

K.S.RANGASAMY COLLEGE OF ARTS AND SCIENCE, TIRUCHENGODE

DEPARTMENT OF COMPUTER SCIENCE -PG

Courses focus on employability / entrepreneurship / Skill Development

COURSE CODE	COURSE NAME	Employability/ Entrepreneurship/ Skill Development
18PCSM101	Core I: Advanced Java Programming	Employability
18PCSMP101	Core Practical I: Advanced Java Programming	Employability
18PCSMP102	Core Practical II: PHP and MYSQL lab	Employability
18PCSM201	Core V: C# and ASP .Net Framework	Employability
18PCSMP201	Core Practical III: C# and ASP.Net Framework	Employability
18PCSM202	Core VI: Data Mining and Warehousing	Employability
18PCSMP202	Core Practical IV : Data Mining	Employability
18PCSM302	Core VIII: Internet of Things	Employability
18PCSMP302	Core Practical VI: Network and IoT Lab	Employability
18PCSMP401	Core Practical VII: Python Programming Lab	Employability
18PCSPR401	Project & Viva -Voce	Skill Development
18PLS101	Career Competency Skills I	Skill Development
18PLS201	Career Competency Skills II	Skill Development

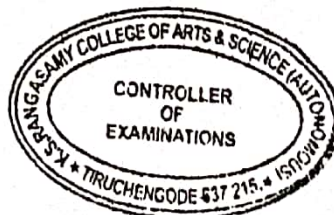
Encl:

- Copy of Scheme of Examination
- Syllabus copy of Courses highlighted on Employability / Skill Development along with course outcomes
- Mapping of the courses to Employability and Skill Development


HOD

(Department of Computer Science)


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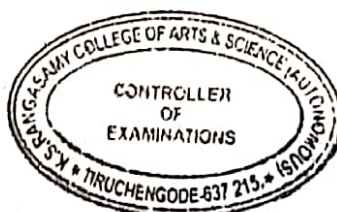

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SCHEME OF EXAMINATION

Subject Code	Subject	Hrs of Instruction	Exam Duration in Hrs	Maximum Marks			Credit Points
				CA	CE	Total	
First Semester							
Part A							
18PCSM101	Core I: Advanced Java Programming	5	3	25	75	100	4
18PCSM102	Core II: Design and Analysis of Algorithms	6	3	25	75	100	5
18PCSM103	Core III: Advanced Operating System	5	3	25	75	100	4
18PCSM104	Core IV: Network Security and Cryptography	5	3	25	75	100	4
18PCSMP101	Core Practical I: Advanced Java Programming	4	3	40	60	100	3
18PCSMP102	Core Practical II: PHP and MYSQL lab	4	3	40	60	100	3
Non-Credit							
18PLS101	Career Competency Skills I	1	-	-	-	-	-
Total		30				600	23
Second Semester							
Part A							
18PCSM201	Core V: C# and ASP/.Net Framework	4	3	25	75	100	4
18PCSM202	Core VI: Data Mining/ and Warehousing/	5	3	25	75	100	5
	Elective I	5	3	25	75	100	4
18PCSMP201	Core Practical III: C# and ASP.Net Framework	4	3	40	60	100	3
18PCSMP202	Core Practical IV: Data Mining/	4	3	40	60	100	3

3

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M.Sc Computer Science (Students admitted from 2018 - 2019 Onwards)

18PMACSI201	IDC I: : Discrete Mathematics	5	3	25	75	100	4
Part B							
18PVE201	Value Education : Human Rights	2	-	25	75	100	2
Non-Credit							
18PLS201	Career Competency Skills II	1	-	-	-	-	-
Total		30				700	25
Third Semester							
Part A							
18PCSM301	Core VII: Big Data Analytics	6	3	25	75	100	5
18PCSM302	Core VIII: Internet of Things /	6	3	25	75	100	5
	Elective II	5	3	25	75	100	4
18PCSM301	Core Practical V: Mobile Application Development	4	3	40	60	100	3
18PCSM302	Core Practical VI: (Network and IoT Lab)	4	3	40	60	100	3
18PMACSI301	IDC II: Resource Management Techniques	5	3	40	60	100	4
Total		30				600	24
Fourth Semester							
Part A							
18PCSM401	Core IX: Python Programming	5	3	25	75	100	4
18PCSM402	Core X: Professional Ethics and Cyber Law	5	3	25	75	100	5
18PCSM301	Core Practical VII: Python Programming Lab	4	2	40	60	100	3
18PCSPR401	Project & Viva -Vocé	6		50	150	200	6
Total		20	-			500	18
Grand Total						2400	90

4



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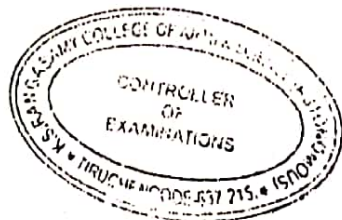
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18PCSM101	CORE I: ADVANCED JAVA PROGRAMMING	SEMESTER - I	
Course Objectives: <ul style="list-style-type: none"> To impart knowledge on advanced concepts in J2EE with database To learn Client/Server programming and Distributed application To learn about overview of J2EE Architecture, concepts of JDBC and servlet 			
Total Hours: 50			
UNIT	CONTENTS	Hrs	CO
I	Java 2 Enterprise Edition Overview: Java Byte code - The Advantages of Java - J2EE and J2SE. J2EE Multi-Tier Architecture: The Tier - J2EE Multi-Tier Architecture. JDBC Objects: The Concept of JDBC - JDB Driver Types - JDBC Packages - A brief Overview of JDBC Process - Database Connection - Statement Objects - ResultSet - Transaction Processing.	10	CO1
II	Networks and HTTP: The Internet - URIs, URLs and URNs - The Client-Server Model - The Transfer of Data and Network Protocols - The Hypertext Transfer Protocol (HTTP) - HTTP Methods - HTTP Status Codes. Java EE Architecture: Terminology- Servlet Basics: Generic Servlets - HTTP Servlets.	10	CO2
III	Servlet Contexts: The Interfaces. Request and Responses: The Interfaces - ServletRequest - HttpServletRequest - ServletResponse. RequestDispatcher & Wrappers: The RequestDispatcher Mechanism. Session Management: Operating with Sessions - The HttpSession Interface.	10	CO3
IV	JSP Basics: Introduction - Codeless JSP Pages - The JSP Life Cycle - Scripting Elements- Directives - Declarations - Scriptlets - Expressions - Comments - Implicit Objects. Security: Authentication Basics - Methods for Authentication - Declarative Authentication.	10	CO4
V	Creating and Deploying an Enterprise Bean: An Introduction to Enterprise Beans - Setting Security. Types of Enterprise Beans: Session Beans - The lifecycle of a session Bean - Coding the Home Interface - Coding the Remote Interface - Coding the Helper classes- Entity Beans - The Life Cycle of an Entity Bean - The Primary Key - Shared Access - The Transaction - Creating an Entity Bean Demonstrating Bean - Managed Persistence - Coding the Home Interface - Coding the Remote Interface - Coding the Enterprise Bean Class - Connecting an Entity Bean to an SQL Database.	10	CO5
Text Books			
1	Jim Keogh, 2005, The Complete Reference. McGraw-Hill .New Delhi. (Unit I)		
2	Charles Lyons, 2009, SCWCD Study Companion with Java EE6 Preview. [Second Edition]. Garner, Press. UK. (Unit II,III,IV)		



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3	Pallavi Jain and Shadab Siddiqui with NITT, 2002. J2EE Professional Projects. PFI Eastern Economy Edition. (Unit V)
Reference Books	
1	Mark Cade and Humphrey Sheil, 2010. Sun Certified Enterprise Architect for Java EE Study Guide. [Second Edition], Prentice Hall, New Delhi
2	Herbert Schildt, 2011. Java : The Complete Reference. [Eighth Edition], McGraw-Hill, New Delhi
3	Richard Monson-Haefel and Bill Burke, 2006. Enterprise JavaBeans 3.0. [Fifth Edition], O'Reilly Publication, New York

Web References	
1	https://www.udemy.com/advanced-java-programming
2	https://www.tutorialspoint.com/java
3	https://www.roseindia.net/java/Advanced-Java-Tutorials.shtml

COURSE OUTCOMES (CO)


After completion of the course , the students will be able to


CO1	Define the Detailed Architecture of J2EE and JDBC
CO2	Explain the concepts of Network protocols used in Java packages
CO3	Analyze the details of Servlet environment and Interface mechanism
CO4	Evaluate the JSP Elements and Scripting for Authentication process
CO5	Apply the Life Cycle of Java Bean and interface with SQL

MAPPING

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	M	H	M
CO2	H	H	M	M	M
CO3	H	H	H	M	M
CO4	H	H	H	M	M
CO5	H	H	H	M	H

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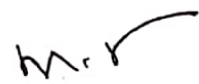
18PCSMP101	CORE PRACTICAL I: ADVANCED JAVA PROGRAMMING	SEMESTER - I	
Course Objectives: The Course aims <ul style="list-style-type: none"> To make clear understanding on Advanced Java programming concepts and syntax To make them strong in Servlet API programming skills To enhance the real time programming skills in Session management and other APIs 			
			Total Hours:40
PROGRAM	CONTENTS	Hrs.	CO
1	Develop program to connect database and get result set from database using JDBC API	04	CO1
2	Develop program to connect database and insert new record to the existing table using JDBC API .	04	CO1
3	Develop program using HTTPServlet API and read request parameters from the HTML page and process the same and display it	04	CO2
4	Develop program using HTTPServlet API and read request parameters from the HTML page store the same into HttpSession Object and process it	04	CO2
5	Develop program using HTTPServlet API and read request parameters from the HTML page and process and store the same into Database	04	CO3
6	Develop program using JSP API and read request parameters from the HTML page and validate the request values using database	04	CO3
7	Develop program using JSP API and read request from the user and navigate to another JSP page	04	CO4
8	Develop program using Statefull Session Bean API	04	CO4
9	Develop program using Stateless Session Bean API	04	CO5
10	Develop program using EntityBean API and insert new record to database	04	CO5
Web References			
1	www.academia.edu/7567434/Advanced_Java_Academic_lab_manual		
2	https://www.tutorialspoint.com/java		
3	https://www.roseindia.net/java/Advanced-Java-Tutorials.shtml		

The undersigned hereby certifies that the above mentioned syllabus is approved for the purpose of the examination.



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COURSE OUTCOMES (CO)

After completion of the course , the students will be able to

CO 1	Establish Database connectivity and make modification with the help of Java interface
CO 2	Apply the concept of Message Passing through HTTPServlet
CO 3	Access the Data and storing the data through HTTPServlet
CO 4	Apply the Request Validation and Navigaion to other JSP
CO 5	Handle the Session Management and usage of Entity Bean API



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18PCSMPI02	CORE PRACTICAL II : PHP & MYSQL LAB	SEMESTER - I	
Course Objectives:			
The Course aims			
<ul style="list-style-type: none"> To develop the skills of Form Designing and Exception handling in PHP To know about record creation and manipulation in MYSQL To know about the uses of AJAX in real time applications 			
			Total Hours:40
PROGRAM	CONTENTS	Hrs.	CO
1	Program to demonstrate the concept of User Defined Functions using PHP	04	CO1
2	Program to Pass Value from One form to another form using PHP	04	CO1
3	Program to demonstrate Techniques of Exception Handling using PHP	04	CO2
4	Program to Display the records from MySQL using PHP	04	CO2
5	Program to Add, Edit and Delete the records from MySQL using PHP	04	CO3
6	Design a Web page to see the result for a candidate when the results are published on the web	04	CO3
7	Program to demonstrate PHP-XML Expat Parser	04	CO4
8	Program to process XML documents in PHP using built-in DOM parser	04	CO4
9	Design a web page using PHP to fetch information from a database with AJAX	04	CO5
10	Design a web page using PHP to fetch information from a XML file with AJAX	04	CO5
Web References			
1	https://www.w3schools.com/php/php_mysql_intro.asp		
2	zetcode.com/databases/mysqlphptutorial/		
3	https://www.guru99.com/php-practical-example.html		

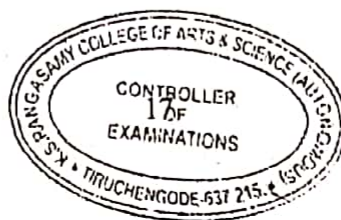
COURSE OUTCOMES (CO)

After completion of the course , the students will be able to

CO 1	Apply User defined functions and passing values to Multiple forms
CO 2	Practice Mechanism of Exception Handling and ODBC through PHP
CO 3	Apply Data Manipulation and server interaction
CO 4	Apply parser and DOM parser to process XML documents in PHP
CO 5	Establish the Interactive communication from a database and an XML file with AJAX

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18PCSM201	CORE V: C# AND ASP .NET FRAMEWORK	SEMESTER - II	
Course Objectives: <ul style="list-style-type: none"> To become skilled at Fundamental and Advanced concept of .NET Frame work To impart Knowledge in C# programming skills in .NET To gain Knowledge of Web Application Architecture 			
Total Hours: 50			
UNIT	CONTENTS	Hrs	CO
I	Introduction C# and the .NET Platform: The Philosophy of .NET - Understanding the Previous State of Affairs - The .NET Solution - Introducing the Building Blocks of the .NET Platform (the CLR,CTS and CLS) - An overview of .NET Assemblies - Understanding the Common Type System - Understanding the Common Language Specification - Understanding the Common Language Runtime - The Assembly/Namespace/Type Distinction.	10	CO1
II	Core C# Programming Constructs: The Anatomy of a Simple C# Program - System Data Types and C# Shorthand Notation - Understanding the System.String Type. Defining Encapsulated Class Types: Introducing the C# Class Type - Understanding Class Constructors - The Role of the this Keyword - Understanding the static Keyword.	10	CO2
III	Understanding Structured Exception Handling: The Role of .NET Exception Handling - The Simplest Possible Example -The Finally Block - The Interfaces of the System.Collections - The Class Types of System.Collections.Namespace. ADO.NET Part I The Connected Layer - A High-Level Definition of ADO.NET - Understanding ADO.NET Data Providers - Additional ADO.NET Namespaces - Understanding the Connected Layer of ADO.NET - Working with Data Readers.	10	CO3
IV	Building Web Applications with ASP.NET: The Role of HTTP - Understanding Web Applications and Web Servers - The Role of HTML - The Role of Client-Side Scripting - Building a Classic ASP Page - Problems with Classic ASP - The ASP.NET Namespaces - Details of an ASP.NET Website Directory Structure-Interacting with the Incoming HTTP Request - Interacting with the Outgoing HTTP Response - The Life Cycle of an ASP.NET Web Page	10	CO4
V	ASP.NET State Management Techniques: The Issue of State - ASP.NET State Management Techniques - Understanding the Role of ASP.NET View State - The Role of the Global.asax File - Understanding the Application/Session Distinction - Working with the Application Cache-Maintaining Session Data - Understanding Cookies.	10	CO5

Text Book	
1	Andrew Troelsen . 2007, Pro C# 2008 and the .NET 3.5 Platform. [Fourth Edition]. Apress. Bangalore.
Reference Books	
1	Mike Snell, Glenn Johnson, Tony Northrup and GrandMasters. 2009. Microsoft .NET Framework 3.5 - ASP.NET Application Development. [First Edition], Microsoft Press. New York.
2	John Sharp. 2008. Microsoft Visual C# 2008 Step by Step . [First Edition]. Microsoft Press. New York. Christian Nagel, Bill Evjen, Jay Glynn, Karl Watson and Morgan Skinner. 2008. Professional C# 2008. [First Edition]. Wiley Publishing . New York.

Web References	
1	https://www.guru99.com/net-framework.html
2	https://www.tutorialspoint.com/asp.net/asp.net_tutorial.pdf
3	asp.net-tutorials.com/basics/introduction/

COURSE OUTCOMES (CO)


After completion of the course , the students will be able to

CO1	Define the fundamentals of .NET framework
CO2	Familiar with the basics of C# working environment
CO3	Deal with Exception Handling and ADO.NET
CO4	Apply Lifecycle activities of ASP.NET
CO5	Handle the ASP.NET session Management

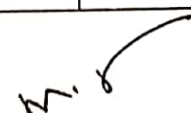
MAPPING

PSO \ CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	H	L
CO2	H	M	M	M	L
CO3	H	H	H	M	M
CO4	H	H	H	M	H
CO5	H	H	M	M	L

H-High; M-Medium; L-Low


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18PCSMP201	CORE PRACTICAL III: C# AND ASP .NET FRAMEWORK	SEMESTER - II	
Course objectives: The Course aims <ul style="list-style-type: none"> To make good clarity in IDE for Form Designing and DB Connectivity on C# and ASP framework To make strong on understanding session management in .NET frame work 			
			Total Hours:40
PROGRAM	CONTENTS	Hrs.	CO
C#.NET			
1	Create a simple application in C# .Net using Console Application	04	CO1
2	Create an application that should use this and static keywords	04	CO1
3	Create and manage application that should use Try....Catch....Finally Blocks	04	CO2
4	Create an application that uses System. Collections namespace	04	CO2
5	Create and open a connection for a database and add, read and update records in a database	04	CO3
ASP.NET			
6	Create a simple application in ASP.NET	04	CO3
7	Create an application that uses multiple forms	04	CO4
8	Create an application to interact with Application-level variables that should use HttpSessionState	04	CO4
9	Create an application to interact with Session-level variables that should use HttpSessionState	04	CO5
10	Create and open a connection to a database and add, read and update records in a database	04	CO5
Web References			
1	https://www.guru99.com/net-framework.html		
2	https://www.tutorialspoint.com/asp.net/asp.net_tutorial.pdf		
3	asp.net-tutorials.com/basics/introduction/		

COURSE OUTCOMES (CO)

After completion of the course , the students will be able to

CO 1	Practice the Console Environment and Exception Handling
CO 2	Identify the Data representation and Memory Management
CO 3	Practice ODBC Establishment and record manipulation
CO 4	Design MDI Form in ASP.NET Environment
CO 5	Practice on Session Management Techniques

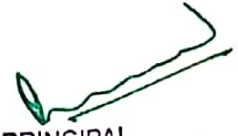
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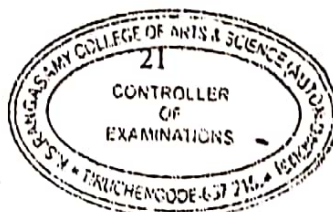
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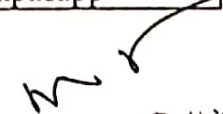
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18PCSM202	CORE VI: DATA MINING AND WAREHOUSING	SEMESTER - II	
Course Objectives: <ul style="list-style-type: none"> To gain Knowledge in Data Warehousing and implementation To study the Data Mining techniques utilized in various types of Algorithms To gather knowledge on classification, clustering and association rules 			
Total Hours: 50			
UNIT	CONTENTS	Hrs	CO
I	Data Warehouse and OLAP Technology: An Overview - Data Warehouse - A Multidimensional Data Model - Data Warehouse Architecture - Data Warehouse Implementation.	10	CO1
II	Introduction: Data mining - Data Mining Functionalities. Data Preprocessing: Preprocess the Data - Data Cleaning - Data Integration and Transformation - Data Reduction.	10	CO2
III	Mining Frequent Patterns, Associations and Correlations: Basic Concepts and a Road Map - Efficient and Scalable Frequent Itemset Mining Methods - Mining Various Kinds of Association Rules. Classification and Prediction: Bayesian Classification - Classification by Back propagation - Prediction.	10	CO3
IV	Cluster Analysis: A Categorization of Major Clustering Methods - Partitioning Methods- Hierarchical Methods - Grid-Based Methods -Model-Based Clustering Methods - Density-Based Methods.	10	CO4
V	Applications and Trends in Data Mining: Data Mining Applications - Data Mining System Products and Research Prototypes - Social Impacts of Data Mining - Trends in Data Mining - Mining the World Wide Web.	10	CO5
Text Book			
1	Jiawei Han and Micheline Kamber. 2006. Data Mining Concepts and Techniques. [Second Edition]. Elsevier Inc , San Francisco.		
Reference Books			
1	Arun K Pujari. 2001. Data Mining Techniques. [First Edition]. Universities Press (India) Pvt.Limited.		
2	George M Marakas. 2002. Modern Data warehousing, Mining and Visualization: Core Concepts. [First Edition]. Prentice Hall. New Delhi.		
3	Pang-Ning Tan, Michael Steinbach and Vipin Kumar. 2006. Introduction to Data Mining. [First Edition]. Pearson Education. New Delhi.		
4	Soman, K. P, Shyam Diwakar and Ajay, V. 2006. Data Mining. [First Edition]. Prentice Hall. New Delhi.		

Web References	
1	https://www.tutorialspoint.com/data_mining/index.html
2	https://www.guru99.com/data-warehousing-tutorial.html
3	https://www.cse.iitb.ac.in/infolab/Data/Talks/kriithi-talk-impact.pp


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COURSE OUTCOMES (CO)

After completion of the course , the students will be able to

CO1	Define the Data warehouse architecture and implementation
CO2	Comprehend the Data Mining Functionalities and Preprocessing techniques
CO3	Analyze Frequent patterns, Classification and Prediction algorithms
CO4	Analyze Various types of Clustering and its impact
CO5	Expertize in Research prototypes and Web Mining

MAPPING

PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	H	M	L
CO2	M	H	H	M	L
CO3	M	H	H	M	M
CO4	M	H	H	M	L
CO5	M	H	H	H	M

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PROGRAM	CONTENTS	Hrs.	CO
1	Implementing Data preprocessing on dataset student .arff	04	CO1
2	Implementing Data preprocessing on dataset labor.arff	04	CO1
3	Implementation of K-Means algorithm	04	CO2
4	Implementing Apriori algorithm	04	CO2
5	Implementation of FP-growth algorithm	04	CO3
6	Implementation of DB-SCAN algorithm	04	CO3
7	Implementation of Bayesian classification algorithm	04	CO4
8	Implementation Decision Tree using Rapidminer.	04	CO4
9	Implementation of Use case(Data import, Preporcessing, Model training and Testing) in RapidMiner.	04	CO5
10	Implementation of Classificaion by Regression in Rapidminer.	04	CO5

18PCSM202 CORE PRACTICAL IV : DATA MINING LAB SEMESTER - II

Course objectives:

The Course aims

- To make clear understanding on preprocessing techniques in Data Mining
- To learn the different types of classification and clustering Algorithms in Weka
- To practice the different techniques used for data mining in Rapidminer.

Total Hours:40


Web References

1	www.cs.ubbcluj.ro/~gabis/ml/MLSoftware/WekaTutorial.ppt
2	www.cs.utexas.edu/users/ml/tutorials/Weka-tut/
3	https://www.slideshare.net/butest/weka-tutorial


COURSE OUTCOMES (CO)

After completion of the course , the students will be able to

CO 1	Define Data preprocessing and Association Rules.
CO 2	Practice the Clustering and classification algorithms.
CO 3	Analyze different Mining Frequent Patterns.
CO 4	Work on Decision Tree and Search Method
CO 5	Practice about Data Analytics techniques


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18PCSM302	CORE VIII: INTERNET OF THINGS	SEMESTER- III	
Course Objectives: <ul style="list-style-type: none"> To know about Smart Objects, Architectures of IoT and its protocols. To build simple IoT Systems using Arduino and Raspberry Pi. To understand data analytics and develop IoT infrastructure for effective applications. 			
			Total Hours: 50
UNIT	CONTENTS	Hrs	CO
I	Evolution of Internet of Things - Enabling Technologies - IoT Architectures: oneM2M, IoT World Forum (IoTWF) and Alternative IoT models - Simplified IoT Architecture and Core IoT Functional Stack - Fog, Edge and Cloud in IoT - Functional blocks of an IoT ecosystem - Sensors, Actuators, Smart Objects and Connecting Smart Objects.	10	CO1
II	IoT Access Technologies: Physical and MAC layers, topology and Security of IEEE 802.15.4, 802.15.4g, 802.15.4e, 1901.2a, 802.11ah and LoRaWAN - Network Layer: IP versions, Constrained Nodes and Constrained Networks - Optimizing IP for IoT: From 6LoWPAN to 6Lo, Routing over Low Power and Lossy Networks - Application Transport Methods: Supervisory Control and Data Acquisition - Application Layer Protocols: CoAP and MQTT.	10	CO2
III	Design Methodology - Embedded computing logic - Microcontroller, System on Chips - IoT system building blocks - Arduino - Board details, IDE programming - Raspberry Pi - Interfaces and Raspberry Pi with Python Programming.	10	CO3
IV	Structured Vs Unstructured Data and Data in Motion Vs Data in Rest - Role of Machine Learning - No SQL Databases - Hadoop Ecosystem - Apache Kafka, Apache Spark - Edge Streaming Analytics and Network Analytics - Xively Cloud for IoT, Python Web Application Framework - Django - AWS for IoT - System Management with NETCONF-YANG.	10	CO4
V	Cisco IoT system - IBM Watson IoT platform - Manufacturing - Converged Plantwide Ethernet Model (CPwE) - Power Utility Industry - GridBlocks Reference Model - Smart and Connected Cities: Layered architecture, Smart Lighting, Smart Parking Architecture and Smart Traffic Control	10	CO5
Text Book			
1	David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry, 2017. IoT Fundamentals: Networking Technologies, Protocols and Use Cases for Internet of Things , Cisco Press.		

Reference Books	
1	Arshdeep Bahga, Vijay Madisetti, 2015. Internet of Things - A hands-on approach, Universities Press.
2	Olivier Hersent, David Boswarthick, Omar Elloumi. 2012. The Internet of Things - Key applications and Protocols, Wiley, (for Unit 2).
3	Jan Ho" ller, Vlasios Tsiatsis , Catherine Mulligan, Stamatis , Karnouskos, Stefan Avesand. David Boyle. 2014 From Machine-to-Machine to the Internet of Things - Introduction to a New Age of Intelligence, Elsevier.
4	Michael Margolis, Arduino Cookbook. 2011 Recipes to Begin, Expand, and Enhance Your Projects, 2nd Edition, O'Reilly Media.

Web References	
1	https://nevonprojects.com/iot-projects
2	https://circuitdigest.com/internet-of-things-iot-projects
3	https://www.skyfilabs.com/blog/raspberry-pi-based-iot-projects

COURSE OUTCOMES (CO)

After completion of the course , the students will be able to

CO1	Explain the detailed architecture, stack of IoT and functional blocks of IoT Eco System.
CO2	Define the network, security and transport methods of IoT.
CO3	Analyse the streaming analytics and network analytics with Machine learning techniques.
CO4	Apply the Machine learning techniques over cloud environment.
CO5	Define the IoT reference models and smart architecture.

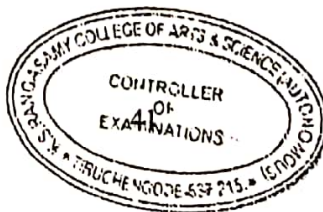
MAPPING

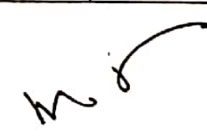
PSO \ CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	H	H	M
CO2	L	H	H	M	M
CO3	M	M	H	H	H
CO4	M	L	H	H	M
CO5	L	H	H	H	M

H-High; M-Medium; L-Low


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18PCSMP302	CORE PRACTICAL VI: NETWORK AND IOT LAB	SEMESTER - III	
COURSE OBJECTIVES:			
The Course aims			
<ul style="list-style-type: none"> To explore the networking concepts using CISCO PACKET TRACER simulator. To exemplify IoT concepts using ARDUINO and RASPBERRY PI. 			
			Total Hours: 40
PROGRAM	CONTENTS	Hrs.	CO
1	Identification of various networks components - connections, BNC, RJ-45, I/O box- Cables- Co-axial, twisted pair, UTP- NIC(network interface card) - Switch, hub	04	CO 1
2	(a) Sketch wiring diagrams of network cabling considering a computer lab of 20 systems (b) Interfacing with the network card(Ethernet) and Preparing of network cables	04	CO 1
3	Establishment of LAN and Use of protocols in establishing LAN	04	CO 2
4	Installation of network device drivers, networks (Peer to Peer Networking client server interconnection) and proxy server	04	CO 2
5	IoT Exemplification using ARDUINO	04	CO 3
6	IoT Exemplification using RASPBERRY PI	04	CO4
7	Trouble shooting of networks	04	CO4
8	File Transfer Protocol.	04	CO4
9	HTTP Server.	04	CO5
10	Class, Network and Host ID.	04	CO5
Web Reference			
1. https://data-flair.training/blogs/how-iot-works			
2. https://www.tutorialspoint.com/internet_of_things			

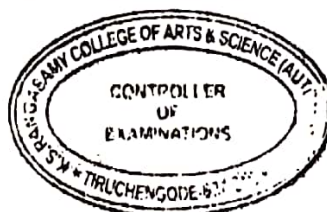
COURSE OUTCOMES (CO)

After completion of the course , the students will be able to

CO 1	Configure networking components for connection establishment .
CO 2	Design simple and complex network architecture.
CO 3	Install device drivers and servers for effective network communications.
CO 4	Connect the ARDUINO with other interfacing devices.
CO 5	Design new internet based applications by remote accessing mode.

18PCSM401	CORE IX: PYTHON PROGRAMMING	SEMESTER-IV	
Course Objectives: <ul style="list-style-type: none"> To acquire core concepts of Python. To collect knowledge on OOPs and System Programming. To explore awareness about socket programming and web surfing.			
Total Hours: 50			
UNIT	CONTENTS	Hrs	CO
I	Core Python: Introduction- History of Python- Features of Python- Installing Python- Running Python-Input and output statements- Operators- Variables and Assignment- Numbers- Dictionaries-Control statements-Exceptions-Functions-Classes- Modules. Syntax and Style: Statements and Syntax- Variable Assignment- Identifiers.	10	CO1
II	Python Objects: Standard Types- Built-in Types- Standard Type Operators- Standard Type Built-in Functions. Sequences: Strings- Lists- Tuples. Dictionaries: Introduction to Dictionaries- Operators- Built-in Functions and methods- Dictionary Keys. Conditionals and Loops: if statement- else Statement- while Statement- for Statement- break Statement- continue Statement- pass Statement.	10	CO2
III	Files and Input/Output: File Objects- File Built-in Function,Methods and Attributes-Standard Files- Command-line Arguments- File System- File Execution. Errors and Exceptions: Detecting and Handling Exceptions- Standard Exceptions.	10	CO3
IV	Functions: Introduction- Calling Functions- Creating Functions- Passing Functions- Formal Arguments- Positional Arguments- Default Arguments- Variable-length Arguments- Functional Programming. Modules: Introduction- Modules and Files- Namespaces- Importing Modules- Importing Module Attributes- Module Built-in Functions.	10	CO4
V	Network Programming: Introduction- Sockets: Communication Endpoints- Network Programming in Python. Web Programming: Introduction- Web Surfing with Python: Creating Simple Web Clients- Advanced Web Clients- CGI: Helping Web Servers Process Client Data- Building CGI Application- Advanced CGI- Web (HTTP) Servers.	10	CO5
Text Book			
1	Wesley J. Chun .2010. Core Python Programming. [First Edition]. Prentice Hall PTR. ISBN: 0-13-026036-3		

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Reference Books	
1	Mark Lutz.2009. Learning Python.[Fourth Edition]. O Reily.ISBN: 978 - 0-596-15806-4
2	Mark Lutz.2010.Programming Python. [Fourth Edition].O Reily.ISBN:9780596158118
3	Tim Hall and J-P Stacey.2009. Python 3 for Absolute Beginners. ISBN:9781430216322
4	Magnus Lie Hetland.2009. Beginning Python: From Novice to Professional.[Second Edition]. ISBN:9781590599822.

Web References	
1	https://pythonprogramming.net/introduction-to-python-programming/
2	https://www.geeksforgeeks.org/python-programming-example/
3	https://www.python.org/

COURSE OUTCOMES (CO)

After completion of the course , the students will be able to

CO1	Realize the basic concepts of Python.
CO2	Know the OOPs and string handling techniques.
CO3	Analyze the file objects and automatic triggering of programs.
CO4	Analyze the function handling and module description mechanisms.
CO5	Recognize the multiple end-users interaction in scripting and socket programming.

MAPPING

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	M	M	L
CO2	H	H	M	M	L
CO3	M	H	M	H	M
CO4	M	M	M	H	H
CO5	L	M	H	H	H

H-High; M-Medium; L-Low

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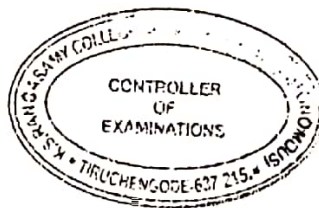
18PCSMP401	CORE PRACTICAL VII: PYTHON PROGRAMMING LAB	SEMESTER-IV	
Course objectives: The Course aims <ul style="list-style-type: none"> To implement OOPs concept in Python. To create webpages and explore database connectivity in Python. 			
			Total Hours: 40
PROGRAM	CONTENTS	Hrs	CO
1	Programs using elementary data items, lists, dictionaries and conditional branches, loops.	04	CO1
2	Programs using functions	04	CO1
3	Programs using exception handling	04	CO2
4	Programs using classes and objects	04	CO2
5	Programs using inheritance	04	CO3
6	Programs using polymorphism	04	CO3
7	Programs to implement file operations.	04	CO4
8	Programs using modules.	04	CO4
9	Programs for creating dynamic and interactive web pages using forms.	04	CO5
10	Program using database connection and web services.	04	CO5
Web References			
1	https://www.programiz.com/python-programming/examples		
2	https://www.practicepython.org/		
3	https://www.w3resource.com/python-exercises/		


COURSE OUTCOMES (CO)

After completion of the course , the students will be able to

CO 1	Apply the elementary building blocks in Python program structure.
CO 2	Apply the OOPs concepts in Python programming.
CO 3	Realize and apply file handling operations in Python.
CO 4	Create customized web pages using forms in Python.
CO 5	Apply different types of database and web connectivity using Python.


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18PLS101	CAREER COMPETENCY SKILLS - I	SEMESTER - I	
Course Objectives: The course aims <ul style="list-style-type: none"> To impart knowledge on the Aptitude. To enhance employability skills and to develop career competency. 			
			Total Hours: 15
UNIT	CONTENTS	Hrs	CO
I	Solving Simultaneous Equations Faster - Number System : HCF, LCM - Square roots and Cube roots - Averages	03	CO1
II	Problems on Numbers -Problems on Ages	03	CO2
III	Calendar - Clocks - Pipes and Cisterns	03	CO3
IV	Time and Work - Time and Distance	03	CO4
V	Ratio and Proportion - Partnership - Chain Rule	03	CO5
Text Book			
1	Aggarwal R.S. 2013. Quantitative Aptitude. [Seventh Revised Edition]. S.Chand & Co., New Delhi.		
Reference Book			
1	Abhijith Guha, Quantitative Aptitude for Competitive Examinations, 5th Edition, Tata McGraw Hill, 2015, New Delhi.		

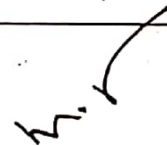
COURSE OUTCOMES (CO)

After completion of the course, the students will be able to

CO1	Carry out mathematical calculations using shortcuts.
CO2	Calculate Problems on Ages with shortcuts.
CO3	Understand the core concepts of Pipes & Cisterns, Calendar & Clocks.
CO4	Obtain knowledge on shortcuts to Time & Work and Time & Distance.
CO5	Calculate Ratio & Proportion, Partnership with shortcuts.


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18



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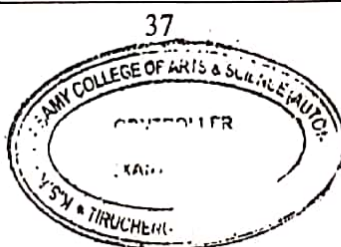
18PLS201	CAREER COMPETENCY SKILLS - II	SEMESTER - II	
Course Objectives: The course aims <ul style="list-style-type: none"> To enhance employability skills and to develop career competency. 			
			Total Hours: 15
UNIT	CONTENTS	Hrs	CO
I	Interview Skills - Types of Interview - Groundwork before Interview - Abide by the dress code - Importance of Body language in Interviews - Tell Us about yourself - Do's and Don'ts of an interview - Concluding an Interview - A Mock Interview.	03	CO1
II	Resume Preparation - Difference between a Resume and CV - The main body of Resume - The Career objective in Resume - A Fresher's Resume - Antiquity of Soft Skills - Classification of Soft Skills - Personality Analysis - Interpersonal Skills.	03	CO2
III	Body Language - Emotion displayed by Body Language - Group Discussion - Group Discussion types - Guidelines Do's and Don'ts during a Group Discussion - Concluding the Discussion - The technique of Summing Up.	03	CO3
IV	Speaking Skills - Effective Speaking Guidelines - Reading Skills - Types of Reading Skills - Barriers to Speed Reading - Listening Skills - Stages of Listening - Types of Listening - Barriers to Listening - Beware of Pitfalls - Avoid Errors : Indianisms in English - Most common errors in the world - Similar but not Quite the same - Words that are Singular or Couple.	03	CO4
V	Avoid Pitfalls: of Beware Self-improvement - Facilitating Laboratory: Language Techniques and Concepts E-learning	03	CO5
Text Book			
1	Barun K. Mitra. 2011. Personality Development and Soft skills. [Second Edition]. Oxford University Press, New Delhi.		
Reference Book			
1	S.P. Dhanavel. 2015, English and Soft Skills. [Second Edition]. Orient Black Swan Publishers, New Delhi.		

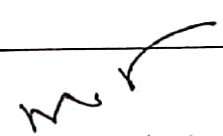
COURSE OUTCOMES (CO)

After completion of the course, the students will be able to

CO1	Understand the types of Interviews, Dress Code and Styles
CO2	Develop Resume content and structures.
CO3	Improve body language skills.
CO4	Know how to represent self through communication.
CO5	Attain the different level of Learning Skills.


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