

**J.J. College of Arts and Science (Autonomous)
Sivapuram, Pudukkottai - 622 422**

Department of Information Technology



M.Sc., Information Technology

Syllabus based on



TANSCHER Regulations on Learning Outcomes - Based Curriculum Frame Work for Post Graduate Education

[Those who Join 2023 - 2024 Onwards]

J.J College of Arts and Science (Autonomous), Pudukkottai – 622 422

M.Sc. – Information Technology (Course Structure under CBCS)

Proposed Course Structure based on TANSCH and UGC-LOCF

(For the Candidates admitted from academic year 2023 – 2024)

Sem.	Paper Code	Title	Instruct Hours/ Week	credi	Exam Hours	Marks		Total
						Int.	Ext.	
I	P1R3ITCC1	Python Programming	7	5	3	25	75	100
	P1R3ITCC2P	Python Programming – Practical	7	5	3	40	60	100
	P1R3ITCC3P	Web Development using Word Press– Practical	6	4	3	40	60	100
	P1R3ITDSE1:1/ P1R3ITDSE1:2	Networks and Security/ Principles of Compiler Design	5	3	3	25	75	100
	P1R3ITDSE2:1/ P1R3ITDSE2:2	Object oriented analysis and design/ Pervasive Computing	5	3	3	25	75	100
Total			30	20				500
II	P2R3ITCC4	Database Systems	6	5	3	25	75	100
	P2R3ITCC5P	Practical III - RDBMS Lab	6	5	3	40	60	100
	P2R3ITCC6P	Practical IV - Open Source Technologies - Practical	6	4	3	40	60	100
	P2R3ITDSE3:1/ P2R3ITDSE3:2	Digital Image Processing/ Biometric Techniques	4	3	3	25	75	100
	P2R3ITDSE4:1/ P2R3ITDSE4:2	Operating Systems / Human Computer Interaction	4	3	3	25	75	100
	P2R3ITSEC1	Web Design	4	2	3	25	75	100
Total			30	22				600

Sem.	Paper Code	Title	Instruct Hours/ Week	credit	Exam Hours	Marks		Total
						Int.	Ext.	
III	P3R3ITCC7	Advanced JAVA	5	5	3	25	75	100
	P3R3ITCC8	Dot Net with C# Programming	5	5	3	25	75	100
	P3R3ITCC9P	Advanced JAVA – Practical	6	5	3	40	60	100
	P3R3ITCC10P	Dot Net with C# Programming Practical	6	5	3	40	60	100
	P3R3ITDSE5:1/ P3R3ITDSE5:2	Discipline Specific Elective Course 5 Internet of Things / Trends in Computing	5	3	3	25	75	100
	P3R3ITSEC2:1/ P3R3ITSEC2:2	Skill Enhancement Course 2 Animation in Flash/ Grid Computing	3	2	3	25	75	100
	P3R3ITINT	Internship	-	3	-	-	-	100
Total			30	28				700
IV	P4R3ITCC11	Data Science and Big Data Analytics	15	5	3	25	75	100
	P4R3ITCC12	Software Project Management	15	5	3	25	75	100
	P4R3ITCC13PW	Project work	-	10	3	-	-	100
Total			30	20	-	-	-	300
MOOC Online Course				04				
Grand Total			-	90(04)	-	-	-	2100

CORE COURSE – 1 PYTHON PROGRAMMING (P1R3ITCC1)

Hours/Week: 5

Max. Marks:100 (CIA:25+Ext.:75)

Total Hours: 75

Credit:5

Nature of the Course: **Skill Development**

Objectives:

1. To discover principles of **Core Python**
2. To acquire knowledge about **Functions**
3. To learn **Modules**
4. To explore knowledge about **GUI Programming** .
5. To understand **Database Programming**

Unit I

Core Python: Introduction - Python Basics: Comments - Statements and syntax - variable Assignment - Identifiers - **Python objects** : Built-in-types - Internal types - Standard Type operators - Standard type Built-in-functions. **Numbers** : Introduction to Numbers - Integers - Floating point numbers - Complex numbers - Operators - Built-in and factory functions – Conditionals and Loops -**Sequences** : Strings, Lists and Tuples.

Unit II

Mapping and set types.- **Functions and functional programming:** Introduction - Calling functions - **Creating functions** - passing functions - Formal arguments - Variable - Length Arguments - Functional Programming - Variable Scope – Recursion.

Unit III

Modules: Modules and Files – namespaces - Importing Modules - Features - Built-in functions.

Object Oriented Programming: Introduction - Object Oriented Programming – Encapsulation Inheritance – Polymorphism - **Errors and Exceptions:** Introduction – Exceptions in Python.

Unit IV

GUI Programming: Introduction – **Using Widgets:** Core widgets- Generic widget properties – Labels – Buttons – Radio Buttons – Check Buttons – Text – Entry – List Boxes – Menus – Frame – Scroll Bars – Scale.

Unit V

Database Programming: Connecting to a database using MongoDB - **Creating Tables** - INSERT-UPDATE - DELETE - READ operations.

Text Books:

1. Wesley J. Chun, (2007), “Core Python Programming”, Pearson Education, Second Edition .
2. Charles Dierbach, (2015), “Introduction to Computer Science Using Python A Computational Problem-Solving Focus”, Wiley India Edition- (Unit III- Object Oriented Programming)
3. Martin C Brown, (2018), “The Complete Reference Python”, McGraw Hill Education (India) Private Limited – (Unit IV)

Book Reference:

1. <https://www.mongodb.com/languages/python>

Reference Books:

1. Mark Lutz, (2013), “Learning Python Powerful Object Oriented Programming”, O’reilly Media, 5 th Edition.
2. Timothy A. Budd, (2011), “Exploring Python”, Tata MCGraw Hill Education Private Limited, First Edition.

Web References:

1. <http://interactivepython.org/courselib/static/pythonds>
2. <http://www.ibiblio.org/g2swap/byteofpython/read/>
3. <http://www.diveintopython3.net/>

Course Outcomes

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Explain the basic concepts in python language.	K2
CO 2	Apply the various data types and identify the usage of control statements, loops, functions and modules in python for processing the data	K3
CO 3	Analyze and solve problems using basic constructs and techniques of python.	K4
CO 4	Assess the approaches used in the development of interactive application.	K5
CO 5	To build real time programs using python.	K6

Relationship Matrix for CO, PO, PSO

Course Name – Python Programming						Course Code – P1R3ITCC1					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	3	2	2	3	2	2	2.3
CO2	2	2	2	3	2	2	3	2	3	3	2.4
CO3	3	2	3	2	2	2	3	2	3	2	2.4
CO4	3	2	2	2	2	2	2	2	2	2	2.1
CO5	2	2	2	3	2	3	2	3	2	3	2.4
	Mean Overall Score										2.32
	Result										High

PYTHON PROGRAMMING – PRACTICAL (P1R3ITCC2P)

Hours/Week: 5

Max. Marks: 100 (CIA:40+Ext.:60)

Total Hours: 75

Credit: 4

Nature of the Course: Employability

Objectives

1. To acquire knowledge about **Python**
2. To acquire knowledge about **Control Structures**
3. To understand OOPs Concepts
4. To explore knowledge about **GUI Programming** .
5. To understand **Database Programming**

1. Python Basic programs
2. Control Structures
3. Lists
4. Functions and Recursions
5. Modules
6. String Processing
7. Dictionaries and Sets
8. Classes and Objects
9. Polymorphism
10. Inheritance
11. GUI Application
12. Working with Database

Course Outcomes:

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Understand the significance of control statements, loops and functions in creating simple programs.	K2
CO 2	Apply the core data structures available in python to store, process and sort the data.	K3
CO 3	Analyze the real time problem using suitable python concepts.	K4
CO 4	Assess the complex problems using appropriate concepts in python.	K5
CO 5	Develop the real time applications using python programming language.	K6

Relationship Matrix for CO, PO, PSO

Course Name – Python Programming Practical						Course Code –P1R3ITCC2P					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	3	3	3	3	3	2	2	2.6
CO2	2	3	2	3	3	2	3	2	2	2	2.4
CO3	3	2	3	3	3	3	2	2	2	2	2.5
CO4	2	2	2	3	2	2	3	3	2	2	2.3
CO5	2	2	2	3	2	2	2	2	2	2	2.1
	Mean Overall Score										2.38
	Result										High

WEB DEVELOPMENT USING WORD PRESS – PRACTICAL

(P1R3ITCC3P)

Hours/Week: 5

Max. Marks: 100 (CIA:40+Ext.:60)

Total Hours: 75

Credit: 4

Nature of the Course: **Employability**

Objectives

1. To acquire knowledge about basic web concepts
2. To acquire knowledge about HTML
3. To understand DHTML Concepts
4. To explore knowledge about JavaScript
5. To understand Word Press

Exercises:

1. Creating ordered and unordered Lists using simple tags
2. Creating Tables
3. Creating Hyperlinks
4. Creating Frames
5. Creating Embedded style sheet
6. Use of External style sheet
7. Creating Inline style sheet
8. Using Conditional checking
9. Using Looping constructs
10. Using Arrays and Functions
11. Creating Dialog Box
12. Handling Events
13. Creating Forms
14. Form Validation for Name, E-Mail Id and Password
15. Form Validation for Date, Month and Year
16. Using Built-in Objects

Text Books:

1. Ivan N. Bayross, (2005), Web Enabled Commercial Applications Development Using HTML, DHTML, JavaScript, perlCGI, 3rd Edition, BPB Publications. (Unit I, II, III and IV)
2. Jesse Friedman, (2012), Web Designer's Guide to WordPress: Plan, Theme, Build, Launch (Voices That Matter), 1st Edition, New Riders. (Unit V)

Reference Books:

1. N.P. Gopalan, J. Akilandeswari, (2009), Web Technology: A Developer's Perspective, Eastern Economy Edition, PHI Learning Private Limited.
2. Deitel&Deitel, (2000), Internet and World Wide Web How to program, Prentice Hall.
3. Jon Duckett, (2004), Beginning Web Programming with HTML, XHTML, and CSS, Wiley Publishing, Inc.

Web Reference Books:

1. http://www.sergey.com/web_course/content.html
2. <http://www.pageresource.com/jscript/index.html>
3. <http://www.peachpit.com/guides/content.aspx>
4. <https://www.tutorialspoint.com/wordpress/index.htm>

Course Outcomes:

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Identify the tools which will be suitable for the requirement of the webpage.	K2
CO 2	Implement Java script and Style Sheets effectively in the Web Pages	K3
CO 3	Analyze the different tools and built-in functions available to be applied in the webpage.	K4
CO 4	Rate the design and effectiveness of the Web Pages created.	K5
CO 5	Design and publish a website using Word press.	K6

Relationship Matrix for CO, PO, PSO

Course Name – Web Development using Word Press – Practical						Course Code – P1R3ITCC3P					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	3	3	3	3	3	2	2	2.6
CO2	2	3	2	3	3	2	3	2	3	2	2.5
CO3	3	2	3	3	3	3	2	2	2	2	2.5
CO4	2	2	2	3	2	2	3	3	2	2	2.3
CO5	2	2	3	3	2	3	2	2	3	2	2.4
	Mean Overall Score										2.46
	Result										High

DISCIPLINE SPECIFIC ELECTIVE-1

NETWORKS AND SECURITY (P1R3ITDSE1:1)

Hours/Week: 5

Max. Marks: 100 (CIA:25+Ext.:75)

Total Hours: 75

Credit: 3

Nature of the Course: **Skill Development**

Objectives

1. To understand Computer Networks .
2. To understand necessary IP Addresses
3. To Techniques to build protection mechanisms in order to secure Computer networks.
4. To know about **Network Security**
5. To gain the knowledge about **Wireless Networks**

UNIT-I :

Uses of Computer Networks – Network Hardware – Line Configuration – Topology – Transmission Modes – **Reference Models:** OSI Reference Model – TCP/IP Reference Model – **Physical Layer:** Guided Transmission Media – Wireless Transmission – Communication Satellites – **Public Switched Telephone Network:** Local Loop – **Multiplexing – Switching**

UNIT-II :

Data Link Layer: Design Issues - Error Detection and Correction - **Network Layer :** Design Issues – **Routing Algorithms** : Shortest Path Routing – Distance Vector Routing – Link State Routing – Broadcast Routing – Multicast Routing – Congestion Control

UNIT-III :

Network Layer in the Internet: IP Addresses –**Transport Layer:** Elements of Transport Protocols: Addressing – Connection Establishment – Connection Release – **Application Layer:** Domain Name System – **Email:** Architecture and Services

UNIT-IV :

Network Security: Introduction to Cryptography - Symmetric - Key Cryptography - Asymmetric- key Cryptography – Security Services: Message Confidentiality - Message Integrity - Message Authentication - Digital Signature - Entity Authentication – **Security in the Internet: IPSecurity - SSL/TLS: SSL services - SSL Protocols - Firewalls**

UNIT-V: Security for Wireless Networks: Introduction – Protecting the wireless networks – Physical Security – Authentication and access control- **Smartphone Security:** Security Threats - Steps to smartphone security – **Websites and Web application Security:** Definition – Available Technologies - Threats - Strategies.

Case Study: To study recent Wi -Fi and Smartphone technologies

Text Book

1. Andrew S.Tanenbaum, David J. Wetherall (2010), Computer Networks, Prentice Hall of India, V Edition. (Unit I - Unit - III) Unit I – Chapter 1,2
Unit II – Chapter 3,5 Unit III – Chapter 5,6,7
2. Behrouz A. Forouzan, (2016), Data Communications and Networking, Tata McGraw-Hill Publishing Company Limited, IV Edition. (Unit IV) Unit IV - Chapter 30, 31, 32

Reference Books

1. Charles P. Pfleeger, Shari Lawrence Pfleeger(2002), Security in Computing, 3rd Edition, Pearson Education.
2. James F. Kurose, Keith W. Ross (2005),Computer Networking, 3rd Edition, Addison Wesley,.
3. William Stallings(2006), Cryptography and Network Security: Principles and Practice, 3rd Edition, PHI.

Website and e-Learning Source

1. <http://wndw.net/pdf/wndw3-en/ch09-security-for-wireless-networks.pdf> (Unit V- Wireless Networks Security)
2. https://www.fcc.gov/sites/default/files/smartphone_master_document.pdf (Unit V- Steps to smartphone security)

Course Outcomes:

Upon the completion ion of the course students would be able to		Knowledge Level
CO 1	Understand the concepts Network Security.	K2
CO 2	Create knowledge in RSA Algorithm	K5
CO 3	Improve the knowledge in Virus	K6
CO 4	Create knowledge in Email Security	K5
CO 5	Improve the knowledge in DES	K6

Relationship Matrix for CO, PO, PSO

Course Name –Network and Security						Course Code – P1R3ITDSE1:1					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	3	3	2	2	2	2	2	2.2
CO2	3	2	3	2	3	2	3	2	3	2	2.5
CO3	2	2	3	2	2	3	2	2	2	3	2.3
CO4	2	2	2	3	2	3	2	2	2	2	2.2
CO5	2	2	2	3	2	3	2	3	2	2	2.3
	Mean Overall Score										2.30
	Result										High

PRINCIPLE OF COMPILER DESIGN (P1R3ITDSE1:2)

Hours/Week: 5

Max. Marks: 100 (CIA:25+Ext.:75)

Total Hours: 75

Credit: 3

Nature of the Course: **Skill Development**

Objectives

1. To discover principles, algorithms and techniques that can be used to construct various phases of compiler.
2. To acquire knowledge about finite automata and regular expressions
3. To learn context free grammars, compiler parsing techniques.
4. To explore knowledge about Syntax Directed definitions and translation Scheme.
5. To understand intermediate machine representations and actual code generation

Unit–I

(13Hours)

Lexical analysis -Language Processors, The Structure of a Compiler,Parameter passing mechanism – Symbol table - **The role of the lexical analyzer** - Input buffering (**ICT CLASS**)- Specification of tokens - Recognition oftokens(**ASSIGNMENT**)–Finite automata- Regular expression to automata.

Unit–II

(13Hours)

Syntax Analysis - The role of the parser - **Context-free grammars** - **Writing a grammar**-Topdown Parsing(**ICT CLASS**)-Bottom-up Parsing- LR parsers-LALR parsers.

Unit–III

(13Hours)

Semantic Analysis-Inherited and Synthesized attributes –Dependency graphs– Ordering the evaluation of attributes – **S-attributed definitions** – **L-attributed definitions** – Applications of Syntax Directed translation(**ICT CLASS**)– Syntax Directed translation schemes-Storage organization–Stack allocation of space.

Unit–IV

(13Hours)

IntermediateCodeGeneration-VariantsofSyntaxtrees–ThreeAddress code – Types and Declarations -Translation of Expressions –Typechecking- Controlflow(**ICT CLASS**)-Backpatching-SwitchStatements-Procedurecalls.

Unit–V

(13Hours)

Code Generation and Code Optimization - Issues in the design of a code generator(**SEMINAR**) - The target language – Address in the Target Code – BasicBlockandFlowgraphs(**ICT CLASS**)–Optimizationof Basic Blocks- A simplecodegenerator–PeepholeOptimization.

TextBook

Alfred V. Aho, Monica S.Lam, Ravi Sethi and Jeffrey D. Ullman,“Compilers-Principles,TechniquesandTools”,Second Edition,PearsonEducationAsia,2009.

References

A.V. Aho, Ravi Sethi, J.D. Ullman, Compilers Principles, Techniques and Tools, Addison-Wesley,2003.

Course Outcomes:

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Understand the concept of Lexical Analysis.	K1
CO 2	Create knowledge in Syntax Analysis.	K2
CO 3	Improve the details of Semantic Analysis.	K3
CO 4	Improve the details of Intermediate code Generation.	K5
CO 5	Improve the details of Intermediate code Generation and code optimization.	K6

Relationship Matrix for CO, PO, PSO

Course Name – Principles of Compiler Design						Course Code – P1R3ITDSE1:2					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	2	3	3	3	3	3	2	2	2.6
CO2	2	3	2	3	3	2	3	2	2	2	2.4
CO3	3	2	3	3	3	3	2	2	2	2	2.5
CO4	2	2	2	3	2	2	3	3	2	2	2.3
CO5	2	2	2	3	2	2	2	2	2	2	2.1
	Mean Overall Score										2.38
	Result										High

DISCIPLINE SPECIFIC ELECTIVE-2

OBJECT ORIENTED ANALYSIS AND DESIGN (P1R3ITDSE2:1)

Hours/Week: 5

Max. Marks:100(CIA:25+Ext.:75)

Total Hours: 75

Credit:3

Nature of the Course: **Skill Development**

Objectives:

1. Develop a working understanding of formal object-oriented analysis and design processes.
2. Develop an appreciation for and understanding of the risks inherent to large-scale software development.
3. Learn (through experience!) techniques, processes, and artifacts that can mitigate these risks.
4. Develop the skills to determine which processes and OOAD techniques should be applied to a given project.
5. Develop an understanding of the application of OOAD practices from a software project management perspective

UNIT I: Overview

(13 Hours)

Structured approach to system construction: SSADM/SADT - An overview of object oriented systems development & Life cycle

UNIT II: Introduction to UML

(13 Hours)

Various object oriented methodologies – Introduction to UML

UNIT III: Use cases

(12 Hours)

Object oriented analysis – Use cases- Object classification, relationships, attributes, methods

UNIT IV: Object oriented Design

(12 Hours)

Object oriented design – Design axioms – Designing classes – Layering the Software design: - data access layer, User interface layer, Control/business logic layer

UNIT V : Models

(11 Hours)

UML - Examples on: Behavioral models – Structural models – Architectural models from real world problems.

TEXT BOOKS:

1. Bahrami Ali, Object oriented systems development, Irwin McGrawHill, 2005 (First 4 units covered here).
2. Booch Grady, Rumbaugh James, Jacobson Ivar, The Unified modeling language – User Guide, Pearson education, 2006 (ISBN 81-7758-372-7) (UNIT -5 covered here).

REFERENCES:

- 1.Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.2017
2. Pascal Roques: Modeling Software Systems Using UML2, WILEY-Dreamtech India Pvt. Ltd.2018

Course Outcomes:

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Improved the knowledge in UML concepts	K2
CO 2	Acquired the Class and Objects concepts	K6
CO 3	Developed knowledge in Use Cases	K3
CO 4	Gather the details in Object oriented design	K4
CO 5	Gather the details in UML Models	K4

Relationship Matrix for CO, PO, PSO

Course Name – Object Oriented Analysis and Design						Course Code – P1R3ITDSE2:1					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	3	2	2	3	2	2	2.3
CO2	3	2	2	3	2	2	2	3	2	2	2.3
CO3	2	2	3	2	2	3	2	2	3	2	2.3
CO4	2	3	2	2	2	2	3	2	2	2	2.2
CO5	2	2	3	2	2	3	2	3	2	2	2.3
	Mean Overall Score										2.28
	Result										High

DISCIPLINE SPECIFIC ELECTIVE-2

PERVASIVE COMPUTING (P1R3ITDSE2:2)

Hours/Week: 5

Max. Marks:100 (CIA:25+Ext.:75)

Total Hours: 75

Credit:3

Nature of the Course: Skill Development

OBJECTIVE:

1. To understand the basics of pervasive computing.
2. To understand the device technology.
3. To understand the concept of device connectivity.
4. To gain the knowledge about WAP and Beyond.
5. To get the knowledge about personal digital assistant.

Unit I: Pervasive Computing

(13 Hours)

Pervasive Computing : Past, Present and Future – Pervasive Computing Market – M-Business – Application examples: Retail, Airline check-in and booking – Health care – Car information system – E-mail access via WAP and voice.

Unit II : Device Technology

(13 Hours)

Device technology : Hardware – Human machine interfaces – Biometrics – Operating Systems – Java for Pervasive devices.

Unit III : Device Connectivity

(12 Hours)

Device Connectivity : Protocols – Security – Device management – Web application concepts: WWW architecture – Protocols – Transcoding – Client authentication via internet.

Unit IV : WAP and Beyond

(12 Hours)

WAP and Beyond : Components of WAP architecture – WAP infrastructure – WAP security issues – WML – WAP push – Products – i-mode –Voice technology : Basics of speech recognition – Voice standards – Speech applications – Speech and Pervasive Computing.

Unit V: Personal Digital Assistant

(11 Hours)

PDA : Device categories – PDA operation systems – Device Characteristics – Software components – Standards – Mobile Applications – PDA Browsers – Pervasive web application architecture : Background – Development of pervasive computing web applications – Pervasive application architecture.

TEXT BOOK :

1. Pervasive Computing, Technology and Architecture of Mobile Internet Applications, Jochen Burkhardt, Horst Henn, Stefan Hepper, Thomas Schaech & Klaus Rindtorff, Pearson Education, 2006.

**Unit I - Chapter 1 2, Unit II - Chapter 3, Unit III Chapter 4,5 Unit IV - Chapter 6,7
Unit V Chapter 8,10**

REFERENCE BOOK :

1. Pervasive Computing and Networking, Mohammad S.Obaidat, Mieso Denko, and Isaac Woungang, Wiley, 2018.

Course Outcome:

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Understand the basic concept of Pervasive Computing	K2
CO 2	Know the device technology.	K6
CO 3	Improve the knowledge of device connectivity.	K3
CO 4	Gather the details in WAP Concept	K4
CO 5	Gather the details in different types of PDA	K4

Relationship Matrix for CO, PO, PSO

Course Name – Pervasive Computing						Course Code – P1R3ITDSE2:2					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	3	2	3	3	3	2	2	2.5
CO2	2	3	2	2	2	3	2	2	3	2	2.3
CO3	2	2	2	2	2	2	2	2	2	2	2
CO4	2	3	3	2	2	3	2	3	3	2	2.5
CO5	2	3	3	3	3	2	2	2	2	2	2.4
	Mean Overall Score										2.34
	Result										High

SEMESTER - II

DATABASE SYSTEMS (P2R3ITCC4)

Hours/Week: 6

Max. Marks: 100 (CIA:25+Ext.:75)

Total Hours: 90

Credit: 5

Nature of the Course: **Employability**

OBJECTIVE:

1. To understand the basics of Database.
2. To understand the Database Design Process.
3. To understand the concept of Transaction.
4. To gain the knowledge about Distributed Data storage.
5. To get the knowledge about **SQL**.

Unit I

18 Hours

Introduction: Database System Applications-**Purpose of Database Systems**-**View of Data**- Database Users and Administrators. **Relational Database:** Structure of Relational Databases- Databases Schema- Keys-Schema Diagrams.

Unit II

18 Hours

Database Design: Overview of Design Process-The Entity Relationship Model- Constraints- Removing Redundant Attributes in Entity Sets-Entity-Relationship Diagrams-Reduction to Relational Schemas-Extended E-R features -Alternative Notations for Modeling Data. **Relational Database Design:** Features of Good Relational Design-Functional Dependency- **Normalization:** 1NF, 2NF, 3NF, BCNF, 4NF, 5NF- **Functional Dependency Theory.**

Unit III

18 Hours

Transaction Management: Transaction Concept-Simple Transaction Model-Storage Structure- Transaction Atomicity and Durability-Transaction Isolation-Serializability. **Concurrency Control:** Lock Based Protocols-Locks-Granting of Locks-Two Phase Locking Protocol-Time Stamp Based Protocol - **Recovery System:** Failure Classification-**Recovery and Atomicity:** LogRecords-Database Modification.

Unit IV

18 Hours

Distributed Database: Homogeneous and Heterogeneous Databases-Distributed Data storage- **Distributed Transactions-Commit Protocols-Concurrency Control in Distributed Databases.**

Unit V

18 Hours

SQL - Table Fundamentals - Viewing Data - Inserting - Deleting - Updating - Modifying - Constraints - Functions - Grouping - Subqueries - Joins - Views.

PL/SQL: Introduction - PL/SQL Block - Data Types And Variables - Control Structure - Cursors - PL/SQL Security - Locks. PL/SQL Database Objects: Exception Handling- Packages - Procedures and Functions - Database Triggers.

Text Books:

1. Abraham Silberchatz, Henry F.Korth, S.Sudarshan, Database Systems Concepts, Sixth Edition, Tata Mcgraw Hill.
2. Ivan Bayross, SQL, PL/SQL The Programming Language of ORACLE, Fourth edition, BPB Publications. Unit IV & V

Reference Books:

1. AtulKahate, Introduction to Database Management systems, Pearson education.
2. Carlo Zaniolo, Stefano Ceri, Christos Faloutsos, R.T.Snodgrass, V.S.Subrahmanian, (1997), Advanced Database Systems, Morgan Kaufman.
3. George Koch, Kelvin Loney, (2002), Oracle 9i : The Complete Reference, Oracle Press, TataMcGrawHill Publication.
4. RamezElmasri, Shamkant B. Navathe (2014), "Database Systems", Sixth edition, PearsonEducation, New Delhi

Web References:

1. <http://awtrey.com/tutorials/dbeweb/database.php>
2. <http://www.slideshare.net/SalamaAlbusaidi/emerging-database-technology-multimedia-database>.

Course Outcomes

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Explain the relational databases and uses of PL/SQL.	K2
CO 2	Apply Schema, ER- Model, normalization, transaction, concurrency, and recovery on tables using SQL and PL/SQL.	K3
CO 3	Analyze and manage relational and distributed database, transaction, concurrency control and query languages.	K4
CO 4	Assess databases based on models and Normal Forms.	K5
CO 5	Design and construct tables and manipulate it effectively using PL/SQL database objects.	K6

Relationship Matrix for CO, PO, PSO

Course Name – Database Systems						Course Code – P2R3ITCC4					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	3	3	2	2	3	3	2	2	2.5
CO2	2	3	2	2	3	2	3	2	2	2	2.3
CO3	2	3	2	2	3	3	3	2	3	2	2.5
CO4	2	3	2	3	2	2	3	3	2	2	2.4
CO5	2	3	2	2	3	2	2	3	3	2	2.4
	Mean Overall Score										2.42
	Result										High

RDBMS LAB (P2R3ITCC5P)

Hours/Week: 6

Max. Marks: 100 (CIA: 40+Ext.:60)

Total Hours: 90

Credit: 5

Nature of the Course: Employability

Objectives

1. To understand the basics of SQL.
2. To understand the Cursor Process.
3. To understand the concept of DDL.
4. To gain the knowledge about PL/SQL.
5. To get the knowledge about Triggers

Exercises:

1. DDL Commands
2. DML Commands
3. DCL Commands
4. Usage of Sub Queries in DML and Create-SQL
5. Solving queries using built-in functions
6. Simple programs in PL/SQL block
7. Exception Handling in PL/SQL
8. Programs using Implicit Cursors
9. Programs using Explicit Cursors
10. Procedures & User-defined functions
11. Creation of Triggers

Course Outcomes:

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Understand the basic concept of DDL Commends.	K2
CO 2	Improve the knowledge of DML Commends.	K3
CO 3	Develop the Knowledge in DCL Commends.	K4
CO 4	Gather the details of PL/SQL.	K5
CO 5	Gather the details of Cursors and Triggers Concepts.	K6

Relationship Matrix for CO, PO, PSO

Course Name – RDBMS LAB						Course Code – P2R3ITCC5P					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	3	3	2	2	3	3	2	2	2.5
CO2	2	3	2	2	3	2	3	2	2	2	2.3
CO3	2	3	2	2	3	3	3	2	3	2	2.5
CO4	2	3	2	3	2	2	3	3	2	2	2.4
CO5	2	3	2	2	3	2	2	3	3	2	2.4
	Mean Overall Score										2.42
	Result										High

OPEN SOURCE TECHNOLOGIES – PRACTICAL (P2R3ITCC6P)

Hours/Week: 6

Max. Marks: 100 (CIA: 40+Ext.:60)

Total Hours: 90

Credit: 4

Nature of the Course: Employability

Objectives

1. To understand of control structures.
2. To understand the concept of functions..
3. To understand the concept of arrays.
4. To gain the knowledge about MySQL.
5. To get the knowledge about Cookies, Sessions.

Exercises:

1. Working with Control Structures
2. String Functions
3. Number Functions
4. Date Functions
5. Time Functions
6. Working with Arrays
7. Associative Array
8. Working with Functions
9. Working with Form Data
10. Working with Files
11. Working with MySql
12. Working with Cookies
13. Working with Sessions
14. Working with Strings
15. Working with Arrays

Text Books:

1. Steven Holzner, (2016), “PHP: The Complete Reference”, McGraw Hill Education Private Limited, Indian Edition. (Unit I, II)
2. RachnaKapur, Mario Briggs, Tapas Saha, Ulisses Costa, Pedro Carvalho, Raul F. Chong, Peter Kohlmann (2010), “Getting Started with Open Source Development”, DB2 on Campus Book Series. (Unit III)

Text References

1. <http://index-of.es/Ruby/Beginning%20Ruby%20On%20Rails.pdf> (Unit IV)
2. <http://www.cs.uni.edu/~wallingf/teaching/agile-may2010/ruby/programming-ruby.pdf>(Unit V)

Reference Books

1. W. Jason Gilmore (2010), “Beginning PHP &MySql”, Apress.
2. Joel Murach, Ray Harris (2010), “PHP and MySQL”,Shroff Publishers & Distributors
3. Larry Ullman (2008), “PHP 6 and MySQL 5”, Pearson Education.
4. John Coggeshall (2006), “PHP 5”, Pearson Education.
5. Michale C. Glass (2004), “Beginning PHP, Apache, MySQL Web Development”, WileyDreamTech Press.

Web References

1. <http://www.w3schools.com/php/>
2. <http://howtostartprogramming.com/PHP/>
3. <http://www.massey.ac.nz/~nhreyes/MASSEY/159339/Lectures/Lecture%2011%20-%20PHP%20-%20Part%205%20-%20CookiesSessions.pdf>
4. <http://www.tutorialspoint.com/mysql/>
5. <http://ruby.bastardsbook.com/chapters/exception-handling/>

Course Outcomes

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Demonstrate the setup and configuration of development environment to write PHP and Ruby Scripts	K2
CO 2	Select the appropriate language fundamentals and techniques to write and compile PHP and Ruby programs	K6
CO 3	Examine the bugs and analyze how to prevent and remove the bugs	K3
CO 4	Test and debug the application with sample inputs to check the correctness and consistency of the scripts	K4
CO 5	Create simple programs that make use of various PHP and Ruby features and functions and solve web application and database tasks using PHP	K4

Relationship Matrix for CO, PO, PSO

Course Name – Open Source Technology – Practical						Course Code – P2R3ITCC6P					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
xCO1	3	2	2	3	2	3	3	3	2	2	2.5
CO2	2	3	2	3	3	2	3	2	3	2	2.5
CO3	3	2	2	3	3	2	2	2	2	2	2.3
CO4	2	2	2	3	2	2	2	3	2	2	2.2
CO5	2	2	3	3	2	3	2	2	3	2	2.4
	Mean Overall Score										2.38
	Result										High

DISCIPLINE SPECIFIC ELECTIVE - 3

DIGITAL IMAGE PROCESSING (P2R3ITDSE3:1)

Hours/Week: 4

Max. Marks: 100 (CIA: 25+Ext.:75)

Total Hours: 60

Credit: 3

Nature of the Course: Skill Development

Objectives

1. To provide complete knowledge on Digital Image Processing method.
2. To gain knowledge about processing methods in spatial domain and Frequency domain.
3. To provide Edge detection, Compression, Segmentation, and Morphological concepts.
4. To understand the concepts and implement them empirically.
5. To gain knowledge about image segmentation and morphological Image Processing.

UNIT-I

(12 Hours)

Fundamentals: Image Sensing and Acquisition, Image Sampling and Quantization, relationship between Pixels; Random noise. **Color Models:** Color Fundamentals, Color Models, Pseudo-color Image Processing, Full Color Image Processing(ICT CLASS), Color Transformation, Noise in Color Images.

UNIT-II

(12 Hours)

Spatial Domain: Enhancement in spatial domain: Point processing; Mask processing; Smoothing Spatial Filters; Sharpening Spatial Filters; Combining Spatial Enhancement Methods. **Frequency Domain:** Image transforms: FFT, DCT, Karhunen – Loeve transform, Wavelet transforms and their properties(ICT CLASS). Image filtering in frequency domain.

UNIT-III

(12 Hours)

Edge Detection: Types of edges; threshold; zero-crossing; Gradient operators: Roberts, Prewitt, and Sobel operators; Canny edge detection (ICT CLASS). Edge features and their applications.

UNIT-IV

(12 Hours)

Image Compression: Fundamentals, Image Compression Models, Elements of Information Theory. Error Free Compression: Huff-man coding; Arithmetic coding (ICT CLASS); Wavelet transform based coding; Lossy Compression: FFT; DCT;KLT; DPCM;MRFM based compression; Wavelet transform based; Image Compression standards.

UNIT–V

(12 Hours)

Image Segmentation: Detection and Discontinuities: Edge Linking and Boundary Deduction; **Threshold (SEMINAR)**; Region-Based Segmentation. **Segmentation by Morphological water sheds. The use of motion in segmentation, Image Segmentation based on Color.**

TextBooks

1. RafaelGonzalez,RichardE.Woods,“DigitalImageProcessing”,Fourth Edition,PHI/PearsonEducation,2013.
2. A.K.Jain,Fundamentals of Image Processing,Second Ed.,PHI,New Delhi, 2015.

References

1. B.Chanla,D.DuttaMajumder,“DigitalImageProcessingandAnalysis”,PHI,2003.
2. NickElford,“DigitalImageProcessingapracticalintroducingusingJava”, PearsonEducation,2004.
3. ToddR.Reed,“DigitalImageSequenceProcessing,Compression,andAnalysis”,CRCPress,2015.
4. L.Prasad,S.S.Iyengar,“WaveletAnalysiswithApplicationstoImageProcessing”,CRCPress,2015.

Course Outcomes

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Understand the DIP.	K2
CO 2	Create knowledge in Line drawing Algorithm.	K3
CO 3	Improve the details of 3D image.	K5
CO 4	Improve the details of Image Enhancement.	K4
CO 5	Improve the details of Image Transformation.	K6

Relationship Matrix for CO, PO, PSO

Course Name – Digital Image Processing						Course Code – P2R3ITDSE3:1					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	3	3	2	2	3	2	2	2	2.5
CO2	2	3	2	2	3	3	3	2	2	2	2.4
CO3	2	3	2	2	3	3	3	3	2	2	2.5
CO4	2	3	3	2	2	2	3	2	2	2	2.3
CO5	2	3	2	2	3	3	3	3	2	2	2.5
	Mean Overall Score										2.44
	Result										High

DISCIPLINE SPECIFIC ELECTIVE - 3

BIOMETRIC TECHNIQUES (P2R3ITDSE3:2)

Hours/Week: 4

Max. Marks: 100 (CIA: 25+Ext.:75)

Total Hours: 60

Credit: 3

Nature of the Course: Skill Development

Objectives

1. To provide complete knowledge on **Notion of biometrics**.
2. To gain knowledge about **Fingerprint recognition**
3. To provide **Iris recognition** concepts.
4. To understand the concepts and implement them **Face recognition**.
5. To gain knowledge about **Physical biometric methods**.

Unit 1

(12 Hours)

Notion of biometrics : Introduction of biometric traits and its aim, Image processing/pattern recognition/statistics, Error types, Development of biometric authentication; Basic terms, biometric data, biometric characteristics, biometric features, biometric templates and references; Expected properties of biometric identifiers; Basics in biometric errors estimation; Enrollment, verification and identification.

Unit 2

(12 Hours)

Fingerprint recognition: Fingerprint capture, sensor types, latent fingerprints. Fingerprint image preprocessing, segmentation, binary and skeletal images. Fingerprint singularities, detection of loops, deltas, whorls and cores, using singularities in fingerprints classification; Galton's details, base and complex minutiae, detection of minutiae; Fingerprint recognition, minutiae- and correlation-based methods; Fingerprints in forensics and biometrics, similarities and differences.

Unit 3

(12 Hours)

Iris recognition: Eye and iris morphogenesis, genetic penetrance; Principles of iris image capture, iris sensors; Iris image preprocessing, segmentation, formatting and filtering; Daugman's method, iris code, statistical properties of the iris code; Other iris coding methods, wavelet analysis.

Unit 4

(12 Hours)

Face recognition: Face detection in still images and sequences; Face features. Face space, principal component analysis and its application, eigen faces, linear discriminant analysis and its application, Fisher faces; Face recognition methods.

Unit 5**(12 Hours)**

Physical biometric methods: Use of vein patterns of a hand, finger and retina; Thermal imaging and geometry of a hand. Recognition of handwritten signatures: Signature capture, off-line (scanned) and on-line (captured by tablets) signatures; Signature as a multidimensional curve, two- and multi-dimensional analyses. Signature features, hidden and visible features; Use of dynamic time warping in signature recognition.

References:

1. Digital Image Processing using MATLAB, By: Rafael C. Gonzalez, Richard Eugene Woods, 2nd Edition, Tata McGraw-Hill Education 2010
2. Guide to Biometrics, By: Ruud M. Bolle, Sharath Pankanti, Nalini K. Ratha, Andrew W. Senior, Jonathan H. Connell, Springer 2009
3. Pattern Classification, By: Richard O. Duda, David G. Stork, Peter E. Hart, Wiley 2007

Course Outcomes:

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Understand the basic concept of notion of biometrics.	K2
CO 2	Improve the knowledge of Fingerprint recognition	K6
CO 3	Improve the knowledge of an Iris recognition.	K3
CO 4	Develop the Knowledge in face recognition.	K4
CO 5	Gather the details of Physical biometric methods	K4

Relationship Matrix for CO, PO, PSO

Course Name – Biometric Techniques						Course Code – P2R3ITDSE3:2					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	3	2	3	3	2	2	2.4
CO2	3	2	3	3	2	2	2	3	2	2	2.4
CO3	3	2	2	2	2	2	2	3	2	2	2.2
CO4	3	2	2	2	2	2	3	2	2	2	2.2
CO5	3	2	2	3	2	2	3	3	2	2	2.4
	Mean Overall Score										2.32
	Result										High

DISCIPLINE SPECIFIC ELECTIVE - 4

OPERATING SYSTEMS (P2R3ITDSE4:1)

Hours/Week: 4

Max. Marks: 100 (CIA: 25+Ext.:75)

Total Hours: 60

Credit: 3

Nature of the Course: **Employability**

Objectives

1. To study distributed operating system concepts
2. To understand hardware, software and communication in distributed OS.
3. To learn the distributed resource management components.
4. Practices to learn concepts of OS
5. To practice Program the principles of operating system.

UNITI: Introduction– Hours)

(12

Operating System Definition–Functions of Operating System – Types of Advanced Operating System – **Design Approaches –Synchronization Mechanisms** – concepts of a Process – **Critical Section Problem–Process Deadlock(ICT CLASS)–Models of Deadlock–Conditions for Deadlock.**

UNITII: Distributed Operating Systems: Hours)

(12

Introduction–**Issues–Communication Primitives** – **Inherent Limitations** – Lamport's Logical Clock, Vector Clock, Global State , Cuts–Termination Detection–Distributed Mutual Exclusion–Non Token Based Algorithms (**ICT CLASS**)–Lamport's Algorithm - Token Based Algorithms –**Distributed Deadlock Detection– Distributed Deadlock Detection Algorithms.**

UNITIII: Distributed Resource Management Hours)

(12

Distributed File Systems–Architecture–Mechanisms–Design Issues – Distributed shared Memory–Architecture (**ICT CLASS**)–**Algorithm–Protocols–DesignIssues–DistributedScheduling–Issues–Components–Algorithms.**

UNITIV: Failure Recovery and Fault Tolerance Hours)

(12

Concepts(**ICT CLASS**)–Failure Classifications – **Approaches to Recovery** – Recovery in Concurrent Systems–Synchronous and Asynchronous Check pointing and Recovery–Check pointing in Distributed Database Systems– Fault Tolerance Issues – **Two-Phase and Non blocking Commit Protocols.**

UNIT V: Multiprocessor and Database Operating Systems (12 Hours)

Structures – Design Issues (ICT CLASS) – Threads – Process Synchronization – Processor Scheduling – Memory management (SEMINAR) – Reliability/Fault Tolerance – Database Operating Systems – concepts – Features of Android OS, Ubuntu, Google Chrome OS and Linux operating systems.

Text Books

1. Mukesh Singhal N.G. Shivaratri, “Advanced Concepts in Operating Systems”, McGraw Hill 2000.
2. Distributed Operating System – Andrew S. Tanenbaum, PHI.

Reference Books

1. Abraham Silberschatz, Peter B. Galvin, G. Gagne, “Operating Concepts”, 6th Edition Addison Wesley publications 2003.
2. Andrew S. Tanenbaum, “Modern Operating Systems”, 2nd Edition Addison Wesley 2001.

Course Outcomes

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Understand the basic concept of an Operating System.	K2
CO 2	Improve the knowledge of Distributed Operating System.	K6
CO 3	Develop the Knowledge in Distributed File System.	K3
CO 4	Gather the details of Fault Tolerance.	K4
CO 5	Gather the details of Multi Processor and Database OS.	K4

Relationship Matrix for CO, PO, PSO

Course Name – Operating Systems						Course Code – P2R3ITDSE4:1					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	3	2	3	3	2	2	2.4
CO2	3	2	3	3	2	2	2	3	2	2	2.4
CO3	3	2	2	2	2	2	2	3	2	2	2.2
CO4	3	2	2	2	2	2	3	2	2	2	2.2
CO5	3	2	2	3	2	2	3	3	2	2	2.4
	Mean Overall Score										2.32
	Result										High

DISCIPLINE SPECIFIC ELECTIVE – 4
HUMAN COMPUTER INTERACTION (P2R3ITDSE4:2)

Hours/Week: 4

Max. Marks: 100(CIA: 25+Ext.:75)

Total Hours: 60

Credit: 3

Nature of the Course: Entrepreneurship

OBJECTIVE:

1. To understand the basics of human-computer interaction.
2. To understand the interaction design basics.
3. To get the knowledge about HCI in the software process.
4. To gain the knowledge about cognitive models.
5. To gain the knowledge about task analysis.

UNIT I : (12 Hours)

The Interaction: Introduction: Models of interaction-Frameworks and HCI-Ergonomics-Interaction styles-Elements of the WIMP interface-interactivity-The context of the interaction-Experience, engagement and fun.

UNIT II : (12 Hours)

Interaction design basics: Introduction-what is design? – The process of design-User focus-Scenarios-Navigation design-Screen design and layout-Iteration and prototyping.

UNIT III : (12 Hours)

HCI in the software process: Introduction-The software life cycle-Usability engineering-Iterative design and prototyping-Design rationale.

Design rules: Introduction-Principles to support usability-Standards-Guidelines-Golden rules and heuristics-HCI patterns.

UNIT IV : (12 Hours)

Cognitive Models: Introduction-Goal and task hierarchies-Linguistic models-The challenge of display-based systems-Physical and device models-Cognitive architectures.

Communication and collaboration models: Introduction-Face-to-face communication-Conversation-Text-based communication-Group working.

UNIT V : (12 Hours)

Task analysis: Introduction-Differences between task analysis and other techniques-Task decomposition-knowledge-based analysis-Entity-relationship-based techniques-Sources of information and data collection-Uses of task analysis. **Dialog notations and design:** What is dialog?-Dialog design notations-Diagrammatic notations-Textual dialog notations-Dialog semantics-Dialog analysis and design.

TEXT BOOK:

1. Alan Dix, Janet Finlay, Gregory D. Abowd, Russell Beale, “Human-Computer interaction” 3rd edition, Pearson Education.

Unit-1 : Chapter-1 Unit-2 : Chapter-5 Unit-3 : Chapter-6,7 Unit-4 : Chapter-12,14 Unit-5 : Chapter-15,16

REFERENCE BOOK:

1. “ Human Computer Interaction fundamental”, Andrew sears Julie A. Jacko, 2019.

Course Outcome:

Upon Completion of the course students would be able to		Knowledge Level
CO 1	The Students would have understood the HCI.	K2
CO 2	They should have created knowledge in WIMP.	K6
CO 3	They should have improved the details of task analysis.	K3
CO 4	Gather the details of Communication and collaboration models .	K4
CO 5	Gather the details of Task Analysis.	K4

Relationship Matrix for CO, PO, PSO

Course Name – Human Computer Interaction						Course Code – P2R3ITDSE4:2					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	2	3	3	2	3	2	2.4
CO2	2	2	2	2	2	2	2	2	2	3	2.1
CO3	2	2	2	2	2	2	3	2	2	2	2.1
CO4	2	2	2	3	2	2	2	2	2	2	2.1
CO5	2	2	3	2	3	2	3	2	2	2	2.3
	Mean Overall Score										2.20
	Result										High

SKILL ENHANCEMENT COURSE 1

WEB DESIGN (P2R3ITSEC1)

Hours/Week: 04

Max. Marks: 100 (CIA:25+Ext.:75)

Total Hours: 60

Credits : 2

Nature of the Course: Skill Development

Objectives:

1. To Teach the Details of Scripting Languages
2. To gain the knowledge about control and looping statements.
3. To give details of String functions in JScripts
4. To provide the ideas of object oriented JAVA script.
5. TO gain the knowledge about validating forms.

UNIT-1: JAVA SCRIPT BASICS (12 Hours)

Introduction- Identifiers –Literals – Keywords- Data Types- Variables – Operators.

UNIT-2: CONTROL AND LOOPING STATEMENTS (12 Hours)

If, if-else statements- Switch statement- While loop-Do-while loop – for loop-Arrays : single and multi Dimensional Arrays.

UNIT-3: STRINGS AND FUNCTIONS (12 Hours)

String specific properties and methods – Java script functions : Defining functions-Invoking functions – Functions scope.

UNIT-4: OBJECT ORIENTED JAVA SCRIPT (12 Hours)

Object properties and methods- Object constructors –Native objects : Boolean , Date, Documents, Event, Math, Number, Object, script and window object.

UNIT-5: VALIDATING FORMS (12 Hours)

Defining dynamic forms – Adding form Elements – changing selection -list-Reset events- Submit events-select events- form validation prior to submission-Enabling and disabling form fields.

TEXT BOOK :

“JAVA script professional projects”, Paul Hatcher with John Gosney, Thomson course technology,ISE.[Unit 1: Chapter 1, Unit 2: Chapters 2 Unit 3: Chapter 3,4 Unit 4: Chapter 5, Unit 5: Chapter 8.]

REFERENCE BOOK :

Web Technologies, Black Book – Dreamtech Press, 2018

COURSE OUTCOMES:

Upon Completion of the course students would be able to		Knowledge Level
CO 1	Improve the knowledge in JAVA Script.	K2
CO 2	Improved the programming knowledge in Java Script.	K6
CO 3	Know the concept of strings and Functions.	K3
CO 4	Gather the depth ideas in Object Oriented Java Script.	K4
CO 5	Gather the details in validating forms.	K4

Relationship Matrix for CO, PO, PSO

Course Name – Web Design						Course Code – P2R3ITSEC1					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	3	2	3	3	2	2	2.4
CO2	3	2	3	3	2	2	2	3	2	2	2.4
CO3	3	2	2	2	2	2	2	3	2	2	2.2
CO4	3	2	2	2	2	2	3	2	2	2	2.2
CO5	3	2	2	3	2	2	3	3	2	2	2.4
	Mean Overall Score										2.32
	Result										High

SEMESTER III

CORE COURSE 7

ADVANCED JAVA (P3R3ITCC7)

Hours/Week: 05

Total Hours: 75

Max. Marks: 100

Credits: 05

CIA:25+Ext.:75)

Nature of the Course: Skill Development

Objectives:

1. To develop programming skill and to solve scientific problems using JAVA Programming.
2. To enable the students to understand the core and advanced principles of the Java Language.
3. To use visual tools to produce well designed, effective applications and Applets.
4. To develop distributed applications using RMI.
5. To develop server side programs in the form of Servlet.
- 6.

Unit I: JAVA FUNDAMENTALS (10 Hours)

JAVA language- Introduction-Character set-Tokens-Constants-Variables-Operators and Expressions-Library Methods-Strings-Control Statement: If Statement-Switch Statement-While Statement-Do While Statement-For Statement.

Unit II: JDBC Classes (17 Hours)

Introduction – Establishing a connection – Creation of Data Tables – Entering data into the tables – Table updating –Use of Prepared statement – Obtaining metadata – Using Transactions – Scrollable Result sets.

Unit III: Remote Method Invocation (18 Hours)

Introduction – Remote Interface – java.rmi.Server Package – The Naming class – RMISecurityManager class – RMI Exceptions – Steps involved in creating RMI Client and Server Classes.

Unit IV: JAVA Servlet (14 Hours)

Introduction – Life cycle of a Servlet – A simple Servlet – Retrieving the values of parameters – Retrieving the values of initialization parameters – Cookies – Creating a cookie and sending it to the client – Retrieving the stored cookies – Session Tracking.

Unit V: Swing Controls (16 Hours)

Introduction – JApplet – JLabel – JButton – JTextField – JTextArea – JCheckBox – JRadioButton – JComboBox – JList – JMenu.

Text Book

1. Programming with Java –C.Muthu. Vijay Nicole publications, Second Edition, 2011

Reference Book

1. Mastering JAVA11 – Dr. Edward Lavieri, Packt Publication, 2018.

Web References:

1. <http://netbeans.org/kb/docs/javaee/javaee-intro.html>
2. <http://www.jsptube.com/>
3. <http://articles.sitepoint.com/article/java-servlets-1>
4. <http://www.java-tips.org/java-tutorials/tutorials/introduction-to-java-servlets-with->
5. <http://download.oracle.com/javase/tutorial/javabeans/index.html>
6. <http://www.javapoint.com/steps-to-connect-to-the-datadase-in-java/>

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Understood and explained programming language constructs, Java mechanism.	K1
CO2	Applied logical constructs as well as include JDBC.	K2
CO3	Understood the concept of interface, Package and exception handling in RMI.	K2
CO4	Understood the concept of life cycle of servlet.	K3
CO5	Created programs that make strong use of buttons, list, check box and radio button.	K4

Relationship Matrix for CO, PO, PSO

Course Name –: Advanced JAVA						Course Code – :P3R3ITCC7					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	3	3	2	2	2	3	2	2.3
CO2	3	2	3	2	3	2	2	2	3	2	2.4
CO3	2	2	3	2	2	3	2	2	2	3	2.3
CO4	2	2	2	3	2	3	2	2	2	3	2.3
CO5	2	2	2	3	2	3	2	3	23	2	2.4
Mean Overall Score											2.34
Mean Overall Relationship is 2.34 which is HIGH											

CORE COURSE 8

DOT NET WITH C# PROGRAMMING (P3R3ITCC8)

Hours/Week: 05

Total Hours: 75

Max. Marks: 100

Credits: 05

(CIA: 25+Ext.:75)

Nature of the Course: **Skill Development**

OBJECTIVES:

1. To understand the basics Structure of C# programming.
2. To gain the knowledge about .NET frame work.
3. To know the concept of web forms.
4. To understand the concept of LINQ Queries.
5. To know the concept of ADO.NET fundamentals.

UNIT I: C# Language (12 Hours)

The Basics- Variables and Data Types - Variable Operations - Object Based Manipulation-Conditional logic-Loops-Methods-Types, Objects and Namespaces-Delegates.

UNIT II: ASP.Net 4.5 Essentials (16 Hours)

Introduction to .NET: Benefit of .NET Framework - Overview of .NET Framework 4.5: Common Language Runtime - Common Type System - Metadata and Assemblies - Introduction to Visual Studio 2012 IDE: Exploring Visual Studio 2012 IDE.

UNIT-III: Web Forms (17 Hours)

Standard controls: Label control - Button Control - Text Box Control - Literal Control - Place Holder Control - Hidden Field Control - Navigation controls: Tree View, Menu and Site Map Path - Validation controls - Rich controls: Calendar Controls - AdRotator control.

UNIT-IV: LINQ Queries: (15 Hours)

Standard Query operators: Filtering operators - Projection operators - Sorting operators - Grouping operators - Set operators - Aggregate operators - Lambda Expressions.

UNIT-V: ADO.NET Fundamentals (15 Hours)

Configuring your Database - ADO.NET Basics - Direct Data Access - Disconnected Data Access - Data Binding: Data Binding with ADO.NET - Data Source Controls.

Text Books:

1. Kogent (2013), ASP.NET 4.5 Black Book - Dreamtech Press, New Delhi (Unit 2, 3, 4)
2. Matthew MacDonald (2010), Beginning ASP.NET 4 in C#, Apress. (Unit 1, 5)

Reference Books:

1. Greg Buczek (2002), ASP.NET Developer's guide, Tata McGraw Hill Publications.
2. Jesse Liberty, (2002), Programming C#, 3.0, O'Reilly Press.
3. J. Sharp, (2009), Microsoft Visual C# 2008 Step by Step, PHI Learning Private Ltd.
4. Christian Nagel et al., (2007), Professional C# 2005 with .NET 3.0, Wiley India.
5. Herbert Schildt (2010), C# 4.0 The Complete Reference, Tata McGraw Hill Publications.

Websites:

1. www.homeandlearn.co.uk/csharp/csharp.html
2. <http://msdn.microsoft.com/en-us/library/aa645596.aspx>
3. <http://www.csharpkey.com/csharp/>
4. <http://www.w3schools.com/aspnet/default.asp>
5. <http://www.maconstateit.net/tutorials/ASPNET20/default.htm>
6. <http://csharp-station.com/Tutorial/AdoDotNet/Lesson01>(Unit V:ADO.NET Fundamentals)

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Developed working knowledge of basic Structure of C# programming.	K1
CO2	Understood the concept of .NET frame work.	K2
CO3	Gained the knowledge about web form.	K2
CO4	Understood the concept of LINQ queries.	K3
CO5	Understood the concept of ADO.NET.	K4

Relationship Matrix for CO, PO, PSO

Course Name – DOT NET WITH C# PROGRAMMING						Course Code – P3R3ITCC8					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	3	2	2	2	2	2	2	2.1
CO2	3	3	2	2	2	3	2	3	2	2	2.4
CO3	2	2	2	2	2	3	2	2	2	2	2.1
CO4	2	2	3	2	2	2	2	3	2	2	2.2
CO5	2	2	2	2	2	2	3	2	3	3	2.3
	Mean Overall Score										2.22
Mean Overall Relationship is 2.22 which is HIGH											

CORE COURSE 9
ADVANCED JAVA– PRACTICAL (P3R3ITCC9P)

Hours/Week: 06
Total Hours: 90

Max. Marks: 100
Credits: 05
(CIA:40+Ext.:60)

Nature of the Course: Skill Development

Objectives

1. To understand the basic concepts of class and objects.
2. To know the knowledge about string handling functions and frame works.
3. To understand the concept of exception handling.
4. To gain knowledge to develop dynamic Web applications using Applet, Servlet.
5. To understand the programming for Java Bean.

List of Programs:

1. Write Java program to sort the given Array.
2. Write a Java program to find the area of rectangle using Constructor.
3. Create a JApplet using swing control, which will create the Biodata.
4. Write a JDBC program to create a table, insert, delete and update records.
5. Write a program in Java to retrieve the records from the database using JDBC.
6. Write a program in Java to implement a client/server application using RMI.
7. Write a Servlet program to count the number of visitors to a web page.
8. Write a Servlet program to create mark statement.
9. Write a Swing program to place the images.
10. Write a Swing program to find out the biggest number of given three numbers.

Text Books:

1. Herbert Schildt, (2004), "Java2: The Complete Reference", Fifth Edition, Tata McGraw Hill, New Delhi.
2. Joel Murach, (2008), "Andrea Steelman, Murach's Java Servlets and JSP", Second Edition, Shroff Publishers

Reference Book:

Bruce W Perry (2004), Java Servlets & JSP Cook Book, Second edition, O'reilly Media.

Websites:

1. <http://netbeans.org/kb/docs/javaee/javaee-intro.html>
2. <http://www.jsptube.com/>
3. <http://articles.sitepoint.com/article/java-servlets-1>
4. <http://www.java-tips.org/java-tutorials/tutorials/introduction-to-java->

- servlets-with- netbeans.html
5. <http://download.oracle.com/javase/tutorial/javabeans/index.html>

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Understood and explain programming language constructs, Java mechanisms, OOP and Internet programming concepts	K1
CO2	Applied logical constructs as well as include Object oriented features, Packages, Interfaces, Exceptions and Threads, JDBC, Internet programming technologies	K2
CO3	Compared and contrast classical and advanced Java in terms of features, architecture, platform and technologies	K2
CO4	Understood an approach to solve real world problem from the acquired knowledge of Servlet.	K3
CO5	Created programs that make strong use of classes and objects and develop JDBC, GUI, Web and Enterprise based applications	K4

Relationship Matrix for CO, PO, PSO

Course Name: ADVANCEDJAVA-PRACTICAL						Course Code: P3R3ITCC9P					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	2	2	2	3	2	3	3	2.4
CO2	2	2	2	3	2	2	2	2	2	2	2.1
CO3	2	2	3	2	3	2	3	2	3	2	2.4
CO4	2	3	2	3	2	3	2	2	3	2	2.4
CO5	2	3	2	3	2	3	2	2	3	2	2.4
	Mean Overall Score										2.34
Mean Overall Relationship is 2.34 which is HIGH											

CORE COURSE 10

DOT NET WITH C# PROGRAMMING – PRACTICAL (P3R3ITCC10P)

Hours/Week: 06
Total Hours: 90

Max. Marks: 100
Credits: 05
(CIA: 40+Ext.:60)

Nature of the Course: **Skill Development**

Objectives:

1. To provide sufficient knowledge in developing web applications.
2. To gain the knowledge about .NET framework.
3. To know the concept of web forms.
4. To understand the concept of LINQ Queries.
5. To manipulate data from SQL Server using Microsoft ADO.NET.

List of Programs:

1. Design ASP .Net web form using Html server Controls to enter job Seeker's details
2. Apply appropriate validation techniques in E-Mail registration form using Validation controls.
3. Create a web application using ADO .Net that uses which performs basic data manipulations:
(i) Insertion (ii) Updating (iii) deletion (iv) Selection Hint: Do Operations using Ms-Access.
4. Create an application using Data grid control to access information's from table in MS-Access.
5. Create an application using Data List control to access information's from table in SQL Server and display the result in neat format. Case studies (Must include basic database operations such as Insertion, deletion, Modification, Selection and Searching).
6. Develop a .NET Program AD Rotator.
7. Develop a .NET Program to create a Calculator.
8. Create and developing a College Website.
9. Create and developing a Company website.
10. Create and develop a Job Search Portal.

Text Books:

1. Kogan(2013), ASP.NET 4.5 Black Book – Dreamtech Press, New Delhi

Reference Books:

1. Herbert Schildt (2010), C# 4.0 The Complete Reference, Tata McGraw Hill Publications.

Websites:

1. <http://www.csharpkey.com/csharp/>
2. <http://www.w3schools.com/aspnet/default.asp>

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Developed of basic Structure of C# programming.	K1
CO2	Understood the concept of .NET frame work.	K2
CO3	Gained the knowledge about web form.	K2
CO4	Ability to understood the concept of LINQ queries.	K3
CO5	Understood the concept of ADO.NET.	K4

Relationship Matrix for CO, PO, PSO

Course Name – DOT NET WITH C# PROGRAMMING PRACTICAL						Course Code – P3R3ITCC10P					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	3	2	3	2	2	3	2	2.3
CO2	3	3	2	2	2	3	2	3	2	2	2.4
CO3	2	2	2	3	2	3	2	2	2	2	2.2
CO4	2	2	3	2	3	2	2	3	2	2	2.3
CO5	2	3	2	2	2	2	3	2	3	3	2.4
	Mean Overall Score										2.32
Mean Overall Relationship is 2.32 which is HIGH											

DISCIPLINE SPECIFIC ELECTIVE COURSE 5

INTERNET OF THINGS (P3R3ITDSE5:1)

Hours/Week: 05

Total Hours: 75

Max. Marks: 100

Credits: 03

(CIA:25+Ext.:75)

Nature of the Course: **Skill Development**

Objectives:

1. To understand the concept of physical and logical design of IoT.
2. To know the concept of domain specific IoT.
3. To understand the concept of M2M to IoT.
4. To understand the concept of IoT. Architecture.
5. To gain the knowledge about the IoT case studies.

UNIT-I : Introduction

(10 Hours)

Introduction to IoT - Introduction to Internet of Things: Introduction- Physical Design of IoT- Logical Design of IoT- IoT Enabling Technologies - IoT Levels & Deployment Templates

UNIT-II : Domain Specific IoT

(15 Hours)

Domain Specific IoT: Introduction-Home Automation-Cities-Environment-Energy-Retail- Logistics-Agriculture-Industry-Health & Lifestyle. IoT and M2M: Introduction - M2M- Difference between IoT and M2M - SDN and NFV for IoT.

UNIT-III : M2M to IoT

(18 Hours)

An Architectural Overview: Building an Architecture- Main design principles and needed capabilities- An IoT Architecture Outline- Standard Considerations. M2M and IoT Technology Fundamentals: Devices and Gateways- Local and wide area Networking- Data Management.

UNIT-IV : IoT Architecture

(16 Hours)

Architecture Reference Model: Introduction- Reference Model and Architecture- IoT Reference Model: IoT Domain Model- Information Model- Functional Model- Communication Model- Safety, Privacy, Trust, Security Model IoT.

UNIT-V: Implementation Examples

(16 Hours)

: The Smart Grid- Introduction-Smart Metering-Smart House-Smart energy city. Case Study: Commercial Building automation today and in the future.

Text Books:

1. Arshdeep Bahga, Vijay Madisetti, —Internet of Things – A hands-on approach, Universities Press, 2015 (Unit I and II)
2. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stamatis, Karnouskos, Stefan Avesand. David Boyle, “From Machine-to-Machine to the Internet of Things – Introduction to a New Age of Intelligence”, Elsevier, 2014 (Unit III, IV and V).

Reference Books:

1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry,—IoT Fundamentals: Networking Technologies, Protocols and Use Cases for Internet of Things, Cisco Press,2017
2. Olivier Hersent, David Boswarthick, Omar Elloumi , —The Internet of Things – Key applications and Protocols, Wiley,2012.
3. Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), —Architecting the Internetof Things, Springer,2011.

Websites:

1. https://www.tutorialspoint.com/internet_of_things/
2. <https://www.geeksforgeeks.org/introduction-to-internet-of-things-iot-set-1/>
3. [https://www.slideshare.net/khusuma/domain-specific-iot\(Unit-II\)](https://www.slideshare.net/khusuma/domain-specific-iot(Unit-II))
4. [https://www.slideshare.net/PascalBodin/an-introduction-to-m2m-iot-technologies\(Unit-III\)](https://www.slideshare.net/PascalBodin/an-introduction-to-m2m-iot-technologies(Unit-III))
5. https://www.smartgrid.gov/the_smart_grid/smart_grid.html

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Understood and explained the concept of physical and logical design of IoT.	K1
CO2	Known the idea about domain specific IoT.	K2
CO3	Understood the concept of M2M to IoT.	K2
CO4	Known the concept of IoT. Architecture.	K3
CO5	Gained the knowledge about IoT case studies.	K4

Relationship Matrix for CO, PO, PSO

Course Name: INTERNET OF THINGS						Course Code: P3R3ITDSE5:1					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	2	3	2	2	2	2.3
CO2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	3	2	3	2	2	2	2.2
CO4	3	2	2	2	2	2	2	3	2	2	2.2
CO5	2	2	2	3	2	3	2	2	3	2	2.3
	Mean Overall Score										2.20
Mean Overall Relationship is 2.20 which is HIGH											

DISCIPLINE SPECIFIC ELECTIVE COURSE 5

TRENDS IN COMPUTING (P3R3ITDSE5:2)

Hours/Week: 05
Total Hours: 75

Max. Marks: 100
Credits: 03
(CIA:25+Ext.:75)

Nature of the Course: **Skill Development**

Objectives

1. To understand the concepts and infrastructure of cloud computing.
2. To know the concept business applications.
3. To understand the scope, design and model of grid computing.
4. To gain the Knowledge about the reduction of energy use, waste.
5. To know the environmental impacts in Information Technologies systems.

UNIT-I: Cloud Computing (10 Hours)

Basics: Overview – Applications – Intranets and the Cloud – First Movers in the Cloud – Organization and Cloud Computing: Benefits – Limitations – Security Concerns- The Business Case for Going to the Cloud: Cloud Computing Services –Deleting Data centre.

UNIT-II: Hardware and Infrastructure (15 Hours)

Clients – Security – Network –Services- Accessing the Cloud: Platforms - Cloud Storage: Overview – Cloud Storage Providers.

UNIT-III: Developing Applications (18 Hours)

Google – Microsoft - Local Cloud and Thin Clients: Virtualization – Server Solutions – Thin Clients – Migrating to the Cloud.

UNIT-IV: Grid Computing (16 Hours)

Introduction - Benefits – Grid Terms and Concepts: Types of Resources – Jobs and Applications –Scheduling, Reservation and Scavenging – Grid Software Components – Grid user role: User Perspective – Administrator Perspective - Design: Building grid architecture - Models – Topologies – Phases and Activities.

UNIT-V: Green Computing (16 Hours)

Introduction - History of Green Computing - Regulations and Industry Initiative - The Demons behind Green Computing - Approaches to Green Computing - Role of IT vendors - Green Computing Tips - Future is Green.

Text Books:

1. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, "Cloud Computing - A practical Approach", McGraw Hill, 2010.
2. Bart Jacob, Michael Brown, Kentaro Fukui, and Nihar Trivedi, "Introduction to Grid Computing", IBM Redbook, 2005.

Reference Books:

1. George Reese, "Cloud Application Architectures: Building Applications and Infrastructures in the cloud", O'Reilly Media Inc., 2009.
2. Halper Fern, Kaufman Marcia, Bloor Robin, Hurwit Judith, "Cloud Computing for Dummies", Wiley India Pvt Ltd, 2009.
3. J. Velete, Anthony T. Velete, Robert Elsenpeter, "Green IT – Reduce Your Information System's Environmental Impact While Adding to the Bottom Line", McGraw-Hill, 2008.
4. Bud E. Smith, "Green Computing: Tools and Techniques for Saving Energy, Money, and Resources", Auerbach
5. Publications, 2013.

Websites:

1. http://www.siteground.com/tutorials/cloud/cloud_computing_infrastructure.htm
2. <http://thecloudtutorial.com/>
3. <http://studymafia.org/wp-content/uploads/2015/11/CSE-Green-Computing-Report.pdf>
4. http://www.znu.ac.ir/data/members/dastjerdi_mohammad/Book11.pdf (Unit IV)
5. <http://www.cs.kent.edu/~farrell/grid06/lectures/grid01.pdf> (Unit V)

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Students should have understood the concept of infrastructure of cloud computing.	K1
CO2	They gained the concept business applications.	K2
CO3	Students should have the scope, design and model of grid computing.	K2
CO4	They gained the Knowledge about the reduction of energy use, waste.	K3
CO5	Students known the environmental impacts in Information Technologysystems.	K4

Relationship Matrix for CO, PO, PSO

Course Name: TRENDS IN COMPUTING						Course Code: P3R3ITDSE5:2					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	2	3	2	2	2	3	2	2	2	2.3
CO2	2	2	2	2	2	2	3	2	2	2	2.1
CO3	2	2	2	2	3	2	3	2	2	2	2.2
CO4	3	2	2	2	2	2	2	3	2	2	2.2
CO5	2	2	2	3	2	3	2	3	3	2	2.4
	Mean Overall Score										2.24
Mean Overall Relationship is 2.24 which is HIGH											

SKILL ENHANCEMENT COURSE 2

ANIMATION IN FLASH (P3R3ITSEC2:1)

Hours/Week: 03

Total Hours: 45

Max. Marks: 100

Credits: 02

(CIA:25+Ext.:75)

Nature of the Course: Skill Development

Objectives:

1. To create knowledge in graphics and animations.
2. To have an exposure on Photoshop, CS2.
3. To create Ideas in filters.
4. To create knowledge in text effects.
5. To become skilled on the components needed for mobile app development.

Unit I: The Basics

(7 Hours)

Opening and saving – selection modes – transformations – Color modes and color models – adjusting color – paint brushes and art tools – digital painting – moving paint.

Unit II: More Tools and Tricks

(8 Hours)

Advanced Painting techniques – layers – using masks – paths.

Unit III: Fun with filters

(10 Hours)

Filters that improve your pictures – filters to make your picture artistic – Filters to distort and other funky effects.

Unit IV: Text, Effect and getting plugged in

(10 Hours)

Adding type to pictures – special effects and useful tricks – photoshop plug-ins and add-on.

Unit V: Photo repair and enhancement

(10 Hours)

Compositing – Photo repair: Black – and – White, color.

Text Book:

1. Carla Rose “SAMS Teach yourself Adobe Photoshop7”, Teach media.

Reference Books:

1. Draw Animation by Paul Hardman.
2. Flash Professional CC Class Room in a book – Pearson.

Websites:

1. <https://www.sfu.ca/~tutor/techbytes/Flash/fl1.html>
2. <https://www.education.ne.gov/wptent/uploads/2017/07/basicanimationwithfash.pdf>

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Gained the knowledge in graphics and animations.	K1
CO2	Kown an exposure on Photoshop, CS2.	K2
CO3	Created an Ideas in filters.	K2
CO4	Understood the knowledge in create text effects.	K3
CO5	Improved their skills on the components needed for mobile app development.	K4

Relationship Matrix for CO, PO, PSO

Course Name: ANIMATION IN FLASH						Course Code: P3R3ITSEC2:1					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	2	2	3	2	2	3	2.3
CO2	2	3	2	2	3	2	2	2	2	3	2.3
CO3	2	2	2	2	2	2	3	2	2	2	2.1
CO4	2	2	3	2	3	2	3	2	2	2	2.3
CO5	2	2	2	2	3	2	2	3	2	3	2.3
	Mean Overall Score										2.26
Mean Overall Relationship is 2.26 which is HIGH											

SKILL ENHANCEMENT COURSE 2

GRID COMPUTING (P3R3ITSEC2:2)

Hours/Week: 03

Max. Marks: 100

Total Hours: 45

Credits: 02

Nature of the Course: Skill Development

(CIA:25+Ext.:75)

Objectives:

1. To impart knowledge in Grid Computing
2. To understand the need for Grid Technology
3. To know about Cluster Grid
4. To understand the concept of OGSA
5. To understand the concept of Grid services

UNIT I: IT Infrastructure Evolution: Introduction

(6 Hours)

Microprocessor Technology- Optical networking technology- Storage Technology-Wireless Technology-Sensor Technology-World Wide Web-Open source movement. **Productivity paradox and informationsystem:**Productivityparadox-return on technologyinvestment-MultiStorey Bureaucracy-consolidation-Outsourcing.

UNIT II: Business value of Grid Computing

(12 Hours)

Grid computing business value analysis - Risk analysis-Grid Market place. **Grid computing technology-An overview:** High performance computing- Cluster computing-peer-to-peer computing-Internet computing- Grid computing-Types of Grids.

UNIT III: Desktop Grids

(10 Hours)

Background-desktop grids defined-desktop grid challenges- desktop grid technology-desktop grid suitability-The Grid server-Role of grids in an enterprise computing infrastructure-Practical use of Desktop grid. **Cluster Grids:** Clusters- HPC Grids: Five steps to scientific insight-Application and architecture. HPC application development environment - production to HPC reinvented-HPC grids.

UNIT IV: Data Grids

(7 Hours)

Data Grids-Alternatives to Data Grids- Avaki Data Grid-Data Grid architecture-The open Grid services architecture: An analogy for OGSA-The Evolution to OGSA-Convergence-OGSA overview-Building on the OGSA platform.

UNIT-5: Creating and managing Grid Services

(10 Hours)

Services and the Grid-Converting Existing Software-Service Discovery-Operational Requirements-Tools and tool kits- Support in UDDI-UDDI and OGSA.

TEXTBOOK:

1. Grid Computing-A practical guide to Technology and applications by Ahmer Abbas.[Chapters:Unit 1-1and 2Unit 2-3and 4, Unit3-5,6 and7,Unit 4-8and9, Unit 5 – 10,11]

REFERENCE BOOK:

1. Grid Computing-The servy Manager's Guide-pawel plaszcak and Richard wellner,jr.2018

Websites:

1. <https://www.researchgate.net/publication>
2. <https://www.geeksforgeeks.org/grid-computing/>

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Understood the concept of optical, storage and wireless technology	K1
CO2	Gained the knowledge about Grid technologies	K2
CO3	Understood the concept of Desktop grids and cluster grids	K2
CO4	Gained the knowledge about Grid Architecture and Service Architecture	K3
CO5	Understood the concept of creating and managing the grid services	K4

Relationship Matrix for CO, PO, PSO

Course Name: GRID COMPUTING						Course Code: P3R3ITSEC2:2					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	2	2	2	3	2	2	3	2.3
CO2	2	2	2	3	3	2	3	2	2	3	2.4
CO3	3	2	3	2	2	2	2	2	2	2	2.2
CO4	2	3	2	3	2	2	2	2	3	3	2.4
CO5	2	3	2	2	2	3	2	3	2	2	2.3
	Mean Overall Score										2.32
Mean Overall Relationship is 2.26 which is HIGH											

INTERNSHIP (P3R3ITINT)
(Carried Out in IYear Summer Vacation)

Credits: 03

Max. Marks: 100

Nature of the Course: Employability

Objectives:

1. To understand and prepare the real time problem statement.
2. To design and construct programs can run to complete complex computations.
3. To gain the knowledge of development tools and coding languages.
4. To create user friendly and efficient applications that are visually appealing and easy to navigate.
5. To improve the knowledge about correctness, completeness, efficiency, flexibility, consistency and maintainability.

Front End: Any Designing Tools

Back End: Any Database Tools

Methodology and Company Road map

Should submit minimum 15-page report

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Improved the analyzing and designing knowledge.	K1
CO2	Gained in-depth knowledge of designing and developing tools.	K2
CO3	Improved the knowledge about the coding languages.	K3
CO4	Developed user friendly and efficient applications.	K3
CO5	Improved the knowledge about to solve the real time problems and applications.	K4

Relationship Matrix for CO, PO, PSO

Course Name: INTERNSHIP						Course Code :P3R3ITINT					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	2	2	2	2	2	2	2
CO2	3	2	3	2	3	2	3	3	3	2	2.6
CO3	2	2	3	2	3	2	3	3	2	3	2.5
CO4	3	2	2	3	3	2	2	3	3	2	2.5
CO5	3	2	3	2	2	2	3	2	2	3	2.4
	Mean Overall Score										2.4
Mean Overall Relationship is 2.4 which is HIGH											

SEMESTER - IV

CORE COURSE -11

DATA SCIENCE AND BIG DATA ANALYTICS - (P4R3ITCC11)

Hours/Week: 06

Max. Marks: 100 (CIA:25+Ext.:75)

Total Hours: 90

Credits: 05

Nature of the Course: Skill Development

Course Objectives:

1. To provides grounding in basic and advanced methods to big data technology and tools.
2. To including MapReduce and Hadoop and its ecosystem.
3. To provides Advanced Analytical Theory and Methods.
4. To provides classification decision tree.
5. To including Advanced Analytics-Technology and Tools.

Unit – I: Introduction to Big Data Analytics : (20 Hours)

Introduction to Big Data Analytics : Big Data Overview – Data Structures – Analyst Perspective on Data Repositories - State of the Practice in Analytics – BI Versus Data Science - Current Analytical Architecture – Drivers of Big Data – Big Data Ecosystem .

Unit- II: Basic Data Analytic Methods Using R: (17 Hours)

Basic Data Analytic Methods Using R : Introduction to R programming – R Graphical User Interfaces – Data Import and Export-Attribute and Data Types – Descriptive Statistics Exploratory Data Analysis : Visualization Before Analysis – Dirty Data – Visualizing a Single Variable – Examining Multiple Variables Data Exploration Versus Presentation .

Unit – III: Advanced Analytical Theory and Methods: (18 Hours)

Advanced Analytical Theory and Methods: Clustering – K Means – Use Cases – Overview – Determining number of clusters – Diagnostics Reasons to choose and cautions – Additional Algorithms - Association Rules : A Priori Algorithm – Evaluation of Candidate Rules- Applications of Association Rules – Validation and Testing– Diagnostics.

Unit -IV: Classification (18 Hours)

Classification: Decision Trees – Overview (ICT CLASS)– Genetic Algorithm – Decision Tree Algorithms – Evaluating Decision Tree – Decision Trees in R - Naïve Bayes – Bayes Theorem – Naïve Bayes Classifier – Smoothing – Diagnostics – Naïve Bayes in R .

Unit- V:Advanced Analytics-Technology and Tools (17Hours)

Advanced Analytics-Technology and Tools: MapReduce and Hadoop : Analytics for Unstructured Data .- UseCases - MapReduce - Apache Hadoop – The Hadoop Ecosystem – pig – Hive – Hbase – Manout – NoSQL.

Text Books:

1. Data Science & Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data”, EMC Education Services Published by John Wiley & Sons, Inc. 2015

Reference Books:

1. Noreen Burlingame, “The little book on Big Data”, New Streetpublishers, 2012.
2. Anil Maheshwari, “Data Analytics”, McGraw Hill Education, 2017.
3. Norman Matloff, “The Art of R Programming: A Tour of Statistical Software Design”, Starch Press; 1 edition, 2011.
4. Sandip Rakshit, “R for Beginners”, McGraw Hill Education, 2017

Website:

1. http://www.johndcook.com/R_language_for_programmers.html.
2. <http://bigdatauniversity.com>
3. <http://home.ubalt.edu/ntsbarsh/stat-data/topics.htm#rintroduction>.

Course outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Understood the concept of big data analytics	K1
CO2	Created knowledge in big data analytics method using R.	K2
CO3	Improved the details of analytical theory and methods.	K2
CO4	Improved the details of decision tree.	K3
CO5	Improved the details of Advanced Analytics-Technology and Tools.	K4

Relationship Matrix for CO, PO, PSO

Course Name: DATA SCIENCE AND BIGDATA ANALYTICS						Course Code: P4R3ITCC11					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	2	2	2	3	2	3	2	2.2
CO2	2	2	2	3	2	2	2	2	2	2	2.1
CO3	2	2	2	2	3	2	3	2	2	2	2.2
CO4	2	3	2	2	2	3	2	2	3	2	2.3
CO5	2	3	2	3	2	3	2	2	2	2	2.3
	Mean Overall Score										2.22
Mean Overall Relationship is 2.22 which is HIGH											

CORE COURSE -12

SOFTWARE PROJECT MANAGEMENT - (P4R3ITCC12)

Hours/Week: 06

Max. Marks: 100 (CIA:25+Ext.:75)

Total Hours: 90

Credits: 05

Nature of the Course: Skill Development

Course Objectives:

1. To understand the basics of software project management.
2. To understand the software management, project management, process frame work.
3. To get the knowledge about management disciplines.
4. To gain the knowledge about project control.
5. To get the knowledge about risk management.

UNIT I: Introduction to Software Project Management (18 Hours)

Introduction – Why is Software Project Management importance – What is a Project? – Activities covered by SPM – Planes, Methods and Methodologies – Some ways of categorizing Software Project – Stakeholders.

UNIT II: Project Evaluation and Programming Management: (20 Hours)

A Business Case - Project portfolio Management – Evaluation of Individual Project – Cost-Benefits Evaluation Techniques – Risk Evaluation – Programme Management – An overview of Project Planning – Introduction to stepwise Project Planning.

UNIT III: Software Processes and Process Models (18 Hours)

Choice of Process model – Structure versus speed of delivery – the water fall model- The spiral model - Software Prototyping – other ways of categorizing prototype – Incremental delivery - DSDM – Rapid applications development.

UNIT IV: Software Effort Estimation (18 Hours)

The bases foe software estimating - Software Effort Estimation Techniques – Bottom up estimating – top do Function point analysis – function points mark II – COSMIC full function points – COCOMO II: A Parametric productivity model – Cost estimation.

UNIT V: Risk Management (16 Hours)

Risk Management: Introduction – Risk – Categories of Risk – A Framework for Dealing with Risk – Risk Identification – Risk Assessment – Risk Planning – Risk Management – Evaluating Risk to Schedule – Applying the PERT Technique.

TEXT BOOKS:

1. Software Project Management, bob Hughes & Mike Cotterell, ISBN: 9780070619852) 2006 edition (Unit I: Chapter 1, Unit II: Chapter 2,3 Unit III: Chapter 4, Unit IV: Chapter 5. Unit V: Chapter7)

REFERENCE BOOK:

1. Software Engineering, Roger S.Pressman ,TMH Publications 2006
2. Handbook of Software Engineering, Cha, Sungdeok, Taylor, Richard N.Kang, Kyo. C, Springer Publications, 2019.

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Understood the Software Project Model.	K1
CO2	Improved the knowledge in Software Testing	K2
CO3	Developed the depth knowledge in Risk analysis.	K2
CO4	Gained the knowledge about project control.	K3
CO5	Known the concept of risk management.	K4

Relationship Matrix for CO, PO, PSO

Course Name SOFTWARE PROJECT MANAGEMENT						Course Code : P4R3ITCC12					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	2	3	2	2	2	2	2	2	2.1
CO2	3	2	3	2	3	2	2	2	3	2	2.4
CO3	2	2	3	2	2	2	2	2	2	3	2.2
CO4	2	2	2	2	2	3	2	2	2	2	2.1
CO5	2	3	2	2	2	3	2	2	2	2	2.2
	Mean Overall Score										2.20
Mean Overall Relationship is 2.20 which is HIGH											

CORE COURSE:13
PROJECT WORK (P4R3ITCC13PW)

Nature of the Course: Employability

Max.Marks: 100

Credits: 05

Course Objectives:

6. To understand and prepare the problem statement.
7. To design and construct programs can run to complete complex computations.
8. To gain the knowledge of development tools and coding languages.
9. To create user friendly and efficient applications that are visually appealing and easy to navigate.
10. To improve the knowledge about correctness, completeness, efficiency, flexibility, consistency and maintainability.

Front End: WEB Design Toolss

Middle End: ServerSide Scripting Languages

Back End: RDBMS Packages

Course Outcomes:

Upon Completion of the Course Students would be able to		Knowledge level
CO1	Improved the analyzing and designing knowledge.	K1
CO2	Talented individual with in-depth knowledge of designing and developing tools.	K2
CO3	Improved development tools and coding languages.	K2
CO4	Developed user friendly and efficient applications.	K3
CO5	Improved the knowledge about correctness, completeness, efficiency.	K4

Relationship Matrix for CO, PO, PSO

Course Name: PROJECT WORK						Course Code: P4R3ITCC13PW					
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	3	2	2	2	2	2	2	2.2
CO2	3	2	3	2	3	2	2	2	3	2	2.4
CO3	2	2	3	2	2	2	2	2	3	3	2.3
CO4	2	2	2	2	3	3	2	3	2	2	2.3
CO5	2	3	2	3	2	3	2	2	2	3	2.4
	Mean Overall Score										2.32
Mean Overall Relationship is 2.32 which is HIGH											