SHRI SHANKARACHARYA TECHNICAL CAMPUS, BHILAI

(An Autonomous Institute affiliated to CSVTU, Bhilai)

SCHEME OF TEACHING AND EXAMINATION (Effective from 2020-2021 Batch)

B.Tech. (Information Technology) Fourth Semester

Sl. No.	Board of Studies (BOS)	Courses	Course Code	Period per Week			Scheme of Examination			Total Marks	Credit
							Theory/Lab				
				L	T	P	ESE	CT	TA		
1	Basic Science Courses	Discrete Structure	AM100401	3	1	-	100	20	30	150	4
2	Information Technology	Programming in JAVA	IT106402	2	1	-	100	20	30	150	3
3	Information Technology	Computer Networks	IT106403	3	-	-	100	20	30	150	3
4	Information Technology	Design & Analysis of Algorithms	IT106404	3	-	-	100	20	30	150	3
5	Information Technology	Data Base Management System (DBMS)	IT106405	3	-	-	100	20	30	150	3
6	Information Technology	Programming in JAVA Lab	IT106491	-	-	-	25	-	25	50	1
7	Information Technology	Design & Analysis of Algorithms Lab	IT106492	-	-	2	25	-	25	50	1
8	Information Technology	Data Base Management System Lab	IT106493	-	-	2	25	-	25	50	1
9	Information Technology	Mini Project - II (Flask/Jango)	IT106494	-	-	2	50	-	25	75	1
10	Chemistry	**Biology for Engineers**	AC10095	-	-	2	-	-	25	25	-
Total				**14**	**2**	**8**	**625**	**100**	**275**	**1000**	**20**

Note:

(a) Abbreviations used : L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Exam, CT- Class Test, TA- Teacher's Assessment

(b) The duration of end semester examination of all theory papers will be of three hours.

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SYLLABUS

B.Tech. (Information Technology) Fourth Semester

Subject Code IT106402	Programming In Java	L =	T =	P =	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
1. Make them learn about Java programming concepts. 2. Knowledge of features of OOPS. 3. Familiarity with multi threading concept in run time environment. 4. Design and implement applications using GUI and Networking in Java. 5. Ability to analyze and implement Java based applications for real world problems.	**CO 1.** Apply Java in developing Object Oriented code. **CO 2.** Analyze and apply feature of OOPS such as inheritance, polymorphism etc in implementation of program. **CO 3.** Apply the knowledge of Multi-threading and Streams in developing Java applications. **CO 4. I**mplement of GUI and Networking in Java run time environment(JVM). **CO 5.** Design and develop Java based applications for solutions to real world problems.

UNIT – I : INTRODUCTION: CO1

Introduction of Java programming, Features Of OOPS, Features of Java, data types, keywords, variables, literals, expressions, operators, programming constructs, loop's, Comparison with C++, Java program Compilation and Execution, JVM as an interpreter and emulator, class File Format, Class loaders, Security Promises of the JVM, Garbage Collection. [8 Hrs]

UNIT – II : CLASSES AND OBJECTS: CO2

Classes, Objects and References, Access specifiers, Methods, "this" keyword, static keyword, overloading method, Arrays, Command line arguments. Constructors and finalizers, overloading constructors, Inner classes, Wrapper Classes, Type compatibility and conversion .Inheritance; definition and advantages, overriding, super , final and abstract classes, Interface, Package: Defining package, interfaces in package, importing packages, Vector. [7Hrs]

UNIT – III : EXCEPTION HANDLING: CO3

STRINGS: Basic of exception handling, Checked and Unchecked Exceptions, default Exception handling, try and catch, Multiple catch statements, try-catch ,finally, uses of throw and throws, User defined exception and programs, Strings: string constructor, string arithmetic, string methods, StringBuffer and methods. [7Hrs]

UNIT – IV : MULTI THREADING AND FILE HANDLING: CO4

Thread & Multi-threading Concepts, Thread life cycle, Thread Creation: Runnable and Thread Class, Thread Priority, Thread Methods, Thread Synchronization: Concept of Monitor, Synchronized methods & Synchronized blocks, Deadlocks. File Handling using Java, Streams, Byte and Character Streams, Various operations with files. [7Hrs]

UNIT- V : GUI APPLICATION AND APPLET DEVELOPMENT: CO5

Overview of AWT , applets and application, applet life cycle, User interfacing components, Layout Managers, Event delegation model, Event types and classes, Listeners: ActionListener, KeyListener, MouseListener etc., Overview of Swing Components. Introduction to JDBC, ODBC, JDBC drivers: Type I, Type II, Type III, Type IV. JDBC Architecture, Java Networking: ServerSocket, Socket, RMI. [7Hrs]

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Text Books:

S. No.	Title	Authors	Publisher
1)	Introduction to Java Programming	Y. Daniel Liang	Pearson Education, 7 th Edition.
2)	Java The complete reference	Herbert Schildt	TMH, 5 th Edition

Reference Books:

S. No.	Title	Authors	Publisher
1)	Programming with JAVA	Balguruswamy	TMH.
2)	Head first Java	Kathy Sierra, Bert Bates	O'Reilly Media Publication
3)	Java How to Program	H.M. Deitel & Paul J. Deitel	PHI, 8 th Edition.

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SYLLABUS

B.Tech. (Information Technology) Fourth Semester

Subject Code IT106403	COMPUTER NETWORKS	L = 4	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
1. To develop an understanding of modern Network architectures from a design and performance perspective. 2. To introduce the student to the major concepts involved in wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs). 3. To provide an opportunity to do network programming 4. To provide a WLAN measurement ideas. 5. To provide Cryptography Basics.	**On successful completion of the course, the student will be able to:** **CO1.** To Explain the functions of the different layer of the OSI Protocol. **CO2**. Draw the functional block diagram of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) describe the function of each block. **CO3.**For a given requirement (small scale) of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) design it based on the market available component **CO4.** For a given problem related TCP/IP protocol developed the network programming. **CO5.** Configure DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls using open source available software and tools.

Unit-1: Data communication Components: CO1

Representation of data and its flow Networks , Various Connection Topology, Protocols and Standards, OSI model, Transmission Media, LAN: Wired LAN, Wireless LANs, Connecting LAN and Virtual LAN, Techniques for Bandwidth utilization: Multiplexing – Frequency division, Time division and Wave division, Concepts on spread spectrum. [8Hrs]

Unit-II : Data Link Layer and Medium Access Sub Layer: CO2

Error Detection and Error Correction – Fundamentals, Block coding, Hamming Distance, CRC; Flow Control and Error control protocols - Stop and Wait, Go back – N ARQ, Selective Repeat ARQ, Sliding Window, Piggybacking, Random Access, Multiple access protocols -Pure ALOHA, Slotted ALOHA, CSMA/CD,CDMA/CA. [7Hrs]

Unit-III : Network Layer: CO3

Switching, Logical addressing – IPV4, IPV6; Address mapping – ARP, RARP, BOOTP and DHCP– Delivery,Forwarding and Unicast Routing protocols. [7Hrs]

Unit-IV : Transport Layer: CO4

Process to Process Communication, User Datagram Protocol (UDP),Transmission Control Protocol (TCP), SCTP Congestion Control; Quality of Service, QoS improving techniques: Leaky Bucket and Token Bucket algorithm. [7Hrs]

Unit-V : Application Layer: CO5

Domain Name Space (DNS), DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls, Basic concepts of Cryptography. [7Hrs]

Text Books:

S. No.	Title	Authors	Publisher
1)	Data Communication and Networking,	4th Edition, Behrouz A. Forouzan	McGraw Hill.
2)	Data and Computer Communication,	8th Edition, William Stallings,	Pearson Prentice Hall India.

Reference Books:

S. No.	Title	Authors	Publisher
1)	Computer Networks, 8th Edition, ,	Andrew S. Tanenbaum	Pearson New International Edition
2)	Internetworking with TCP/IP, Volume 1,	6th Edition Douglas Comer	Prentice Hall of India.
3)	TCP/IP Illustrated, Volume 1,	W. Richard Stevens	Addison-Wesley, United States of America.

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SYLLABUS

B.Tech. (Information Technology) Fourth Semester

Subject Code IT106404	Design Analysis of Algorithm	L = 3	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
1. Reinforce basic design concepts (e.g., pseudocode, specifications, top-down design). 2. Knowledge of algorithm design strategies 3. Familiarity with an assortment of important algorithms 4. Ability to analyze time and space complexity. 5. To understand the Basic concepts of Linear time analysis of the KMP algorithm	**CO 1.** Apply design principles and concepts to algorithm design. **CO 2.** Have the mathematical foundation in analysis of algorithms **CO3.** Understand different algorithmic design strategies **CO4.** Analyze the efficiency of algorithms using time and space complexity theory. **CO5.** Implementation of different algorithm for complexity measurement.

UNIT – I : Introduction to Algorithms: CO1

Analyzing algorithms, Algorithm types, Recurrence Equations, Growth function: Asymptotic notation, Standard notation & common functions, Recurrence relation, different methods of solution of recurrence equations with examples. [8 Hrs]

UNIT – II : Sorting and Introduction of Tree: CO2

Introduction to Divide and Conquer paradigm, Quick and merge sorting techniques, Linear time selection algorithm, the basic divide and conquer algorithm for matrix multiplication Strassen Multiplication and, Red Black tree, Binary Search tree , heap sort, shell & bucket sort. [7 Hrs]

UNIT – III : Algorithm Optimization: CO3

Overview of the greedy paradigm examples of exact optimization solution (minimum cost spanning tree), Knapsack problem, Single source shortest paths.Overview, difference between dynamic programming and divide and conquer, Applications: Shortest path in graph, Matrix multiplication, Traveling salesman Problem, longest Common sequence. [7Hrs]

UNIT – IV : Graph: CO4

Representational issues in graphs, Depth first search & Breath first search on graphs, Computation of biconnected components and strongly connected components using DFS, Topological sorting of nodes of an acyclic graph & applications, Shortest Path Algorithms , Bellman -Ford algorithm, Dijkstra's algorithm & Analysis of Dij kstra's algorithm using heaps, Floyd -Warshall's all pairs shortest path algorithm. [7Hrs]

UNIT – V : Recursive and Backtracking Algorithms: CO5

The general string problem as a finite automata, Knuth Morris and Pratt algorithms, Linear time analysis of the KMP algorithm, The Boyer -Moore algorithm. Backtrackin g & Recursive backtracking, Applications of backtracking paradigm ,Complexity measures, Polynomial Vs Nonpolynomial time complexity; NP - hard and NP -complete classes, examples. [7Hrs]

Text Books:

S. No.	Title	Authors	Publisher
1)	Algorithm	Coreman, Rivest, Lisserson	PHI
2)	Fundamental of Computer Algorithm	Horowitz & Sahani	Galgotia

Reference Books:

S. No.	Title	Authors	Publisher
1)	Computer Algorithms: Introduction to Design & Analysis	Basse,	Addision Wesley

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SYLLABUS

B.Tech. (Information Technology) Fourth Semester

Subject Code IT106405	Database Management System	L = 3	T = 1	P = 0	Credits = 3
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
1.To understand the role of a database management system and its users in an organization. 2.To understand database concepts, including the structure and operation of the relational data model. 3. To successfully apply logical database design principles, including E-R diagrams and database normalization. 4. To construct simple and moderately advanced database queries using Structured Query Language (SQL). 5.To understand the concept of transaction, its properties and how to persist the data in complex concurrent users environment..	**On successful completion of the course, thestudent will be able to:** **CO 1.** Describe the basic concepts of RDMBS and relational data model Be familiar with the relational database theory, and be able to write relational algebra expressions for queries. **CO 2.** Understand DML, DDL and will be able to construct queries using SQL by knowing the importance of data & its requirements in any applications. **CO 3.** Be familiar with the basic issues of transaction, its processing and concurrency control. **CO 4.** Able to translate DB designs from relational notation to ER notation & con Perform normalization once redundancies have been eliminated. **CO 5.** Be familiar with basic db storage structures, access techniques: file / page organizations, indexing methods including B-tree, hashing.

UNIT – I Introduction: CO 1

An overview of database management system, database system Vs file system, Database system concept and architecture, data model schema and instances, data independence and database language and interfaces, Overall Database Structure.

Data Modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationship of higher degree. [8 Hrs]

UNIT – II Relational data Model and Language: CO 2

Relational data model concepts, integrity constraints, entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, relational calculus, tuple and domain calculus.

Introduction on SQL: Characteristics of SQL, advantage of SQL. SQl data type and literals. Types of SQL commands. SQL operators and their procedure. Tables, views and indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations, Joins, Unions, Intersection, Minus, Cursors, Triggers, Procedures in SQL/PL SQL. [7Hrs]

UNIT – III Data Base Design & Normalization: CO 3

Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependence, loss less join decompositions, normalization using FD and MVD alternative approaches to database design. [7Hrs]

UNIT – IV Transaction Processing Concept: CO4

Transaction system, Testing of serializability, serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures, log based recovery, checkpoints, deadlock handling. [7Hrs]

UNIT – V Concurrency Control Techniques: CO5

Concurrency control, Locking Techniques for concurrency control, Time stamping protocols for concurrency control, validation based protocol, multiple granularity, Multi version schemes, Recovery with concurrent transaction, case study of Oracle.

Overview of Storage and Indexing: Data on External Storage, File Organization and Indexing - Clustered Indexes, Primary and Secondary Indexes, Index data Structures - Hash Based Indexing, Tree based Indexing, Comparison of File Organizations, Indexed Sequential Access Methods(ISAM). [7Hrs]

Text Books:

S. No.	Title	Authors	Publisher
1)	Database system concept	Korth & Sudarshan	TMH, 5th Ed.
2)	Introduction to Database Systems	C.J.Date	Pearson Education, 8th Ed

Reference Books:

S. No.	Title	Authors	Publisher
1)	Principles of Database Systems	Ullman, J.O	Galgotia Publications. IInd Ed
2)	Fundamentals of Database Systems	Elmasri R. & Navathe S.B	Pearson Education.

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SYLLABUS

B.Tech. (Information Technology) Fourth Semester

Subject Code IT106491	Programming In Java Lab	L =	T =	P =	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25		25	50	-------

Course Objectives	Course Outcomes
1. Ability to write, compile, run, and test simple Java programs. 2. Knowledge of features of OOPS required to implementation in program. 3. Understanding of multi threading concept in run time environment. 4. Design and implement applications using GUI and Networking in Java. 5. Analyze and implement Java based applications for real world problems	**CO 1.** Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs. **CO 2.** Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity. **CO 3.** Identify classes, objects, threads of a class and the relationships among them needed for a finding the solution to specific problem. **CO 4.** Demonstrates how to use GUI and Networking and describes faster application development can be achieved. **CO 5.** Understanding and use of different applications of java (such as applet, awt, swing etc.)and implementation for real world problems.

List of Experiment (but should not be limited to): [24 Hrs]

1. Write a program in Java to read from console employee details of 5 employees with following details: Name of employee, Department, Age, Salary. Print the details of every employee..
2. Write a program to find the volume of a box having its side w,h,d means width ,height and depth. Its volume is v=w*h*d and also find the surface area given by the formula s=2(wh+hd+dw). use appropriate constructors for the above.
3. Write a program to show the use 'this' keyword .
4. Develop a program to illustrate a copy constructor so that a string may be duplicated into another variable either by assignment or copying.
5. Create a base class called shape. Apart from Constructors, It contains two methods get xyvalue() and show xyvalue() for accepting co-ordinates and to display the same. Create the sub class Called Rectangle which contains a method to display the length and breadth of the rectangle called showxyvalue().Illustrate the concepts of Overriding and Constructor call sequence.
6. Write a program that creates an abstract class called dimension, create two subclasses, rectangle and triangle. Include appropriate methods for both the subclass that calculate and display the area of the rectangle and triangle.
7. Write a program, which throws Arithmetic Exception. Write another class (in a different file) that handles the Exception.
8. Write a program to create a user defined Exception class which throws Exception when the user inputs the marks greater than 100 Catch it and again rethrow it.
9. Write a program to illustrate various String class methods.
10. Write a program to illustrate various String Buffer methods.
11. Write a program in which a Mythread class is created by extending the Thread class. In another class, create objects of the Mythread class and run them. In the run method print “SSTC IT DEPARTMENT” 10 times. Identify each thread by setting the name.
12. Demonstrate using a Java program, how DEADLOCK occurs between threads and also give solution program..
13. Write a Program to illustrates the concept of Thread Synchronization problem and also give solution.

14. To write a program to create a text file using Byte Stream class.
15. To write a program to copy contents of one file to another.
16. Write a JDBC program for Student Mark List Processing.
17. Write a program, which illustrates the use of Mouse Events. Use Applet for this.
18. Write a program using swing components which simulates simple calculator.
19. Develop two applications in Java using Sockets to communicate with each other using text messages.
20. Develop two applications in Java using RMI to communicate with each other using text messages.

Text Books:

S. No.	Title	Authors	Publisher
1)	Introduction to Java Programming	Y. Daniel Liang	Pearson Education, 7 th Edition.
2)	Java The complete reference	Herbert Schildt	TMH, 5 th Edition

Reference Books:

S. No.	Title	Authors	Publisher
1)	Programming with JAVA	Balguruswamy	TMH.
2)	Head first Java	Kathy Sierra, Bert Bates	O'Reilly Media Publication
3)	Java How to Program	H.M. Deitel & Paul J. Deitel	PHI, 8 th Edition.

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SYLLABUS

B.Tech. (Information Technology) Fourth Semester

Subject Code IT106492	Design Analysis of Algorithm Lab	L = 3	T = 1	P = 0	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25		25	50	--------

Course Objectives	Course Outcomes
1. Write sorting programs using Divide-and-Conquer techniques. 2. Implement to find the minimum cost spanning tree and shortest path using different Greedy techniques. 3. Construct DFS, BFS programs and topological ordering using Decrease-and-Conquer technique. 4. Implement knapsack, travelling salesperson 5. Apply important algorithmic design paradigms and methods of analysis. 6. Synthesize efficient algorithms in common engineering design situations.	**CO 1.** Argue the correctness of algorithms using inductive proofs and invariants. **CO 2.** Analyze worst-case running times of algorithms using asymptotic analysis **CO3.** Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize divide-and-conquer algorithms. Derive and solve recurrences describing the performance of divide-and-conquer algorithms **CO4.** Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize dynamic-programming algorithms, and analyze them .

List of Experiment: [24 Hrs]

1. Sort a given set of elements using the Quick sort method and determine the time required to sort the elements. Repeat the experiment for different values of n
2. Sort a given set of elements using merge sort method and determine the time required to sort the elements. Repeat the experiment for different of values of n
3. Write a program to obtain the topological ordering of vertices in a given digraph.
4. Implement travelling salesman problem.
5. Implement the knapsack problem (0/1).
6. Print all the nodes reachable from a given starting node in a digraph using BFS method.
7. Check whether a given graph is connected or not using DFS method.
8. Write a program to implement binary search using divide and conquer technique
9. Write a program to implement insertion sort using decrease and conquer technique
10. Find minimum cost spanning tree of a given undirected path using a Prim's algorithm.
11. From a given vertex in a weighted connected graph, find shortest paths to other vertices using Dijkstra's algorithm

Text Books:

S. No.	Title	Authors	Publisher
1)	Introduction to the Design and Analysis of Algorithms ,3rd edition	Anany Levitin,	Pearson Publication, ISBN: 9789332583771

Reference Books:

S. No.	Title	Authors	Publisher
1)	Algorithm	Coreman, Rivest, Lisserson	PHI
2)	Fundamental of Computer Algorithm	Horowitz & Sahani	Galgotia

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SYLLABUS

B.Tech. (Information Technology) Fourth Semester

Subject Code IT106493	Database Management System Laboratory	**L=0**	**T=0**	**P= 2**	**Credits=1**
Evaluation Scheme	**ESE**	**CT**	**TA**	**Total**	**ESE Duration**
	25	**-**	**25**	**50**	**--------**

Course Objectives	Course Outcomes
1 To understand data definitions and data manipulation commands 2 To learn the use of nested and join queries 3 To understand functions, procedures and procedural extensions of data bases 4 To be familiar with the use of a front end tool 5 To understand design and implementation of typical database applications.	Upon completion of the course, the students will be able to: **CO 1.**Use typical data definitions and manipulation commands. Design applications to test Nested and Join Queries **CO 2.**Implement simple applications that use Views **CO 3.**Implement applications that require a Front-end Tool **CO4.**Critically analyzes the use of Tables, Views, Functions and Procedures. **CO5.** Analyze the control structure of DBMS with SQL.

List of experiments: [24 Hrs]

1. To implement Data Definition language

1.1 Create, alter, drop, truncate

1.2 To implement Constraints. (a) . Primary key, (b).Foreign Key, (c). Check, (d). Unique, (e). Null, (f). Not Null (g). Default, (h). Enable Constraints, (i). Disable Constraints (j). Drop Constraints

2. To implementation of DML, DCL commands in RDBMS

2.1 (a).Insert, (b).Select, (c).Update, (d).Delete, (e).commit, (f).rollback, (c) (g).save point, (i). Like'%', (j).Relational Operator.

3. To implement Nested Queries & Join Queries

3.1 (a) Nested Queries related SQL statement using Inner Join, Left Outer Join, Right Outer Join, and Full Outer Join

4. To implement Views

4.1. (a). View, (b).joint view, (c).force view, (d). View with check option

5. (a) Control Structure

5.1. To write a PL/SQL block for Addition of Two Numbers
5.2. To write a PL/SQL block for IF Condition
5.3. To write a PL/SQL block for IF and else condition
5.4. To write a PL/SQL block for greatest of three numbers using IF AND ELSEIF
5.5. To write a PL/SQL block for summation of odd numbers using for LOOP

5. (b) Procedures

5.6. To write a PL/SQL Procedure using Positional Parameters
5.7. To write a PL/SQL Procedure using notational parameters
5.8. To write a PL/SQL Procedure for GCD Numbers
5.9. To write a PL/SQL Procedure for cursor implementation
5.10. To write a PL/SQL Procedure for explicit cursors implementation
5.11. To write a PL/SQL Procedure for implicit cursors implementation
5.12. To write a PL/SQL block to implementation of factorial using function
5.13. To write a PL/SQL function to search an address from the given database

6. Triggers:

6.1. To write a Trigger to pop-up the DML operations
6.2. To write a Trigger to check the age valid or not Using Message Alert.
6.3. Create a Trigger for Raise appropriate error code and error message.
6.4. Create a Trigger for a table it will update another table while inserting values

Text Books:

S.No.	Title	Authors	Publisher
1.	Database system concept	Korth & Sudarshan	TMH, 5 th Ed.
2.	Introduction to Database Systems	C.J. Date	Pearson Education, 8 th Ed

Reference Books:

S.No.	Title	Authors	Publisher
1.	Principles of Database Systems	Ullman, J.O	Galgotia Publications
2.	Fundamentals of Database Systems	Elmasri R. & Navathe S.B	Pearson Education
3.	Database Design Fundamentals	Rishe N	PHI.

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SYLLABUS

B.Tech. (Information Technology) Fourth Semester

Subject Code IT106494	Mini Project - II (Flask/Jango)	L = 3	T = 1	P = 0	Credits = 1
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	25		25	50	------

Course Objectives	Course Outcomes
To understandthe working of Web Applications and clients ide technologies. 1. To provide understanding of how XML can be developed and used. 2. To understande-commerce. 3. To learn howto host anddeploy theweb applications on servers. 4. To learn howto Django Processes 5. To provide understanding Wildcard URL patterns	After successful completion if this course, the students will be able to- **CO 1.** Explain the understanding of working of web Applications.. **CO 2.** Explain Architectural Framework for e-commerce. **CO3.** Develop Web applications that can be hostedon webservers. **CO 4.** Explain Architectural Framework for Django Processes. **CO5.** Develop Web applications that can be Wildcard URL patterns

Suggested List of Experiments (but should not be limited to): [24 Hrs]

1.Introduction to Django

- What Is a Web Framework?
- The MVC Design Pattern
- Django's History

2.Installation of Django

- Installing Python
- Installing Django
- Setting Up a Database
- Starting a Project.
- The Development Server
- DjangoCommands Overview

3.The Basics of Dynamic Web Pages

- Your First View: Dynamic Content
- Mapping URLs to Views
- How Django Processes a Request
- URL configurations and Loose Coupling
- 404 Errors
- Your Second View: Dynamic URLs
- A Word About Pretty URLs
- Wildcard URL patterns
- Django's Pretty Error Pages

4.The Django Template System

- Template System Basics
- Using the Template System
- Creating Template Objects
- Rendering a Template
- Multiple Contexts, Same Template
- Context Variable Lookup
- Playing with Context Objects
- Basic Template Tags and Filters Tags
- Philosophies and Limitations
- Using Templates in Views
- Template Loading
- render_to_response()
- The locals() Trick
- Subdirectories in get_template()
- The include Template Tag

Text Books:

S. No.	Title	Authors	Publisher
1)	The Definitive guide to DJANGO	Adrian Holovaty and Jacob Kaplan-Moss	APRESS
2)	Django: Web Development with Python	Samuel Dauzon, Aidas Bendoraiyis, Arun Ravindran	Packt

Reference Books:

S. No.	Title	Authors	Publisher
1)	Django Professional Series: Python Frameworks	Dana Moore, Raymond Budd, William Wright	Wrox
2)	Bert Bates	O'Reilly	Media Publishers
3)	Head First PHP & MySQL	Lynn Beighley	Michael Morrison

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SYLLABUS

B.Tech. (Information Technology) Fourth Semester

Subject Code (AC100492)	Biology for Engineers	L = 0	T = 0	P = 2	Credits = 0
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	Workshop ,Quiz, Seminar And By Organizing Guest Lecture	-	25	25	-

Course Objectives	Course Outcomes
The objective of this course is to impart an understanding of fundamentals ofbiological systems and its applicationstowards industries to solve the problemsin the real life. • To convey that Biology is as important scientific discipline as Mathematics, Physics, Chemistry, and Engineering and technology. • To convey that classification *per se* is not what biology is all about. The underlying criterion, such as morphological, biochemical or ecological be highlighted. Discuss the concept human genetics. • To convey that all forms of life has the same building blocks and yet the manifestations are as diverse as one can imagine. The molecular basis of coding and decoding genetic information is universal • How to analyses biological processes at the reductionist level. Concept of Energy change. • The fundamental concept and principles of Microbiology	**On successful completion of the course, the student will be ableto:** **CO1:**Describe how biological observations of 18th Century that lead to major discoveries.. **CO2:** Convey that classification *per se* is not what biology is all about but highlight the underlying criteria, such as morphological, biochemical and ecological. Highlightthe the concepts of genetic material and its segregation and independent assortment. **CO3:** Convey that all forms of life have the same building blocks and yet the manifestations are as diverse as one can imagine. Classify enzymes and distinguish between different mechanisms of enzyme action. Concept of genetic code. Universality and degeneracy of genetic code **CO4:** Identify DNA as a genetic material in the molecular basis of information transfer. The fundamental principles of energy transactions in physical and biological world. Thermodynamics properties of different biological systems. **CO5:** Apply thermodynamic principles to biological systems. Identify and classify microorganisms. A Brief Account of Evolution

Unit 1. INTRODUCTION: **CO1**

Bring out the fundamental differences between science and engineering by drawing a comparison between eye and camera, Bird flying and aircraft. Mention the most exciting aspect of biology as an independent scientific discipline. Why we need to study biology? Discuss how biological observations of 18th Century that lead to major discoveries. Examples from Brownian motion and the origin of thermodynamics by referring to the original observation of Robert Brown and Julius Mayor. These examples will highlight the fundamental importance of observations in any scientific inquiry. **[2 Hrs.]**

Unit 2. CLASSIFICATION &GENETICS: **CO2**

Hierarchy of life forms at phenomenological level. A common thread weaves this hierarchy.Classification. Discuss based on (a) cellularity- Unicellular or multicellular (b) ultrastructure- prokaryotes or eucaryotes. (c) Energy and Carbon utilization -Autotrophs,Heterotrophs, Lithotropes (d) Ammonia excretion – Aminotelic, Uricotelic, Ureotelic (e) Habitataacquatic or terrestrial (e) Molecular taxonomy- three major kingdoms of life. A given organism can come under different category based on classification. Model organisms for the study of biology come from different groups. E.coli, S.cerevisiae, D. Melanogaster, C. elegance, A. Thaliana, M.musculus.

Mendel's laws, Concept of segregation and independent assortment. Concept of allele. Gene mapping, Gene interaction, Epistasis. Meiosis and Mitosis be taught as a part of genetics. Emphasis to be give not to the mechanics of cell division nor the phases but how genetic material passes from parent to offspring. Concepts of recessiveness and dominance. Concept of mapping of phenotype to genes. Discuss about the single gene disorders in humans. Discuss the concept of complementation using human genetics. **[3Hrs.]**

Unit 3. BIOMOLECULES &INFORMATION TRANSFER: **CO3**

Molecules of life. In this context discuss monomeric units and polymeric structures. Discuss about sugars, starch and cellulose. Amino acids and proteins. Nucleotides and DNA/RNA. Two carbon units and lipids.
Molecular basis of information transfer. DNA as a genetic material. Hierarchy of DNA structure from single stranded to double helix to nucleosomes. Concept of genetic code. Universality and degeneracy of genetic code. Define gene in terms of complementation and recombination. **[4 Hrs.]**

Unit 4. MACROMOLECULAR ANALYSIS & ITS METABOLISM: **CO4**

Proteins- structure and function. Hierarch in protein structure. Primary secondary, tertiary and quaternary structure. Proteins as enzymes, transporters, receptors and structural elements.
Thermodynamics as applied to biological systems. Exothermic and endothermic versus endergonic and exergoinc reactions. Concept of Keq and its relation to standard free energy. Spontaneity. ATP as an energy currency. This should include the breakdown of glucose to CO_2 + H_2O (Glycolysis and Krebs cycle) and synthesis of glucose from CO_2 and H_2O (Photosynthesis). Energy yielding andEnergy consuming reactions. Concept of Energy change. **[3 Hrs.]**

Unit 5. MICROBIOLOGY EVOLUTION: **CO5**

Concept of single celled organisms. Concept of species and strains. Identification and classification of microorganisms. Microscopy. Ecological aspects of single celled organisms. Sterilization and media compositions. Growth kinetics.
Origin of Universe, Origin of Life, Evolution of Life Forms, Evidences of Evolution, Adaptive Radiation, Theories of Evolution Biological Evolution, Hardy–Weinberg Principle, **[3 Hrs.]**

Text Books:

S. No.	Title	Author(s)	Publisher
1.	Bology: A global approach	Campbell, N. A, Reece, J. B., Urry, Lisa, Cain, M, L., Wasserman, S. A., Miniorsky, P. V., Jackson, R. B.	Pearson Education Ltd
2.	Outlines of Biochemistry	Conn, E.E, Stumpf, P.K., Bruening G., Doi R.H.	John Wiley and Sons
3.	Principles of Biochemistry	Nelson D. L. and Cox M.M.W.H.	Freeman and Company
4.	Molecular Genetics	Stent, G. S.; and Calender, R.W.H.	Freeman and company, Distributed by Satish Kumar Jain for CBS Publisher
5.	Microbiology	Prescott, L.M J.P. Harley and C.A. Klein	W.M.C. Brown Publishers
6	Biology for engineers and other non-biologist.	Prof. Suraish kumar & Prof Madhulika Dixit	IIT madras

Reference Books:

S. No.	Title	Author(s)	Publisher
1.	Biology For Engineers	DrTanu Allen, DrSohini Singh	Vayu Education Of India ,New Delhi
2.	Biology For Engineers	Arthur T.Johnsion	Taylor &Francis Group
3.	Molecular. Cellular and tissue	Joseph D .Bronzino,Donal R .Peterson	CRC Press
4.	Biology For Engineers	Rajiv Singal,GauravAgrawal,RituBir	CBS Publisher &distributors
5.	Biology For Engineers	G,K,Suraish Kumar	OUP India