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1.1.2: The programmes offered by the institution focus on employability / entrepreneurship / skill development and their course syllabi are adequately revised to incorporate contemporary requirements

SYLLABUS OF THE COURSES FOCUSING EMPLOYABILITY / ENTREPRENEURSHIP / SKILL DEVELOPMENT

Colour Coding

EMPLOYABILITY

ENTREPRENEURSHIP

SKILL DEVELOPMENT

M.Sc. INFORMATION TECHNOLOGY

YEAR – I	PROBLEM SOLVING TECHNIQUES USING C	18PIT11
SEMESTER – I		HRS/WK - 5
CORE – 1		CREDIT - 4

Objective:
To inculcate primary programming skills among the students.

Course Outcomes(CO's):

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to C-Language Fundamentals
CO2: Logic using Control Statements
CO3: Modular Programming using Functions
CO4: Knowledge pertaining to arrays and structures.
CO5: Advanced Programming techniques using pointers, files and graphics Concepts.

SEMESTER I	COURSE CODE: 18PIT11					COURSE TITLE :PROBLEM SOLVING TECHNIQUES USING C					HOURS:5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	5	5	5	5	5	5	5	5	5	5	5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	4	4	4	4	4	4	4	
CO5	4	4	4	4	4	4	4	4	4	4	4	
Mean Overall Score											4.5	

Result: The score of this course is 4.5 (Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT - I **[15 Hrs]**

Introduction: Introduction to C – Constants, Variables, Data types – Operators and Expressions.

UNIT - II **[15 Hrs]**

Input / Output and Control Structures : Managing Input and Output operations – Decision Making and Branching – Decision making and Looping.

UNIT - III **[15 Hrs]**

Arrays and Functions: Arrays – Character Arrays and Strings – User defined Functions – Built-in-Functions.

UNIT - IV **[15 Hrs]**

Structures and Pointers: Structures and unions – Pointers – Pointers with Arrays – Pointers with structures.

UNIT - V **[15 Hrs]**

File Management and Graphics: File management - Dynamic memory allocation – Preprocessors – Graphics in C.

TEXT BOOK :

1. E. Balagurusamy, Programming in ANSI C, Sixth Edition, McGraw-Hill.

REFERENCE BOOKS:

1. R. S. Bichkar, Programming with C, University Press, 2012 McGraw Hill, 2012.
2. Byron S. Gottfied - Schaum's outline Theory and problems of programming with C. Tata McGraw Hill Publications.
3. Yeshwanth Kanethkar -Let us C, BPB Publications.
4. K. R. Venugopal, S. R. Prasad -Mastering C – Tata McGraw Hill Pub.

YEAR - I	INTRODUCTION TO INFORMATION TECHNOLOGY	18PIT12
SEMESTER - I		HRS/WK - 5
CORE - 2		CREDIT - 4

Objective:
To make the students to acquire the basic knowledge about Information technology.

Course Outcomes(CO's):

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to basics of Computers
CO2: Proficiency in Computer Software and OS
CO3: Knowledge pertaining to Network Communication
CO4: Knowledge pertaining to Network Applications.
CO5: Expertise in Latest IT trends.

SEMESTER I	COURSE CODE: 18PIT12					COURSE TITLE :INTRODUCTION TO INFORMATION TECHNOLOGY					HOURS:5	CREDITS:4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	4	4	4	4.70	
CO2	4	4	4	4	4	4	4	4	4	4	4	
CO3	4	4	4	4	4	4	4	4	4	4	4	
CO4	4	4	4	4	4	4	4	4	4	4	4	
CO5	4	4	4	4	4	4	4	4	4	4	4	
Mean Overall Score											4.1	

Result: The score of this course is 4.1 (Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT – I **[15 Hrs]**

Introduction to Computers: Computer system concepts - characteristics of computer-generations and types of computer - components of computer system - Booting process-classification of digital computer system - organization of computers - Input and Output devices - Storage devices.

UNIT – II **[15 Hrs]**

Computer Software: System software - application software – firmware. **Programming languages classification:** machine language - assembly language and high-level language. **Evolution of programming languages:** first generation - second generation - third generation and fourth generation languages. **Language translator:** Compiler - Interpreter and Assembler. **Operating System:** Definition – Job - Objective and evolution of operating system - Types of operating systems.

UNIT - III **[15 Hrs]**

Network Communication: Definition – Criteria - advantages and limitations of computer networking - Communication process - Communication types - Types of computer network - Network topology - LAN and other network related protocols - OSI model - TCP/IP model - Networking Components.

UNIT - IV **[15 Hrs]**

Network Applications: Introduction about Internet - Internet basics - Internet protocols - Internet addressing - Browser –WWW - E-mail – telnet – ftp – application - benefits and limitation of internet - electronic conferencing - teleconferencing.

UNIT – V **[15 Hrs]**

Latest IT Trends: E-Commerce - M-Commerce - Artificial Intelligence - Computational Intelligence - Geographic Information System (GIS) - Data Mining. **Role of IT in different Areas** : Education, Industry, Banking, Marketing, Public Services and others.

TEXT BOOK:

1. V. Rajaraman, Computer Fundamentals, PHI.

REFERENCE BOOKS:

1. Dennis P. Curtin, Kim foley, KunalSen and Cathleen Morin, Information Technology - The Breaking Wave, Tata-McGraw Hill Publications, 2005.
2. Leon and Leon, Fundamentals of IT, Leon Tec World.
3. Alexis Lean and Mathews Leon, Fundamentals of Information Technology, Vikas Publication House, Delhi.
4. Cyganski, Information Technology - inside and outside, Pearson Publication.
5. ITL ESL , Introduction to computer Science, Pearson Education.

YEAR - I	E-COMMERCE	EPIT14A
SEMESTER - I		HRS/WK - 5
ELECTIVE - I(1)		CREDIT – 5

Objective:
To learn the potential of electronic business for future development and the development of the 'Information Society' and ethical issues facing business organizations in their daily use of the Internet.

Course Outcomes (CO's):

At the end of the Course the students should be able to exhibit

CO1: Basic Knowledge pertaining to E-Commerce
CO2: Basic Knowledge pertaining to E-Commerce business models.
CO3: Knowledge pertaining to Electronic Data Interchange (EDI)
CO4: Knowledge pertaining to Marketing on the Internet.
CO5: Basic Knowledge pertaining to Multimedia and Digital Video.

SEMESTER I	COURSE CODE: EPIT14A					COURSE TITLE :E-COMMERCE					HOURS:5	CREDITS: 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	4	4	3	3	3	5	3	3.70	
CO2	4	4	4	4	3	3	3	3	5	4	3.70	
CO3	3	3	3	3	3	3	3	3	4	3	3.10	
CO4	3	3	3	3	3	3	3	3	4	3	3.10	
CO5	3	3	3	3	3	3	3	3	4	3	3.10	
Mean Overall Score											3.4	

Result: The score of this course is 3.4 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT I: **[15 Hrs]**

Introduction to E-Commerce : Electronic Commerce Frame work – Electronic commerce and Media convergence – The anatomy of E-Commerce Applications – Components of the Iway – Network Access Equipment – Global Information Distribution Networks – Internet Terminology – NSFNET : Architecture and Components - National Research and Educational Network.

UNIT II: **[15 Hrs]**

Electronic Commerce and World Wide Web: Architectural Frame work for E- – WWW Architecture – Hypertext Publishing – Consumer Oriented Applications – Mercantile Process Models – Consumer's Perspective – Merchant's Perspective – Electronic Payment Systems (EPS) – Types - Designing EPS - Smart Cards and EPS – Credit Cards and EPS.

UNIT III: **[15 Hrs]**

Electronic Data Interchange (EDI) : Applications – Security and Privacy Issues – Software Implementations – Value Added Networks – Internal Information System – Work-flow Automation and Coordination – Customization – Supply Chain Management .

UNIT IV: **[15 Hrs]**

Marketing on the Internet: Advertising on the Internet – Chatting the On-Line Marketing Process – E-Commerce Catalogs or Directories – Information Filtering – Consumer-Data Interface: Emerging Tools.

UNIT V: **[15Hrs]**

Multimedia and Digital Video: Concepts – Digital Video and ECommerce – Video Conferencing – Frame Relay – Cell Relay – Mobile Computing - Frame Work – Wireless Delivery Technology – Cellular - Data Communication Protocols.

TEXT BOOK:

1. Frontiers of Electronic Commerce - Ravi Kalakota, Andrew Winston,Pearson Education

REFERENCE BOOKS :

1. E-Commerce The Cutting Edge Of Business - Kamelesh K Bajaj, Debjani Nag
2. E Business Road Map for Success - Dr.RaviKalakota, Marcia Robinson
3. E-Commerce - Srinivasa Vallabhan .S.V, Vijay Nicole Imprints pvt. Ltd., Chennai.

YEAR - I	PRACTICAL I : C PROGRAMMING AND WEB TECHNOLOGIES	18PITP11
SEMESTER - I		HRS/WK - 5
PRACTICAL - I		CREDIT - 4

Objective:

- To enable the students to learn different C Programming concepts.
- To enable the students to learn Web Development and .Net Application Tools.

Course Outcomes (CO's):

At the end of the Course the students should be able to exhibit

CO1: Knowledge pertaining to C-Language Fundamentals and Knowledge pertaining to HTML Fundamentals.

CO2: Logic using Control Statements and Designing capabilities using CSS

CO3: Modular Programming using Functions and Modular Programming using Scripts.

CO4: Knowledge pertaining to arrays and structures and Web Site Development using ASP.Net.

CO5: Advanced Programming techniques using pointers, files and Web Site Development with database support using ADO.Net.

SEMESTER I	COURSE CODE:18PITP11					COURSE TITLE : C PROGRAMMING AND WEB TECHNOLOGIES(Practical)					HOURS:5	CREDITS:4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	5	5	5	5	5	5	5	5	5	5	5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	4	5	5	5	5	5	4.5	
CO5	4	4	4	4	4	5	5	5	5	5	4.5	
Mean Overall Score											4.7	

Result: The score of this course is 4.7 (Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Lab Exercises:

C- Programming : [40 Hrs]

1. Create console-based applications using C language.
2. Develop simple console-based programs using C language with features like decision making statements, loops.
3. Write modular programs by using functions.
4. Use preprocessor directives in a program.
5. Use pointers to handle integer arrays.
6. Develop C programs using structures, pointers.
7. Use pointers to handle integer arrays, strings and files.
8. Process data in files using file I/O functions.
9. Develop C programs using dynamic memory allocation.
10. C program to find binary addition and binary subtraction.

Web Technologies : [35 Hrs]

1. Usage of Simple HTML commands, Graphics and image formats and Background Graphics and Color.
2. HTML Program to demonstrate the Usage of Tables, Frames, Forms, hyperlinks.
3. How to create a simple CSS style sheet using notepad.
4. Write CSS code to apply different style (color, background color).
5. Write a JavaScript function that converts upper case to lower case, and lower case to upper case in one form and display it in another form.
6. Write a JavaScript code block, which validates a username and password.
   a) If either the name or password field is not entered display an error message.
   b) The fields are entered do not match with default values display an error message.
   c) If the fields entered match, display the welcome message in another page.
7. Write Asp.net program to find sum of all digits of a given number and check whether the given number is an Armstrong number and display the result using a popup window.
8. Write a Asp.net program to get substring from a given string and change the color using scroll bar, font size and name using a value entered in a text box.
9. Write an Asp.net program to store the staff's general information like Staff_id, name, mobile_no, Email_id, DOB.,etc., in a database using Validation control and calendar control.
10. Develop a simple database program to prepare a student mark Sheet using ms-access simple applications using ASP.

YEAR – I	PROJECT I :C PROGRAMMING OR WEB TECHNOLOGIES	18JPIT11
SEMESTER - I		HRS/WK –5
PROJECT – I		CREDIT – 4

Objective:

To motivate the students to work in emerging / latest technologies, help the students to develop ability, to apply theoretical and practical tools / techniques to solve real life problems related to industry, academic institutions and research laboratories.

Course Outcomes (CO's):

At the end of the Course the students should be able to develop

CO1: Stand-alone applications using "C" or HTML/CSS/Javascript
CO2: System Program using "C"
CO3: Web Services using Asp.Net
CO4: A Web Site using Asp.Net and ADO.Net
CO5: A Novel Application.

SEMESTER I	COURSE CODE:18JPIT11					COURSE TITLE :C PROGRAMMING OR WEB TECHNOLOGIES(Project)					HOURS:5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	5	5	5	5	5	5	5	5	5	5	5	
CO3	4	4	4	4	5	5	5	5	5	4	4.5	
CO4	4	4	4	4	4	5	5	5	5	5	4.5	
CO5	4	4	4	4	4	5	5	5	5	5	4.5	
Mean Overall Score											4.7	

Result: The score of this course is 4.7 (Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

About the Project:

- The project is of 5 hours/cycle for each semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project.
- The initiation of project should be with the project proposal.
- The synopsis approval will be given by the project guides.

Problem:

- Develop a project by choosing any topic in C Programming or Web Technologies.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The project work should be an individual project and a project report should be submitted at the end of the semester. The students shall defend their project in front of experts during practical examinations.

YEAR – I	OBJECT ORIENTED PROGRAMMING USING JAVA	18PIT21
SEMESTER - II		HRS/WK – 5
CORE - 4		CREDIT – 4

Objective:
To Impart sound knowledge in Object Oriented Programming using JAVA.

Course Outcomes (CO's):

At the end of the Course the students should possess

CO1: Proficiency in Classes & Objects in Java.
CO2: Proficiency in Packages, Interfaces and Threads.
CO3: Knowledge pertaining to AWT.
CO4: Application developing skills using RMI.
CO5: Application developing skills using Servlets.

SEMESTER II	COURSE CODE:18PIT21					COURSE TITLE :OBJECT ORIENTED PROGRAMMING USING JAVA					HOURS:5	CREDITS:4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	5	5	5	5	5	5	5	5	5	5	5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	5	5	5	5	5	4	4.5	
CO5	4	4	4	4	4	5	5	5	5	5	4.5	
Mean Overall Score											4.7	

Result: The score of this course is 4.7 (Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT - I **[15 Hrs]**

Introduction to Classes & Objects in Java: Introduction to Java - Features of Java – Data types – Classes and Objects – Constructors – String Class - Using Super - Abstract class.

UNIT - II **[15 Hrs]**

Packages, Interfaces and Threads: Creating Packages – Importing Packages – Interfaces - Defining an Interface, Implementing Interfaces - Exception Handling (Try, Catch, Throw and Throws) –Thread – Multithreading.

UNIT – III **[15 Hrs]**

Working with Windows using AWT Classes :AWT: AWT Hierarchy (Components & Containers) – AWT Controls (Label, TextField, TextArea, CheckBox, Button) – Layouts - Sample Program using AWT Controls. **Applets:** Introduction to Applets – Life Cycle of Applets – Sample program using Applets.

UNIT – IV **[15 Hrs]**

Networks &RMI : Networks basics - Socket Programming - Proxy Servers - TCP/IP Sockets - INet Address - URL - Datagrams – Architecture of RMI – An example program using RMI.

UNIT – V **[15 Hrs]**

Database & Java Servlets:JDBC Overview – JDBC Drivers – Connection Class – Command Class – ResultSet Class. Servlet: Servlet Overview – Servlet Terminology – Servlet API – HTTP Servlet Class – Servlet Life cycle – Session Tracking in Servlets (Cookies, Hidden Form Field, URL Rewriting-HTTP Session) - Create a Servlet in NetBeans.

TEXT BOOK :

1. H. Schildt, Java2 (The Complete Reference), Fourth Edition, TMH 1999.

REFERENCE BOOKS :

1. Wesley, K. Arnold and J. Gosling, The Java Programming Language, Third Edition, Addison–Wesley, 2000.
2. H. M. Dietel and P. J. Dietel, Java: How to Program, Pearson Education/PHI, Sixth Edition.
3. Iver Horton, Beginning in Java 2, Wrox Publications.
4. Naughton and H. Schildt, Java2 (The Complete Reference), Third Edition, 1999, Tata McGraw-Hill.
5. K. Moss, Java Servlets, Tata McGraw-Hill, 1999.
6. C. S. Horstmann, Gary Cornell, Core Java 2 Vol. I Fundamentals, Pearson Education.
7. C. S. Horstman, Gary Cornell, Core Java 2 Vol. I and Vol. II – 7th Edition. PHI, 2000.
8. D.R. Callaway, Inside Servlets, 1999, Pearson Education, Delhi.

YEAR – I	RELATIONAL DATABASE MANAGEMENT SYSTEM	18PIT22
SEMESTER - II		HRS/WK – 5
CORE - 5		CREDIT – 4

Objective:

To enable the students to learn the various concepts in Relational Database Management system and to impart knowledge on SQL and PL/SQL statements.

Course Outcomes (CO's):

At the end of the Course the students should possess

CO1: Proficiency in SQL Basics.
CO2: Proficiency in Advanced SQL Concepts.
CO3: Knowledge pertaining to SQL Loader.
CO4: Application developing skills using PL/SQL.
CO5: Application developing skills using Cursors and Triggers.

SEMESTER II	COURSE CODE:18PIT22					COURSE TITLE :RELATIONAL DATABASE MANAGEMENT SYSTEM					HOURS:5	CREDITS:4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	4	4	4	4	5	5	5	5	5	4	4.5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	4	5	5	5	5	5	4.5	
CO5	4	4	4	4	4	5	5	5	5	5	4.5	
Mean Overall Score											4.6	

Result: The score of this course is 4.6 (Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT - I **[15 Hrs]**

SQL Basics: Introduction to RDBMS – **Normalization:** First Normal form-Second Normal form-Third Normal form-Creating a Table-Integrity Constraints- Creating, Modifying and Dropping -Select, from, where and Order by-Logic and Value: Single value tests-LIKE-NULL and NOT NULL-Simple tests against a list of values-Combining logic-Dropping tables-Altering a table: Adding or modifying a column-Changing Data: insert-multiple inserts-update-merge-delete-rollback-commit and Save point.

UNIT - II **[15 Hrs]**

SQL Concepts: Data types-String functions-Single value functions-Aggregate functions-List functions-Findings Rows with MAX or MIN-Date functions-Conversion functions-Creating a view- Stability of a view-Order by views-Creating a read only view -Grouping Things Together: The use of group by and having-views of Groups-Sub queries-Advanced Sub queries-Outer joins-Natural and inner joins-Union, Intersect, and minus.

UNIT - III **[15 Hrs]**

Advanced SQL Concepts: Decode and Case: if, then, else-Decode and Case-Creating a table from a table-Using Partitioned Tables: Creating a Partitioned Table-Creating Sub partitions-Indexes-Clusters-Sequences.

Users, Roles and Privileges: Creating a user-Password Management-Standard Roles-Format for grant command-Revoking privileges-What users can Grant: Moving to another user –Create synonym-Create a role-Granting privileges to a role-Granting a role to another role-Adding password to a role-Removing password from a role –Enabling & Disabling roles-Revoking privileges from a role-Drop a role.

UNIT - IV **[15 Hrs]**

Using SQL*Loader to load data: The Control file-Loading Variable length data-Starting the load-Syntax-Managing the data loads-Tuning Data loads-Using External Tables: Access an external data-External table: Creation-Limitation-Benefits.

Object–Relational Databases: Implementing Types-Object Views- Methods-Collectors (Nested Tables and Varying Arrays)-Using Large Objects-Advanced Object –Oriented Concepts.

UNIT - V **[15 Hrs]**

Introduction to PL/SQL: Declarations section-Executable commands section-Exception handling section-Cursor Management-Procedures, Functions & Packages-Triggers: Syntax-Types of Triggers: Row level- Statement level-before & after-Instead of Schema-Database level triggers-Enabling & Disabling triggers.

TEXT BOOK:

1. Kevin Lonely, ORACLE DATABASE 10g - The Complete Reference, Tata McGraw-Hill Publishing Company Ltd 2004.

REFERENCE BOOKS:

1. Michael Abhey, Mike Corey and Ian Abramson, Oracle 9i- A Beginner's Guide, Tata McGraw Hill Publishing Company Ltd.
2. Seyed M.M. (Saied) Tahaghoghi, Hugh Williams, Learning MySQL, O'Reilly Media.

YEAR – I	SOFTWARE TESTING (Students admitted from year 2022-2023)	PIT23A
SEMESTER - II		HRS/WK – 5
CORE - 6		CREDIT – 4

Objective:
To understand the Concepts of Software Testing and to introduce various Testing Strategies and Testing Tools.

Course Outcomes (CO's):

At the end of the Course the students should possess

CO1: Proficiency in Principles of Testing.
CO2: Proficiency in Different Testing Techniques.
CO3: Knowledge pertaining to Specialized Testing.
CO4: Application developing skills using Proper Test Plan and Reporting.
CO5: Implementing ability using Software Tools.

SEMESTER II	COURSE CODE: PIT23A					COURSE TITLE :SOFTWARE TESTING					HOURS:5	CREDITS:4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	4	4	4	4	4	4	4	4	
CO2	4	4	4	4	4	4	4	4	4	4	4	
CO3	3	3	3	3	3	3	3	3	3	3	3	
CO4	3	3	3	3	3	3	3	3	3	3	3	
CO5	3	3	3	3	3	3	3	3	3	3	3	
Mean Overall Score											3.4	

Result: The score of this course is 3.4 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT-I: **[15Hrs]**

Introduction: Principles of Testing - Software Development Life Cycle Models**:** Phasesof Software Project - Quality, Quality Assurance and Quality Control – Testing, Verification and Validation - Process Model to represent different Phases – Life Cycle Models: Waterfall Model, Prototyping and Rapid Application Development Models, Spiral or Iterative Model, The V-Model, Modified V- Model.

UNIT-II: **[15Hrs]**

Types of Testing - White Box Testing: Static Testing ,Structural Testing - Black Box testing: Need for Black Box Testing, Black Box Testing Techniques - Integration Testing: Types of Integration Testing, Defect Bash - System and Acceptance Testing: Need for System Testing, Functional System Testing, Non- Functional Testing.

UNIT-III: **[15Hrs]**

Specialized Testing: Performance Testing: Factors Governing Performance Testing, Methodology for Performance Testing, Tools for Performance Testing, Process for Performance Testing – Regression Testing: Types of Regression Testing, Need for Regression Testing, Regression Testing Methodologies - Testing of Object Oriented Systems: Primer on Object Oriented Software, Differences in OO Testing.

UNIT-IV: **[15Hrs]**

Test Planning and Reporting: Test Planning, Test Management, Test Process, Test Reporting, Best Practices.

UNIT-V: **[15Hrs]**

Software Tools: Software Test Automation: Skills needed for Automation, What to Automate and Scope for Automation, Design and Architecture for Automation, Selecting a Test Tool - Test Metrics and Measurements: Types of Metrics: Project Metrics, Progress Metrics, Productivity Metrics.

TEXT BOOK:

1. Srinivasan Desikan, Gopalasamy Ramesh, Software Testing, Pearson Education 2006.

REFERENCE BOOKS:

1. LouisTamres, Introducing Software Testing, FirstEdition, Addison Wesley Publications**.**
2. Ron Patton, Software Testing, Sams Publishing.

YEAR – I	CLOUD COMPUTING	18EPIT24
SEMESTER - II		HRS/WK – 5
ELECTIVE - II(1)		CREDIT – 5

Objective:
To understand the concepts of cloud computing and to make the students to get in touch with the services provided by cloud computing.

Course Outcomes (CO's):

At the end of the Course the students should possess

CO1: Proficiency in basics of Cloud Computing.
CO2: Proficiency in Developing Cloud Services.
CO3: Knowledge pertaining to Cloud Computing.
CO4: Application developing skills using Cloud Services.
CO5:Proficiency in Cloud Security and Challenges.

SEMESTER II	COURSE CODE:18EPIT24					COURSE TITLE :CLOUD COMPUTING					HOURS:5	CREDITS:5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	4	4	4	4	4	4	4	4	
CO2	3	3	3	3	3	3	3	3	3	3	3	
CO3	3	3	3	3	3	3	3	3	3	3	3	
CO4	3	3	3	3	3	3	3	3	3	3	3	
CO5	4	4	4	4	4	4	4	4	4	4	4	
Mean Overall Score											3.4	

Result: The score of this course is 3.4 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT - I **[15 Hrs]**

Introduction to Cloud Computing : Cloud Computing: Definition, Cloud Architecture, Cloud Storage, Advantages and Disadvantages of Cloud Computing, Companies in the Cloud Today, Cloud Services, **Cloud Types:** The NIST Model, The Cloud Cube Model, Deployment Models, Service Models Cloud **Computing, Service Models:** Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS).

UNIT - II **[15 Hrs]**

Developing Cloud Services : Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand Computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2 – Google App Engine – IBM Clouds.

UNIT - III **[15 Hrs]**

Cloud Computing for Everyone : Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud Computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation.

UNIT - IV **[15 Hrs]**

Using Cloud Services : Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing - Collaborating on Databases – Storing and Sharing Files.

UNIT - V **[15 Hrs]**

Cloud Security and Challenges : Cloud computing security architecture: Architectural Considerations- General Issues, Trusted Cloudcomputing, Secure Execution Environments and Communications, Micro-architectures; Identity Management and Access control Identity management, Access control, Autonomic Security **Cloudcomputing security challenges:** Virtualization security management virtual threats, VM SecurityRecommendations, VM--Specific Security techniques, Secure Execution Environments and Communications in cloud.

TEXT BOOKS:

1. Barrie Sosinsky, Cloud Computing Bible, Wiley India publications.
2. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Pearson Publications.

REFERENCE BOOKS:

1. Kailash Jayaswal, Cloud Computing Black Book, Dream tech Press.
2. Thomas Erl, Ricardo Puttini, Zaigham Mahmood, Cloud Computing: Concepts, Technology, and Architecture, Pearson Education India.
3. Dinakar Sitaram, Moving to The Cloud, Elsevier, 2014.
4. Danc. Marinercus, Cloud Computing Theory And Practice, Elsevier, 2013.
5. Judith Hurwitz, Robin Bloor, Marcia Kaufman, and Dr. Fern Halper, Cloud Computing for Dummies, Wiley Publishing, 2010.

YEAR – I	PRACTICAL II: JAVA PROGRAMMING AND RDBMS	18PITP22
SEMESTER - II		HRS/WK – 5
PRACTICAL - II		CREDIT - 4

Objective:
To get hands on experience in developing Programs using Java applications and to enable students to write SQL queries and work with PL/SQL.

Course Outcomes (CO's):

At the end of the Course the students should possess

CO1: Application development efficiency using Java basic statements and SQL basics.

CO2:Application development efficiency using AWT Controls and advanced SQL concepts.

CO3: Network Application development skill and knowledge pertaining to SQL loader.

CO4: Application developing skills using RMI and Application developing skills using PL/SQL.

CO5: Application developing skills using Servlets and Application developing skills using Cursors and Triggers.

SEMESTER II	COURSE CODE:18PITP22					COURSE TITLE :JAVA PROGRAMMING AND RDBMS(Practical)					HOURS:5	CREDITS:4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	4	4	4	4	4	5	5	5	5	5	4.5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	4	5	5	5	5	5	4.5	
CO5	4	4	4	4	4	5	5	5	5	5	4.5	
Mean Overall Score											4.6	

Result: The score of this course is 4.6 (Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Lab Exercises:

JAVA: **[40 Hrs]**

1. To find the area and perimeter of a Circle and Rectangle using Buffered Reader Class.
2. String Manipulation using String and String Buffer Class.
3. Implementing packages for simple application.
4. Implementing Interfaces in Java.
5. Create an application using AWT Controls.
6. Loading image onto Applet.
7. Chatting application using TCP/IP.
8. To develop a program for factorial of a number using RMI.
9. Create a Login form using Servlet in NetBeans.
10. To develop an application for Student Mark List using Servlet with Database (Ms-Access).

RDBMS: **[35 Hrs]**

1. Writing Basic SQL Statements
2. Table Constraints
3. Working with Built-in-functions of SQL.
4. Joins & Sub queries
5. Loading data using SQL*loader
6. PL\SQL blocks.
7. Exception Handling
8. Cursors.
9. Creating Stored procedures, functions and packages.
10. Triggers.
11. Working with Abstract Data Types
    i) Types
    ii) Object Views
    iii) Methods
    iv) Nested Tables
    v) Varying arrays.

YEAR – I	PROJECT II: JAVA PROGRAMMING OR RDBMS	18JPIT22
SEMESTER - II		HRS/WK – 5
PROJECT - II		CREDIT – 4

Objective:

To motivate the students to work in emerging / latest technologies, help the students to develop ability, to apply theoretical and practical tools / techniques to solve real life problems related to industry, academic institutions and research laboratories.

Course Outcomes (CO's):

At the end of the Course the students should be able to develop

CO1: Stand-alone applications using Java or RDBMS Package.
CO2: System Program using Java
CO3: Web Services using Servlet
CO4: A Web Site using Servlet and SQL.
CO5: A Novel Application.

SEMESTER II	COURSE CODE:18JPIT22					COURSE TITLE :JAVA PROGRAMMING OR RDBMS (Project)					HOURS:5	CREDITS:4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	5	5	5	5	5	5	5	5	5	5	5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	4	5	5	5	5	5	4.5	
CO5	4	4	4	4	4	5	5	5	5	5	4.5	
Mean Overall Score											4.7	

Result: The score of this course is 4.7 (Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

About the Project:

- The project is of 5 hours/cycle for each semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project.
- The initiation of project should be with the project proposal.
- The synopsis approval will be given by the project guides.

Problem:

- Develop a project by choosing any topic in Java Programming or RDBMS.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The project work should be an individual project and a project report should be submitted at the end of the semester. The students shall defend their project in front of experts during practical examinations.

YEAR – II	DATA ANALYTICS USING PYTHON	PIT31A
SEMESTER - III		HRS/WK – 4
MAIN - 7		CREDIT - 4

Objective:
Towriteprogramsforawidevarietyproblemsinmaths,science,finance,andgames.

Course Outcomes (CO's):

At the end of the Course the students should possess

CO1: **Analyze and design strategies for solving basic programming problems.**
CO2: Learn Primitive data types, selection statements, loops, functions to write programs.
CO3: Develop programs to solve a variety of problems in maths, science, business, and games.
CO4: Use the step-wise refinement approach.
CO5: Use lists to store,process, and sort data.

SEMESTER III	COURSE CODE:					COURSE TITLE :DataAnalyticsUsingPython					HOURS:4	CREDITS:4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	4	4	4	4	4	5	5	5	5	5	4.5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	4	5	5	5	5	5	4.5	
CO5	5	5	5	5	5	5	5	5	5	5	5	
Mean Overall Score											4.7	

Result: The score of this course is 4.7 (Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Unit I

Python Basics: Introduction to Python-Features-Identtifiers-Keywords-Indentation-Comments-Built-in data types. Control Structure: for-nested for-while. User defined functions-function arguments and its types.

Data Structures: **List**-List methods: append, clear, copy, count, extend, index, pop, remove, reverse, sort **Tuples-** Tuple methods: count, index. **Dictionary** -Dictionary methods:clear,copy,get,fromkeys,items,keys,pop,popitem,setdefault,update values. **Set**-Set methods: add, copy, clear, difference, union, intersection, symmetric difference, isdisjoint, issubset, issuperset.

Unit II

Python File Handling – File manipulations: read, readline, readlines, truncate, seek, flush, write, writable, writelines, tell.

Python Exception Handling-Exception methods: Exception, ArithmeticError, EOFError, ImportError, IndentationError, keyError, OverflowError, ZeroDivisionError.

Unit III

Introduction to Numpy: Numpy Basics- Arrays and Vector Computation-Numpy ndarrays-Creating ndarrays-Numpy Data types : strings, integer, float, Boolean, complex-Arithmetic with Numpy arrays: Array indexing and Slicing functions: slice, arrange-Numpy ufunc: add, subtract, multiply, division, power, mod, divmod, abs.

Unit IV

Data Manipulation with Pandas:- Introduction to Pandas Data Structure: DataFrame-Loading your first data set-Looking at columns, rows and cells: Subsetting columns-subsetting columns by name, range-subsetting rows-subsetting rows by index label(head, tail, loc)-Group and aggregated calculations:-grouped mean.

Unit V

Introduction to OpenCV:-Loading-Displaying-saving image:-imread, imshow, imwrite-Drawing:Lines, rectangle, circle-Image Transformation:-rotation, flip, splitting and merging channels-color space:- convert between rgb, hsv, grayscale images.

TEXTBOOK:

1. Tony Gaddis,"Starting out with Python",Pearson India Educational Sevices Pvt. Ltd.,4th Edition.
2. Paul Deitel, Harvey Deitel,"Python for Programmers", Pearson India Educational Sevices Pvt. Ltd.,5th Edition.
3. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, Numpy and IPython", O'Reilly, 2nd Edition, 2018.

REFERENCE BOOKS:

1. Ljubomir Perkovic, "Introduction to Computin Using Python:An Application DevelopmentFocus",JohnWiley&Sons, 2012.

2. Dawson,Michael.PythonProgrammingfortheAbsoluteBeginner(3rded.).Boston,MA:CourseTechnology,2010.

YEAR – II	OPEN SOURCE TECHNOLOGIES	18PIT32
SEMESTER - III		HRS/WK – 4
CORE - 8		CREDIT – 4

Objective:
To make the students get acquainted with the basics of PHP and MySQL Programming.

Course Outcomes (CO's):

At the end of the Course the students should possess

CO1: Knowledge pertaining to Building blocks of PHP
CO2: Proficiency in Working with Strings, Date and Time Functions.
CO3: Proficiency in Error Handling and Debugging.
CO4:Proficiency in Working with Directories.
CO5: Knowledge pertaining to application development using MySql.

SEMESTER III	COURSE CODE:18PIT32					COURSE TITLE :OPEN SOURCE TECHNOLOGIES					HOURS:4	CREDITS:4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	4	4	4	4	4	5	5	5	5	5	4.5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	4	5	5	5	5	5	4.5	
CO5	5	5	5	5	5	5	5	5	5	5	5	
Mean Overall Score											4.7	

Result: The score of this course is 4.7(Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

UNIT - I **[12Hrs]**

Building blocks of PHP: Basic syntax - Variables - Data Types - Operators and expressions-Constants. **Flow Control:** Switch flow- Loops- Code Block- Sending data to the browser-**Working with Arrays:** Arrays- Creating array- Array related Functions-**Working with Function:** Function- Calling Function- Defining Function- Returning the Values from user defined function- Variable Scope- Argument.

UNIT - II **[12Hrs]**

Working with Strings, Date and Time Functions: Formatting String with PHP- Date andTimeFunction-StringManipulationandInvestigatingStringswithPHP-**Working with Forms:** Creating form- Handling form- Validating form data- Accessing form data- use of Hidden fields to save State- Redirecting user- file Upload-**Working with Cookies and User Session:** Introduction of Cookie- Setting a Cookie with PHP-Introduction of Session and Improving Session Security- Starting a Session- Working with Session Variables- Passing Session Id in the query String- Destroying Session and Unsetting Variables.

UNIT - III **[12Hrs]**

Error Handling and Debugging: General error types and debugging- displaying PHP errors- Adjusting Error Reporting- Creating Custom error handler- PHP debugging techniques-**Filter:** Types of Filter- Functions of Filter- Validate the data with filter option and sanitize-**Working with files:** Include Files with INCLUDE- creating and deleting files-opening a file for reading- writing or Appending- Reading from files- Validating Files.

UNIT - IV **[12Hrs]**

Working with Directories: Directory related function- $DIR object in PHP-**Working with Images:** Image related function- Miscellaneous function-**Introduction To OOP:** The basic-auto loading objects- Class- Extends- Constructs- Scope Resolution Operator- Parent-serializing object- The magic objects sleep and awake- reference inside the constructor-comparing objects- Visibility- overloading- object interface- pattern- magic method.

UNIT - V **[12Hrs]**

Learning Basic SQL Command: Table Creation- Insert row- Select Command Using Where Clause- Update and Delete Command- Replace Command- String Function- Date and Time Functions- Stored Procedures- Join- Indexing and Sorting query-**Using MySQL with PHP:** Connecting to MySQL and selecting the database- executing simple queries- retrieving query results- counting return Records- updating- Record Addition-Viewing Record- and Deletion Record with PHP.

TEXT BOOKS:

1. Dave W. Mercer, Allan Kent, Steven D. Nowicki, David Mercer, Dan Squier, Wankyu Choi with Heow Eide-Goodman, Ed Lecky-Thompson, Clark Morgan, Beginning PHP 5, Wrox.
2. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education.

REFERENCE BOOKS:

1. Larry Ullman, PHP and MySQL for dynamic Web Sites: Visual Quickpro Guide, Peachpit Press.
2. Rasmus Lerdorf, Kevin Tatroe, Peter Maclntyre, Programming PHP, O'Reilly Media.
3. Steven Holzner, The Complete Reference PHP, McGraw Hill Education.

YEAR – II	INTERNET OF THINGS	19EPIT33
SEMESTER - III		HRS/WK – 5
ELECTIVE - III(1)		CREDIT – 5

Objective:
To make the students get acquainted with Internet of things.

Course Outcomes (CO's):

At the end of the Course the students should possess

CO1: Knowledge pertaining to Basics of IoT
CO2: Proficiency in IoT Market Perspectives.
CO3: Proficiency in IoT Technology Fundamentals.
CO4:Proficiency in IoT State of the Art Architecture.
CO5: Knowledge pertaining to Commercial building automation in the future.

SEMESTER III	COURSE CODE:19EPIT33					COURSE TITLE :INTERNET OF THINGS					HOURS:5	CREDITS:5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	4	4	4	4	4	4	4	4	
CO2	4	4	4	4	4	4	4	4	4	4	4	
CO3	4	4	4	4	4	4	4	4	4	4	4	
CO4	4	4	4	4	4	4	4	4	4	4	4	
CO5	5	5	5	5	5	5	5	5	5	5	5	
Mean Overall Score											4.2	

Result: The score of this course is 4.2(Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Unit-I **[15 Hrs]**

Basics of IoT–Overview-IoT−Key Features-IoT–Advantages-IoT–Disadvantages-Application of IoT.

Unit-II **[15 Hrs]**

IoT Hardware-IoT Sensors-Wearable Electronics-Standard Devices-IoT Software-IoT Technology and Protocols.

Unit-III **[15 Hrs]**

IoT Security-IoT -Identity Protection-IoT Liability-IoT Common uses-IoT − Media, Marketing&Advertising-IoT−Environmental Monitoring.

Unit-IV **[15 Hrs]**

IoTApplications−Manufacturing Applications - IoT− Energy Applications - IoT−Healthcare Applications - IoT−Building/Housing Applications - IoT−Transportation Applications - IoT−Education Applications-IoT−Government Applications.

Unit-V **[15 Hrs]**

Python and IoT-Working with Python on Intel Galileo Gen 2.- Interacting with Digital Outputs with Python.-Retrieving Data from the Real World with Sensors.

TEXT BOOK:

1. Internet of Things with Python,GastonC. Hillar,Electronic bo,2019

REFERENCE BOOKS:

1. Vijay Madisetti and Arshdeep Bahga, Internet of Things (A Hands-on Approach), First Edition, VPT, 2014.
2. Francis daCosta, Rethinking the Internet of Things: A Scalable Approach to Connecting Everything, First Edition, Apress Publications, 2013.

YEAR – II	PRACTICAL III : DATA ANALYTICS USING PYTHON AND WEB DEVELOPMENT USING PHP	PITP34
SEMESTER - III		HRS/WK – 5
PRACTICAL -III		CREDIT - 5

Objective:

- To enable the students to learn the programming concepts in Data Analytics using Python.
- To enable the students to build applications in PHP.

Course Outcomes (CO's):

At the end of the Course the students should be able to

CO1: Understand and summarize different File handling operations in Python.
CO2: Design and develop Client Server network applications using Python.
CO3: Develop Application using Forms in PHP.
CO4: Develop different application such as online shopping cart, banking App.
CO5: Develop Database application using Android and PHP

SEMESTER III	COURSE CODE:					COURSE TITLE :DATA ANALYTICS USING PYTHONAND WEB DEVELOPMENT USING PHP (Practical)					HOURS:5	CREDITS: 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	4	4	4	4	4	5	5	5	5	5	4.5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	4	5	5	5	5	5	4.5	
CO5	4	4	4	4	4	5	5	5	5	5	4.5	
Mean Overall Score											4.6	

Result: The score of this course is 4.6(Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

Lab Exercises:

DATA ANALYTICS USING PHYTON: [40 Hrs]

1. Working with List – append, clear, copy, extend, index, pop, remove, reverse, sort.
2. Working with Dictionary- clear, copy, get, fromkeys, pop, popitems, setdefault, update values
3. Working with Tuple- count, index
4. Working with Set- add,copy, clear, difference, union, intersection, symmetri, isdisjoint, issubset, issuperset.
5. File handling with exception handling
6. Numpy computation – creating numpy arrays, working with numpy data types
7. Numpy computation – numpy array indexing, slice, arrange, add, subtract, multiply, division, pow, mode, divmod, abs.
8. Working with Pandas – loading dataset, subsetting columns by : name, range, subsetting rows by index.
9. Image manipulation using Opencv – load image, imread, imshow, imwrite, drawing: lines, rectangle, circle.
10. Image manipulation using Opencv – rotation, flip, splitting and merging channels-convert between : rgb, hsv, grayscale images.

WEB DEVELOPMENT USING PHP: **[35 Hrs]**

1. String and Date functions in PHP.
2. Form creation using POST method
3. Database Operations using mysql.
4. Login form using session.
5. Class and Object in PHP.
6. Student mark list creation with validation.
7. Electricity bill preparation.
8. Develop a simple online shopping cart.
9. Develop a simple bank application.
10. Develop an application for employee pay slip.

YEAR – II	PROJECT III : DATA ANALYTICS USING PYTHON OR WEB DEVELOPMENT USING PHP OR ANDROID APPLICATIONS	JPIT33A
SEMESTER - III		HRS/WK – 5
PROJECT - III		CREDIT - 5

Objective:

To motivate the students to work in emerging / latest technologies, help the students to develop ability, to apply theoretical and practical tools / techniques to solve real life problems related to industry, academic institutions and research laboratories.

Course Outcomes (CO's):

At the end of the Course the students should be able to develop

CO1: Stand-alone applications using Python and PHP.
CO2: System Program using Python
CO3: Web Services using PHP.
CO4: A Web Site using PHP and MySql.
CO5: A Novel Application.

SEMESTER III	COURSE CODE:					COURSE TITLE:DATA ANALYTICS USING PYTHON OR WEB DEVELOPMENT USING PHPOR ANDROID APPLICATIONS (Project)					HOURS:5	CREDITS:5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	5	5	5	5	5	5	5	5	5	5	5	
CO3	4	4	4	4	5	5	5	5	5	4	4.5	
CO4	4	4	4	4	5	5	5	5	5	4	4.5	
CO5	4	4	4	4	5	5	5	5	5	4	4.5	
Mean Overall Score											4.7	

Result: The score of this course is 4.7(Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **VERY HIGH** association with Programme Outcomes and Programme Specific Outcomes.

About the Project:

- The project is of 5 hours/cycle for each semester duration and a student is expected to do planning, analysing, designing, coding, and implementing the project.
- The initiation of project should be with the project proposal.
- The synopsis approval will be given by the project guides.

Problem:

- Develop a project by choosing any topic in Android Applications or Web Development using PHP.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The project work should be an individual project and a project report should be submitted at the end of the semester. The students shall defend their project in front of experts during practical examinations.

YEAR-II	MAIN PROJECT	18JPIT44
SEMESTER - IV		HRS/WK-30
MAIN PROJECT		CREDIT – 11

Objective:
To expose the students to industry atmosphere and help them to gain knowledge on software development.

Course Outcomes (CO's):

At the end of the Course the students should possess

CO1: Project Analysis Technical Skill.
CO2:Project Designing Technical Skill.
CO3: Project Coding Technical Skill.
CO4: Project Testing Technical Skill.
CO5: Project Implementation Technical Skill

SEMESTER IV	COURSE CODE:18JPIT44					COURSE TITLE :MAIN PROJECT					HOURS:30	CREDITS:11
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	5	5	5	5	5	5	5	5	5	5	5	
CO2	5	5	5	5	5	5	5	5	5	5	5	
CO3	4	4	4	4	4	5	5	5	5	5	4.5	
CO4	4	4	4	4	4	5	5	5	5	5	4.5	
CO5	4	4	4	4	4	5	5	5	5	5	4.5	
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FORMAT FOR PREPARING MAIN PROJECT REPORT

Arrangement of contents

1. Title Page
2. Bonafide Certificate
3. Acknowledgement
4. Table of contents
5. Abstract
6. Chapters of the Report
7. References
8. Appendices, if any

Appendices should be named as

APPENDIX – A
APPENDIX - B

BINDING SPECIFICATION

- Report should be found using flexible cover of thick white art paper.
- The Spine for the bound volume should be of black calio of 2cms width.
- The Cover should be printed in block letters.

MARGIN SPECIFICATION

Top	:	4 cms
Bottom	:	3 cms
Left	:	4.5 cms
Top	:	2.5 cms

PAGE NUMBERING

All Page numbers should be typed without punctuation on the bottom-center portion of the page. The Preliminary pages (table of contents and abstract) should be numbered in lowercase roman literals. Papers of main text, starting with Chapter-1, should be consecutively numbered using Arabic numerals.