

(Annexure D-2_BSCIT3to6)

FACULTY OF COMPUTER SCIENCE & IT

SYLLABUS

of

Bachelor of Science (Information Technology)

(Semester III-VI)

(Under Continuous Evaluation System)

(12+3 System of Education)

Session 2023-24



The Heritage Institution

**KANYA MAHA VIDYALAYA
JALANDHAR
(Autonomous)**

Program Specific Outcomes

Bachelor of Science (Information Technology) (Session 2023-24)

After completing this program, the students will be able to:

PSO1: Apply skills for development of software and websites for providing efficient solution to IT based problems.

PSO2: Comprehend development process in IT industry through ethical, defined and innovative techniques.

PSO3: Achieve leadership role and team player role to be able to work in multidisciplinary areas at various job roles.

PSO4: Identify and demonstrate the implementation of various tools and technologies involved in the field of Information Technology.

PSO5: Demonstrate proficiency in the field of Programming, Web development and IT enabled services.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Information Technology)

Session 2023-24

Bachelor of Science (Information Technology) Semester – III							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BITL-3111	Computational Problem Solving	C	75	60	-	15	3
BITL-3112	Internet Applications	C	75	60	-	15	3
BITL-3113	System Analysis and Design	C	75	60	-	15	3
BITP-3114	Lab on Computational Problem solving	C	50	-	40	10	3
BITP-3115	Lab on Internet Applications	C	25	-	20	05	3
AECE - 3221	* Environmental Studies (Compulsory)	AC	100	60	20	20	3
SECP - 3512	*Personality Development	AC	25	20	-	05	1
	Total		300				

Note:

C - Compulsory

AC - Audit Course

* Marks of these courses will not be added in total marks and only grades will be provided.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Information Technology)

Session 2023-24

Bachelor of Science (Information Technology) Semester - IV							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BITL-4111	Database Management System	C	75	60	-	15	3
BITL-4112	Data Structures	C	75	60	-	15	3
BITL-4113	Object Oriented Programming- II	C	75	60	-	15	3
BITL-4114	E-Business	C	75	60	-	15	3
BITP-4115	Lab on Database Management System	C	25	-	20	05	3
BITP-4116	Lab on Object Oriented Programming - II	C	50	-	40	10	3
BITP-4117	Lab on Data Structures	C	25	-	20	05	3
SECS - 4522	*Social Outreach	AC	25	-	20	05	1
	Total		400				

Note:

C - Compulsory

AC - Audit Course

* Marks of these courses will not be added in total marks and only grades will be provided.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Information Technology)

Session 2023-24

Bachelor of Science (Information Technology) Semester - V							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BITL-5111	Computer Networks	C	100	80	-	20	3
BITL-5112	Web Technologies	C	100	80	-	20	3
BITL-5113	Operating System	C	100	80	-	20	3
BITP-5114	Lab on Web Technologies	C	50	-	40	10	3
BITP-5115	Lab on Operating System	C	50	-	40	10	3
SECJ-5551	* Job Readiness Course	AC	25	20	-	05	1
	Total		400				

Note:

C – Compulsory

*** Marks of these courses will not be added in total marks and only grades will be provided**

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Science (Information Technology)

Session 2023-24

Bachelor of Science (Information Technology) Semester - VI							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BITL-6111	Computer Graphics	C	75	60	-	15	3
BITL-6112	Digital Marketing	C	75	60	-	15	3
BITP-6113	Lab on Computer Graphics	C	50	-	40	10	3
BITD-6114	Project	C	200	-	160	40	3
	Total		400				

Note:

C - Compulsory

Bachelor of Science (Information Technology) Semester – III

Session 2023-24

COURSE CODE: BITL-3111

COMPUTATIONAL PROBLEM SOLVING

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend basics of Python programming like operators, data types, control structures, etc.

CO2: Apply list and dictionaries for handling and accessing data through iterations.

CO3: Implement various built-in and user defined function to solve mathematical problems.

CO4: Comprehend Object Oriented Programming and modules in Python.

Bachelor of Science (Information Technology) Semester – III

Session 2023-24

COURSE CODE: BITL–3111

COMPUTATIONAL PROBLEM SOLVING

Examination Time: 3 Hours.

Max. Marks: 75

Theory: 60

CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT- I

Introduction to Problem solving using Python: Process of Computational Problem Solving, Python Programming Language.

Data and Expressions: Literals, Variables and Identifiers, Operators, Expressions, Statements and Data Types.

Control Structures: Boolean Expressions (Conditions), Logical Operators, Selection Control, Nested conditions, Debugging.

UNIT- II

Lists: List Structures, Lists (Sequences) in Python, Iterating Over Lists (Sequences) in Python.

Iteration: While statement, Definite loops using For, Loop Patterns, Recursive Functions, Recursive Problem Solving, Iteration vs. Recursion.

Dictionaries: Dictionaries and Files, Looping and dictionaries, Advanced text parsing.

UNIT- III

Functions: Fundamental Concepts, Program Routines, Flow of Execution, Parameters & Arguments.

Files: Opening Files, Using Text Files, String Processing, Exception Handling.

UNIT- IV

Objects and Their Use: Introduction to Object Oriented Programming.

Modular Design: Modules, Top-Down Design, Python Modules.

Using Databases and SQL: Database Concepts, SQLite Manager Firefox Add-on, SQL basic summary, Basic Data modeling, Programming with multiple tables.

References/Textbooks:

1. Charles Severance, Python for Informatics, Version 0.0.7.
2. Charles Dierbach, Introduction to Computer Science Using Python: A Computational Problem-Solving Focus, Wiley Publications, 2012.
3. Guttag John V, Introduction To Computation And Programming Using Python, PHI, 2014.
4. Jeeva Jose and Sojan P. Lal, Introduction to Computing& Problem Solving Through Python, Khanna Publishers, 2015.
5. Mark J. Guzdial, Introduction to Computing and Programming in Python, Pearson Education, 2015.
6. Kenneth Lambert, Fundamentals of Python, Course Technology, Cengage Learning, 2015
7. Mark Lutz, Learning Python, O'Reilly Media, 2013

Note: The latest editions of the books should be followed.

**Bachelor of Science (Information Technology) Semester- III
(Session 2023-24)**

COURSE CODE: BITL-3112

INTERNET APPLICATIONS

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend basics of internet and email along with their effective use.

CO2: Apply HTML for development of static webpages.

CO3: Implement styling and behavior in webpages through the use of CSS.

CO4: Create and manage websites through the application of WordPress content management system.

**Bachelor of Science (Information Technology) Semester- III
(Session 2023-24)**

COURSE CODE: BITL-3112

INTERNET APPLICATIONS

**Max. Marks: 75
Theory: 60
CA: 15**

Examination Time: 3 Hours

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Internet: Introduction, working, applications, DNS, IP addresses, Search engine and its working. File Transfer Protocol (FTP), Telnet, HTTP, WWW and its working.

E-Mail Basics: Introduction, Advantage and disadvantage, protocols and structure of an e-mail message, working of e-mail (sending and receiving messages).

UNIT-II

HTML: Introduction, Features, Program Structure, Headings, Paragraph, Styling, Formatting, Hyperlinks, Image, Table, List, Frame, Block, Entities, Form, Form elements, Audio, Video, Embed YouTube Video.

UNIT-III

CSS: Introduction, Advantages and Limitations, types, selector, colors, background, box model, text, font, display, position, z-index, float, clear, rounded corners, 2D Transformations, Transitions and Animations.

UNIT-IV

WordPress: Installation, Configuration, Management - Managing Posts, comments, pages, categories, Plugins, Widgets, Tags, images, users, Import and export content, Updating WordPress. Useful Plugins – MailChimp, Creating Gallery, Stripe Checkout, Verified Authorship, Google Maps, Google Analytics.

References / Textbooks:

1. Anshuman Sharma, Fundamentals of Internet Applications, Lakhanpal Publications, 2016.
2. Ikvinderpal Singh, Internet Applications, Khanna Book Publishing Company, 1st Edition, 2011
3. P. Rizwan Ahmed, Internet & its Applications, Margham Publications, 2013.
4. Douglas E. Comer, Computer Networks and Internet with Internet Applications, Pearson, 4th Edition, 2008.
5. Satish Jain/Vineeta Pillai, Wireless Communication & Networking made Simple, BPB Publishers, 2007.
6. Laura Lerney, Rafe Colburn, Jennifer Kyrnin, Mastering HTML, CSS & Javascript Web Publishing, BPB Publishers, 1st Edition, 2016.
7. Lisa Sabin-Wilson, WordPress for Dummies, Wiley, 8th Edition, 2021.

Bachelor of Science (Information Technology) Semester – III

Session 2023-24

COURSE CODE: BITL-3113

SYSTEM ANALYSIS AND DESIGN

Course Outcomes:

After passing course the student will be able to:

CO1: Gather data to analyze and specify the requirements of a system.

CO2: Comprehend various system analysis and design processes.

CO3: Identify different types of testing and involved documentation.

CO4: Comprehend implementation of system along with its maintenance.

Bachelor of Science (Information Technology) Semester – III

Session 2023-24

**COURSE CODE: BITL-3113
SYSTEM ANALYSIS AND DESIGN**

Examination Time: 3 Hours.

Max. Marks: 75

Theory: 60

CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

System Planning and Analysis: Introducing System Analysis and Design, SA&D Concepts, Qualifications and Responsibilities of System Analyst as an agent of change, Systems development life cycle and role of different stages Determining Feasibility, types of feasibility, Feasibility Study.

Information Requirements analysis: Sampling and investigating data through Interviews and Questionnaires, use of Structured English, Decision tables.

UNIT-II

System Analysis Process: Using data flow diagrams, data dictionaries, describing Process specifications and system proposal

System Design: Architectural Design, User Interface Design, Data Design, Module specifications, Module coupling and cohesion, Top-down and bottom-up design,

UNIT-III

Tools for Structured design and System design considerations.

System Development and Testing: Introduction to testing and its types, Types of Documentation and Documentation Tools.

UNIT-IV

System Implementation: Quality Assurance, Managing system implementation, Transition to new system. Different modes for training users.

System Maintenance: Concept of maintenance and its importance, compare and contrast different types of maintenance.

References/Textbooks:

1. Marvin R. Gore and John W. Stubbe, Elements of System Analysis, Dubuque, Iowa Wm.C. Brown 1988.
2. Thapliyal M.P., System Analysis and Design, JBD Publisher, 2002.
3. Hoffer, Modern Systems Analysis and Design, George and Valacich, Pearson, 2014.
4. Dorny C. Nelson, Understanding Dynamic System: Approaches to Modelling, Analysis and Design, Pearson, 1993.
5. Perry Edwards, System Analysis and Design, McGraw-Hill, 1993.
6. Elias M. Awad, System Analysis and Design, Galgotia Publications, 1997.
7. James A. Senn, Analysis and Design of Information Systems, McGraw-Hill, 1989.
8. Silver and Silver, System Analysis and Design, Addison Wesley, Last Edition

Note: The latest editions of the books should be followed.

Bachelor of Science (Information Technology) Semester – III

Session 2023-24

COURSE CODE: BITP-3114

LAB ON COMPUTATIONAL PROBLEM SOLVING

Examination Time: 3 Hours.

Max. Marks: 50

Practical: 40

CA: 10

Lab-I: Lab on computational problem solving.

Bachelor of Science (Information Technology) Semester- III

Session 2023-24

COURSE CODE: BITP-3115

LAB ON INTERNET APPLICATIONS

Examination Time: 3 Hours.

Max. Marks: 25

Practical: 20

CA: 05

Lab – II: Lab on Internet Applications

**Bachelor of Science (Information Technology) Semester- IV
(Session 2023-24)**

COURSE CODE: BITL-4111

DATABASE MANAGEMENT SYSTEM

Course Outcomes:

After the completion of this course, the student will be able to:

CO1: Understand data, database and database models.

CO2: Apply relational algebra and relational calculus for performing queries of different types.

CO3: Gain knowledge of normalization and transaction control.

CO4: Create, manage and access database using SQL and PL/SQL.

**Bachelor of Science (Information Technology) Semester- IV
(Session 2023-24)**

COURSE CODE: BITL-4111

DATABASE MANAGEMENT SYSTEM

**Max. Marks: 75
Theory: 60
CA: 15**

Examination Time: 3 Hours

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Introduction to data, field, record, file, database, database management system. Structure of database system, Advantages and disadvantages, levels of database system, Relational model, Hierarchical model, Network model, comparison of models, different keys used in a relational system, DBA and responsibilities of DBA.

UNIT-II

Codd's Rules, E-R diagram, Relational algebra, Relational calculus – Domain and Tuple relational Calculus.

UNIT-III

Introduction to Normalization : Need and advantages of Normalization, 1NF, 2NF, 3NF, BCNF, 4NF and 5NF.

Introduction to Transaction Management– ACID properties, concurrency control and its management, protection, security, recovery of database.

UNIT-IV

SQL: Introduction to SQL–DDL, DML, DCL, Join methods & sub query, Union Intersection, Minus, Built in Functions, Views, Security amongst users, Sequences, Indexing.

Introduction to PL/SQL: Cursors– Implicit & Explicit, Procedures, Functions & Packages Database Triggers.

Big Data: Introduction to Big Data and Analytics, Introduction to NoSQL.

References / Textbooks:

1. C.J. Date, Introduction to Database System, Pearson Education (2003), 8th Edition
2. RamezElmasri and ShamkantNavathe, Fundamentals of Database Systems, Pearson Education (2015), 7th Edition
3. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concepts, McGraw Hill Education (2019), 7th Edition
4. P.S. Deshpande, SQL & PL / SQL for Oracle 11g, Dreamtech Press (2011)
5. Mahesh Mali, Database Management System for Engineering, TechKnowledge Publication, 2020
6. Raghu Ramakrishnan and Johannes Gehrke, Database Management System, McGraw Hill Education (2014), 3rd Edition
7. Rajiv Chopra, Database Management Systems, S. Chand Publishers (2016), 5th Edition

Bachelor of Science (Information Technology) Semester – IV

Session 2023-24

COURSE CODE: BITL-4112

DATA STRUCTURES

Course Outcomes:

After passing course the student will be able to:

CO1: Analyze complexity of algorithms to determine their efficiency.

CO2: Comprehend various hashing method, sorting and searching algorithms.

CO3: Comprehend various operations of stack and queue along with different scenarios.

CO4: Comprehend advanced data structures such as tree and graph.

Bachelor of Science (Information Technology) Semester – IV

Session 2023-24

COURSE CODE: BITL-4112

DATA STRUCTURES

Examination Time: 3 Hours.

Max. Marks: 75

Theory: 60

CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Data Structure: Introduction, Common Operations on Data Structures, Algorithm Complexity, Big O Notation, Time – Space tradeoff between Algorithms.

Arrays: Array Defined, Representing Arrays in Memory, Operations, Bubble Sort, Linear Search, Binary Search and Multidimensional Arrays.

UNIT-II

Hashing: Hash Functions: Division Method, Mid-Square Method & Folding Method and Collision Resolution methods.

Linked Lists: Types of Linked Lists, Representing Linked Lists in Memory, Advantages of using Linked Lists over Arrays, Various Operations on Linked Lists.

UNIT-III

Stacks: Description of STACK structure, Implementation of Stack in memory, Applications of Stacks – Converting Arithmetic expression from infix notation to reverse polish and their subsequent evaluation and Quicksort method.

Queues: Description of queue structure, Implementation of queue in memory, Description of priorities of queues, Dequeues.

UNIT-IV

Trees: Description of Tree Structure and its Terminology, Binary Trees and Binary Search Trees and their representation in Memory and Heapsort.

Graphs: Description of Graph Structure, Implement Graphs in Memory using Adjacency Matrix, PathMatrix and Graph traversal techniques - DFS, BFS.

References/Textbooks:

1. Seymour Lipschutz, Data Structures, Schaum's Outline Series, McGraw Hill Company, 2013.
2. Aaron M. Tenenbaum, Data Structures using C, Pearson Education, 1990.

Note: The latest editions of the books should be followed.

**Bachelor of Science (Information Technology) Semester- IV
(Session 2023-24)**

COURSE CODE: BITL-4113

OBJECT ORIENTED PROGRAMMING- II

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the basic fundamentals of Object Oriented Programming using Java.

CO2: Identify the use of inheritance, interfaces and packages in Java.

CO3: Identify the utilization of multithreading and Exception handling.

CO4: Connect Java application with an existing database and access it through JDBC.

Bachelor of Science (Information Technology) Semester- IV

(Session 2023-24)

COURSE CODE: BITL-4113

OBJECT ORIENTED PROGRAMMING- II

Max. Marks: 75

Theory: 60

CA: 15

Examination Time: 3 Hours

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT - I

JAVA BASICS: Introduction to Java, Features of Java, Structure of a Java Program, primitive data types, keywords, Identifiers, literals, operators and comments.

OOPS: Object oriented concepts Advantage of OOPs, Objects and Classes,

Strings: Declaring a string, Immutable string, string comparison, concatenation, substring, string tokenizer.

UNIT - II

Inheritance: what is inheritance, types of inheritance, static import, Method overloading, method overriding, Runtime polymorphism, super keyword, final keyword

Interfaces: Abstract classes, declaring an interface, relationship between classes and interface, interface inheritance, implementing multiple inheritance using interface

Packages: what are packages, advantages of using packages, accessing package from another package, subpackaging, running packages by setting path and classpath.

UNIT - III

Exception Handling: what is exception handling, checked and unchecked exceptions, try-catch, try-multiple catch, try – finally, throw and throws

Multithreading: What is a thread, life cycle of a thread, creating a thread, sleeping a thread, joining a thread, thread priority

UNIT - IV

Input/Output: File input stream, File output stream, Buffered output stream, Buffered input stream.

Database connectivity: JDBC, JDBC drivers, steps to connect to the database, connectivity with MYsql.

References/Textbooks:

1. HurbertSchildt, Java The Complete Reference, Tata McGraw Hill, 2014.
2. Y. Daniel Liang, Introduction to Java Programming, Pearsons Publications, 2015.
3. Jon Duckett, Beginning Web Programming with HTML, XHTML, and CSS, John Wiley & Sons, 2004.
4. Thomas A. Powell, HTML & CSS: The Complete Reference, McGraw-Hill, 2010.

Note: The latest editions of the books should be followed.

**Bachelor of Science (Information Technology) Semester- IV
(Session 2023-24)**

COURSE CODE: BITL-4114

E-BUSINESS

Course Outcomes:

After passing this course student will be able to:

CO1: Comprehend the basic terms of E-Commerce, aims, benefits and E-Commerce models.

CO2: Acquaint about the working and components of EDI.

CO3: Identify Electronic Payment systems, various issues involved in relation to secure electronic transactions and various E-Payment options.

CO4: Comprehend BPR and Case Studies of E-Business related applications.

**Bachelor of Science (Information Technology) Semester- IV
(Session 2023-24)**

COURSE CODE: BITL-4114

E-BUSINESS

**Examination Time: 3
Hours**

**Max. Marks: 75
Theory: 60
CA: 15**

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I

Introduction to E – Commerce: Meaning and Concept, Features, Benefits, E-Commerce v/s. Traditional Commerce. E-Commerce Framework, VAN and EDI as Promoters. E-Commerce Models.

Steps involved in opening your own online business, Role of Website and the technologies needed to build a website.

UNIT - II

EDI: EDI Vs Traditional Systems, components and working of EDI system, EDI implementation issues, Factors for successful EDI Implementation, EDI service providers in India.

UNIT – III

Concerns for E – Commerce: Legal and regulatory issues, Laws for E – Commerce, E-Commerce in India, Sections of IT Act for E-Commerce transactions.

Electronic Payment Systems: Various Methods of Electronic Payments – Google pay, Paytm, Debit and Credit Cards, UPI. E-Commerce security Issues and Measures.

UNIT – IV

Re – Engineering for Change: Business process re – engineering (BPR), Methodology and Planning Methods for change.

Case Studies: To demonstrate usefulness of E – Commerce in various business areas like Banks, Reservations, E-Governance and E-Retailing.

References / Textbooks:

1. Chaffey, E-Business and E-Commerce Management: strategy, Implementation and Practice, Pearson Education India (2013), 5th Edition
2. Kenneth C. Laudon and Carol Guercio Traver, E-Commerce, Pearson (2018), 13th Edition
3. S.J. P.t. Joseph, E-Commerce: An Indian Perspective, PHI Learning Pvt. Ltd. (2019), 6th Revised Edition
4. Shruti Mathur, Ecommerce, Pinnacle Learning (2020)
5. David Whiteley, E-Commerce: Strategy, Technologies and Applications, McGraw Hill Education (2017).
6. Nidhi Dhawan, A handbook of E-Commerce, Sun India Publications (2017)
7. Laudon, Kenneth C and Carol Guercio Traver, E-Commerce business. Technology Pearson Education Delhi (2011).

**Bachelor of Science (Information Technology) Semester- IV
(Session 2023-24)**

COURSE CODE: BITP-4115

LAB ON DATABASE MANAGEMENT SYSTEM

Max. Marks: 25

Practical: 20

CA: 05

Examination Time: 3 Hours

Lab on Database Management System.

**Bachelor of Science (Information Technology) Semester- IV
(Session 2023-24)**

COURSE CODE: BITP-4116

LABON OBJECT ORIENTED PROGRAMMING- II

Max. Marks: 50

Practical: 40

CA: 10

Examination Time: 3 Hours

Lab on Object Oriented Programming – II.

Bachelor of Science (Information Technology) Semester- IV

(Session 2023-24)

COURSE CODE: BITP-4117

LAB ON DATA STRUCTURES

Max. Marks: 25

Practical: 20

CA: 05

Examination Time: 3 Hours

Lab on Data Structures

Bachelor of Science (Information Technology) Semester – V

Session 2023-24

COURSE CODE: BITL-5111

COMPUTER NETWORKS

Course Outcomes:

After passing course the student will be able to:

CO1: Describe the functions of each layer in OSI and TCP/IP model.

CO2: Identify various network devices and the layers on which it operates.

CO3: Describe the Data Link layer and Network layer design issues.

CO4: Comprehend the functioning of Transport layer and Application layer protocols.

Bachelor of Science (Information Technology) Semester – V

Session 2023-24

COURSE CODE: BITL-5111

COMPUTER NETWORKS

Examination Time: 3 Hours.

Max. Marks: 100

Theory: 80

CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (16 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I

Introduction: Basic concepts of Computer Networks, Basic Components of a Network, Network types and topologies.

Models: OSI Reference Model, TCP/IP Model, Comparison between TCP/IP and OSI model

Transmission Media: Coaxial Cable, Twisted Pair Cable, Fiber Optics & Satellites.

UNIT – II

Network Devices: Hub, Switch, Repeaters, Bridges, Routers, Gateways.

Introduction to Analog and Digital Transmission: Introduction to Analog and Digital Signals. Modems, Types of modems, pulse code modulation. Multiplexing and its types, Circuit Switching, Packet Switching, Message Switching.

Data Link Layer Design Issues: Error Control, Flow Control, Error Detection & Correction

UNIT - III

Media Access Protocols: CSMA, CSMA/CD, CSMA/CA.

IEEE standards 802: Token Ring, FDDI.

Design Issues of Network Layer: Routing Algorithm- Distance Vector Routing, Link state Routing and The Dijkstra Algorithm, IPv4: Notation, Classful addressing, Header Format, IPv6 addressing.

UNIT – IV

Design issues of Transport Layer: Introduction to TCP, TCP Services, features, TCP segment format, Introduction to UDP, User Datagram Format, UDP Operation

Network Security and Privacy: Introduction to Cryptography, types of Key.

References/Textbooks:

1. Tanenbaum , A.S., Computer Networks, Prentice Hall, 2010.
2. Stallings, W., Local Networks: An Introduction: Macmillan Publishing Co, 1990.
3. Stallings W., Data and Computer Communications, Prentice Hall, 2011.
4. Forouzan B., Data Communications and networking, McGraw Hill, 2007.

Note: The latest editions of the books should be followed.

Bachelor of Science (Information Technology) Semester – V

Session 2023-24

COURSE CODE: BITL-5112

WEB TECHNOLOGIES

Course Outcomes:

After passing course the student will be able to:

CO1: Apply JavaScript code for interaction with content of webpage.

CO2: Apply PHP as server side scripting language for control of flow, file handling, cookie and session handling, database interactions, etc.

CO3: Comprehend the application of XML, AJAX, JQuery and REST.

CO4: Use Laravel framework to create web applications.

Bachelor of Science (Information Technology) Semester – V

Session 2023-24

COURSE CODE: BITL-5112

WEB TECHNOLOGIES

Examination Time: 3 Hours.

Max. Marks: 100

Theory: 80

CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (16 Marks) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Java script language: Basics, Features, Advantages, Limitations, Types, Basics, Functions, Control Statement, Arrays, JavaScript objects, Host objects.

DOM: Introduction, Methods, Accessing HTML and CSS, Events, Event Listener, Nodes and Collection.

BOM: Window, Screen, History, Navigation.

UNIT-II

Introduction to Server Side Scripting using PHP: Basics, Control Statement, Array, Functions.

Core PHP Concepts: Superglobals, Form Handling, PHP Include, Sessions, PHP File Handling, File Upload, Cookies, Error Handling, Exception Handling.

Introduction to OOPs in PHP: Classes, Object, Constructor, Inheritance. Access MySQL Database in PHP.

UNIT-III

XML: Basics, Structure, Namespace, Parsing.

AJAX: Fetching response from server (Textual and XML form), Basics of JQuery.

Introduction to **REST**.

UNIT-IV

Laravel: MVC Framework, Role of Model-View-Controller, Routing, Blade Templating.

Components, Form Handling and Validation, Session Handling, Pagination.

Handling Database: Creating Table, Inserting Data, Update, Delete and Query data.

References / Textbooks:

1. Jeffery C Jackson, “Web Technology- A Computer Science perspective”, Pearson Education, 1st Edition, 2007.
2. Chris Bates, “Web Programming- Building Internet Applications”, Wiley India, 1st Edition, 2006.
3. Achyut S Godbole and Atul Kahate, “Web technologies”, Tata McGraw Hill, 1st Edition, 2008.
4. Web Technologies, Uttam K Roy, Oxford University Press, 1st Edition, 2010.
5. Kirupa Chinnathambi, Learning React, Addison-Wesley Professional, 1st Edition, 2019.
6. Mark Masse, REST API Design Rulebook, O'Reilly Media, 2011.
7. Lynn Beighley, Michael Morrison, Head First PHP & MySQL, O'Reilly Media, 2009.
8. Vikram Vaswani, PHP: A Beginner's Guide, O'Reilly Media, 2008.
9. Gregory Blake, Laravel Basics, CreateSpace Independent Publishing Platform, 2016.
10. Matt Stauffer, Laravel: Up & Running: A Framework for Building Modern PHP Apps, O'Reilly Media; 2nd edition, 2019.

Note: The latest editions of the books should be followed.

Bachelor of Science (Information Technology) Semester – V

Session 2023-24

COURSE CODE: BITL-5113

OPERATING SYSTEM

Course Outcomes:

After passing course the student will be able to:

CO1: Describe, contrast and compare different types of Operating System.

CO2: Understand the process synchronization policies and CPU scheduling.

CO3: Describe and analyze the memory management and its allocation policies.

CO4: Comprehend about the application of virtual memory and disk scheduling.

Bachelor of Science (Information Technology) Semester – V

Session 2023-24

COURSE CODE: BITL-5113

OPERATING SYSTEM

Examination Time: 3 Hours.

Max. Marks: 100

Theory: 80

CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (16 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I

Introduction: Definition, Batch Processing, Multi programming, Time Sharing Systems, Multitasking, multiprocessing, Parallel Systems, Distributed Systems, Real–time Systems.

Processes: Process Concepts, Process Scheduling, Threads, System Calls.

UNIT - II

CPU–Scheduling: Basic concepts, Scheduling Criteria, Scheduling Algorithms, Algorithm Evaluation: Response Time, Turnaround Time, Waiting Time, Throughput.

Process Synchronization: Critical-section problem, semaphores and its Types (Binary and Counting), Classical problems of synchronization and their solutions.

UNIT – III

Deadlocks: System Model, Deadlock characterization, Methods for handing deadlocks, Deadlocks Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Approach to Deadlock handling.

Memory Management: Background, Logical v/s Physical Address Space, Swapping, Continuous Allocation, Paging, Segmentation.

UNIT – IV

Virtual Memory: Background, Page Fault, Demand Paging, Page Replacement, Page Replacement Algorithms, Thrashing.

Secondary Storage Structures: Disk structures, Disk scheduling.

References/Textbooks:

1. Avi Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Concepts, Wiley, 2013.

2. Charles Crowley, Operating Systems: A Design-Oriented Approach , Tata McGraw Hill, 2001.
3. Deitel, An Introduction to Operating Systems, Second Edition, Addison Wesley, 1990.
4. William Stallings, Operating Systems: Internals and Design Principles, Pearson Education Limited, 2014.

Note: The latest editions of the books should be followed.

Bachelor of Science (Information Technology) Semester – V

Session 2023-24

COURSE CODE: BITP-5114

LAB ON WEB TECHNOLOGIES

Examination Time: 3 Hours.

Max. Marks: 50

Practical: 40

CA: 10

Lab on Web Technologies.

Bachelor of Science (Information Technology) Semester – V

Session 2023-24

COURSE CODE: BITP-5115

LAB ON OPERATING SYSTEM

Examination Time: 3 Hours.

Max. Marks: 50

Practical: 40

CA: 10

Implementation of different algorithm in C / C++ based on BITL-5113.

**Bachelor of Science (Information Technology) Semester – VI
(Session 2023-24)**

COURSE CODE: BITL - 6111

COMPUTER GRAPHICS

Course Outcomes:

After passing this course the student will be able to:

CO1: Comprehend the background mechanism involved in display devices like CRT, LCD, LED, etc.

CO2: Comprehend basic concepts involved in drawing basic shapes.

CO3: Implement various algorithms and techniques to clip and transform various objects and viewports.

CO4: Identify the importance of viewing and projections.

**Bachelor of Science (Information Technology) Semester – VI
(Session 2023-24)**

COURSE CODE: BITL - 6111

COMPUTER GRAPHICS

Examination Time: 3 Hours

Max. Marks: 75

Theory: 60

CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I

Overview of Graphics System: Computer Graphics and their applications.

Display Devices: CRT Monitors, Random Scan, Raster Scan, LED & LCD Monitors, Virtual Reality and Workstation.

UNIT – II

Elementary Drawing: Points and various line drawing Algorithms and their comparisons and Circle & Ellipse Generating Algorithms.

UNIT – III

Two Dimensional Transformations: Basic Transformations - Translation, Rotation, Scaling, Reflection and Shearing. Matrix representation of Basic Transformations, Homogenous Coordinates and Composite transformations.

Windowing and Clipping: Windowing Concepts, Clipping and its Algorithms and Window-to-View Port Transformations.

UNIT - IV

Three Dimensional concepts: 3D Coordinate Systems, 3D Transformations - Translation, Rotation, Scaling, Reflection and Shearing,

Projection: Parallel Projections, Perspective Projection, Vanishing Point, View Confusion and Topological Distortion.

References / Textbooks:

1. Hearn D, Baker P, Computer Graphics, PHI Eastern Economy (2002), 2nd Edition.
2. Zhigang Xiang, Plastock R, Kalley G, Computer Graphics, McGraw Hill Education (2006), 2nd Edition.

3. Rajesh K. Maurya, Computer Graphics with Virtual Reality System, Wiley (2018), 3rd Edition
4. Udit Aggarwal, Computer Graphics, SK Katria and Sons (2013), Reprint 2013 Edition
5. Padeep K. Bhatia, Computer Graphics, Dreamtech Press (2019)
6. Andries Van Dam, Foley, Steven, John, Computer Graphics Principles and Practice, Peson Education India (2002), 2nd Edition

**Bachelor of Science (Information Technology) Semester – VI
(Session 2023-24)**

COURSE CODE: BITL - 6112

DIGITAL MARKETING

Course Outcome:

After passing the course the student will be able to:

CO1: Identify impact of digital space and digital marketing in reaching out to customers.

CO2: Comprehend importance of Keywords in Search Engine Optimization.

CO3: Outline factors affecting Social Media Marketing.

CO4: Comprehend importance of Tools and Analytics in social media marketing.

**Bachelor of Science (Information Technology) Semester- VI
(Session 2021-22)**

COURSE CODE: BITL-6112

DIGITAL MARKETING

Examination Time: 3 Hrs

Max. Marks: 75

Theory: 60

CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT – I

Introduction to Marketing: Meaning, 4 Ps of Marketing, Value creation, communication, delivery and exchange. Segmentation, target marketing and positioning.

Consumer Behavior, Environmental and Psychological factors, decision making process and its stages. AIDAA model, Marketing Mix.

UNIT - II

Introduction to Digital Marketing: Introduction, Search Engine Optimization – Keywords, on page and off page optimization, Ad-Words, Meta-tags

Search Engine Marketing: Advertising, PPC, SEM Strategy, SEM Auction models.

UNIT – III

Social Media Marketing: Word of Mouth, factors affecting social media marketing, social media platforms- B2B and B2C.

UNIT – IV

Social Media Marketing Tools: Mobile marketing, website planning and creation, e-mail marketing, content marketing, online reputation management, digital analytics.

References / Textbooks:

1. Phillip Kotler and Lane Keller Kevin, Marketing Management, Pearson Education
2. Seema Gupta, Digital Marketing, Tata McGraw Hill Education (2018)

3. Ian Dodson, The Art of Digital Marketing: The defensive guide to Creating Strategic, Targeted and measurable Online campaigns, Wiley Publishers
4. Stephanie Diamond, Digital Marketing - All in One for Dummies, Wiley Publishers
5. Digital Marketers, The Ultimate Guide to Digital Marketing, <https://www.digitalmarketer.com/digital-marketing/assets/pdf/ultimate-guide-to-digital-marketing.pdf>
6. Damian Ryan, Understanding Digital Marketing: Marketing strategies for engaging, Cogan page Publishers Third Edition

**Bachelor of Science (Information Technology) Semester – VI
(Session 2023-24)**

COURSE CODE: BITP - 6113

LAB ON COMPUTER GRAPHICS

Max. Marks: 50

Practical: 40

CA: 10

Examination Time: 3 Hours

Lab on implementation of applications of Computer Graphics in C / C++.

**Bachelor of Science (Information Technology) Semester – VI
(Session 2023-24)**

COURSE CODE: BITD - 6114

PROJECT

Course Outcomes:

After passing course the student will be able to:

CO1: Apply the tools and techniques learnt to frame problems and their corresponding solutions.

CO2: Develop skills necessary to structure, manage and execute projects.

CO3: Learn to work as a member of a cohesive unit.

CO4: Develop presentation skills.

**Bachelor of Science (Information Technology) Semester – VI
(Session 2023-24)**

COURSE CODE: BITD - 6114

PROJECT

Max. Marks: 200

Practical: 160

CA: 40

Examination Time: 3 Hours

General Instructions:

1. A software module based on the work done in the entire course is to be developed.
2. Candidates have to submit one hard copy and two CDs/DVDs of documentation which shall be kept with the HoD in the college only. Further, supervisor/guide shall forward one copy of DVD/CD containing all the documentation files of the students (file name to be saved as Rollno_of_the_student.pdf) to the COE Office. The Covering letter (duly signed by the guide and Head of the department) should contain the following information. Candidate name, Candidate Roll no, Project Title of the student and .pdf file name of her project documentation.
3. The software module / website may be developed in groups, consisting of at most two students in a group.
4. The college shall depute guide(s)/supervisor(s) under whose supervision the software module shall be developed. The guide/supervisor shall clarify that the work done is original and authenticated. The certificate found to be incorrect at any stage shall attract the proceedings against all the stakeholders, as per rules.
5. The evaluation of the module shall be done as per the common ordinance of UG/PG under semester system.