GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications	**Branch/Spec.**	Computer Application
Semester	III	**Version**	1.0.0.2
Effective from Academic Year	2023-2024	**Effective for the batch Admitted in**	June 2022
Subject Code	P13A1ADM	**Subject Name**	Advanced Database Management System

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2	0	2	0	4	Theory	40	60	100
Hours	2	0	4	0	6	Practical	30	20	50

Objective:

- To administer and manage various aspects of a database in a specific database tool.

Pre-requisites:

- Require the basic knowledge of DBMS and basic operational systems.

Course Outcomes :

- **1 = Slight (Low); 2 = Moderate (Medium); 3 = Substantial (High); "-" = No Correlation**

Name of CO	**Description**
CO1	Explain Database Architecture and Create a database with DBCA
CO2	To manage the Instance , Database Storage Structure and undo data
CO3	To study flashback Technology, its benefits and performing flashbacks
CO4	Use SQL* loader to load data from a non-oracle database (or user files). Use Data Pump Export and import to move data between databases

Mapping of CO and PO

Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	2	3	3	1	2	3	3	3	2
CO2	2	3	3	3	3	3	3	2	2	2	2	2
CO3	3	2	2	2	2	2	2	3	3	3	3	3
CO4	3	2	3	2	2	2	3	3	2	2	2	3

Content:

Unit	SECTION-I	Hrs
1	**Introduction of Database and Database Configuration Assistant** **Introduction:** Overview of Database, Database Architecture, Database Structures, Database Memory Structures, Process Structures, Database Instance Management , Server Process and Database Buffer Cache, Overview of backup and recovery, Initialization Parameter Files, Simplified Initialization Parameters, Viewing and Modifying Initialization Parameters , Database Startup and Shutdown **Creating a Database:** Objectives, Planning the Database, Database Configuration Assistant (DBCA), Using DBCA to create a database, Password Management, Creating a Database Design Template, Using the DBCA to Delete a Database	8
2	**Managing Database Storage Structures :**Objectives, Storage Structures, How Table Data Is Stored, Anatomy of a Database Block ,Tablespaces and Data Files, Database Managed Files, Space Management in Tablespaces, Exploring the Storage Structure, Creating a New Tablespace, Storage for Locally Managed Tablespaces, Tablespaces in the Preconfigured Database, Altering a Tablespace, Actions with Tablespaces, Dropping Tablespaces, Viewing Tablespace Information, Gathering Storage Information, Viewing Tablespace Contents, Enlarging the Database **Managing Undo Data** Managing Undo Data : Objectives, Data Manipulation, Undo Data , Transactions and Undo Data, Storing Undo Information1, Undo Data Versus Redo Data, Monitoring Undo, Administering Undo, Configuring Undo Retention, Guaranteeing Undo Retention, Sizing the Undo Tablespace, Using the Undo Advisor	7
	SECTION-II	
3	**Performing Flashback**: Objectives, Flashback Technology: Benefits, When to Use the Flashback Technology, Flashing Back Any Error, Flashback Database: Overview, Reducing Restore Time, Considerations, Enabling Flashback Database Flashback Table, Flashback Drop: Overview, Flashback Time Navigation, Flashback Query, Flashback Versions Query, Flashback Transaction Query	7
4	**Moving Data** :Objectives, Moving Data: General Architecture, Directory Object: Overview, Creating Directory Objects, SQL*Loader: Overview, Loading Data with SQL*Loader, SQL*Loader Control File, Loading Methods, Data Pump: Overview, Data Pump: Benefits, Data Pump Export and Import: Overview, Data Pump Utility: Interfaces and Modes, Fine-Grained Object Selection, Advanced Feature: Sampling, Export Options: Files, Data Pump File Locations, Scheduling and Running a Job, Data Pump File Naming and Size	8

Practical Content:	
● List of programs specified by subject teacher based on above mention topics.	
Text Books:	
1	Oracle Database 10G, The Complete reference by kevinloney- Tata Mcgraw Hill Education Pvt. Ltd Publication ,1st edition (September 28, 2004).
Reference Books:	
1	Oracle DBA Bible, by Janathan Gennick, Carol McCullough-Dieter and Gerrit- Jan Linker, WILEY-Dreamtech Publication,1st Edition 2000.
2	Using Oracle, by William G. Page - Que Pub; Special edition (March 9, 1998)
MOOC/Certification Courses:	
1	https://nptel.ac.in/
2	https://docs.oracle.com/en/database/oracle/oracle-database/

3	https://www.vlab.co.in/
4.	https://nptel.ac.in/courses/106106220

Question Paper Scheme:

University Examination Duration: 3 Hours

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION - I

Q.1 – 8 Marks

Q.2 – 11 Marks

Q.3 – 11 Marks

SECTION - II

Q.4 – 8 Marks

Q.5 – 11 Marks

Q-6– 11 Marks

GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications	**Branch/Spec.**	Computer Application
Semester	III	**Version**	1.0.0.2
Effective from Academic Year	2023-24	**Effective for the batch Admitted in**	June 2022
Subject Code	P13A2WTD	**Subject Name**	Web Technologies Development using PHP

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2	0	2	0	4	Theory	40	60	100
Hours	2	0	4	0	6	Practical	20	30	50

Objective:

- To develop a deep understanding of PHP and laravel framework.

Pre-requisites:

- Basic Knowledge of HTML, CSS and programming language.

Course Outcomes :

- **1 = Slight (Low); 2 = Moderate (Medium); 3 = Substantial (High); "-" = No Correlation**

Name of CO	**Description**
CO1	Understand Basics and Advance of PHP
CO2	Apply Object Oriented Programming using PHP
CO3	To learn database operations with PHP and with various database product
CO4	To learn PHP using Laravel MVC Framework

Mapping of CO and PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1	2	1	1	1	1	1	1	1
CO2	2	2	2	1	3	2	1	2	1	1	1	1
CO3	2	3	3	1	3	2	2	2	1	2	1	2
CO4	2	3	3	1	3	2	2	2	2	2	1	2

Content:

Unit	**Section-I**	**Hrs**
1	**Introduction to PHP** PHP features, Data types, Control statement, Loop, PHP Arrays, PHP Form Handling, Include Function, Require Function, calling user define function.	5

2	**Advanced PHP** PHP OOP, Classes/Objects, Constructor, Destructor, Access Modifiers, Inheritance, Constants, Abstract Classes, Interfaces, Traits, Static Methods, Static Properties, Namespaces, Iterables PHP File handling functions, Session and Cookies function, PHP with Ajax, Exception, File Upload	10
Section-II		
3	**PHP and MySQL Database** connection with MySQL Database, performing basic database operation (DML) (Insert, Delete, Update, Select) using PDO	5
4	**Laravel MVC Framework** Introduction to MVC Framework, Introduction to Laravel, Laravel Installation process, Application structure, Configuration, Middleware, Controllers, Creating HTML forms and validations in Laravel, working with database in Laravel, Understanding CRUD operations	10

Practical Content:

List of programs specified by the subject teacher based on above mentioned topics.

Text Books:

1	PHP 6 and MySQL Bible by Tim Converse and Joyce Park ,Wiley (1 January 2009).

Reference Books:

1	Beginning PHP6, Apache, MySql web Development, by Timothy Boronczyk, Elizabeth Naramore. wrox publication,Wiley (1 January 2009).
2	Beginning PHP and MySQL, by W. Jason Gilmore, Apress,2nd edition (1 January 2006).
3	The Complete Reference PHP, by Steven Holzner, McGraw Hill Education; Raunak php study edition (1 July 2017).

MOOC/Certification Courses:

1	https://in.coursera.org/learn/web-applications-php
2	https://www.udemy.com/course/php-mysql-tutorial/
3	https://www.w3schools.com/php/
4.	https://www.mygreatlearning.com/academy/learn-for-free/courses/php

Question Paper Scheme:

University Examination Duration: 3 Hours

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION – I

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

SECTION - II

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks

GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications	**Branch/Spec.**	Computer Application
Semester	III	**Version**	1.0.0.0
Effective from Academic Year	2023-24	**Effective for the batch Admitted in**	June 2022
Subject Code	P13A3DOP	**Subject Name**	DevOps

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2	0	2	0	4	Theory	40	60	100
Hours	2	0	4	0	6	Practical	20	30	50

Objective:

- To design to drive business innovation and continuous process improvement.

Pre-requisites:

- Student should have experience in both software development and system administration

Course Outcomes :

- **1 = Slight (Low); 2 = Moderate (Medium); 3 = Substantial (High); "-" = No Correlation**

Name of CO	**Description**
CO1	To Implement DevOps concepts such as Life Cycle, Models and Tools.
CO2	To learn and implement Continuous Integration using Jenkins.
CO3	To be able to work with Containers and Virtual Development using Docker.
CO4	To learn Configuration Management Tools using Ansible.

Mapping of CO and PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	3	2	1	2	2	1	1	1	1
CO2	2	2	3	2	2	1	2	3	1	1	1	2
CO3	2	2	2	2	1	1	2	2	1	1	-	1
CO4	2	1	2	2	2	1	2	2	1	1	-	2

Content:

Unit	**SECTION-I**	Hrs
1	**Introduction to Devops** What Is Devops, History of Devops, Devops definition, DevOps and Software Development Life Cycle, Waterfall Model, Agile Model, Continuous Integration & Deployment (Jenkins), Containers and Virtual Development (Docker, Vagrant), Configuration Management Tools	7

	(Ansible, Puppet, Chef)	
2	**Continuous Integration - Jenkins** Introduction to Jenkins, Continuous Integration with Jenkins, Configure Jenkins, Jenkins Management, Scheduling build Jobs	8
	SECTION-II	
3	**Containers and Virtual Development - Docker** Docker Image, Docker Installation, Working with Docker Containers (What is Container, Docker Engine, Creating Containers with an Image, Working with Images), Docker Command Line Interphase, Docker Compose, Docker Hub, Docker Trusted Registry, Docker swarm, Docker attach, Docker File & Commands	7
4	**Configuration Management Tools - Ansible** Introduction to Ansible, Ansible Server Configuration, Infrastructure Management, SSH Connection in Ansible Master, YAML Scripts, Host Inventory (Hosts and Groups, Host Variables, Group Variables, Host and Group Specific Data), Ad-hoc Commands, Playbooks (Variables, Conditionals, Loops, Blocks, Handlers, Templates), Modules (Core Modules, Extra Modules), Ansible Roles	8

Practical Content:

List of programs specified by the subject teacher based on above mentioned topics.

Text Books:

1	Docker in practice by Ian Miell, Aidan Hobson Sayers, Manning Publications; 2nd edition (10 February 2019).
2	Ansible for Devops by Jeff Geerling, Midwestern Mac, LLC; 1st edition (10 October 2015).
3	Cloud Native Devops with Kubernetes by John Arundel, Justin Domingus, Oreilly pub 2019.
4	Jenkins Continuous Integration Cookbook by Alan Mark Berg, Ingram short title; 3rd edition (1 January 2017).

Reference Books:

1	Effective Devops by Jennifer Davis, Katherine Daniels, Oreilly publication 2016.
2	The Practice of System and Network Administration by Thomas A. LimonCelli, Strata R. Chalup, Christina J. Hogan, Pearson pub.
3	The Science of Lean Software and Devops Accelerate by Nicole Forsgren, Jez Humble, Gene Kim, Library of Congress Catalog-in-Publication

MOOC/Certification Courses:

1	https://www.mygreatlearning.com/academy/learn-for-free/courses/introduction-to-devops1
2	https://www.redhat.com/en/topics/devops
3.	https://intellipaat.com/jenkins-training-course/
4	https://kodekloud.com/courses/docker-for-the-absolute-beginner/
5.	https://in.coursera.org/projects/ansible-fundamentals

Question Paper Scheme:

University Examination Duration: 3 Hours

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION – I

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

SECTION - II

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks

GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications	**Branch/Spec.**	Computer Application
Semester	III	**Version**	1.0.0.0
Effective from Academic Year	2023-24	**Effective for the batch Admitted in**	June 2022
Subject Code	P13A4WTD	**Subject Name**	Web Technologies Development using SPRING

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2	0	2	0	4	Theory	40	60	100
Hours	2	0	4	0	6	Practical	20	30	50

Objective:

- Spring aims to simplify the complex and cumbersome enterprise Java application development process

Pre-requisites:

- To learn spring it would be beneficial to have a basic understanding of HTML, CSS and JAVA programming language.

Course Outcomes :

- **1 = Slight (Low); 2 = Moderate (Medium); 3 = Substantial (High); "-" = No Correlation**

Name of CO	**Description**
CO1	To implement framework concepts such as container, scope, bean and dependencies.
CO2	To learn and implement resources and validations.
CO3	To be able to learn Spring expression language
CO4	Design to access data using JDBC database operations

Mapping of CO and PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1	2	2	-	2	1	-	1	1	2
CO2	1	2	2	2	2	1	1	1	1	1	1	2
CO3	2	3	3	2	3	2	2	1	1	1	1	2
CO4	2	3	1	2	1	1	1	1	-	1	2	1

Content:

Unit	**SECTION-I**	**Hrs**

1	**Overview of Spring and The IoC Container:** Introduction to Spring Framework, Introduction IOC Container and Beans, Dependencies, Bean Scope	7
2	**Resources and Validation:** Resource Interface, Built-in resources, Resource loader, Validation using spring validator interface, Spring type conversion	8
	SECTION-II	
3	**Spring Expression Language** Evaluation, Expression in bean definitions, Literal expression, Properties, Arrays, Lists, Maps, Indexers, Inline lists, Inline Maps	7
4	**Data Access** Spring Framework JDBC, Using JDBC core class, Controlling database connections, JDBC Batch operations	8

Practical Content:

List of programs specified by the subject teacher based on above mentioned topics.

Text Books:

1	Spring 5 Recipes: A Problem-Solution Approach, by Marten Deinum & Daniel Rubio & Josh Long, Apress Pub.
2	Spring MVC: Beginner's Guide by Ganeshan, Amuthan, PACKT pub 2014.
3	Mastering in Spring 5.0 by Ranga Rao Karanam, Publisher June 28) Packt Publishing Limited : (2017.

Reference Books:

1	Spring Framework Cookbook **Author(s)** JCGs (Java Code Geeks)**Publisher:** Java Code Geeks (2017)
2	Beginning Spring by Mert Caliskan & Kenan Sevindik & Rod Johnson & Jürgen Höller, Wrox pub 2015.

MOOC/Certification Courses:

1	https://docs.spring.io/spring-framework/docs/4.0.x/spring-framework-reference/htmlsingle/
2	https://spring.io/learn

Question Paper Scheme:

University Examination Duration: 3 Hours

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION – I

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

SECTION - II

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks

GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications	**Branch/Spec.**	Computer Application
Semester	III	**Version**	1.0.0.0
Effective from Academic Year	2023-24	**Effective for the batch Admitted in**	June 2022
Subject Code	P13A5ISA	**Subject Name**	Fundamental of Information Systems Audit

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2	0	2	0	2	Theory	40	60	100
Hours	2	0	4	0	4	Practical	20	30	50

Objective:

- To understand how information systems can be audited and how to make the audit report.

Pre-requisites:

- Basic knowledge of information system assets, risk, threat, vulnerability management

Course Outcomes:

- **1 = Slight (Low); 2 = Moderate (Medium); 3 = Substantial (High); "-" = No Correlation**

Name of CO	**Description**
CO1	To understand vulnerability, risk and threat.
CO2	To understand how to protect Information Assets.
CO3	To understand ISMS ISO 27001 and how to implement it.
CO4	To learn how to perform a security audit and write the audit report.

	Mapping of CO and PO											
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	2	1	1	2	1	1	-	2	2	1
CO2	1	2	2	2	1	2	2	1	-	2	1	1
CO3	1	2	2	1	-	3	1	2	-	2	2	1
CO4	1	2	2	2	-	2	2	1	1	2	1	1

Content:

Unit	**SECTION – I**	**Hrs**

1	**Process of Information System Audit** Risk based Audit methodology: what is vulnerability, threat and Risk, types of Risk: Inherent risk, Residual risk, Detection risk, Control risk, Audit risk. Risk Response Methodology: Mitigate, accept, avoid, transfer, Audit Charter: Purpose and benefits of audit charter, Audit sampling: types of sampling, statistical sampling, non-statistical sampling, attribute sampling, variable sampling, stop-or-go sampling, discovery sampling. Audit Evidence collection technique: Review organization structure, Review IS policies, processes and standards, observations, Interview technique, Re-performance, Process walkthrough. Phases of Information System Audit: Planning, Execution and Reporting	8
2	**Information Asset Protection** Access controls: Physical and logical, Mandatory access control, discretionary access control, Role-based access control, Rule-based access control, Introduction to biometric verification: accuracy measures for Biometrics, false acceptance rate, false rejection rate, Equal error rate, Biometric-attacks, Firewall types and implementation, Intrusion detection system and Intrusion prevention system, Digital signature, symmetric and Asymmetric encryption, public key infrastructure, Fire suppression system	7
	SECTION – II	
3	**Introduction to Information Security Management Systems-ISO/IEC 27001:2022** Introduction to information security framework, Introduction to standard ISO 27001, clauses and controls, steps for implementing ISO 27001: existing control assessment, gap analysis, Policy and procedure documents, internal audit activity. Introduction to certifying body PECB, BSI, TUVSUD, how to become a lead Auditor.	7
4	**Information Security Audit Tasks, Reports and Post Auditing Actions:** Pre-audit checklist, Information Gathering, Vulnerability Analysis, External Security Audit, Internal Network Security Audit, Firewall Security Audit, IDS Security Auditing, Social Engineering Security, Web Application Security Auditing, Auditing desktop securities, Information Security Audit Deliverables & Writing Report.	8

Practical Content:	
List of programs specified by the subject teacher based on above mentioned topics.	
Text Books:	
1	The Beginner's Guide to Information System Audit by Hemang Doshi and Hiral Patel Publisher:Notion Press 1st Edition 2022.
2	CISA exam study guide by Hemang Doshi Publisher August 21) Packt Publishing Limited : .(2020
Reference Books:	
1	Assessing Information Security (strategies, tactics, logic and framework) by A Vladimirov, K.Gavrilenko, and A. Michajlowski Publisher .(2016 April 11) IT Governance Publishing :
2	CISA – Certified Information Systems Auditor Study Guide: Aligned with the CISA Review Manual 2019 to help you audit, monitor, and assess information systems
3	ISO 27001 Handbook: Implementing and auditing an Information Security Management System in small and medium-sized businesses by Cees Van Der Wens Publisher Independently Published : .(2019 December 24)
MOOC/Certification Courses:	
1	edx course for Network Security: https://courses.edx.org/course_modes/choose/course-v1:RITx+CYBER504x+1T2023/
2	Udemy course: https://www.udemy.com/course/information-system-audit/
3	Udemy Course: https://www.udemy.com/course/certified-in-information-system-audit/

Question Paper Scheme:

University Examination Duration: 3 Hours

Note for Examiner: -

(I) Questions 1 and 4 are compulsory with no options.

(II) Internal options should be given in questions 2, 3, 5 and 6.

SECTION – I

Q.1 –8 Marks

Q.2 –11 Marks

Q.3 –11 Marks

SECTION - II

Q.4 –8 Marks

Q.5 –11 Marks

Q.6 –11 Marks

GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications	**Branch/Spec.**	Master of Computer Applications
Semester	III	**Version**	1.0.0.0
Effective from Academic Year	2021-22	**Effective for the batch Admitted in**	June 2020
Subject Code	P13A6SDP1	**Subject Name**	System Development Project - I

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	-	-	5	-	5	Theory	-	-	-
Hours	-	-	10	-	10	Practical	60	40	100

Objective:

- Student can study, analyses, design, implement and evaluate the information system.

Pre-requisites:

- Students have basic knowledge of system analysis and design with the implementation ability in any one technology.

Course Outcomes :

Name of CO	**Description**
CO1	Able to understand study and analysis of real world problem and solutions.
CO2	To design and implement software based on user requirements.
CO3	To evaluate and test the result after the implementation with maintenance.
CO4	To understand the working mechanism using system diagram.
CO5	Able to write the software documentation as per software development lifecycle.

	Mapping of CO and PO											
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	3	2	3	1	1	1	0	1	2	1
CO2	1	2	3	2	3	1	1	2	1	1	1	1
CO3	1	2	3	2	3	1	1	1	1	1	2	1
CO4	1	2	2	2	3	0	1	2	1	1	1	1
CO5	1	2	2	2	3	1	1	1	1	1	2	1

Content:		
	Rules for the Project: • The students can develop their project individually or in a group of two is preferable. • The project can be developed in any language or platform but it is required to get it approved by the head of the department. For the purpose of approval, they have to submit their project titles and proposals with the name of internal and external guides to the Head of Institution or Project Coordinator within 7 days of the commencement of the semester. In case, if the student proposal is rejected, the revised proposal in the same or other area, is required to submit and get it sanctioned within next 7 days. Failing to do this, he/she will not be qualified for this subject. • The students have to report to the internal guide for at least 3 times during the project lifespan with the progress report duly signed by guide. Moreover, they have to bring these reports with the final report at the time of external examination. • The Internal Guide/Project Coordinator of Department will give the internal marks. These marks may be given on the basis of regular reporting of the student to the internal guide, quality of project work and a report obtained from the external guide. • The external examiners appointed by the University will give the external marks on the basis of the heads like Presentation, Demonstration, Viva Voice, and Documentation etc. The distribution of the marks to different heads may be decided at the time of evaluation of the project but it is expected to have the same distribution.	

Practical Content:	
NA	
Text Books:	
1	NA
Reference Books:	
1	NA
Web References / MOOC / Certification Course	
1	NA
Question Paper Scheme:	
	NA