THIRUVALLUVAR UNIVERSITY
B. Sc COMPUTER SCIENCE
REGULATIONS
2022 - 2023

Program Outcomes

S.No	OUTCOMES
PO1	1. Having clear understanding of subject related concepts and apply the same to identify, formulate and analyze Complex problems.
PO2	2. Confident enough to act as a productive contributor for both self and team growth.
PO3	3. Able to adapt work environment easily.
PO4	4. Clear understanding on Professional and ethical responsibility.
PO5	5. Able to work effectively by managing time and provide innovative solutions.
PO6	6. Help to understand the market's demand and ability to provide Quality and timely services.
PO7	7. Help to Provide Infinite Solutions to same problem.
PO8	8. Able to clear any competitive exams for higher education.
PO9	9. Able to identify and grab global opportunities.
PO10	10.Help to develop Problem solving and to analyze Critical data.

Sub.Name: Programming in C　　　　　　**No. of Hours per week: 6**
Sub.Code: FCS 11　　　　　　　　　　**Credit: 4**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
I (Regulation 2022 - 2023)	Programming in C	4	CO1 - The student will be able to understand the concepts of Constants, Variables, and DataTypes, Operators and Expressions CO2 –The student will be able to understand the concepts of Managing Input and Output Operations, Decision Making and Branching, DecisionMaking and Looping. CO3 – The student will be able to understand the concepts of Arrays, Character Arrays and Strings, User Defined Functions. CO4 – The student will be able to understand the concepts of Structure and Unions, Pointers, File Management in C. CO 5 – The student will be able to understand the concepts of Fundamental Algorithms, Factoring Methods.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	S	S	M	S	S	M	S
CO2	S	M	M	S	S	S	S	S	S	S
CO3	S	S	M	M	S	S	S	S	S	S
CO4	S	M	M	M	M	M	S	S	S	S
CO5	S	S	M	M	S	S	S	S	S	S

PO–Programme Outcome, CO – Course outcome S –Strong ,M–Medium,L–Low(maybeavoided)

Sub.Name: PROGRAMMING IN C LAB   **No. of Hours per week: 3**

Sub.Code: FPCS13   **Credit: 2**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
I (Regulation 2022 - 2023)	Programming in C Lab	2	CO1 – The student will be able to Enhance the analyzing and problem solving skills and use the same for writing programs in C. CO2 – The student will be able to Write diversified solutions, draw flow charts and develop a well-documented and indented program according to coding standards CO3 – The student will be able to Learn to Debug a given program and execute the C program. CO4 - The student will be able to have enough practice the use of conditional and looping statements. CO 5 – The student will be able to implement Arrays, functions and pointers.

Course Mapping:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	S	S	S	S	S	S
CO2	S	S	M	S	S	S	S	S	S	S
CO3	S	M	M	S	S	M	S	S	S	S
CO4	S	M	M	S	M	M	S	S	S	S
CO5	S	M	M	S	S	S	S	S	S	S

PO–ProgrammeOutcome,CO – Courseoutcome S –Strong ,M–Medium,L–Low(maybeavoided)

Sub.Name: MATHEMATICAL FOUNDATIONS–1   **No. of Hours per week: 7**

Sub.Code: FAMA15B   **Credit: 3**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
I (Regulation 2022 - 2023)	MATHEMATICAL FOUNDATIONS–1	3	CO1 –Students can ability to apply mathematical logic to solve problems. CO2 – Students can realize the sets, relations, functions. CO3-Students can explain the discrete structures. CO4 –Students can use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions. CO5- Students can to solve complex problems by critical understanding, analysis and synthesis.

Course Mapping:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	S	S	S	M	S
CO2	S	S	M	M	S	S	M	M	S	S
CO3	S	M	M	S	S	S	S	S	S	S
CO4	S	S	M	S	S	M	M	S	S	S
CO5	S	S	S	S	M	M	S	S	S	S

PO–ProgrammeOutcome,CO – Courseoutcome S –Strong ,M–Medium,L–Low(maybeavoided)

Sub.Name: ENVIRONMENTAL STUDIES   **No. of Hours per week: 2**

Sub.Code: FES10   **Credit: 2**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
I (Regulation 2022 - 2023)	ENVIRONMENTAL STUDIES	2	CO1 – Students can able analyze Eco system in their environment. CO2 –Students can Recognize the importance of natural resources. CO3 – Students can adopting sustainability as practice in life, society and industry. CO4 – Students can use scientific reasoning to understand environment problems.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	M	M	S	S	S	S	S
CO2	S	S	S	S	S	M	M	L	M	M
CO3	S	S	S	S	M	S	S	S	M	M
CO4	M	S	S	S	S	S	S	S	S	S

PO–ProgrammeOutcome,CO – Courseoutcome S –Strong ,M–Medium,L–Low(maybeavoided)

Sub.Name: C++ & Data Structure **No. of Hours per week: 5**

Sub.Code: FCS21 **Credit: 4**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
II (Regulation 2022 - 2023)	. C++ & Data Structures	4	CO1 – The student will be able to understand the concepts of object oriented programming Apply structure and inline functions. CO2 – The student will be able to understand the concepts of the types of inheritances and Applying various levels of Inheritance for real time problems Apply the OOPs concepts class and object. Understand Explain the file concept and exception handlings in C++ CO3 – The student will be able to understand the concepts of Stacks and Queue using array and pointers. CO4 – The student will be able to understand the concepts of Recursion, Binary SearchTree and graphs. CO5 – The student will be able to understand the concepts of Sorting and Searching Algorithms

Course Mapping:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	S	S	M	S	S	S	S
CO2	S	M	M	S	S	M	S	M	S	S
CO3	S	M	S	S	M	S	S	S	S	M
CO4	S	S	M	S	M	S	S	S	M	S
CO5	S	S	S	M	S	S	S	M	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: C++ & Data Structures Lab　　　**No. of Hours per week: 2**

Sub.Code: FPCS23　　　**Credit: 2**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
II (Regulation 2022 - 2023)	C++ & Data Structures Lab	2	CO1 – The student's ability to Creating and Deleting the Objects with the concepts of Constructors and Destructors. CO2 – The students can able to implement the Polymorphism concepts and Operator Overloading. CO3 – The students can ability to implement basic Data Structures such as Arrays, Linked Lists, Stacks, Queues, Doubly Linked List and Infix to Postfix Conversion. CO4 – The students can able to apply Algorithm for solving problems like Sorting and Searching. CO5 - Apply Algorithms and use Graphs and Trees as tools to visualize and simplify Problems.

Course Mapping:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	M	M	S	S	S	S
CO2	S	M	M	M	S	S	S	M	S	S
CO3	S	M	M	M	M	S	S	S	S	S
CO4	S	M	M	S	M	S	M	M	S	S
CO5	S	S	S	M	M	S	S	S	S	S

PO- Programme outcome, CO- Course outcome S- Strong, M- Medium, L-Low (may be avoided)

Sub.Name: MATHEMATICALFOUNDATIONS–II No. of Hours per week: 7

Sub.Code: FAMA25B **Credit: 5**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
II (Regulation 2022 - 2023)	MATHEMATICALFOUNDATIONS–II	5	CO1 – Apply the concept of matrices to solve the system of linear equations CO2 – Using matrices to Hamilton theorem in real life CO3 – Identify definite interaction simple problem and rational funtion as anti-derivative. CO4 – To defined definite integrals CO5 – Using analytical geometry of three dimention.

Course Mapping:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	S	S	M	S	S	S	S
CO2	S	M	M	M	M	S	S	S	S	S
CO3	S	S	S	M	M	S	S	M	S	S
CO4	S	M	M	M	S	S	S	M	S	S
CO5	S	S	M	M	M	S	S	S	S	S

PO- Programme outcome, CO- Course outcome S- Strong, M- Medium, L-Low (may be avoided)

Sub.Name: Soft Skill   **No. of Hours per week: 2**

Sub.Code: FSS20   **Credit: 1**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
II (Regulation 2022 - 2023)	Soft Skill	1	CO1 – The students can able to gain confidence in their speaking skills. CO2- The students will be to understand English language thoroughly.

Course Mapping:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	M	M	L
CO2	S	S	S	S	S	S	M	M	L	S
CO3	S	S	S	S	S	S	S	M	M	L
CO4	S	S	S	S	S	S	M	M	L	S
CO5	S	S	S	S	S	S	M	M	L	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L-Low (may be avoided)

Sub.Name: Value Education   **No. of Hours per week: 2**

Sub.Code: FGA20   **Credit: 2**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
II (Regulation 2022 - 2023)	Value Education	2	CO1-Students can understand the importance of value based living CO2-Students to gain deeper understanding about the purpose of their life. CO3-Students can understand and start applying the essential steps to become good leaders CO4-Students emerge as responsible citizens with clear conviction to practice values and ethics in life. CO5-Students can become value based professional.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	S	S	S	S	M
CO2	S	M	M	M	S	S	S	S	S	S
CO3	M	M	M	L	S	S	S	S	S	M
CO4	S	S	S	S	S	M	L	S	S	S
CO5	S	S	S	S	S	S	M	S	S	M

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

SEMESTER III

Sub.Name: Programming in JAVA   **No. of Hours per week: 3**

Sub.Code: CCS 31   **Credit: 3**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
III (Regulation 2022 - 2023)	Programming in JAVA	3	CO1 – The student will be able to understand the concept of General-purpose and Purely object-oriented programming language including datatypes and classes. CO2 The student will be able to understand the concept of loops CO3 – The student will be able to understand the concepts of Arrays. CO4 – The student will be able to Understand the concepts of Files. CO5 – The student will be able to understand the concept of internet programming using applets and GUI-based.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	M	S	M	S	S	S
CO2	S	S	M	M	M	S	S	S	S	S
CO3	S	M	M	M	M	S	S	S	M	S
CO4	S	M	M	M	M	S	S	S	S	S
CO5	S	S	M	M	M	S	S	S	M	S

PO–ProgrammeOutcome,CO – Courseoutcome S –Strong ,M–Medium,L–Low(maybeavoided)

Sub.Name: Programming in JAVA LAB   No. of Hours per week: 3

Sub.Code: CPCS35   Credit: 3

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
III (Regulation 2022-2023)	Programming in JAVA LAB	3	CO1 - Students can able to apply basic concepts such as function Overloading, array and string manipulation in Java CO2 – students can able to utilize classes in the real time applications CO3-students can able to understand the types of inheritance CO4 –They can implement packages, manipulate threads and exception handling techniques CO5 – They can Develop Applet programs and manipulate the IO streams

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	M	M	S	S	S	S
CO2	S	M	M	M	M	M	S	M	S	M
CO3	S	M	S	M	M	S	S	M	S	S
CO4	S	M	S	M	M	M	S	M	S	M
CO5	S	M	M	M	M	M	S	S	S	S

PO–ProgrammeOutcome,CO – Courseoutcome S –Strong ,M–Medium,L–Low(maybeavoided)

Sub.Name: Statistical Methods and their Applications No. of Hours per week: 4

Sub.Code: CACS32   **Credit: 3**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
III (Regulation 2022-2023)	Statistical Methods and their Applications	3	CO1-Calculate and interpret the correlation between two variables. CO2-Calculate the simple linear regression equation for a set of data. CO3- Employee the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient. CO4- Know the association between the attributes. CO5-Know the construction of point and interval estimators CO5- Evaluate the properties of estimators. Demonstrate understanding of the theory of maximum likelihood estimation.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	S	M	S	S	S	S	S
CO2	M	M	M	M	M	M	S	S	M	S
CO3	S	M	M	M	M	M	S	S	S	M
CO4	M	S	S	M	M	M	M	S	S	S
CO5	S	S	M	M	M	M	S	S	S	S

PO- Programme outcome, CO- Course outcome S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Digital Logic Design and Computer Organization
No. of Hours per week: 3
Sub.Code: CSCS31   **Credit: 2**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
III (Regulation 2022-2023)	Digital Logic Design and Computer Organization	2	C01-the student will be able to understand Boolean algebra and basic gates. C02-the student will be able to understand how to simplify expression using K-Map. C03-the student will be able to understand how to build combinational circuits. CO4-the student will be able to know about registers and addressing modes CO5-the student will be able to understand types of memories.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	M	S	S	M	S
CO2	S	M	M	S	S	M	S	S	M	S
CO3	S	M	M	S	S	M	M	S	M	S
CO4	S	M	M	S	M	M	M	S	M	S
CO5	S	M	M	S	M	M	M	S	M	S

PO–ProgrammeOutcome,CO – Courseoutcome S –Strong ,M–Medium,L–Low(maybeavoided)

Sub.Name: Introduction to Information Technology   **No. of Hours per week: 2**

Sub.Code: CNCS34   **Credit: 2**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
III (Regulation 2022-2023)	Introduction to Information Technology	2	CO1 – The student will be able to understand the Major components of Computer System and its working principles. CO2 – The student will be able to know the Role of an Operating System and basic terminologies of networks. C03 – The student will be able to know How the InformationTechnology aids for the Current Scenario. CO4 – The student will be able to understand the Computer Software CO5 – The student will be able to understand internet applications

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	M	S	M	M	S
CO2	S	S	S	M	S	S	M	S	S	S
CO3	S	S	S	S	M	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

SEMESTER IV

Sub.Name: RDBMS   **No. of Hours per week: 3**

Sub.Code: CCS41   **Credit: 3**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
IV (Regulation 2022-2023)	Relational Database Management System	3	CO1 - Describe the database architecture and its applications Sketch the ER diagram for real world applications Uses various ER diagram for a similar concepts from various sources. CO2 - Discuss about the relational algebra and calculus Construct various queries in SQL and PL/SQL Compiles various queries in SQL, Relational Calculus and Algebra. CO3 - Describe the various normalization forms Apply the normalization concepts for a table of data Practices a table and implement the normalization concepts. CO4 - Explain the storage and accessing of data. CO5- Illustrate the query processing in database management. Define the concurrency control and deadlock concept

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	M	M	S	S	S	S
CO2	S	S	M	M	M	S	S	S	S	S
CO3	S	S	S	S	M	M	S	S	M	S
CO4	S	M	M	M	S	M	S	S	S	S
CO5	S	S	M	M	M	M	S	S	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: RDBMS Lab No. of Hours per week: 3
Sub.Code: CPCS45 **Credit: 3**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
IV (Regulation 2022-2023)	Relational Database Management System Lab	2	CO1 – The students can able to implement Basic DDL, DML and DCL commands CO2 – The students can able to understand Data selection and operators used in queries and restrict data retrieval and control the display order CO3 – The students can able to implement sub queries and understand their purpose. CO4 – The students can able to implement Join multiple tables using different types of joins. CO5 – The students can able to develop PL/SQL Block for procedures, Functions, cursors and exception handling etc.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	M	M	S	S	S	S
CO2	S	S	M	S	M	S	S	S	S	S
CO3	S	M	M	M	M	S	M	S	S	S
CO4	S	M	S	M	S	S	S	S	S	S
CO5	S	M	M	M	M	S	M	M	M	M

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: STATISTICAL METHODS AND THEIR APPLICATIONS-II
No.of Hours per week: 4

Sub.Code:CACS42   **Credit: 3**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
IV (Regulation 2022-2023)	STATISTICAL METHODS AND THEIR APPLICATIONS-II	3	CO1 – The students can able to implement Basic DDL, DML and DCL commands CO2 – The students can able to understand Data selection and operators used in queries and restrict data retrieval and control the display order CO3 – The students can able to implement sub queries and understand their purpose. CO4 – The students can able to implement Join multiple tables using different types of joins. CO5 – The students can able to develop PL/SQL Block for procedures, Functions, cursors and exception handling etc.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	M	M	S	S	S	S
CO2	S	S	S	M	M	M	S	S	S	S
CO3	S	M	M	S	M	S	S	S	S	S
CO4	S	M	S	M	M	M	S	S	S	S
CO5	S	M	M	M	M	S	M	S	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Statistical Methods And Their Applications-II Lab

No.of Hours per week: 3

Sub.Code:CACS42   **Credit: 2**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
IV (Regulation 2022-2023)	STATISTICAL METHODS AND THEIR APPLICATIONS-II Lab	2	CO1 – The students can able to implement Basic DDL, DML and DCL commands CO2 – The students can able to understand Data selection and operators used in queries and restrict data retrieval and control the display order CO3 – The students can able to implement sub queries and understand their purpose. CO4 – The students can able to implement Join multiple tables using different types of joins. CO5 – The students can able to develop PL/SQL Block for procedures, Functions, cursors and exception handling etc.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	S	S	S	S	S
CO2	S	M	M	M	M	M	M	M	M	S
CO3	S	S	S	M	M	S	S	S	S	S
CO4	S	M	M	M	M	S	S	S	S	S
CO5	S	M	M	S	M	M	M	S	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Wireless Data Communication   **No. of Hours per week: 3**

Sub.Code:CSCS43   **Credit: 2**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
IV (Regulation 2022-2023)	Wireless Data Communication	2	CO1.The student will be able to understand the concepts of basic OS layers. CO2.The student will be able to understand the concepts of signals and transmission media. CO3.The student will be able to understand the basic concepts of error detection and DLC. CO4.The student will be able to understand the Characterize of wireless transmission technologies CO5. The student will be able to understand the concepts of Security.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	S	M	M	M	S	S	M
CO2	S	M	M	S	M	S	M	M	S	M
CO3	S	S	S	S	M	S	S	S	S	S
CO4	S	S	M	S	S	M	S	S	S	M
CO5	S	S	S	S	S	M	S	S	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Internet Technology   **No. of Hours per week: 2**

Sub.Code: **Credit: 2**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
IV (Regulation 2022-2023)	Internet Technology	2	CO1 - Understand the fundamental concepts of Internet CO2 - Understand the services of Internet CO3 - Design the colorful web pages using HTML tags CO4 - Understand the functions of search engines, Email Concept. CO5 - Develop the networking skills and use the internet based applications

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	M	M	S	S	S	S	S
CO3	S	M	M	S	S	M	S	S	S	S
CO4	S	S	M	S	S	S	S	S	M	S
CO5	S	S	M	M	M	S	M	S	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

SEMESTER V

Sub.Name: Mobile Application Development   **No. of Hours per week: 6**

Sub.Code: CCS51   **Credit: 4**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
V (Regulation 2022-2023)	Mobile Application Development	4	CO1-Students are identify various concept of mobile programming for other platform. CO2- Students can utilize rapid prototyping techniques to developed sophisticated mobile interface. CO3-Students can able to demonstrate their understanding of the fundamentals of Android Operating Systems. CO4-Students can ability to deploy software to mobile devices. CO5-Students can be ability to debug programs running on mobile devices.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	M	M	S	S	S	S
CO2	S	S	S	M	M	M	M	S	S	S
CO3	S	M	M	S	M	S	M	S	S	S
CO4	M	S	M	M	S	S	M	S	S	S
CO5	S	M	M	M	S	M	S	S	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Mobile Application Development Lab   **No. of Hours per week: 4**

Sub.Code: CPCS56   **Credit: 3**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
V (Regulation 2022-2023)	Mobile Application Development Lab	3	CO1-Students can apply essential Android Programming concepts. CO2- Students can able to develop various Android applications related to layouts & rich uses interactive interfaces. CO3- Students they develop Android applications related to mobile related server-less database like SQLITE. CO4-Students can able to demonstrate their understanding of the fundamentals of Android Operating Systems. CO5-Students can ability to deploy software to mobile devices.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	M	M	S	M	S	L	S
CO2	M	S	L	S	L	M	S	S	M	L
CO3	M	S	S	M	L	M	S	L	M	S
CO4	M	S	S	M	L	L	M	S	L	S
CO5	M	S	S	L	S	S	S	S	M	M

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Operating System   **No. of Hours per week: 6**

Sub.Code: CCS52   **Credit: 4**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
V (Regulation 2022-2023)	Operating System	4	CO1-Students will able to control access to a computer and the files that may shared. CO2-Students can demonstrate the knowledge are the components of computer and their respective roles in computing. CO3-Students can ability to recognize and resolve user problem with standard operating environment. CO4-Students their gain practical knowledge of how programming languages, Operating Systems, Architectures interact and how to use each effectively. CO5-Students they will be learn different memory management techniques like paging segmentation and demand paging etc.,

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	S	S	M	M	M	S
CO2	S	M	M	M	S	M	M	S	M	S
CO3	S	M	M	S	M	S	S	S	S	S
CO4	S	M	M	S	M	S	M	M	S	S
CO5	S	S	M	M	M	M	S	S	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Operating System Lab   **No. of Hours per week: 4**

Sub.Code: CPCS 57   **Credit: 4**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
V (Regulation 2022-2023)	Operating System Lab	3	CO1 – The student will be able to understand UNIX commands. CO2 – The student will be able to write a program using shell commands. CO3 – The student will be able to build an application for semaphores. CO4 - The student will be able to implement synchronization applications. CO5 – The student will be able to develop a program for file allocation strategies.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	M	M	S	S	S
CO2	S	S	M	S	M	S	S	S	S	S
CO3	S	S	M	M	M	M	M	S	S	M
CO4	S	S	M	M	M	S	M	S	S	M
CO5	S	S	M	M	M	M	S	S	S	M

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Data Mining   **No. of Hours per week: 3**

Sub.Code: CCS54   **Credit: 3**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
V (Regulation 2022-2023)	Data Mining	3	CO1 – provide the foundation knowledge in multi dimensional data model. CO2 – classify types of meta data. CO3 - Remove redundancy and incomplete data from the dataset using data preprocessing methods. CO4 – Students can explain the concept of cluster analysis. CO5 – To Develop a data mining application for data Sanalysis of the techniques.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	M	M	S	S	S
CO2	S	M	M	S	M	S	S	M	S	S
CO3	S	M	S	S	S	M	S	S	S	S
CO4	S	S	S	S	M	M	S	S	M	S
CO5	S	M	M	S	M	M	M	S	S	S

PO–ProgrammeOutcome,CO –Courseoutcome S –Strong ,M–Medium,L–
Low(maybeavoided)

Sub.Name: Software Engineering   **No. of Hours per week:3**

Sub.Code: CCS54   **Credit: 2**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
V (Regulation 2022-2023)	Software Engineering	2	CO1- Students can able to decompose the given project in various phases of a lifecycle. CO2- Students can able to choose appropriate process model depending on the user requirements. CO3- Students can able perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance. CO4- Students can able to know various processes used in all the phases of the product. CO5- Students can apply the knowledge, techniques, and skills in the development of a software product.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	S	M	M	S	S	M	S
CO2	S	S	S	M	M	S	M	S	S	S
CO3	S	M	M	S	M	M	M	S	S	S
CO4	S	S	M	M	S	S	S	M	M	M
CO5	S	M	M	S	M	M	M	M	S	S

PO–ProgrammeOutcome,CO –Courseoutcome S –Strong ,M–Medium,L–Low(maybeavoided)

Sub.Name: Open Source Software   **No. of Hours per week: 4**

Sub.Code: **Credit: 4**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
VI (Regulation 2022-2023)	Open Source Software		CO1 - The students can able to describe Introduction to Open Source Software, advantages, needs and examples of open source software, Hyper Text Markup Language, Lists, Tables, and Frames. CO2 - The students can able to describe Cascade Style Sheet, style sheet basics, style sheet properties. CO3 - The students can able to describe basis for open source operating system CO4 - The students can able to describe the JavaScript syntax, data types, variables, arrays, functions, control Statements, objects. CO5 - The students can able to create simple database using DDL, DML commands and can able to write PHP programs.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	M	S	S	S	S
CO2	S	S	M	S	S	M	S	S	S	S
CO3	S	M	M	S	S	M	S	M	S	S
CO4	S	S	M	S	M	M	S	M	S	S
CO5	S	M	M	S	M	M	S	S	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Open Source Programming Lab   **No. of Hours per week: 4**

 Sub.Code: **Credit: 2**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
VI (Regulation 2022-2023)	Open Source Programming Lab	2	CO1.The students can able to know features of OSS over Commercial s/w CO2. The students can able to develop simple shell programs using simple commands CO3.The students can able to apply the DDL and DML commands for their simple Applications with MySQL as backend. CO4. The students can able to classify the usage of different operators and functions in PHP. CO5. The students can implement the web pages for manipulating files

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	S	S	S	S	M
CO2	S	M	M	M	S	S	S	S	S	S
CO3	S	M	M	L	S	S	S	S	S	M
CO4	S	S	S	S	S	M	L	S	S	S
CO5	S	S	S	S	S	S	M	S	S	M

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Python Programming   **No. of Hours per week:4**

Sub.Code: **Credit: 4**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
VI (Regulation 2022-2023)	Python Programming	4	CO1-Thestudent will be able to write simple Python programs gives basic knowledge. CO2-The student will be able to understand control structures. CO3-The student will be able to create functions. CO4The student will be able to arrange elements through sorting. CO5-The student will be able to handle exception.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	M	M	S	S	S	S
CO2	S	M	M	M	M	M	S	M	M	S
CO3	S	M	S	S	S	S	S	M	S	S
CO4	S	M	M	S	M	S	M	M	M	S
CO5	S	S	S	S	M	M	M	M	S	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Python Programming Lab   **No. of Hours per week:4**

 Sub.Code: **Credit: 3**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
VI (Regulation 2022-2023)	Python Programming Lab	3	CO1. The student will be able to write a program using operators. CO2.The student will be able to develop a program using loops. CO3.The student will be able to implement program using Arrays. CO4.The student will be able to implement the concept of String functions. CO5.The student will be able to build application with basic expressions.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	M	S	S
CO2	S	S	M	M	S	M	S	M	S	S
CO3	S	M	M	M	S	M	S	M	S	S
CO4	S	S	S	M	S	S	S	S	M	S
CO5	S	M	S	S	S	S	S	S	M	S

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Cryptography   **No. of Hours per week:3**

Sub.Code: **Credit: 3**

Course Outcomes:

SEMESTER	COURSE NAME	COURSE CREDIT	COURSE OUTCOMES
VI (Regulation 2022-2023)	Cryptography	3	CO1. The student will be able to know the security attack sand services. CO2.The student will be able to understand the concept of Encryption Standards. CO3.The student will be able to understand public key cryptographic algorithms. CO 4.The student will be able to learn the concept of hash functions. CO5.The student will be able to understand the Email security.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	L	S	S	M	M	M	S	S
CO2	S	L	S	L	S	S	M	S	S	M
CO3	M	M	M	L	S	S	S	S	M	L
CO4	S	S	S	S	S	L	S	S	S	L
CO5	M	S	L	S	S	L	S	M	S	L

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)

Sub.Name: Cloud Computing   **No. of Hours per week:3**

Sub.Code: **Credit: 3**

Course Outcomes:

Semester	Course Name	Course Credit	Course Outcomes
VI (Regulation 2022-2023)	Cloud Computing	2	CO1 - The students can able to know the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing CO2 - The students can able to identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc. CO3 - The students can able to explain the core issues of cloud computing such as security, privacy, and Interoperability. CO4 - The students can able to choose the appropriate technologies, algorithms, and approaches for the related issues. CO5 - The students can able to identify problems, and explain, analyze, and evaluate various cloud computing solutions.

Course Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	L	S	S	M	M	M	S	S
CO2	S	L	S	L	S	S	M	S	S	M
CO3	M	M	M	L	S	S	S	S	M	L
CO4	S	S	S	S	S	L	S	S	S	L
CO5	M	S	L	S	S	L	S	M	S	L

PO- Programme outcome, CO- Course outcome   S- Strong, M- Medium, L- Low (may be avoided)