concepts page no (203 - 222), (261 - 276) and (322 – 338)

Unit 4: Operating System Concepts page no (351 - 382)

Unit 5: Operating System Concepts page no (470 - 477) and (503 – 525)

### References:

1. Pandiyaraja P, **Programming in C**, Vijay Nicole Imprint Private Limited,2005.
2. Kanetkar Y, **Let us C**, BPB publications,2014,
3. AshokN.Kamthane ,**Programming in C** , Pearson Education,2012.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1			4		
<b>CO2</b>		2	3			
<b>CO3</b>		2				6
<b>CO4</b>			3		5	
<b>CO5</b>				4	5	

Mean = 3.5

### BIT1403

### C PROGRAMMING LAB

4 hrs/4 cr

The aim of this lab course is to enable students to acquire Problem Solving skill using computers and facilitate them to learn basic principles of programming so as to write programs using C.

Upon completion of this course students will be able to:

- i. Understand basic structure of the C Programming. Build simple program using control and looping statements.
- ii. Acquire programming skills by executing programs using arrays and string
- iii. Design and develop programs in c using functions and pointers.
- iv. Implement the structure concepts in C Programs.
- v. Develop simple file applications in C
  1. C operators
  2. If structure
  3. Loops and GOTO
  4. Arrays



5. Functions
6. Recursion
7. StringHandling
8. String handling libraryfunction
9. Call by value and Call byreference
10. Pointers
11. Memoryallocation
12. Structures
13. unions, Bitfield , Typedef and enumerated datatype
14. File operations and filefunctions
15. Random file and command lineargument

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>			3			
<b>CO3</b>		2			5	
<b>CO4</b>			3	4		6
<b>CO5</b>					5	6

Mean = 3.8

**BIT1405**

**PRINCIPLES OF INFORMATIONTECHNOLOGY(TL)**

**4 hrs/4cr**

The course aims to develop understanding and appreciation in a broader perspective the application of the information technology. The course attempts to equip the students to compete in the present world with computer knowledge

Upon completion of this course students will be able to:

- i. Acquire the basic knowledge aboutIT
- ii. Analyze the types of database andmemory
- iii. Understand the types of network and various techniques in databasemanagement
- iv. Acquire the skills in word processing, presentation tools andspreadsheets.
- v. Obtain the basic knowledge on libreoffice.

## **Unit 1:**

**Introduction to IT :** Introduction to internet and other emerging technologies – types of computers – advantages and limitations – components of computer – software - systems software – applications software – other expert systems.

## **Unit 2:**

**Database structure:** Types of database structures – comparison between the structures – Database types and manners of data storage – data access control software – database management methods and techniques – data dictionary – data processing: techniques in data processing – online, batch mode, processing software tools

## **Unit 3:**

**Telecommunication and networking:** Types of network structures – LAN/ WAN/ SAN – advantages and limitations – data transmission methods – data storage – retrieval and data base management – storagetechniques – access control methods and best policies depending upon frequency of access and volumes.

## **Unit 4:**

**Office productivity tools:** Word processing– Presentation tools - Electronic spread sheets.

## **Unit 5:**

**Office productivity tools:** Libre Office

## **Text book:**

1. Alexis Leon & Mathew Leon, **Fundamentals of information technology**, Tata McGraw Hill,2002

Unit 1: Fundamentals of IT page no (1-10), (20-34) and (111-166)

Unit 2: Fundamentals of IT page no (223-232) and (265-273)

Unit 3: Fundamentals of IT page no (288-300)

Unit 4: Word Processing with word, Keith Brindley, Page no(1-84), Presentation with MS powerpoint, Abdulkadhir Page No (1-16) & Next generation Excel page no (1-20)

Unit 5: Use Libreoffice Calc a beginners guide – Thomas ecclestone – page no (1-50)

## **References:**

1. Ravindranath H, **Infrastructure for information technology**, McMillan,2003

2. Andrew S Tenenbaum, Albert S. Woodhull, **Operating Systems**, Prentice Hall,2002

3. Dennis P Curtin Kim Foley Kyanansen, Cathleen Morin, **Information technology – The breaking wave**, TataMcGraw Hill,2002

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>		2				
<b>CO3</b>		2				
<b>CO4</b>			3		5	6
<b>CO5</b>		2	3		5	6

Mean = 3.5

**BIT1407**

**DIGITAL PRINCIPLES AND APPLICATIONS**

**5 hrs/4 cr**

This course enables the students to understand the basic concepts of digital logic and the design of basic logic circuits. It also helps the student to learn combinational and sequential circuits.

Upon completion of this course students will be able to:

- i. Perform conversion and arithmetic calculations in binary, decimal and hexadecimal numbers system.
- ii. Gain knowledge on the application of digital principles using gates, solve Boolean algebra and simplify using K-map
- iii. Analyze and synthesize combinational logic circuits
- iv. Compare various types of Flip flops and counters for data storage.
- v. Acquire knowledge on shift Registers, Ring and Johnson's counters.

### **Unit 1:**

**Number System:** Digital Concepts: Introduction, Decimal numbers, Binary numbers, Decimal to binary conversions, Binary arithmetic, 1's and 2's complements of Binary numbers, Signed numbers, Arithmetic operations. Hexadecimal numbers, Octal numbers, Digital codes, Binary coded decimal (BCD).

### **Unit 2:**

**Building Blocks:** Logic Gates: Positive and negative logic, NOT gate, AND gate, OR gate, NAND gate, NOR gate, EX-OR and EX-NOR gates. Boolean Algebra: Boolean operations, logic expressions, rules and laws of Boolean algebra, De Morgan's theorems, Boolean analysis of logic circuits, Simplification using Boolean algebra, Standard forms, SOP and POS Expressions, Karnaugh map techniques SOP & POS (up to 4 variables).

### **Unit 3:**

**Combinational Logic Circuits:** Combinational Logic Circuits: Implementation, Universal property of NAND and NOR gates, Half adder, Full adder, Parallel binary adder, Comparators, Decoders, BCD to 7-segment

decoder, Encoders, Code converters, Multiplexers and Demultiplexers, Parity generators and Checkers.

#### Unit 4:

**Sequential Logic Circuits:** Sequential Logic Circuits: SR Latches, Gated S-R latch, gated D latch, Flip-Flops: Edge triggered flip flops, Master Slave flip flops, Applications Counters: Asynchronous counters, Decade Asynchronous counters, Synchronous counters, synchronous Decade counters, up/down synchronous counter, Applications.

#### Unit 5:

**Shift register and counters:** Shift register: serial in - serial out, serial in - parallel out, parallel in - serial out, parallel in parallel out configurations. Ring counter, Johnson's counter

#### Text book:

1. Thomas L. Floyd & RP Jain, **Digital Fundamentals-**, 10th Edition, Pearson Edition

Moris Mano, Digital logic and computer design–PHL

Unit 1: Digital Fundamentals Pg No: (28 - 70)

Unit 2: Digital Fundamentals Pg No: (86 - 160)

Unit 3: Digital Fundamentals Pg No: (186 - 198) (222 - 228) & (235 -268)

Unit 4: Digital Fundamentals Pg No: (291 - 310) & ( 327 - 357)

Unit 5: Digital Fundamentals Pg No: (382 – 395) & (399 – 402)

#### ReferencesBooks:

1. P. Malvino, Digital Principles and Applications- McGraw Hill Int Editions (FourthEdition)
2. R. P. Jain, Modern Digital Electronics- Tata McGraw Hill Pub. Company(ThirdEdition)

Bloom's Taxonomy	K1	K2	K3	K4	K5	K6
CO1	1					
CO2			3			
CO3			3		5	
CO4			3	4		
CO5		2	3		5	6

Mean = 3.5

**BIT1201**

**E-COMMERCE**

**3 hrs/2 Cr**

The subject starts with Introduction to e-Commerce, highlighting the features and benefits. Business models of e-Commerce will be subsequently explained. Relevance of e-Commerce with regard to marketing strategies will be covered. There is an additional topic on Electronic Payment System. Legal and ethical issues

will be discussed.

Upon completion of this course students will be able to:

- i. Acquire the basic knowledge about e-commerce, benefits and challenges.
- ii. Gain the applications of e-commerce in business
- iii. Analyze the weaknesses and advantages of internet advertising
- iv. Understand the numerous payment systems and issues in it.
- v. Understand the issues of e-commerce

### **Unit 1:**

**Introduction to e-Commerce:** Meaning and concept- e-Commerce v/s Traditional Commerce - e-Business & e-Commerce – History of e-Commerce – EDI – Importance, features & benefits of e-Commerce – impacts, Challenges & Limitations of e-Commerce – Supply chain management & e-Commerce - e-Commerce infrastructure.

### **Unit 2:**

**Business models of e-Commerce:** Business to Business – Business to customers – customers to customers – Business to Government – Business to employee - e-Commerce strategy – influencing factors of successful e-Commerce.

### **Unit 3:**

**Marketing strategies & e-Commerce:** Website – Introduction to HTML – components of website- Concept & Designing website for e-Commerce – Corporate Website – Portal – Search Engine – Internet Advertising – Emergence of the internet as a competitive advertising media- Models of internet advertising – Weakness in Internet advertising – Mobile Commerce.

### **Unit 4:**

**Electronic Payment system:** Introduction – Online payment systems-prepaid and postpaid payment systems – e-cash, e-cheque, Smart Card, Credit Card, Debit card. Electronic purse – Security issues on electronic payment system – Solutions to security issues – Biometrics – types of biometrics

### **Unit 5:**

**Legal and ethical issues in e-Commerce:** Security issues in e-Commerce – Regulatory framework of e-Commerce

### **Text Book:**

1. Turban, Efraim, and David King, **Electronic Commerce: A Managerial Perspective**, Pearson Education Asia, 2003.

Unit 1: Electronic Commerce: A Managerial Perspective page no (1-38)

Unit 2: Electronic Commerce: A Managerial Perspective page no (161-197)

Unit 3: Electronic Commerce: A Managerial Perspective page no (51-88)

Unit 4: Electronic Commerce: A Managerial Perspective page no (521-548)

Unit 5: Electronic Commerce: A Managerial Perspective page no (459-506)

**References:**

1. Rayport, Jeffrey, Jaworksi and J.Bernard, **Introduction to E-Commerce**, Tata McGraw Hill,2002.
2. Rich and Jason, **Starting an E-Commerce Business** , IDG Books,2004.
3. K.Ravi, **Frontiers of Electronic Commerce** , Addison – Wesley,2005.
4. Bharat Bhasker, **Electronic Commerce** , The McGraw-Hill companies, 2<sup>nd</sup> edition,2006.
5. Laudon, Kenneth and Traver, **E-Commerce business. Technology . Society** , Pearson Education,2004.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>			3			
<b>CO3</b>			3		5	
<b>CO4</b>					5	6
<b>CO5</b>		2				

Mean = 3.5

**BIT 1203**

**HTML 5**

**3 hrs/3 cr**

The objective of the course is to enable the students to understand a core technology markup language of the Internet used for structuring and presenting content for the WWW.

Upon completion of this course students will be able to:

- i. Gain the fundamental knowledge ofHTML5.
- ii. Get the knowledge of forms inHTML
- iii. Acquire the practical skills to embed audio and videofiles.
- iv. Obtain the basic knowledge in Cascade StyleSheet3
- v. Gain the skills to create images usingcanvas.

**Unit 1:**

**Intro to HTML5:** HTML5 Templates –Semantics –Changes to Existing Features Form Controls – Validating HTML5 Documents

**Unit 2:**

**HTML Forms:** Dependable tools in our toolbox - New Elements - Form Attributes – New Form Input Types – New Form Controls – Changes to Existing

### Unit 3:

**Audio & Video:** Current State of play - markup – audio - Encoding Video files - Creating Custom Controls – Accessible Media

### Unit 4:

**CSS3:** Introduction to css3 – css3 selectors – css3 colors – Rounded corners – Drop Shadows – CSS3 Transforms and Transitions

### Unit 5:

**Canvas:** Creating canvas element – drawing on the canvas – canvas coordinates – draw shape by create path - manipulate images –SVG - drag and drop

### Text book:

1. Teach Yourself VISUALLY HTML5, Mike Wooldridge - 2011.

Unit 1: Teach Yourself VISUALLY HTML5 page no (29-40)

Unit 2: Teach Yourself VISUALLY HTML5 page no (396-440)

Unit 3: Teach Yourself VISUALLY HTML5 page no (662-687)

Unit 4: Teach Yourself VISUALLY HTML5 page no (185-195)

Unit 5: Teach Yourself VISUALLY HTML5 page no (599-650)

### References:

1. Alexis Goldstein, Louis Lazaris, and Estelle, **HTML5 & CSS3 for the Real World**, Weyl - SitePoint Pty. Ltd.
2. ChristopherSchmittandKyleSimpson,**HTML5Cookbook**,O'ReillyMedia,IncMarkPilgrim, **HTML5: Up and Running** , O'Reilly Media, Inc

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>		2	3			
<b>CO3</b>			3			6
<b>CO4</b>		2	3			6
<b>CO5</b>						6

To gain the basic knowledge of object oriented programming concepts and to understand the detailed idea of C++ streams, templates and error handling concepts of C++ programming.

Upon completion of this course students will be able to:

- i. Outline the basic concepts of object oriented programming.
- ii. Describe the constructor, destructor and overloading concepts.
- iii. Understand the role of inheritance in building reusable code. Discuss polymorphism and virtual base class in program development.
- iv. Apply and demonstrate the uses of C++ streams, console I/O operations and Error handling functions.
- v. Learn how to fix the errors in the program using exception handling mechanism. Build simple programs using templates.

**Unit 1:**

**Introduction to OOPs concepts:** Introduction to OOP – Object oriented paradigm – OOPs Features – Applications of OOP – Classes and Objects – Accessing class members – Defining member function – Passing objects as arguments – Returning objects from functions – Friend Function – Static data member - Static member functions - Inline Function - Function Overloading.

**Unit 2:**

**Constructor and Overloading:** Constructor and Destructor functions – Types of Constructors – Characteristics of Constructor and Destructor - Operator overloading – Overloading unary and binary operators – Overloading with friend function – Rules for overloading operator.

**Unit 3:**

**Inheritance:** Inheritance - Types of Inheritance - Advantages and Disadvantages of Inheritance – Polymorphism - Virtual Function - Pure Virtual Functions – Virtual Base Class – The this pointer – New and Delete Operator

**Unit 4:**

**C++ Streams:** C++ Streams – Unformatted I/O Operations – Formatted Console I/O Operations - I/O Manipulators – File Handling – Error Handling Function - EOF – File Modes – Command line argument.

**Unit 5:**

**Exceptions and Template:** Exception Handling – List of Exceptions – Handling Uncaught Exceptions – Templates – Class Templates - Function Templates - Member function Templates - Class Templates and Inheritance.



**Textbook:**

- Balagurusamy.E, **Object Oriented Programming with C++**, 6<sup>th</sup> Edition, Tata McGraw Hill – 2012.  
 Unit 1: page no (5-13) and (90 –118)  
 Unit 2: page no (129 - 142) and (152 -167)  
 Unit 3: page no (179 - 206) and (238 -248)  
 Unit 4: page no (257 - 280) and (287 -313)  
 Unit 5: page no (340 - 350) and (319 -331)

**References:**

- Venugopal.K.R, Rajkumar, Ravishankar.T, **Mastering C++**, Tata McGrawHill,2003.
- Ashok N.Kamthane, **Object Oriented Programming with ANSI & Turbo C++**, Pearson Education, 2012.
- BjanneStroustrup, **The C++ Programmers Reference**, 3rd Edition, AddisonWesley,2000.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1			4		
<b>CO2</b>		2				
<b>CO3</b>		2		4		6
<b>CO4</b>			3			
<b>CO5</b>		2			5	6

Mean = 3.5

**BIT1404****C++PROGRAMMINGLAB****4hrs/4cr**

To enable the students to understand the concepts of Object Oriented Programming, the syntax of statements in C++ language and help to acquire the programming skills in C++.

Upon completion of this course students will be able to:

- Understand basic structure of a C++ Program. Develop simple program using classes and objects.
- Develop programming skills by writing programs using constructors and overloading concepts.
- Apply the inheritance and polymorphism concepts in writing C++ programs
- Write C++ Programs using console I/O functions.
- Develop simple programs using templates and handle the exceptions.

**Lab Component**

- C++ environment

2. Functions
3. Classes and objects
4. Friend functions
5. Constructor and Destructor
6. Operator Overloading
7. Type conversion
8. Inheritance
9. Pointers
10. Files
11. Templates
12. Exception Handling

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1			4		
<b>CO2</b>		2				
<b>CO3</b>			3			6
<b>CO4</b>					5	
<b>CO5</b>			3	4		6

Mean = 3.7

**BIT 1406**

**DATA STRUCTURES USING C(TL)**

**4(2+2) hrs/4cr**

The aim of the course is to enable the students to build simple and complex data structures. Students are trained to develop algorithms and writing programs for the user defined data types such as Structures, Stacks, Queues, Lists and Trees. Also this course gives an in depth knowledge on Sorting, & Searching.

Upon completion of this course students will be able to:

- i. Acquire knowledge on implementation of array and stack to execute the instructions.
- ii. Understand the types and applications of queue data structure.
- iii. Implement linked list in real time problem solving.
- iv. Gain knowledge on various types of trees, tree traversals and variable length code generation.
- v. Develop real time algorithms to search and sort the data.

**Unit 1:**

**Arrays and Stack :** Arrays – Strings – Stacks – Operations on stack – Representation of Stacks using Array and Linked list - infix - prefix and Post fix notations - Evaluation of Post fix - infix- prefix expression- Applications of

stacks

**Unit 2:**

**Queues** : Operations on queue -Representation of queue using array and linked list –Circular Queue – Operation on Circular queue - Representation of Circular queue using array and linked list

**Unit 3:**

**Linked List** : Operations on linked list- Single Linked List- Operation on Single linked list - Double Linked list – Operations on Double Linked List

**Unit 4:**

**Trees** : Binary tree – Traversal of a Binary tree – Applications of Binary Tree Binary Search Tree- Operations on Binary search tree – Applications of Binary search tree

**Unit 5:**

**Sorting and Searching** : Bubble sort - Quick sort - Merge sort.Search – Linear Search – Binary Search

**Text book:**

1. Seymour Lipschutz, **Data structures with C**, Tata McGraw-Hill Education, 2011

Unit 1: Page No (3.1 -4.84) & (6.1-6.44)

Unit 2: Page No (6.50 -6.125)

Unit 3: Page No (5.1-5.83)

Unit 4: Page No (7.1-7.49)

Unit 5: Page No (9.1-9.56)

**References:**

1. Balagurusamy.E, **Data structures using C**, Tata McGraw-Hill Publishing Company Ltd,2013

2. Krishnamoorthy,**Data structures using C**, Tata McGraw-Hill Publishing Company Ltd,2010

3. Aaron M. Tenenbaum, Y. Langsam, M. J. Augenstein, **Data Structures Using C**,PearsonEducation,2009

4. A.A.Puntambekar, **Datastructures using C**,Technical Publications,2009.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1			4		
<b>CO2</b>			3	4		
<b>CO3</b>		2	3			
<b>CO4</b>				4	5	
<b>CO5</b>			3			6

Mean = 3.5

This course enables the students to understand the basic concept of Cyber security and problems associated with it and also to know the intellectual property rights and legal aspects of it.

Upon completion of this course students will be able to:

- i. Gain the knowledge of basic concepts of cyber security and its problems.
- ii. Acquire the depth knowledge in various problems in cybersecurity.
- iii. Understanding the various property rights in the environment.
- iv. Obtain the various issues in cybersecurity.
- v. Gain the knowledge of various laws regarding cybersecurity.

#### **Unit 1:**

**Basic concepts of Cyber Security:** Introduction-Cyber Security and its problem-Intervention Strategies: Redundancy, Diversity and Autarchy.

#### **Unit 2:**

**Problems in Cyber Security:** Private ordering solutions, Regulation and Jurisdiction for global Cyber security, Copy Right-source of risks, Pirates, Internet Infringement, Fair Use, postings, criminal liability, First Amendments, Data Loss.

#### **Unit 3:**

**Intellectual Property Rights:** Copy Right-Source of risks, Pirates, Internet Infringement, Fair Use, postings, Criminal Liability, First Amendments, Losing Data, Trademarks, Defamation, Privacy-Common Law Privacy, Constitutional law, Federal Statutes, Anonymity, Technology expanding privacy rights.

#### **Unit 4:**

**Technical Issues:** Duty of Care, Criminal Liability, Procedural issues, Electronic Contracts & Digital Signatures, Misappropriation of information, Civil Rights, Tax, Evidence.

#### **Unit 5:**

**Legal Aspects of Cyber Security:** Ethics, Legal Developments, Late 1990 to 2000, Cyber security in v.b.n Society, Security in cyber laws case. Studies, General Law and Cyber Law-a Swift Analysis.

#### **Text book:**

1. Jonathan Rosenoer, **Cyber Law: The law of the Internet**, Springer-Verlag, 1997.

Unit 1: Cyber Law: The law of the Internet page no(11-50)

Unit 2: The Law and Economics of Cyber Security page no (1-20)

Unit 3: The Law and Economics of Cyber Security page no (95-141)

Unit 4: The Law and Economics of Cyber Security page no (161-261)

**References:**

1. Mark F Grady, Francesco Parisi, **The Law and Economics of CyberSecurity**, Cambridge University Press, 2006.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>		2				
<b>CO2</b>			3			
<b>CO3</b>			3			
<b>CO4</b>				4		6
<b>CO5</b>			3			

Mean = 3.5

**BIT1204 EMERGING COMPUTING PARADIGMS AND TECHNOLOGIES 3 hrs/ 2 cr**

The aim of this course is to gain insights into emerging computing paradigms and technologies in order to acquire skills in the IT domain.

Upon completion of this course students will be able to:

- i. Gain the knowledge of various principles of computing in software industry.
- ii. Acquire the basic knowledge of cloud computing and its advantages.
- iii. Understanding the various principles of computing technologies.
- iv. Obtain the various milestones of cluster systems and application of IOT.
- v. Gain the knowledge of applying computing methods in software environments.

**Unit 1:**

**Distributed Computing:** Scalable computing over the Internet – The Age of Internet Computing – High Throughput computing – High Performance computing - Paradigms of Computing: Centralized Computing – Distributed computing Parallel Computing - Grid computing – Utility Computing

**Unit 2:**

**Cloud Computing:** What is Cloud computing – Cloud computing Architecture – Types of cloud computing:– Advantages and disadvantages of Cloud computing - History of Cloud computing - Prominent cloud computing Trends : Mobile computing- Big data – Web of Things – Cloud computing standards organizations

**Unit 3:**

**Computing Technologies:** Technologies for Network based systems : Multicore CPUs and Multithreading

**Unit 4:**

**Cluster Computing and Ubiquitous computing:** Clustering for Massive Parallelism – Cluster development trends – Milestone of cluster systems - Use of cloud for Ubiquitous computing – Internet of Things and Cyber-Physical systems - Applications of Internet of Things

**Unit 5:**

**Software Environments for Distributed Programming:** Features common to Cloud and Grid – Data features and Databases –Mapreduce – Hadoop – Google File System(GFS) – Big Table – Google’s NOSQL system - Amazon AWS - EC2 – Amazon Simple Storage Service(S3)-Microsoft Azure – Online Social Networking characteristics

**Text Book:**

1. Kai Hwang,Geoffrey C. Fox,Jack J. Dongarra, **Distributed and CloudComputing:**From Parallel Processing to the Internet of Things,Elsevier,2012

Unit – 1 : Distributed and Cloud Computing page no (3-11), (29-32) and 33

Unit – 2 : Distributed and Cloud Computing page no(191-200)

Unit – 3: Distributed and Cloud Computing page no (13-20)

Unit – 4 : Distributed and Cloud Computing page no (66-83)

Unit – 5 : Distributed and Cloud Computing page no(370-383)

**References:**

1. Massimo Cafaro , Giovanni Aloisio, Grids, Clouds and Virtualization, Springer verlog,London ,2011.

2. Olivier Terzoismb, Turin, Italylorenzo Mossuccaismb, Turin, Italy,CRC Press,Taylorand Francis Group ,2015.

<b>Bloom’s Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>			3	4		
<b>CO3</b>				4		
<b>CO4</b>			3		5	
<b>CO5</b>		2				6

Mean = 3.5

The objective of the course is to outline the importance of System analysis and Design and highlight the various phases in Analysis and Design.

Upon completion of this course students will be able to:

- i. Define and develop the life cycle concepts used in software development.
- ii. Analyse using basic tools of system in software development
- iii. Study and implement the design principles.
- iv. Design and implement the OO model.
- v. Illustrate the software Development phase activities used in software development

### Unit 1:

**Information systems concepts:** Business information systems, information system levels - operational, lower, middle, top management- the system development life cycle concepts-Life cycle activities- life cycle flow chart, task, management review, baseline specifications, role of system analyst.

### Unit 2:

**Basic tool of system analysis:** forms design - basic parts of form, style and types of form, principles of form design, Tools for structure analysis and design- Types of basic charts, decision tables, decision trees, structured English, data flow diagram, data dictionary, system flow charts, flow charting symbols

### Unit 3:

**Study phase:** fact finding techniques, fact analysis techniques, steps in feasibility analysis, Design phase: Design phase activities, structure design, input design, output design

### Unit 4:

**Object Orientated Technology:** Development and OO Modeling, History, Modeling Concepts: Modeling design Technique, Three models, Class Model, State model and Interaction model, Relation of Class and State models. Interaction Modeling: Use case Models, sequence models, activity models, Class design.

### Unit 5:

**Development phase:** Development phase activities, bottom up and top down computer program development, training- programmer, operator, user trainings – conversion-change over plan- PERT- steps in computer program development- structured programming-development phase report.

### Text books:

- 1) Kendall, **System Analysis And Design**, 9<sup>th</sup> edition, 2013
- 2) Grady Booch, James Rumbaugh, Ivar Jacobson, **The Unified Modeling Language User Guide**, Pearson Education, 2<sup>nd</sup> edition, 2005

Unit1: System Analysis and Design page no: (2 – 10)

Unit2: System Analysis and Design page no: (181- 185) (210 – 221) & (235 –248)

Unit3: System Analysis and Design page no: (293 – 32) & (335 –340)

Unit4: System Analysis and Design page no: (30 – 38) & (269 – 274)

Unit 5: System Analysis and Design page no: (463 –470)

**References:**

- 1) Marvin Gore & John Stubbe, **Elements Of System Analysis**, Galgotia Book Source, 4e, 1998
- 2) Michael Blaha and James Rumbaugh, **Oriented Modeling and Design with UML**, 2<sup>nd</sup> edition, 2005

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>				4		
<b>CO2</b>		2			5	
<b>CO3</b>			3			
<b>CO4</b>		2		4		
<b>CO5</b>	1				5	6

Mean = 3.5

**BIT2503**

**SOFTWARE TESTING**

**5 hrs/5 cr**

The objective of the course is to outline the importance of Software Testing and to highlight the various types of Testing

Upon completion of this course students will be able to:

- i. Understand the principles of testing and various defects in software.
- ii. Understand the knowledge of various testing strategies.
- iii. Understand the concept of various testing and compare them.
- iv. Apply the software testing techniques in commercial environments
- v. Analyze the various results of testing.

**Unit 1:**

**Introduction:** Testing as an Engineering Activity–Role of Process in Software Quality–Testing as a Process – Basic Definitions–Software Testing Principles–The Tester’s Role in a Software Development Organization–Origins of Defects–Defect Classes–The Defect Repository and Test Design–Defect Examples–Developer/Tester Support for Developing a Defect Repository.

**Unit 2:**

**Test case design -i:** Introduction to Testing Design Strategies –The Smarter Tester–Test Case Design Strategies–



Using Black Box Approach to Test Case Design Random Testing– Requirements based testing – positive and negative testing - Boundary Value Analysis –decision tables .

### **Unit 3:**

**Test case design -ii:** Equivalence Class Partitioning state-based testing–cause- effect graphing–error guessing - compatibility testing – user documentation testing– domain testing Using White–Box Approach to Test design– Test Adequacy Criteria– static testing vs. structural testing - Paths–Their Role in Whitebox Based Test Design– code complexity testing.

### **Unit 4:**

**Levels of testing:** The Need for Levels of Testing–Unit Test–Unit Test Planning– Designing the Unit Tests. Running the Unit tests and Recording results –Integration tests–Designing Integration Tests–Integration Test Planning– System Testing–types of system testing- Acceptance testing– performance testing–Regression Testing.

### **Unit 5:**

**Test management:** People and organizational issues in testing–organization structures for testing teams– testing services- Test Planning– Test Plan Components– Test Plan Attachments– Locating Test Items–test management– test process-Reporting Test Results – Introducing the test specialist–Skills needed by a test specialist–Building a Testing Group.

### **Text book:**

1. SrinivasanDesikanandGopalaswamyRamesh,**SoftwareTesting– PrinciplesandPractices**,Pearsoneducation,2013.

Unit 1: Software Testing–Principles and Practices page no (1-43)

Unit 2: Software Testing–Principles and Practices page no (73-104)

Unit 3: Software Testing–Principles and Practices page no (47-68) and (90-104)

Unit 4: Software Testing–Principles and Practices page no(107-208)

Unit 5: Software Testing–Principles and Practices page no(299-385)

### **References:**

1. AdityaP.Mathur,**Foundationsof SoftwareTesting**,PearsonEducation,2008.
2. BorisBeizer,**SoftwareTestingTechniques**,SecondEdition,Dreamtech,2003.
3. ElfriedeDustin,**EffectiveSoftwareTesting**,FirstEdition,PearsonEducation,2003.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>		2	3			
<b>CO3</b>			3	4		
<b>CO4</b>				4		
<b>CO5</b>					5	6

Mean = 3.5

**BIT2505**

**JAVA PROGRAMMING**

**5 hrs/5 cr**

The objective of this course is to train the students in core java and make them to develop programs to the industry standard.

Upon completion of this course students will be able to:

- i. Obtain basic knowledge on the principles of object oriented programming.
- ii. Understand constructor, method overloading, static function concepts and develop programs.
- iii. Demonstrate the uses of inheritance, abstract class and interface
- iv. Acquire knowledge to create package, identify and fix errors in the code and achieve faster execution of code by multithreaded programming.
- v. Understand applets and database connectivity to develop window based application.

### **Unit 1:**

**Introduction to OOPs:** Object oriented Programming concepts - Java features - JVM- Data types –variables - Operators – Control statements -Strings - Arrays - Classes - Objects

### **Unit 2:**

**Methods and Constructors:** Constructors – this keyword – Garbage Collection - Method Overloading – Overloading constructors - Recursion – Access control - Static Function – Command line arguments

### **Unit 3:**

**Inheritance and interface:** Inheritance – Member access and inheritance - Multi level inheritance – Hierarchical inheritance – Method Overriding – Abstract class - Interfaces- Implementing interfaces – Nested interfaces

### **Unit 4:**

**Packages, Exceptions and Threads:** Creating and using packages – Access protection –importing packages- - Exception handling – Built in Exceptions- User defined Exceptions- Multithreading – Thread model - The Life cycle of a Thread - Synchronizing Threads

## Unit 5:

**Applets and Database connectivity:** Overview of I/O Streams- Applets - Life cycle of applet- AWT - Event handling - JDBC architecture-Establishing database connectivity.

### Text book:

1. Balagurusamy, **Programming with Java 4e A Primer**, Tata McGraw Hill edition, 2014

Unit I: page no (1-9) & (23-131)

Unit II: page no 42 & (133-138)

Unit III: page no (139-152) &(180-189)

Unit IV: page no s (190 -249)

Unit V : Java 2 The Complete Reference, page no (628-684)

### References:

1. Patrick Naughton and Herbert Schildt, **Java 2 The Complete Reference**, Tata Mc Graw Hill Publications, 7<sup>th</sup> edition,2012
2. Kathy Sierra and Bert Bates, **Head First Java**, O'Reilly Media,Inc.,2nd Edition,2005
3. Arnold, Ken & Gosling, James, **The Java Programming language**, Addison Wesley, 4<sup>th</sup> Edition,2005

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1	2				
<b>CO2</b>			3	4		
<b>CO3</b>			3			6
<b>CO4</b>			3			
<b>CO5</b>		2			5	6

Mean = 3.5

## BIT2407

## JAVAPROGRAMMINGLAB

4 hrs/4 cr

The Objective of the course is to train the student to develop problem solving abilities and facilitate them to build the necessary skill set and analytical abilities for developing java based software for real life problems.

Upon completion of this course students will be able to:

- i. Develop simple java programs to demonstrate OOPs concepts.
- ii. Construct programs using constructor, method overloading and static function.
- iii. Examine reusability through inheritance, abstract class and interface concept in real time application development
- iv. Develop packages and understand how to fix errors using exception handling.

- v. Construct window based applications using Applet and achieve database connectivity using JDBC.

### Lab Components

1. Working with Array and flow control statement
2. Demonstrate the concept of command line arguments
3. Implementation of Single inheritance
4. Implementation of Multilevel inheritance
5. String Manipulation using CharArray.
6. Calculation of Student Total Mark using Interface
7. Implementing Thread based applications & Exception Handling.
8. File copy program
9. Checking Minimum Bank Balance using User defined exception
10. Database Creation for storing e-mail addresses and manipulation.
11. Creation of applet and passing parameter to applet
12. Calculation of Electricity bill using JDBC and Applet
13. Creation of Employee pay bill using JDBC and Swings
14. Login form using JDBC
15. Working with Dialogs and Menu control
16. Working with Panel and Layout control
17. Incorporating Graphics concept
18. Working with colors and Fonts

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>					5	
<b>CO2</b>				4		
<b>CO3</b>						6
<b>CO4</b>					5	6
<b>CO5</b>						6

Mean = 5.3

This course enables the students to understand the basic operating system concepts. It highlights the goals and services of the OS and covers scheduling, memory management, paging and segmentation. It facilitates the students to write simple shell script programs in Unix.

Upon completion of this course students will be able to:

- i. Describe the structure of UNIX operating system and its commands.
- ii. Describe the fundamental concepts of operating system. Understand the process management components of Operating System.
- iii. Analyse CPU scheduling, synchronization concepts and discuss the methods to manage / avoid deadlocks.
- iv. Compare different types of memory management techniques that are used in Operating Systems.
- v. Recognize the uses of paging, segmentation and file system mechanisms.

#### **Unit 1:**

**Introduction to UNIX:** Salient Features of Unix-Unix System Organization-Unix File system- Unix commands- File related commands-Directory Related Commands-Simple Shell Programming

#### **Unit 2:**

**Introduction to OS:** Views- Goals - OS Structure - Components - Services – Types of OS – OS for PC - OS for Hand held devices – Mobile OS – Network OS - system calls - System Structure - Process Management -Process -Process Scheduling – Operations on processes - Cooperating Process – Inter Process Communication - Threads.

#### **Unit 3:**

**CPU Scheduling:** CPU Schedulers - Scheduling Criteria - Scheduling Algorithms -Process Synchronization - Critical Section Problem – Semaphores – Deadlocks - Characterization -Methods for Handling Deadlocks - Deadlock Prevention – Avoidance - Detection - Recovery.

#### **Unit 4:**

**Memory Management:** Introduction- Address Binding - Dynamic Loading and Linking – Overlays -Logical and Physical Address Space – swapping - Contiguous Allocation - Internal & External fragmentation - Non-Contiguous Allocation.

#### **Unit 5:**

**Paging and Segmentation Schemes:** Virtual memory - Demand Paging - File System: Introduction - File Concepts - File System Structures- Access Methods - Directory Structures – Protection-Disk Schedule-Disk Scheduling Algorithm.

#### **Text books:**

1. Yashavant P. Kanetkar, **Unix Shell Programming**, BPB Publications,2003
2. Silberschatz Abraham, Galvin and Gagne, **Operating System Concepts**, Wiley India Pvt., Ltd, 9<sup>th</sup> Edition, 2013.

Unit 1: page no (5-15) and (21 – 92)

Unit 2: Operating System Concepts page no (19 - 23) and (105 - 129)

Unit 3: Operating System Concepts page no (203 - 222), (261 - 276) and (322 – 338)

Unit 4: Operating System Concepts page no (351 - 382)

Unit 5: Operating System Concepts page no (470 - 477) and (503 – 525)

### References:

1. NaliniVengatasubramaniyan,ViladimirGetov,StephanSteglich,**MobileWirelessMiddleware,Operating system and Applications**,Springer Heidelberg Dordrecht London New York,2011
2. William Stallings, **Operating Systems: Internal and Design Principles**, PearsonEducation-2014.
3. Michael Palmer, Michael Walters,**Guide to Operating Systems**, Cengage Learning,2011
4. Pramod Chandra P,Bhatt, **An Introduction to Operating Systems: Concepts and Practice**, PHI LearningPvt.,Ltd,2010

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>		2		4		
<b>CO2</b>			3			
<b>CO3</b>		2	3			
<b>CO4</b>					5	
<b>CO5</b>				4	5	

Mean = 3.5

### BIT2504

### COMPUTERNETWORKS

5 hrs/5 cr

The objective of the course is to facilitate the students to understand various issues in establishing networks and the importance of various architectures and protocols in computer networks.

Upon completion of this course students will be able to:

- i. Classify the types of networks and topologies and uses of networks
- ii. Describe the functions of each layer in OSI and TCP/IP model.
- iii. Summarize the analog and digital data communication
- iv. Illustrate the functions of data link layer and explain the hardware components
- v. Elucidate the functions of Network layer and routing algorithms and discuss cryptography and network security.

## Unit 1:

**Introduction:** Introduction to Computer Communications and Networking Technologies-Uses of Computer Networks, Network Devices - Nodes, and Hosts- Types of Computer Networks and their Topologies.

## Unit 2:

**Network Software:** Network Design issues and Protocols, Connection-Oriented and Connectionless Services, Network Applications and Application Protocols, Network Architecture and the OSI Reference Model, TCP/IP reference model.

## Unit 3:

**Analog and Digital Communications Concepts:** Representing Data as Analog Signals, Representing Data as Digital Signals, Digital Carrier Systems, Guided and Wireless Transmission Media, Switching and Multiplexing.

## Unit 4:

**Data Link Layer:** Framing, Flow Control, Error Control, Error Detection and Correction, Media Access Control: Random Access Protocols, Token Passing Protocols ,Token Ring - Introduction to LAN technologies: Ethernet, switched Ethernet, VLAN, fast Ethernet, gigabit Ethernet, token ring - Wireless LANs, Bluetooth, Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface Cards and PC Cards, Bridges, Switches, Routers, Gateways;

## Unit 5:

**Network Layer and Routing Concepts:** Virtual Circuits and Datagrams- Routing Algorithms - Congestion Control Algorithms – Internetworking.

Network Security Issues: Security threats - Encryption Methods – Authentication - Symmetric Key Algorithms- Public Key Algorithms.

## Text book:

1. Andrew S. Tanenbaum, **Computer Networks**, Pearson Education, 2011.

Unit 1:ComputerNetworks page no: (3 –28)

Unit 2:ComputerNetworks page no: (33 – 39) & (41 –53)

Unit 3:ComputerNetworks page no: (95 –115)

Unit 4: Computer Networks page no: (197 – 214) (277 -297) (320 -326) (332 – 335) & (340 -342)

Unit 5:ComputerNetworks page no: (362 – 385) & (392 –403)

## References:

1. Michael A. Gallo, William M.Hancock,**Computer Communications and Networking Technologies**, CENGAGE Learning, 2001.
2. Behrouz A Forouzan, **Data Communications and Networking**, McGraw Hill, 2012

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>				4		
<b>CO2</b>			3			
<b>CO3</b>						6
<b>CO4</b>					5	
<b>CO5</b>						6

Mean = 4.8

## **BIT2506 RELATIONAL DATABASEMANAGEMENTSYSTEM**

**5 hrs/5 cr**

This course enables the students to understand the basic Database concepts and RDBMS concepts using Oracle SQL and PL/SQL. It helps the students to acquire sound knowledge in Oracle.

Upon completion of this course students will be able to:

- i. Obtain basic knowledge on database, relational database, data Models and ERmodel.
- ii. Understand the normalization and denormalization concepts to organize the data.
- iii. Familiarize structure query language, SQL queries, sub-queries, operators and views.
- iv. Discuss PL/SQL concepts, handle loops, control statements and cursors.
- v. Analyze the uses of sub programming, exception handling and triggers to built programs.

### **Unit 1:**

**Introduction to database:** File systems versus Database systems – Database System - DBMS Architecture – Advantages of a DBMS – Describing and Storing Data in a DBMS – Queries in a DBMS – Database users and Administrator- Data Models.

**Relational Model:** Structure of Relational Databases – Database Design – ER Model – Overview of the Design Process – The Entity-relationship Model – Integrity Constraints over Relations – Enforcing Integrity Constraints – Entity Relationship Diagrams.

### **Unit 2:**

**Data Normalization:** Pitfalls in Relational Database Design – Decomposition – Functional Dependencies – Normalization – First Normal Form – Second Normal Form – Third Normal Form – Boyce- Codd Normal Form – Fourth Normal Form – Fifth Normal Form – De Normalization.

### **Unit 3:**

**Structured Query Language:** Basic Structure of SQL Queries - Working with Tables – DDL-DML-DCL-TCL- Set Operations – Restricting Data with WHERE clause - Aggregate Functions - Null Values - Nested Sub Queries – Views.



#### Unit 4:

**PL/SQL:** A Programming Language: Fundamentals – Block Structure – Comments – Data Types - Declaration – Assignment operation - Printing – Arithmetic Operators - Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables.

#### Unit 5:

**Exceptions:** Types of Exceptions - PL/SQL Composite Data Types: Records – Tables – Arrays - Named Blocks: Procedures – Functions – Packages –Triggers – Data Dictionary Views.

#### Text books:

1. Alexis Leon and Matthews Leon, **Essentials of Database Management System**, McGraw Hill Education India Private Limited, 2008
2. Riktesh Srivastava, **Relational Database Management System**, New Age International Pvt Ltd Publishers, 2015
3. Ivan Bayross, **SQL, PL/SQL: The Programming Language of Oracle**, BPB, 2010  
Unit 1: Essentials of Database Management System ,Page No (1-77) & (91-102)  
Unit 2: Essentials of Database Management System, Page No (104-125)  
Unit 3: Essentials of Database Management System ,Page No (157 - 229)  
Unit 4: SQL, PL/SQL: The Programming Language of Oracle, Page No (338 - 375)  
Unit 5: SQL, PL/SQL: The Programming Language of Oracle, Page No (404 - 438)

#### References:

1. Nilesh Shah , **Database Management Systems using Oracle**, Pearson Education, 2015.
2. Arun Majumdar & Pritimoy Bhattacharya, **Database Management systems**, TMH publications, 2007.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1	2				
<b>CO2</b>				4	5	
<b>CO3</b>			3			6
<b>CO4</b>			3			6
<b>CO5</b>			3			6

Mean = 3.9

**BIT2408**

**RDBMS LAB**

**4 hrs/4 cr**

The Objective of the course is to train the students able to work on the basic Oracle commands and to develop real life problems using PL/SQL.

Upon completion of this course students will be able to:

- i. Design and create databases with the help of ER Diagram and datamodels.
- ii. Remove inconsistent and redundant data using normalization concepts.
- iii. Write SQL statements, queries, sub-queries, join and views.
- iv. Construct programs using PL/SQL concepts, loops, control statements and cursors.
- v. Build programs using functions, procedures, exception handling and triggers.

1. Creating database tables.
2. Modify the table, Rename and Drop the table.
3. Modify the column Name ,data type, Rename and Drop the column.
4. Practical Based on Data Manipulation.
5. Practical Based on Using following clauses  
Simple select clause, Accessing specific data with Where,  
Ordered By,  
Distinct and Group By
6. Practical Based on Aggregate Functions.
7. Practical Based on implementing all String functions.
8. Practical Based on implementing Date and Time Functions.
9. Implement Nested Queries & JOIN operation.
10. Practical Based on performing different operations on a view.
11. PL/SQL programs using triggers.
12. PL/SQL programs using cursors.
13. PL/SQL programs using Functions & procedures in PL/SQL.
14. Make Database connectivity with front end tools.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1		3			
<b>CO2</b>		2		4		
<b>CO3</b>				4		
<b>CO4</b>			3			6
<b>CO5</b>			3			6

Mean = 3.5

The objective of the course is to outline the need for Software Project Management and highlight different techniques for software cost estimation and activity planning.

Upon completion of this course students will be able to:

- i. Gain the knowledge of various principles of managing and planning the project.
- ii. Understand the knowledge of various process models and estimation techniques.
- iii. Acquire the skills of planning the activity and identifying the risk in projects.
- iv. Obtain the knowledge of monitoring and controlling the projects.
- v. Gain the knowledge of allocating the staff and decision making in the projects.

### Unit 1:

**Project Evaluation and Project Planning:** Importance of Software Project Management – Activities Methodologies – Categorization of Software Projects – Setting objectives – Management Principles – Management Control – Project portfolio Management – Cost, benefit evaluation technology – Risk evaluation – Strategic program Management – Stepwise Project Planning.

### Unit 2:

**Project Life Cycle and Effort Estimation:** Software process and Process Models – Choice of Process models – mental delivery – Rapid Application development – Agile methods – Extreme Programming – SCRUM – Managing interactive processes – Basics of Software estimation – Effort and Cost estimation techniques – COSMIC Full function points – COCOMO II, A Parametric Productivity Model – Staffing Pattern.

### Unit 3:

**Activity Planning and Risk Management:** Objectives of Activity planning – Project schedules – Activities – Sequencing and scheduling – Network Planning models – Forward Pass & Backward Pass techniques – Critical path (CRM) method – Risk identification – Assessment – Monitoring – PERT technique – Monte Carlo simulation – Resource Allocation – Creation of critical patterns – Cost schedules.

### Unit 4

**Project Management and Control:** Framework for Management and control – Collection of data Project termination – Visualizing progress – Cost monitoring – Earned Value Analysis- Project tracking – Change control- Software Configuration Management – Managing contracts – Contract Management.

### Unit 5:

**Staffing in Software Projects:** Managing people – Organizational behavior – Best methods of staff selection – Motivation – The Oldham-Hackman job characteristic model – Ethical and Programmed concerns – Working in teams – Decision making – Team structures – Virtual teams – Communications genres – Communication plans.

### Text Book:

1. Bob Hughes, Mike Cotterell and Rajib Mall: **Software Project Management** ,5th Edition, Tata Mc Graw Hill, New Delhi, 2012.

Unit 1: Software Project Management page no (1-78)

Unit 2: Software Project Management page no (81-144)

Unit 3: Software Project Management page no (155-233)

Unit 4: Software Project Management page no : (238-283)

Unit 5: Software Project Management page no : (286-323)

### References:

1. Robert K. Wysocki , **Effective Software Project Management**, Wiley Publication,2011.
2. Walker Royce: **Software Project Management**, Addison Wesley,1998.
3. Gopaldaswamy Ramesh,**Managing Global Software Projects**,McGraw Hill Education,2013

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>			3	4		
<b>CO3</b>		2	3			
<b>CO4</b>				4		6
<b>CO5</b>				4	5	

Mean = 3.5

**BIT3601**

**WEBPROGRAMMING**

**TL (3+3)Hrs / 6Cr**

The objective of this course is to gain the knowledge of creating dynamic web pages using HTML5, CSS3, JavaScripts, PHP and MySQL.

Upon completion of this course students will be able to:

- i. Gain the fundamental knowledge ofHTML.
- ii. Apply the concepts ofCSS3.
- iii. Develop an depth knowledge in JavaScript.
- iv. Gain the fundamental knowledge inPHP
- v. Gain the basic knowledge in connecting MySql andPHP.

### Unit 1:

**HTML:** Basics of HTML, formatting and fonts, commenting code, color, hyperlink, lists, tables, images, forms, XHTML, Meta tags, Character entities, frames and frame sets, Browser architecture and Web site structure.

## Overview and features of HTML5

### Unit 2:

**Style Sheets:** Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS, CSS2, Overview and features of CSS3

### Unit 3:

**JavaScript:** Client side scripting with JavaScript, variables, functions, conditions, loops and repetition, Pop up boxes, Advance JavaScript: Javascript and objects, JavaScript own objects, DHTML : Combining HTML, CSS and Javascript, Events and buttons

### Unit 4:

**PHP:** Introduction and basic syntax of PHP, decision and looping with examples, PHP and HTML, Arrays, Functions, Browser control and detection, string, Form processing, Files, Advance Features: Cookies and Sessions

**Unit 5: PHP & MySQL:** Basic commands with PHP examples, Connection to server, creating database, selecting a database, listing database, listing table names, creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP my admin and database bugs –Report generation.

### Text Books:

1. **HTML 5**, Black Book, Dreamtech Press, 2<sup>nd</sup> edition,2016
2. **PHP, MySQL, JavaScript & HTML5 All-in-One for Dummies**, Steve Suehring, Janet Valade, John Wiley and Sons, Inc,2013.

Unit 1: HTML 5, Black Book page no (31-205)

Unit 2: HTML 5, Black Book page no(465-602)

Unit 3: HTML 5, Black Book page no(265-386)

Unit 4: PHP, MySQL, JavaScript & HTML5 All-in-One for Dummies (page no : 150-200)

Unit 5: PHP, MySQL, JavaScript & HTML5 All-in-One for Dummies (page no : 250-350)

### References:

1. **Web Technologies**, Black Book , Dreamtech Press, edition 2010
2. **Web Design** , Joel Sklar, Cengage Learning, 6<sup>th</sup> edition,2015
3. **Developing Web Applications in PHP and AJAX**, Harwani, McGrawHill,2010

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>		2		4		
<b>CO3</b>			3			6
<b>CO4</b>		2	3			
<b>CO5</b>			3		5	6

Mean = 3.5

**BIT3611**

**PYTHONPROGRAMMING**

**6 (3+3) Hrs /6Cr**

The main aim of the course is to teach the essentials of Python and train the students to develop applications in Python.

Upon completion of this course students will be able to:

- i. Acquire the basic knowledge on the fundamentals of python.
- ii. Understand tuples, list, set and dictionary concepts.
- iii. Write programs using functions, strings and date.
- iv. Demonstrate the creation of package and module. Learn to know, how to fix errors in the code and to read and write files in Python
- v. Gain knowledge on OOPS in Python and develop simple programs.

### **Unit 1:**

**Introduction to Python:** Python overview - comments – Identifiers – Reserved keywords – data types – Understanding Python variables - Python basic Operators - statements and expressions – python blocks – Boolean expressions- control statements – iteration statements input/output with print and input functions - Python program flow control statements.

### **Unit 2:**

**Tuples, List and Dictionaries:** Create tuple – accessing tuple – tuple assignment – tuple as return value – Basic tuple operators and functions – List - insert and access elements – delete elements from list – Built in list operators and functions – returning a list from a function – Dictionaries – Sets.

### **Unit 3:**

**Function, Strings and Date&Time:** Built in Functions – User defined Functions – Python Recursive Function – Strings – String slices - String formatting operator and functions - String handling functions – Ticks – calendar module – time module - Powerful Lambda function in python.

#### Unit 4:

**Files, Exception and Packages :** Text files–Opening and closing file –File handling functions - Exception handling – assertions in python-user defined exceptions - Modules - Importing modules - Understanding Packages.

#### Unit 5:

**Python Object Oriented Programming :** Class, Object and Instances - Class attributes - Constructor and Destructors - Data Encapsulation -Regular Expressions - Inheritance-Method Overloading and Overriding-MySQL Database connectivity – Introduction to GUI programming.

#### Text Books:

1. Ashok Namdev kamthane, Amit amthane ,“**Programming and problem solving with python**” McGraw hill2017.

2 Jeeva Jose, P.Sojan Lal ,”**Introduction to Computing & Problem Solving WithPYTHON** “,Khanna publication, 2016.

Unit1 : Programming and problem solving with python ,page no (1.1 -5.7)

Unit 2 : Programming and problem solving with python ,page no (8.1-9.3.6) and (11.1 – 11.3.13)

Unit 3: Programming and problem solving with python ,page no (6.1 –7.8.9)

Unit 4: Introduction to Computing & Problem Solving With PYTHON , page no (149 -204) and (233-244)

Unit 5 : Introduction to Computing & Problem Solving With PYTHON , page no (206-232) and (264 -272)

#### References:

1.Balagurusamy, “**Introduction to Computing & Problem Solving Using Python**”, Mc Graw Hill Education,2016.

2.Allen Downey,Jeffrey Elkner, Chris Meyers , “**How to think like a computer scientist : learning with Python**” ,2012

3.R. NageswaraRao ,**Core Python Programming** , DreamtechPress,2016

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>			3			
<b>CO3</b>				4		6
<b>CO4</b>					5	
<b>CO5</b>		2				6

Mean = 3.8

The aim of the course is to train the students to understand the basic software engineering concepts and make them to analyze, estimate & design new software with quality standards.

Upon completion of this course students will be able to:

- i. Get insight on planning the software development process.
- ii. Process SRS and perform requirement engineering of software development.
- iii. Develop strategies to initiate, plan, execute, monitor and control the software design.
- iv. Create test plans to verify and validate a system.
- v. Apply project management tools and techniques for process development.

#### **Unit 1:**

**Introduction to Software Engineering:** Software Characteristics - size factors - Factors influencing quality and productivity – Planning a Software Project- Defining the problem, Goals & Requirements - Developing a solution strategy – Planning the Development Process – Planning an Organization Structure–Project Structure – Project Team Structure - Software Cost Estimation.

#### **Unit 2:**

**Software Requirements and Specifications:** Value of a good SRS - Requirements Specification - Formal Specification Techniques – Requirement Engineering – Requirements Documents – Requirements Elicitation – Requirements Analysis and Negotiation – Requirements Validation – Requirements Management.

#### **Unit 3:**

**Fundamentals Design concepts:** Modules and modularizing Criteria- Design Notations –Design techniques – Detailed Design Consideration –Real time and distributed system design –Test plan- Mile stones walk through and inspection –Design guide lines.

#### **Unit 4:**

**Coding:** Programming Practice – Top-down and Bottom-up - structured programming – Information Hiding – Programming style-Verification and validation Techniques - Quality assurance - Unit testing and Debugging – System testing – Formal Verification.

#### **Unit 5:**

**Software Maintenance:** Issues in Maintenance – Enhancing maintainability during development - Configuration management – Source code metrics – Other maintenance tools and Techniques.

#### **Text Books:**

1. Richard Fairley, “ **Software Engineering** ” Tata Mcgraw Hill 2012 Edition.
2. Roger S Pressman, “ Software Engineering A Practisener Approach” McGrawHill, 7<sup>th</sup> Edition, 2010.

Unit 1: Software Engineering Concepts page no: (5 – 20) (30 – 60) & (64 – 80)



- Unit 2: Software Engineering Concepts page no: (88 -110)
- Unit 3: Software Engineering Concepts page no: (138 – 188)
- Unit 4: Software Engineering Concepts page no: (267 - 305)
- Unit 5: Software Engineering Concepts page no: (311 – 327)

**References:**

1. Ian SommerVille, “RequirementsEngineering”,Johnwiley,1998.
2. Stephen R. Schach, “Object Oriented and Classical Software Engineering”, TataMcgrawHill 5<sup>th</sup>Edition.
3. Watts S. Humphrey, “ A Discipline for Software Engineering”, PearsonEducation,2001.
4. Boriz and Beizer, “Software Testing Techniques”, DreamTech, 2<sup>nd</sup> Edition –2000.

<b>Bloom’s Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>				4		
<b>CO2</b>		2				
<b>CO3</b>						6
<b>CO4</b>					5	
<b>CO5</b>			3			

Mean = 4

**BIT3507**

**ENTERPRISERESOURCEPLANNING**

**5Hrs / 5Cr**

The aim of this course is to understand the business process of an enterprise and ERP project management cycle. It also helps students to learn business modules and ERP market. It also deals with emerging trends in ERP.

Upon completion of this course students will be able to:

- i. Analyse the concept of resource planning and its related technologies.
- ii. Understand, Design and implement ERP methodologies.
- iii. Discuss different business modules available in an ERP package and the features of the business modules.
- iv. Analyze the ERP market, various vendors and their ERP product. Compare vendors and their ERP packages.
- v. Outline the Enterprise Application Integration and the trends in ERP

**Unit 1:**

**RP and technology:** Introduction – Related Technologies – Business Intelligence – E-Commerce and E-Business – Business Process Reengineering – Data Warehousing – Data Mining – OLAP – Product life Cycle management – SCM –CRM.

**Unit 2:**

**ERP implementation methodology:** Implementation Challenges – Strategies – Life Cycle – Pre-implementation Tasks – Requirements Definition – Methodologies – Package selection – Project Teams – Process Definitions – Vendors and Consultants – Data Migration – Project management– Post ImplementationActivities.

**Unit 3:**

**Business modules in ERP:** Operation and Maintenance – Performance – Maximizing the ERP System – BusinessModules–Finance–Manufacturing–HumanResources–Plantmaintenance–MaterialsManagement – Quality management – Marketing – Sales, Distribution and service.

**Unit 4:**

**ERP market:** Marketplace – Dynamics – SAP AG – Oracle – PeopleSoft – JD Edwards – QAD Inc – SSA Global – Lawson Software – Epicor –Intutive.

**Unit 5:**

**Trends in ERP:** Enterprise Application Integration – ERP and E-Business – ERP II – Total quality management – Future Directions – Trends in ERP.

**Text Books:**

1. Alexis Leon, “**ERP DEMYSTIFIED**”, Tata McGraw Hill, Second Edition,2008.

2. Mary Sumner, “Enterprise Resource Planning”, Pearson Education,2007.

Unit 1: ERP DEMYSTIFIED page no (24 - 49) and (93 –193)

Unit 2: ERP DEMYSTIFIED page no (235 - 359) and (385 - 407)

Unit 3: ERP DEMYSTIFIED page no (457 -512)

Unit 4: ERP DEMYSTIFIED page no (513 -536)

Unit 5: ERP DEMYSTIFIED page no (542 -582)

**References:**

1. Jim Mazzullo,”SAP R/3 for Everyone”,Pearson,2007.

2. Enterprise Resource Planning Paperback – 26 Sep 2007by Alexis Leon 2<sup>nd</sup> edition. 2<sup>nd</sup>edition.

3. Biao Fu, “SAP BW: A Step-by-Step Guide”, First Edition, PearsonEducation,2003

<b>Bloom’s Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>			3			
<b>CO3</b>			3	4		
<b>CO4</b>				4		
<b>CO5</b>		2			5	6

Mean = 3.5

The objective of this course is to gain knowledge about the Internet, various network protocols, internet connectivity and other internet technologies behind the screen.

Upon completion of this course students will be able to:

- i. Get insights on basics of Internet and its terminologies.
- ii. Understand the TCP/ IP protocols, internet addressing scheme
- iii. Discuss various internet connectivity types.
- iv. Attain basic knowledge on computer networks and security.
- v. Explore the features of email and its services.

#### **Unit 1:**

**Introduction to Internet:** Internet, Growth of Internet, Owners of the Internet, Anatomy of Internet, ARPANET and Internet history of the World Wide Web, basic Internet Terminology, Net etiquette. Internet Applications – Commerce on the Internet, Governance on the Internet, Impact of Internet on Society – Crime on/through the Internet.

#### **Unit 2:**

**TCP/IP – Internet Technology and Protocol:** Packet switching technology, Internet Protocols: TCP/IP, Router, Internet Addressing Scheme: Machine Addressing (IP address), E-mail Addresses, Resources Addresses

#### **Unit 3:**

**Internet Connectivity:** Connectivity types: level one, level two and level three connectivity, Setting up a connection: hardware requirement, selection of a modem, software requirement, modem configuration, Internet accounts by ISP: Telephone line options, Protocol options, Service options, Telephone line options – Dialup connections through the telephone system, dedicated connections through the telephone system, ISDN

#### **Unit 4:**

**Internet Network:** Network definition, Common terminologies: LAN, WAN, Node, Host, Workstation, bandwidth, Interoperability, Network administrator, network security, Network Components: Servers, Clients, Communication Media, Types of network, Addressing in Internet, Network topologies.

#### **Unit 5:**

**Services on Internet (Definition and Functions):** WWW, Telnet, FTP, IRC and Search Engine, Electronic Mail - Email Networks and Servers, Email protocols, Structure of an Email, Email Clients, Web based E-mail. Email encryption- Address Book, Signature File. Current Trends on Internet: Languages, Internet Phone, Internet Video, collaborative computing, e-commerce.

#### **Test Book:**

1. Greenlaw R and Hepp E “**Fundamentals of Internet and www**” 2<sup>nd</sup> Edition, TataMcGrawHill, 2007.

Unit 1: page no (319 -358)

Unit 2: page no (323 -338)

Unit 3: page no (311 -330)

Unit 4: page no (290 -300)

Unit 5: page no (325 -330)

**Reference:**

1. D. Comer, “The Internet Book”, Pearson Education,2009.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>		2				
<b>CO3</b>			3			
<b>CO4</b>				4		
<b>CO5</b>					5	6

Mean = 3.5

**BIT3602**

**.NETProgramming**

**TL 6 (3+3)Hrs / 6 Cr**

The main aim of the course is to provide in depth knowledge about .NET frame work, VB.Net, ASP.NET and ADO.NET. It also equips the students to develop window applications and dynamic web application.

Upon completion of this course students will be able to:

- i. To understand the dot net framework and its features
- ii. Explore the features of IDE and build window based applications using forms, controls, events, procedures and functions
- iii. Understand exception handling, delegates and inheritance concept and write program on console application.
- iv. Create database connectivity programs using ADO.NET.
- v. Gain knowledge on ASP.NET and design simple, dynamic web pages.

**Unit 1:**

**Introduction:** Introduction to .NET-Evolution -.net platform-advantages of .net-working of .net- .basic architecture of net frame work-common language run time- architecture of CLR-features of CLR -common language specification-unified programming classes- meta data –assembly-MSIL-Just In Time compiler-class loader-verifier- security in .net.

**Unit 2:**

**VB.NET:** Visual studio .net IDE-Window based applications-Data types-operators- Event handling -loading and showing forms -adding controls-working with simple controls-adding menus-menus-advanced windows applications-creating MDI application.

**Unit 3:**

**VB.NET Programming concepts:** Introduction to console application- Procedures-OOPs in VB.net- class-object-inheritance-polymorphism-inheritance-my base class keyword-my class keyword-abstract base class-exception handling-delegates.

**Unit 4:**

**ADO.NET :** Overview of ADO.NET architecture-ADO.NET Component model- managed provider in ADO.net – advantages of ADO.net - data access using ADO.NET - ADO.net data form wizard.

**Unit 5:**

**ASP.NET:**Features of ASP.net - ASP.net page life cycle-using common web controls - creating simple web applications - create web applications using data base connectivity - Web services.

**Text Book:**

1. **Visual Basic 2008 Programming Black Book**, Kogent Solutions Inc, Published by Dreamtech Press, Platinum Edition

Unit 1: page no (1-20)

Unit 2: page no (30-72) and (186-453)

Unit 3: page no (78-178)

Unit 4: page no (1121-1168)

Unit 5: page no (722 -766) and (1213-1235)

**References:**

- 1.Nitini pandey yesh singhal, mridula pairhar “Visual studio.net programming”, Wiley- Dream tech India(p) Ltd,2002.
- 2.Steven holzner, “Visual basic .net black book”, coriolis group book,2009.
- 3.Professional Visual Studio 2015 (WROX) ,Wiley,2015
- 4.Nikhil Kothari, Vandana datye “Developing Microsoft ASP.NET Server controls and components”Tata Mcgraw Hill publishing company limited,2002.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>		2				6
<b>CO3</b>			3		5	

<b>CO4</b>			3			6
<b>CO5</b>						6

Mean = 4

**BIT3604**

**SOFTWARE DEVELOPMENT LAB II**

**6 Hrs /6 Cr**

The main objective of this software development lab is to improve the acquired technical skills of the student by giving required lab practices. It supports them to work efficiently in the latest technologies. It improves the student's problem solving ability.

- i. Acquire practical knowledge within the chosen area of information technology for project development.
- ii. Identify, analyze, formulate and handle projects with a comprehensive and systematic approach.
- iii. Apply knowledge of computing and information technologies to produce effective designs and solutions for specific computer-based problems.
- iv. Effectively communicate during project development and present results for the area of interest.
- v. Perform test to achieve specific computer based outcomes

Based on case study of the following lab components need to be done by students

1. Planning a problem
2. Analyzing the problem
3. Requirement analysis
4. Designing prototype.
5. Table Design
6. Dataflow diagram/ UML diagrams
7. Coding
8. Testing.
9. Implementation.
10. Maintenance.

**Suggested case study topics:**

**Student may take any one of the topics listed below but not necessarily limited to**

1. Client/server application
2. Network security
3. Embedded system
4. Image processing

5. Datamining
6. Distributednetworks
7. Softwareengineering
8. Internet ofthings
9. Mobileapplications.
10. CloudComputing.
11. Web applicationdevelopment

### Evaluation pattern

It adopts the evaluation pattern of a lab course of our college which contains 75% marks allotment for the continuous assessment using project reviews and 25% marks allotment for final report submission.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1	2				
<b>CO2</b>		2				6
<b>CO3</b>				4		
<b>CO4</b>						6
<b>CO5</b>		2			5	

Mean = 3.5

**BIT3606**

**DATA MINING ANDDATAWAREHOUSING**

**6Hrs/6Cr**

This course enables the student to understand the basic concepts of data mining and warehousing and various methodologies in it.

Upon completion of this course students will be able to:

- i. Understand the basic principles and concepts and of data mining and datawarehousing.
- ii. Identify the need for data pre-processing and various steps involved in it.
- iii. Categorize the methodologies and algorithms used in data mining. Familiar with association rule mining techniques and constraint based association mining.
- iv. Identify the usages of Decision tree Algorithm, Bayesian Classification, Back Propagation techniques in classification analysis
- v. Outline the applications and trends in Data mining. Compare various Mining Techniques such as Web mining, Sequence mining, Spatial mining etc.,

**Unit 1:**

**Introduction to DM & DW:** Data Mining versus KDD - Data Mining & Goals – Stages of the Data Mining Process - Types of Databases – Data warehouse – Multidimensional data model –DW Architecture - OLAP operations – From Data Warehousing to Data Mining.

**Unit 2:**

**Data Preprocessing:** Data Preprocessing - Why Preprocess the data – Data cleaning – Data Integration – Data Transformation – Data Reduction – Data Discretization and generating concept hierarchies.

**Unit 3:**

**Data mining Task and Association rules:** Data Mining tasks - Architecture of Data mining system - Data mining primitives – Data mining query language. Market Basket Analysis - Association Rule Mining – The Apriori Algorithm – Multilevel Association Rules – Multidimensional Association Rules – Constraint Based Association Mining.

**Unit 4:**

**Classification and Prediction:** Issues regarding Classification and Prediction – Decision Tree induction – Bayesian Classification – Back Propagation – Classification Methods – Prediction – Classifiers accuracy.

**Unit 5:**

**Advance Data Mining:** Applications and trends in Data Mining- Social Impacts of Data Mining - Introduction to Advanced Topics: Web Mining, Spatial Mining and Temporal Mining

**Text Book:**

1.”**Data Mining: Concepts and Techniques**” Book by Jiawei Han, editor Micheline Kamber, 2012.

Unit 1: page no (5-15) and (126 – 148)

Unit 2: page no (83 - 119)

Unit 3: page no (243 - 300)

Unit 4: page no (327 - 354), (398 - 405) and (415 – 421)

Unit 5: page no (607 - 624)

**References:**

1. Shawkat Ali A B M, Saleh A. Wasimi, “Data Mining: Methods and Techniques, Third Indian Reprint, Cengage Learning, 2010.

2. Soman K. P., Shyam Diwakar, Ajay V. “Insight into Data Mining Theory and Practice” , Fifth Printing, PHI Learning, 2011.



<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1	2				
<b>CO2</b>					5	
<b>CO3</b>			3			
<b>CO4</b>			3		5	
<b>CO5</b>						6

Mean = 3.5

**BIT3508**

**MOBILE TECHNOLOGIES**

**5Hrs / 5Cr**

This course enables the student to learn the basics of wireless voice and data communication technologies along with Android Application Development.

Upon completion of this course students will be able to:

- i. Grasp the concepts and features of Wireless transmission and compare various media of accessing wireless devices.
- ii. Describe the components and functionalities of mobile network.
- iii. Understand the applications of e-commerce and m-commerce
- iv. Acquire the basic knowledge of architecture of various mobile OS and compare hybrid and native application.
- v. Obtain the knowledge of applying IOT in various fields.

**Unit 1:**

**Wireless Technology:** Introduction – Wireless transmission – Frequencies for radio transmission – MAC – SDMA – FDMA – TDMA – CDMA – GSM.

**Unit 2:**

**Mobile Technology:** Evolution of Mobile Technology, Lte, VoLte, wifi, Lifi,, Bluetooth, NFC, Mobile Operating System. Sensors used in Mobile devices, GPS and GeoFencing.

**Unit 3:**

**Mobility Management:** Call Handoff and Roaming (national and international)

**Mobile Commerce Services:** Base Services Platform, Mobile Commerce Services for Consumers, Mobile

Commerce Services for Businesses.

Case Study: ecommerce application.

#### **Unit 4:**

**Mobile OS Architecture:** Android OS and its architecture, IOS and its architecture, IDE used for app development in android and ios, Application data management, publishing the app to playstore / app store. Native application, Hybrid application, comparison of native and hybrid approach.

#### **Unit 5:**

**Internet of Things:** IOT overview, applications, potential & challenges, and architecture, Arduino and Raspberry Pi architecture.

Case study: Control of a smart home.

#### **Text Books:**

1. **Wireless Communications & Networks**, Second Edition, William Stallings by Pearson, 2005.
2. M-Commerce: Technologies, Services, and Business Models by Norman Sadeh, September 2002
3. Android Application Development Black Book, Pradeep Kothari, dreamtech press, 2014
4. Internet of Things: A Hands-On Approach Paperback – 2015 by Arsheep Bahga (Author), Vijay Madiseti (Author)

Unit 1: Introduction to Wireless and mobile systems page no (132-141) & page no(151-165)

Unit 2: Wireless Communications & Networks page no (421-477) , Introduction to Wireless and mobile systems page no (377-385), page no(305-310)

Unit 3: Introduction to Wireless and mobile systems page no (220-232) M-Commerce: Technologies, Services, and Business Models page no(159-181)

Unit 4: PHP, MySQL, JavaScript & HTML5 All-in-One for Dummies (page no : 150-200)

Unit 5: PHP, MySQL, JavaScript & HTML5 All-in-One for Dummies (page no : 250-350)

#### **References:**

1. Android Programming for Beginners, Book by John Horton, December 2015
2. Dharma Prakash Agarwal, Qing and An Zeng, "Introduction to Wireless and Mobile systems", Thomson Asia Pvt Ltd, 2005.
3. Jochen Schiller, "Mobile Communications", PHI/Pearson Education, Second Edition, 2003.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1					
<b>CO2</b>			3			
<b>CO3</b>				4		
<b>CO4</b>		2	3			6
<b>CO5</b>		2			5	6

Mean = 3.5

**BIT3200**

**ENVIRONMENTAL STUDIES**

**4 Hrs / 2 Crs**

The objective of this course is to create awareness about the environmental pollution and how to manage and dispose the Solid wastes and E-wastes.

Upon completion of this course students will be able to:

- i. Understand, analyze the scope of environmental studies
- ii. Analyze Functions of biodiversity
- iii. Compare various types of natural resource
- iv. Acquire knowledge on the environmental pollution.
- v. Develop a solid waste management technique

**Unit 1:**

**Introduction to environment and environmental studies:** Introduction to environment – components – nature of environment - need of awareness – reasons for environmental problems – anthropocentric and eco centric views. Environmental studies - multidisciplinary nature – scope and aim – sustainable development.

**Unit 2:**

**Ecosystem and Biodiversity:** Ecosystem – structure – functions – simplified ecosystem models (food chain and food webs and their types, energy flow) - forest – grassland – pond – ecosystems – ecological succession - ecological pyramids. Biodiversity – definition – types – species – genetic and ecosystem diversities- values of biodiversity – threats to biodiversity – conservation of biodiversity – endemism – biodiversity hotspots – Indian biodiversity

**Unit 3:**

**Natural resources:** Natural resources – definition – types – forest resources – uses – deforestation- reasons - effects – water resources – dams – effects of dams - food resources – modern agriculture– ill effects - energy resources- types – hydel – nuclear – solar – wind and biomass energy – world scenario – Indian scenario.

Population and environment – reasons for over exploitation of resources – population –demography – population curves – population explosion – effects – consumerism – effects –urbanization – reasons and effects- role of an individual.

**Unit 4:**

**Environmental Pollution:** Pollution – definition – types – air pollution – causes and effects – effects of CO<sub>2</sub> – CO – NO<sub>x</sub> –SO<sub>x</sub> – particulates – control of air pollution – water pollution – causes – effects –remedies – soil pollution

**Unit 5:**

**Solid Waste Management:** Solid waste management - House hold, Hospital, Insecticide, pesticide, fungicide, Biomedical, Animal and human excreta, E – waste – ill effects of e-waste - Effects of Solid Waste: Ground water pollution, Increase in infecting agents in soil, Soil quality deterioration, On human health, Disposal of Solid Waste – Solid Waste Management: Open dumping, Landfilling, Incineration, Re – use, reclamation, recycle, Composting

**TextBook:**

1. Perspective in Environmental Studies – Anubha Kaushik, C.P.Kaushik

Unit 1: EnvironmentalStudies      page no: (1 – 4)  
 Unit 2: Environmental Studies      page no: (65 – 100)  
 Unit 3: EnvironmentalStudies      page no: (5 –55)  
 Unit 4: Environmental Studies      page no: (123 –142)  
 Unit 5: Environmental Studies      page no: (145 –160)

**References:**

1. Environmental Studies - Sanjay Kumar Batra, Kanchan Batra, Harpreet Kaur &Parul Pant – 2nd Edition 2016
2. Environmental Studies: From Crisis to Cure, R. Rajagopalan, 3<sup>rd</sup> edition2015

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>				4		
<b>CO2</b>		2				
<b>CO3</b>			3			
<b>CO4</b>	1				5	
<b>CO5</b>						6

Mean = 3.5

The aim of this course is to introduce the broad perspective of cloud architecture and model. To understand the concept of Virtualization and the design of cloud Services. It also helps the students to learn cloud programming model.

Upon completion of this course students will be able to:

- i. Understand Cloud Computing models and architecture of Cloud Computing.
- ii. Describe the importance of virtualization along with their technologies.
- iii. Summarize various architectural design and technologies.
- iv. Analyze the components of open stack, open nebula, Aneka & Hadoop Cloud platform and understand Map Reduce and Amazon webService.
- v. Understand the importance of the security in the Cloud applications

### Unit 1:

**Cloud architecture and model:** Technologies for Network-Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture. Cloud Models: -Public, Private and hybrid Cloud – Cloud Services: IaaS, PaaS, SaaS.

### Unit 2:

**Virtualization:** Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation.

### Unit 3:

**Cloud infrastructure:** Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development, Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment, Global Exchange of Cloud Resources.

### Unit 4:

**Programming model:** Parallel and Distributed Programming Paradigms – MapReduce , Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support- Amazon AWS - Cloud Software Environments - OpenNebula, OpenStack, Aneka

### Unit 5:

**Security in the cloud:** Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security– Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security – Identity Management and Access Control – Autonomic Security.

### Text Book:

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, “**Distributed and Cloud Computing, From Parallel Processing to the Internet of Things**”, Morgan Kaufmann Publishers, 2012.

Unit 1: Distributed and Cloud Computing page no: (13 – 35) & (191 – 205)

Unit 2: Distributed and Cloud Computing page no: (129 -178)

Unit 3: Distributed and Cloud Computing page no: (218 – 220) (225 – 227) & (234 – 248)

Unit 4: Distributed and Cloud Computing page no: (343 -369) & (387 – 394)

Unit 5: Distributed and Cloud Computing page no: (398 -405)

**References:**

1. John W.Rittinghouse and James F.Ransome, “Cloud Computing:Implementation,Management, and Security”, CRC Press,2010.
2. Toby Velte, Anthony Velte, Robert Elsenpeter, “Cloud Computing,APracticalApproach”, TMH, 2009.
3. Kumar Saurabh, “ Cloud Computing – insights into New-Era Infrastructure”,WileyIndia,2011.

<b>Bloom's Taxonomy</b>	<b>K1</b>	<b>K2</b>	<b>K3</b>	<b>K4</b>	<b>K5</b>	<b>K6</b>
<b>CO1</b>	1	2				
<b>CO2</b>			3		5	
<b>CO3</b>					5	
<b>CO4</b>						6
<b>CO5</b>		2		4		

Mean = 3.5