Sharad Institute of Technology College of Engineering

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Department: AI &DS Engineering   **Rev:** Course Structure/00/2021-22

Class: T.Y. B.Tech.   **Semester:** VI

Sr No	Course Code	Course Type	Course	Teaching Scheme				Evaluation Scheme					Credits
				L	T	P	Total Hrs.	CA1	CA2	MSE	ESE	Total	
1	AD601	PCC	Data Warehousing and Data Mining	3	-	-	3	10	10	30	50	100	3
2	AD602	PCC	Machine learning	3	-	-	3	10	10	30	50	100	3
3	AD603	PCC	Artificial Intelligence	3	-	-	3	10	10	30	50	100	3
4	AD604	PEC	Elective-III	2	-	-	2	10	10	30	50	100	2
5	OEXXX	OEC	Open Elective-II	3	-	-	3	10	10	30	50	100	3
6	AD605	PCC	Full Stack Development	1		2	3	15	15	-	20	50	2
6	AD606	PCC	Machine learning Lab	-	-	2	2	15	15	-	20	50	1
7	AD607	PEC	Elective-III lab	-	-	2	2	15	15	-	20	50	1
8	PRJ05	PROJ	Mega Project Phase –I (Seminar)	-	-	4	4	25	25	-	50	100	2
9	HMS07	HSMC	Aptitude Skills-IV	1	-	-	1	25	25	-	-	50	Audit
10	HMS08	HSMC	Language Skills-IV	-	-	2	2	25	25	-	-	50	1
11	IFT02	PROJ	Industrial Training/ Field Training	-	-	-	-	-	-	-	50	50	Audit
Total				16	-	12	28	170	170	150	410	900	21

Elective-III   AD604A- Web Technology

            AD604B- React JS and Node JS

            AD604C- Angular JS

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T.Y. (AI &DS Engineering) Semester VI

AD601	PCC	Data Warehousing and Data Mining	3-0-0	3 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 3hrs/week	CA 1: 10 Marks CA 2 : 10 Marks Mid Semester Exam: 30 Marks End Semester Exam: 50 Marks

Pre-requisites: Basic concepts of Database Management System

CO1	Apply data warehousing concepts and OLAP Operations.
CO2	Understand Data Mining concepts and knowledge discovery process.
CO3	Apply Knowledge to build association based rules technique for real world case studies.
CO4	Justify the usage of various Classification algorithms with prediction .
CO5	Justify the usage of various Clustering algorithms on provided huge data.
CO6	Understand the Data Warehouse designing process with issues.

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Course Contents:	Hours
Unit 1: Data Warehouse and OLAP Introduction to Data Ware House, Differences between operational database systems and data Ware House, Data Ware House characteristics, Data Warehouse Architecture and its components, Extraction-Transformation-Loading, Logical (Multi-dimensional), Data Modeling, OLAP: OLAP cube, OLAP Operations, OLAP Server Architecture-ROLAP, MOLAP and HOLAP.	[6]
Unit 2: Introduction to Data Mining Introduction, What is Data Mining, Definition, KDD, Challenges, Data Mining Tasks, Data Preprocessing- Data Cleaning, Missing Data, Dimensionality Reduction, Feature Subset Selection, Data Transformation; Measures of similarity and dissimilarity-Basics	[6]
Unit3: Association rule mining Association Rules: Problem Definition, Frequent item set generation, The APRIORI Principle, support and confidence measures, association rule generation; APRIORI algorithm, FP-Growth Algorithms.	[6]
Unit 4: Classification and Prediction Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Naïve-Bayes Classifier, and Classification Based on Concepts from Association Rule Mining, Prediction, Classifier Accuracy.	[6]
Unit5: Clustering Types of data, categorization of major clustering methods, K-means partitioning methods, hierarchical methods, density based methods, grid based methods, model based clustering methods, outlier analysis.	[6]
Unit6: Data Warehouse Design Design issues: Monitoring, Wrappers, Integration, Data cleaning, Data loading, Materialized views, Warehouse Maintenance. Conceptual data modeling, Data warehouse design using ER approach. Aspects of building data warehouses	[6]

Reference/Text books:-
- Data Mining-Concepts and Techniques- Jiawei Han, Micheline Kamber, Morgan Kaufmann Publishers, Elsevier, 2 Edition, 2006
- Fundamentals of Data Warehouses, M. Jarke, M. Lenzerini, Y. Vassiliou, P. Vassiliadis (ed.), Springer -Verlag, 1999
- Introduction to Data Mining, Pang-Ning Tan, Vipin Kumar, Michael Steinbanch, Pearson Education.
- Data Mining Techniques, Arun KPujari, 3rd Edition, Universities Press.

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T.Y. (AI &DS Engineering) Semester VI

AD602	PCC	Machine Learning	3-0-0	3 Credits

Teaching Scheme	Examination Scheme
Lecture: 3 hrs/week	CA I:10 Marks
	CA II:10 Marks
	Mid Semester Exam: 30Marks
	End Semester Exam: 50Marks

Pre-Requisites: Statistics, data science.

Course Outcomes: At the end of the course, students will be able to:

CO1	Make use of basics of machine learning to perform classification algorithms
CO2	Choose & differentiate different supervised learning algorithms for solving the problems
CO3	Solve the problems by making use of concepts of neural networks
CO4	Identify suitable hypothesis by choosing correct theory among different theories
CO5	Choose and apply clustering algorithm and identify its applicability in real life problems

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Course Content:

Unit 1: Introduction: Basic definitions, types of learning, hypothesis space and inductive bias,evaluation, cross-validation, Linear regression, Decision trees, over fitting.	[6]
Unit 2: Instance based learning, Feature reduction, Collaborative filtering based recommendation,Probability and Bayes learning.	[6]
Unit3: Logistic Regression, Support Vector Machine, Kernel function and Kernel SVM.	[6]
Unit 4: Neural network: Perceptron, multilayer network, back propagation, introduction to deep neuralnetwork.	[6]
Unit5: Computational learning theory, PAC learning model, Sample complexity, VC Dimension,Ensemble learning.	[6]
Unit6: Clustering: k-means, adaptive hierarchical clustering, Gaussian mixture model.	[6]

Reference/Text books:-

- Machine Learning, Tom Mitchell, First Edition, McGraw Hill, 1997.
- Introduction to Machine Learning, 2nd Edition, by Ethem Alpaydin

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AD603	PCC	Artificial Intelligence	3-0-0	3 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 3hrs/week	CA 1: 10 Marks CA 2 : 10 Marks Mid Semester Exam: 30 Marks End Semester Exam: 50 Marks

Pre-requisites: Data Base Management Systems, Design and Analysis of Algorithms

CO1	Illustrate Basics of AI using Components of AI
CO2	Demonstrate different searching strategies
CO3	Compare Results of various Constraint Satisfaction Problems
CO4	Model Adversarial Search Games, Optimal Decisions in Games
CO5	Illustrate Logical Agents with various examples
CO6	Demonstrate Quantifying Uncertainties by Bayes' Rule

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Course Contents:	Hours
Unit 1: Introduction, What Is AI?, The Foundations of Artificial Intelligence, The History of Artificial Intelligence, The State of the Art. Intelligent Agents Agents and Environments Good Behavior: The Concept of Rationality, The Nature of Environments, The Structure of Agents.	[6]
Unit-II: Problem-solving Solving Problems by Searching, Problem-Solving Agents, Example Problems, Searching for Solutions, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions.	[6]
Unit III: Constraint Satisfaction Problems Defining Constraint Satisfaction Problems, Constraint Propagation: Inference in CSPs,Backtracking Search for CSPs, Local Search for CSPs, The Structure of Problms.	[6]
Unit 4: Game Playing Adversarial Search Games, Optimal Decisions in Games, Alpha–Beta Pruning.	[6]
Unit 5: Logical Agents Knowledge-Based Agents, The Wumpus World, Logic, Propositional Logic: A Very Simple Logic, Propositional Theorem Proving, Effective Propositional Model Checking, Agents Based on Propositional Logic	[6]
Unit 6: Uncertainty Quantifying Uncertainty, Acting under Uncertainty, Basic Probability Notation, Inference Using Full Joint Distributions, Independence, Bayes' Rule and Its Use, Probabilistic Reasoning, Representing Knowledge in an Uncertain Domain,	[6]

Text Book: Peter Norvig, Artificial Intelligence: A Modern Approach, Third Edition
Reference Books Peter Norvig, Artificial Intelligence: A Modern Approach, Third Edition

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T.Y. (AI &DS Engineering) Semester VI

AD604A	PEC	Web Technology	2-0-0	2 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 2hrs/week	CA 1: 10 Marks CA 2 : 10 Marks Mid Semester Exam: 30 Marks End Semester Exam: 50 Marks

Pre-requisites: Data Base Management Systems, Design and Analysis of Algorithms

CO1	Use LAMP Stack for web applications
CO2	Use Tomcat Server for Servlets and JSPs
CO3	Write simple applications with Technologies like HTML, Javascript, AJAX, PHP, Servlets and JSPs
CO4	Connect to Database and get results
CO5	Parse XML files using Java (DOM and SAX parsers)

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Course Contents:	Hours
Introduction to WWW & HTML: Protocols and programs, secure application and development tools, the web browser, What is server, web servers, Logging users, dynamic IP **Web Design:** Web site design principles, planning the site and navigation, **Introduction to HTML :** The development process, Html tags and simple HTML forms, web site structure	[6]
Style sheets : Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS, CSS2	[6]
JavaScript : Client side scripting, What is JavaScript, How to develop JavaScript, simple JavaScript, variables, functions, conditions, loops and repetition	[6]
Advance script, JavaScript and objects, JavaScript own objects, the DOM and web browser environments, forms and validations	[6]
Web Servers: Introduction to web servers, installation and configuration. **Introduction to JSP:** The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design and JSP Environment, JSP Declarations, Directives, Expressions, Code Snippets, implicit objects, Requests, Using Cookies and Session for Session Tracking.	[6]
PHP : Starting to script on server side, Arrays, function and forms, advance PHP **Databases:** Basic command with PHP examples, Connection to server, creating database, selecting a database, listing database, listing table names creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP MyAdmin and database bugs.	[6]

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Reference Books

1. Steven Holzner, "HTML Black Book", Dremtech press.

2. Web Technologies, Black Book, Dreamtech Press

3. Web Applications: Concepts and Real World Design, Knuckles, Wiley-India

4. Internet and World Wide Web How to program, P.J. Deitel & H.M. Deitel Pearson

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T.Y. (AI &DS Engineering) Semester VI

AD604B	PEC	React JS	2-0-0	2 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 2hrs/week	CA 1: 10 Marks CA 2 : 10 Marks Mid Semester Exam: 30 Marks End Semester Exam: 50 Marks

Pre-Requisites: 'C' Language

Course Outcomes: At the end of the course, students will be able to:

CO1	Implement Angular for developing modern, complex, responsive and scalable web applications
CO2	Illustrate full architecture behind an React application
CO3	Construct single-page applications with modern JavaScript frameworks
CO4	Demonstrate concepts of advanced java script.
CO5	Illustrate component and lifecycle of react js
CO6	Design React event handling

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Course Contents:	Hours
Unit 1: Introduction to React : Basics of React, Need of React, React version historyReact 16 vs React 15, Basics of JSX, difference between javascript vs JSX virtual DOM One way binding, Setting up Development Environment, Basics of ES, Babel and npm	[6]
Unit 2: Components: Significance of component architecture, Types of components - 1. Functional.Class based, Pure vs impure functions Component Composition, Lifecycle of component, Presentational vs container component, Lists, Keys, Refs, Rendering Elements, Rendering Elements	[6]
Unit 3: state and props state and it significance, Read state and set state, Passing data to component using props, Validating props using prop Types, Supplying default values to props using default Props, Methods as Props, Unidirectional Data Flow	[6]
Unit 4: Event handling: Understanding React event system Understanding Synthetic event passing arguments to event handlers	[6]
Unit 5: NodeJs architecture ,Modules: Built-in and custom, Event loop, Asynchronous application , Testing node application	[6]

Text Book:

Artificial Intelligence: A Modern Approach, 4th US ed.by Stuart Russell and Peter Norvig

Reference Book: https://www.tutorialspoint.com/reactjs/reactjs_tutorial.pdf

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AD604C	PEC	Angular JS and Node JS	2-0-0	2 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 2hrs/week	CA 1: 10 Marks CA 2 : 10 Marks Mid Semester Exam: 30 Marks End Semester Exam: 50 Marks

Course Outcomes: At the end of the course, students will be able to:

CO1	Introducing Angular for developing modern, complex, responsive and scalable web applications ion
CO2	Understanding full architecture behind an Angular applicat
CO3	Understanding single-page applications with modern JavaScript frameworks
CO4	Understanding concepts of advanced web development.
CO5	Devise an architecture for solving the given problem.
CO6	Develop a web application using Angular and other back end technologies.

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Course Contents:	Hours
Unit 1: Angular JS Basics: What is Angular JS? ,Why Angular JS? ,Why MVC matters ,MVC-The Angular JS way Features of Angular JS ,Model-View-Controller Angular Expressions, How to use expressions, Angular vs JavaScript, Built-In Filters, Using Angular JS Filters Creating Custom Filters	[6]
Unit 2: Directives and Controllers: Introduction to Directives, Directive Lifecycle Binding controls to data, Matching directives Using Angular JS built-in directives Creating a custom directive Role of a Controller, Controllers & Modules Attaching Properties and functions to scope Nested Controllers, Using Filters in Controllers, Controllers in External Files	[6]
Unit 3: Angular JS Modules, Scope: Introduction to Angular JS Modules Bootstrapping Angular JS What is scope, Scope Lifecycle Scope Inheritance, Scope & Controllers Root scope, Scope Broadcasting Two-way data binding, Scope Inheritance Scope & Directives, $apply and $watch Scope Event.	[6]
Unit 4: Introduction to Node JS Introduction to Node JS Advantages of Node JS What is Node JS, Node.js Process Model Traditional Web Server Model, **Setup Development Environment, Node JS Modules**	[6]
Unit 5: Node Package Manager and Creating Web Server: What is NPM, Installing Packages Locally Installing package globally adding dependency in package json Updating packages, Creating Web Server Sending Requests, Handling http requests.	[6]
Unit 6: File System :Read File, Writing a File Opening a file, Deleting a file Writing a file asynchronously Other IO Operations.	[6]

Text Book: Learn AngularJS in 1 Day: Complete Angular JS Guide with Examples Krishna Rungta Learn AngularJS in 1 Day: Complete Angular JS Guide with Examples
Reference Book: Express - Node.js web application framework (expressjs.com)

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T.Y. (AI &DS Engineering) Semester VI

AD605	PCC	Full Stack Development	1-2-0	2 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 3hrs/week	CA 1: 10 Marks CA 2 : 10 Marks Mid Semester Exam: 30 Marks End Semester Exam: 50 Marks

Course Outcomes: At the end of the course, students will be able to:

CO1	Demonstrate the basics String and collection concepts in java.
CO2	Explain thread and its interface concepts
CO3	Outline operations on mongo db
CO4	Develop API with spring boot along with mongo db
CO5	Make use of basics of react JS Concepts
CO6	Design restful web services

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Course Contents:	Hours
Unit 1] String Concept **String Concept** • String Basics • String Methods ,String Buffer ,String Builder , Collection Framework - Collection Basics - Methods of Collection Interface List ,Array List Linked List ,Vector ,Set , Hash Set ,Tree Set ,Map, Hash Map ,Tree Map, Hash table	[2]
Unit 2] Thread Concept Lifecycle, Extends Thread, Implement Runnable Interface, Thread Priorities Thread Methods, Multithreading, Thread Synchronization	[2]
Unit 3 Mongo DB: Mongo DB Introduction, Mongo DB Features, Mongo DB Database ,Mongo DB Collection ,Spring Boot with Mongo DB Integration ,	[2]
Unit 4 Spring Boot with Mongo DB API Creation, Spring Boot with Mongo DB SignUp	SignIn Spring Boot with Mongo DB HRM Application	[2]
Unit 5 React JS Basics ,React JS Features ,React JS Setup and Hello World Application, React JS JSX ,React JS ES , Features ,React JS Component ,React JS State	[2]
Unit 6 Web Services :Restful Web Service	[2]

Text Book/ Reference Book:
1.Colin Ihrig, Full Stack JavaScript Development With MEAN: MongoDB, Express,
AngularJS, and Node.JS, SitePoint; 1st Edition.
2. https://www.w3schools.com/whatis/whatis_fullstack.asp.
3. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5: A Step-by-Step Guide to
4.Creating Dynamic Websites, O'Reilly Media; 3rd edition,
5. Callum Macrae, Learning from jQuery, O'Reilly Media.

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Experiment List

1) Implement various operations on strings.

2) Construct examples on Collections

3) Construct program on Map(Map, Hash Map ,Tree Map)

4) Design programs on threads

5) Install mongo db analyses its performance

6) Develop program for Spring Boot with Mongo DB Integration Support

   Vector Machine

7) Design programs on react JS that demonstrate basics.

8) Develop restful web services

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T.Y. (AI &DS Engineering) Semester VI

AD606	PCC	Machine learning Lab	0-2-0	1 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 2hrs/week	CA I:15Marks
	CAII:15Marks
	End Semester Exam:20

Course Outcomes: At the end of the course, students will be able to:

CO1	Make use of basics of machine learning to perform classification algorithms
CO2	Choose & differentiate different supervised learning algorithms for solving the problems
CO3	Solve the problems by making use of concepts of neural networks
CO4	Identify suitable hypothesis by choosing correct theory among different theories
CO5	Choose and apply clustering algorithm and identify its applicability in real life problems

Experiment List

1) Implementation of Linear Regression

2) Implementation of Decision Tree

3) Implementation of K nearest neighbor

4) Study experiment on Recommendation System

5) Implementation of Bayes Theorem

6) Implementation of Support Vector Machine

7) Implementation of Logistic Regression

8) Implementation of Back propagation

9) Study experiment on Ensemble Learning

10) Implementation of K means Clustering

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AD604A	PCC	Web Technology Lab		0-2-0	1 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 2hrs/week Tutorial	CAI:15Marks CA II:15 Marks End Semester Exam: 20Marks

Course Outcomes: At the end of the course, students will be able to:

CO1	Use LAMP Stack for web applications
CO2	Use Tomcat Server for Servlets and JSPs
CO3	Write simple applications with Technologies like HTML, Javascript, AJAX, PHP, Servlets and JSPs
CO4	Connect to Database and get results
CO5	Parse XML files using Java (DOM and SAX parsers)

Experiment List

1. Design the static web pages required for an online book store web site.
2. Write JavaScript to validate the fields of the Registration page
3. Develop and demonstrate the usage of inline, internal and external style sheet using CSS
4. Develop and demonstrate JavaScript with POP-UP boxes and functions .5) Write an HTML page that contains a selection box with a list of 5 countries. When the User selects a country, its capital should be printed next in the list. Add CSS to customize The properties of the font of the capital (color,bold and font size).
5. Write an HTML page including any required JavaScript that takes a number from text
6. Field in the range of 0 to 999 and shows it in words. It should not accept four and above
7. Digits, alphabets and special characters.
8. Develop and demonstrate PHP Script for the following problems:
9. Write a PHP Script to find out the Sum of the Individual Digits.
10. Write a PHP Script to check whether the given number is Palindrome or not

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AD604B	PCC	React JS	0-2-0	1 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 2hrs/week	CA I:15 Marks
	CA II:15 Marks
	End Semester Exam: 20Marks

Course Outcomes: At the end of the course, students will be able to:

CO1	Build Search filter in React
CO2	Design Simple counter exercise
CO3	Build Accordion in React Image Slider using React JS
CO4	Design Simple Login form in React
CO5	Demonstrate Print data from REST API
CO6	Design Multi-Page navigation using React Router

Course Contents:

1 Build Search filter in React

2. Simple counter exercise

3. Display a list in React

4. Build Accordion in React   Image Slider using React JS

5.Simple Login form in React

6 .Print data from REST API

7.Context API in React Components

8 .Multi-Page navigation using React Router

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T.Y. (AI &DS Engineering) Semester VI

AD604C	PCC	Angular JS	0-2-0	1 Credits

Teaching Scheme:	Examination Scheme:
Lecture: 2hrs/week	CA I:15 Marks CA II:15 Marks End Semester Exam: 20Marks

Course Outcomes: At the end of the course, students will be able to:

CO1	Design number expressions in Angularjs
CO2	Develop Angularjs various string expressions
CO3	Develop Angularjs json object expression
CO4	Design Angular Directories
CO5	Demonstrate Filters in angularjs, angularjs filter example in controller
CO6	Demonstrate Angularjs filter orderby example, Angularjs filter orderby descending / ascending

Course Contents:

1.Write a program to Use number expressions in angularjs.

2. Implement Angularjs string expressions for concatenation, AngularJS string expressions for string comparison

3.Implement Angularjs json object expression

4.Implement Angularjs array expression to check if array contains data, Angularjs expression to check if array empty

5.ImplementDirectives in angularjs with example

6. Program To demonstrate Filters in angularjs, angularjs filter example in controller

7.Program to demonstrate Angularjs format date using date filter , Angularjs change date format with date filter example

8.Program to demonstrate Angular filter order by example, Angularjs filter orderby descending / ascending

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Mega Project Phase-I

PRJ05	PROJ	Mega Project Phase-I	0-0-4	2 Credits

Teaching Scheme:	Examination Scheme:
Lecture: - Practical: 4 hrs/week	CA 1: 25 Marks CA 2: 25 Marks End Semester Examination: 50 Marks

Pre-Requisites: All courses

Course Outcomes: At the end of the course, students will be able to:

CO1	State the exact title of the project and problem definition.
CO2	Explain the motivation, objectives and scope of the project.
CO3	Review the literature related to the selected topic of the project.
CO4	Design the mechanism, components of the system and prepare detailed drawings.
CO5	Evaluate the cost considering different materials/manufacturing processes.

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The students in a group of not more than FOUR will work under the guidance of the faculty member on the project work undertaken by them. The completion of work, the submission of the report and assessment should be done at the end of VII Sem.

The project work should consist of any of the following or appropriate combination:

1. A comprehensive and up-to-date survey of literature related to study of a phenomenon or product.
2. Design of any equipment and / or its fabrication and testing.
3. Critical Analysis of any design or process for optimizing the same.
4. Experimental verification of principles used in applications related to various specializations related to Mechanical Engineering.
5. Software development for particular applications.
6. A combination of the above.

It is expected that the students should complete at least 50% of the total project work in VI Semester. The objective is to prepare the students to examine any design or process or phenomenon from all angles, to encourage the process of independent thinking and working and to expose them to industry. The students may preferably select the project works from their opted elective subjects. The students should submit the report in a prescribed format, before the end of VII semester. The report shall be comprehensive and presented typed on A4 size sheets and bound. Number of copies to be submitted is number of students plus two. The assessment would be carried out by the panel of examiners for both, term work and oral examinations.

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T.Y. (AI &DS Engineering) **Semester VI**

HMS07	HSMC		Aptitude Skills-IV	1-0-0	Audit

Teaching Scheme	Examination Scheme
Lecture:1hr/week	CA 1:25 Marks CA II:25 Marks

Pre-Requisites: Communication Skills, Aptitude Skills I, II

Course Outcomes: At the end of the course students will be able to:

CO1	Solve the problems on system of equation.
CO2	Solve the problems on seating arrangement.
CO3	Solve the logical reasoning problems.
CO4	Solve the critical analysis problems.
CO5	Solve the problems of Data interpretation
CO6	Solve the problems mensuration's.

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Course Contents:

Unit		[2]
Unit 1: System of equations		[2]
quadratic equations, Surds and indices, solution of equations, Ages		
Unit 2: Seating Arrangements		[2]
Linear seating Arrangement, Circular seating arrangement, Complex seating arrangement,		
Unit 3: Logical Reasoning		[2]
Numerical based on sense of direction, Blood relations, Odd man Out		
Unit 4: Critical analysis		[2]
Clocks and Calendar based problems, Crypt arithmetic, heights and distances		
Unit 5: Data Interpretation		[2]
Table form, Bar form, Line for Pi chart form		
Unit 6: Mensuration's		[2]
2D mensuration's and 3D mensuration's, venn diagram		

Text Books:
1. RS Aggarwal "A Modern Approach to Verbal & Non-Verbal Reasoning ",S. Chand Publisher; 2016 edition
2. RS Aggarwal, " Quantitative Aptitude for Competitive Examinations ", S. Chand Publisher; 2016 edition
3. Raymond Murphy "Essential English Grammar with Answers", Murphy

Reference Books:
1. Rao N,D,V,Prasada, Wren & Martin High School English Grammar and Composition Book, S Chand Publishing, 2017
2. Murphy, Intermediate English Grammar with Answers, Cambridge University Press;Second edition
3. RS Aggarwal, Objective General English, S. Chand Publisher; 2016 edition

Head of Department,
Artificial Intelligence & Data Science
SHARAD INSTITUTE OF TECHNOLOGY
COLLEGE OF ENGINEERING,
Yadrav (Ichalkaranji) Dist. Kolhapur.

T.Y. (AI &DS Engineering) Semester VI

HMS08	HSMC	Language Skills-IV	0-0-2	1 Credit

Teaching Scheme	Examination Scheme
Practical:2 hrs/week	CA I:25 Marks CA II:25 Marks

Pre-Requisites: Language Skills I, II

Course Outcomes: At the end of the course students will be able to:

CO1	Make use of functions in python programming.
CO2	Make use of python collections.
CO3	Elaborate classes and its objects in python.
CO4	Elaborate file & its handling functions.

Course Contents:

Unit 1: Function Why we Need Function ,Categories of Functions-Predefined ,User-define ,Parts of Functions Arguments, Return Value ,Definition of Function ,Function Calling ,Lambda(Introduction)	[6]
Unit 2 :Python Collections List, tuple, set, dictionary,constructor ,check, change ,remove item ,list comprehension ,Sort ,loop through ,joining	[6]
Unit 4: Class and Object OOP Characteristics ,creating class ,__init__() method, creating Object ,accessing methods and variables of class ,constructor and destructor ,inheritance ,super(),function overloading	[6]

Head of Department,
Artificial Intelligence & Data Science
SHARAD INSTITUTE OF TECHNOLOGY
COLLEGE OF ENGINEERING,
Yadrav (Ichalkaranji) Dist. Kolhapur.

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	[6]
Unit 4: File handling	
Path & Directory Settings-Absolute,Relative,File Modes(r,w,a,etc),Open & Close file Reading File using Python--Read Line By Line readline() function,Read Word,Read character(offset),Writing Text File using Python--Write Mode,Append Mode, Exception handling.	

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Internship/Field Training

IFT02	PROJ	Internship/Field Training	0-0-0	Audit

Teaching Scheme:	Examination Scheme:
Lecture: -	
Practical:	End Semester Examination : 50 Marks

Pre-Requisites: Basic knowledge of all courses

Course Outcomes: At the end of the course, students will be able to:

Course Description:-Internship / Training is educational and career development opportunity, providing practical experience in a field or discipline. At the end of the **Fourth and Fifth semester,** every student should undergo practical training in an industry / professional organization / Research laboratory with the prior approval of the HoD/TPO/Principal of the college and submit the report along with the completion certification from the Industry/ Organization. The report will be evaluated during the **Sixth** semester by the department.

Course Learning Outcomes:-

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

1. Verify the Technical knowledge in real industrial situations.

2. Develop interpersonal communication skills.

3. Discuss activities and functions of the industry in which the Internship/training has done.

4. Write the technical report.

Prerequisite: - Basics of Mechanical Engineering, Good written and Oral Communication.

Guideline for Students:-

1. Arrive at work as per schedule, ready to work and stay for the agreed upon time.

2. Present yourself in a professional manner at all times, including being appropriately dressed at workplace.

3. Communicate any concerns with your supervisor and the internship/Training coordinator in a timely manner and respectfully.

4. Demonstrate enthusiasm and interest in what you are doing, ask questions and take the initiative as appropriate.

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5. Complete and submit assigned tasks by designated timelines. Meet all deadlines.

Student's Diary/ Daily Log

The main purpose of writing daily diary is to cultivate the habit of documenting and to encourage the students to search for details. It develops the students' thought process and reasoning abilities. The students should record in the daily training diary the day to day account of the observations, impressions, information gathered and suggestions given, if any. It should contain the sketches & drawings related to the observations made by the students.

The daily training diary should be signed after every day by the supervisor/ in charge of the section where the student has been working. The diary should also be shown to the Faculty Mentor.

Student's Diary and Internship Report should be submitted by the students along with attendance record and an evaluation sheet duly signed and stamped by the industry to the SITCOE immediately after the completion of the training. It will be evaluated on the basis of the following criteria:

- Regularity in maintenance of the diary.
- Adequacy & quality of information recorded.
- Drawings, sketches and data recorded.
- Thought process and recording techniques used.
- Organization of the information.

Internship Report

After completing the internship, the student should prepare a comprehensive report to indicate what he/she has observed and learned in the training period. Daily diary will also help to a great extent in writing the industrial report since much of the information has already been incorporated by the student into the daily diary. The competent authority should sign the training report. The Internship report should be evaluated on the basis of following criteria:

i.   Originality.

ii.   Adequacy and purposeful write-up.

iii. Organization, format, drawings, sketches, style, language etc.

iv.   Variety and relevance of learning experience.

v.   Practical applications, relationships with basic theory and concepts taught in the course.

Evaluation of Internship/Training