B.TECH. INFORMATION TECHNOLOGY
REGULATIONS – 2021 – AUTONOMOUS
CHOICE BASED CREDIT SYSTEM
VII TO VIII SEMESTERS CURRICULUM

Vision of the Department

To make the department of Information Technology the unique of its kind in the field of Research and Development activities in this part of world

Mission of the Department

To impart highly innovative and technical knowledge in the field of Information Technology to the urban and unreachable rural student folks through Total Quality Education.

Program Educational Objectives (PEOs)

PEO1: Technical Knowledge: Graduates will be able to identify, analyze and create solutions for real life, industrial and societal needs by applying the principles and practices of Information Technology.

PEO2: Teamwork & Ethics: Graduates will be able to collaborate effectively and ethically in a multi-disciplinary team as a member &/ as a leader.

PEO3: Lifelong Learning: Graduates will be able to adopt the contemporary technologies in the field of Information Technology to provide solutions for challenging environments.

PROGRAM OUTCOMES:

After going through the four years of study, the Computer Science and Engineering graduates will have the ability to

POs	Graduate Attribute	Programme Outcome
1	Engineering knowledge	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2	Problem analysis	Identify, formulate, review research literature, and analyze

		complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3	Design/Development of solutions	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4	Conduct investigations of complex problems	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions
5	Modern tool usage	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
6	The engineer and society	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

7	Environment and sustainability	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8	Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9	Individual and team work	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10	Communication	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11	Project management and finance	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12	Life-long learning	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Objectives (PSOs)

PSO 1: Demonstrate technical and interpersonal skills to design and develop IT enabled solutions to meet the real time industrial and societal needs

PSO2: Exhibit an ability to adapt to the evolutionary changes in computing

SEMESTER VII

S.NO.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
THEORY								
1	GE2401	Universal Human Values and Ethics	HS	2	2	0	0	2
2		Management Elective	HS	3	3	0	0	3
3	OE2	Open Elective II*	OE	3	3	0	0	3
4	OE3	Open Elective III*	OE	3	3	0	0	3
5	OE4	Open Elective IV*	OE	3	3	0	0	3
PRACTICALS								
6	IT2401	Project Development	EM	3	0	0	3	1
			TOTAL	**17**	**14**	**0**	**3**	**15**

* Course from the Curriculum of other UG programmes

SEMESTER VIII

S.NO.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
PRACTICALS								
1	IT2451	Project Work	EM	20	0	0	20	10
			TOTAL	**20**	**0**	**0**	**20**	**10**

OPEN ELECTIVES

OPEN ELECTIVES II

(Offered to departments except CSE, ADS, IT and ECE)

S.NO.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1	OIT701	Augmented Reality and Virtual Reality	OE	3	3	0	0	3

OPEN ELECTIVES III

S.NO.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1	OIT702	Principles of Database Management System	OE	3	3	0	0	3
2	OIT703	Problem Solving Techniques	OE	3	3	0	0	3

OPEN ELECTIVES IV

S.NO.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1	OIT704	Principles of Programming Language	OE	3	3	0	0	3
2	OIT705	Web Design Basics	OE	3	3	0	0	3

MANAGEMENT ELECTIVES

S.NO.	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1	GE2491	Principles of Management	HS	3	3	0	0	3
2	GE2492	Total Quality Management	HS	3	3	0	0	3

Course Code	Course Name	L	T	P	C
GE2401	UNIVERSAL HUMAN VALUES AND ETHICS	2	0	0	2

Category: Science and Humanities

Preamble

This course is intended to provide much-needed orientational input in value education to the young, enquiring minds.

b. Course Outcome

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

CO. No.	Course Outcome	Knowledge Level
CO1	Define the essential complementarily between 'VALUES' and 'SKILLS' for ensuring happiness and prosperity.	K2
CO2	Explore Human being as the Co-existence of the Self and the Body.	K3
CO3	Develop holistic perspective towards value-based living in a natural way.	K3
CO4	Explain the interconnectedness of the four orders of Nature and existence.	K2
CO5	Comprehend the ethics of human values, Humanistic education and constitution, strategies of value-based life and profession.	K2

c. Course Syllabus   **Total : 30 Periods**

INTRODUCTION TO VALUE EDUCATION   **6**

Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education), Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity - the Basic Human Aspirations, Happiness and Prosperity - Current Scenario, Method to Fulfil the Basic Human Aspirations.

HARMONY IN THE HUMAN BEING   **6**

Understanding Human being as the Co-existence of the Self and the Body, Distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health.

HARMONY IN THE FAMILY AND SOCIETY   **6**

Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to-Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human Order.

HARMONY IN THE NATURE/EXISTENCE 6

Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence.

IMPLICATIONS OF THE HOLISTIC UNDERSTANDING - A LOOK AT PROFESSIONAL ETHICS 6

Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order, Competence in Professional Ethics, Holistic Technologies, Production Systems and Management Models-Typical Case Studies, Strategies for Transition towards Value-based Life and Profession.

d. Activities

Practice Sessions - Introduction to Value Education

1 Sharing about Oneself

2 Exploring Human Consciousness

3 Exploring Natural Acceptance

Practice Sessions– Harmony in the Human Being

4 Exploring the difference of Needs of Self and Body

5 Exploring Sources of Imagination in the Self

6 Exploring Harmony of Self with the Body

Practice Sessions– Harmony in the Family and Society

7 Exploring the Feeling of Trust

8 Exploring the Feeling of Respect

9 Exploring Systems to fulfil Human Goal

Practice Sessions– Harmony in the Nature (Existence)

10 Exploring the Four Orders of Nature

11 Exploring Co-existence in Existence

Practice Sessions– Implications of the Holistic Understanding – a Look at Professional Ethics

12 Exploring Ethical Human Conduct

13 Exploring Humanistic Models in Education

14 Exploring Steps of Transition towards Universal Human Order

e. Learning Resources

https://fdp-si.aicte-india.org/UHV-II_Lectures_PPTs.php

https://fdp-si.aicte-india.org/UHV-II%20Practice%20Sessions.php

Text Books

1. R R Gaur, R Asthana, G P Bagaria., *The Textbook A Foundation Course in Human Values and Professional Ethics,* 2nd Revised Edition, Excel Books, New Delhi, 2019.

2. R R Gaur, R Asthana, G P Bagaria., *The Teacher's Manual A Foundation Course in Human Values and Professional Ethics,* 2nd Revised Edition, Excel Books, New Delhi,2019.

Reference Books

1. EkParichaya, A Nagaraj., *JeevanVidya*, JeevanVidyaPrakashan, Amarkantak, 1999.

2. A.N. Tripathi ., *Human Values*, New Age Intl. Publishers, New Delhi, 2004.

3. Mohandas Karamchand Gandhi ., *The Story of My Experiments with Truth*. 2009.

4. J C Kumarappa., *Economy of Permanence.*2017.

Course Code	Course Name	L	T	P	C
IT2401	**PROJECT DEVELOPMENT**	0	0	3	1

Category: Employability Enhancement Course

a.   Preamble

This course provides students with the resources and support they need to design, develop, and implement innovative projects. It helps students to develop the skills and knowledge they need to succeed in the engineering profession. It encourages students to think creatively and solve problems independently.

b. Course Outcome

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

CO. No.	Course Outcome	Knowledge Level
CO1	Identify and define key concepts related to project development, such as project scope, project management, and project planning.	K3
CO2	Analyze and interpret project requirements and specifications.	K4
CO3	Apply their knowledge of software architecture, design patterns, and coding to develop a software application that meets specific project requirement.	K3
CO4	Evaluate the factors contributing to the success or failure of the software development project.	K3
CO5	Document the work done and present the work in a reputed conference / journal.	K3

TOTAL: 45 PERIODS

The students will be working in single or group of 2 or 3 on a scientific problem approved by the Head of the Department under the guidance of the faculty member and prepare a comprehensive report after completing the work to the satisfaction of the supervisor. The progress of the project is evaluated based on a minimum of three reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The project work is evaluated based on project evaluation process as recommended in the respective regulation.

Course Code	Course Name	L	T	P	C
IT2451	PROJECT WORK	0	0	20	10

Category: Employability Enhancement Course

a. Preamble

This course nurtures the capacity to unravel a particular predicament, commencing from pinpointing it and delving into the realm of literature, all the way to achieving a triumphant resolution. Its purpose lies in instructing students on composing comprehensive project reports and bracing them for evaluations and vivacious oral examinations.

b. Course Outcome

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

CO. No.	Course Outcome	Knowledge Level
CO1	Identify complex engineering dilemmas and societal demands to suggest innovative solutions.	K3
CO2	Develop the capacity for critical thinking and the ability to make analytical decisions in order to discover solutions by crafting appropriate methodologies.	K3
CO3	Analyze diverse algorithmic approaches employing cutting-edge technologies in order to furnish inventive software resolutions.	K4
CO4	Create innovative solutions for the problems that have been identified.	K3
CO5	Document the work done and present the work in a reputed conference / journal.	K3

TOTAL: 300 PERIODS

The students will be working in single or group of 2 on a scientific problem approved by the Head of the Department under the guidance of the faculty member and prepare a comprehensive report after completing the work to the satisfaction of the supervisor. The progress of the project is evaluated based on a minimum of three reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The project work is evaluated based on project evaluation process as recommended in the respective regulation. The student can also be permitted to work on the project in Industry/Research organization with the due permission from the Head of the Department. The Engineer/Scientist from Industry/ Research Organization can jointly act as supervisor in addition to the Project Supervisor.

Course Code	Course Name	L	T	P	C
OIT701	**AUGMENTED REALITY AND VIRTUAL REALITY**	**3**	**0**	**0**	**3**

Category: Open Elective Course

a. Preamble

This course enables the students to get knowledge on augmented reality. This helps the students to understand the fundamental aspects and framework of virtual reality. This course makes the students to obtain knowledge on modeling of VR systems. This course benefits the students to explore VR programming and human factors. This course familiarizes the students to learn engineering applications using virtual reality.

b. Course Outcome (Theory)

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

CO. No.	Course Outcome	Knowledge Level
CO1	Illustrate the working principles and techniques of Augmented Reality.	K2
CO2	Demonstrate the different input and output devices used in virtual reality.	K2
CO3	Outline the various modeling of VR systems.	K2
CO4	Summarize the Human factors and Virtual Reality Programming.	K2
CO5	Extend the VR applications in different domains.	K2

c. Course Syllabus   Total : 45 Periods

AUGMENTED REALITY   9

Introduction - Taxonomy, Technology, Features of Augmented Reality - AR Vs VR, AR- Systems and Functionality - Visualization Techniques for Augmented Reality - Marker-Less Tracking for Augmented Reality - Enhancing Interactivity in AR Environments - Evaluating AR Systems - Mobile Augmented Reality - Architectures for Mobile Augmented Reality.

INTRODUCTION TO VIRTUAL REALITY   9

Definition - Three I's of Virtual Reality - Early commercial VR technology - The five classic components of a VR system - Input devices: Three-Dimensional position trackers - Tracker performance parameters - Ultrasonic trackers - Optical trackers -

Navigation and Manipulation Interfaces - Gesture interfaces. Output devices: Graphics displays - Large-volume displays - Sound displays – Human Auditory System.

MODELING OF VR SYSTEMS **9**

Modeling - Kinematics Modeling: Transformation Matrices - Object Position - Transformation Invariants - Object Hierarchies - Viewing the 3D World - Physical Modeling: Collision Detection - Surface Deformation - Force Computation - Force Smoothing and Mapping - Behavior Modeling.

VR PROGRAMMING AND HUMAN FACTORS **9**

VR Programming - Toolkits and Scene Graphs - World ToolKit - Human factors in VR: Methodology and Terminology - User performance studies - VR health and safety issues.

APPLICATIONS OF VR **9**

Medical Applications of VR - Education, Arts and Entertainment - Military VR Applications - Emerging Applications of VR - VR Applications in Manufacturing - Applications of VR in Robotics - VR in Business - VR in Entertainment - VR in Education.

d. Activity

- Quiz

e. Learning Resources

Text Books

1. C. Burdea & Philippe Coiffet, 2008, *Virtual Reality Technology*, 2nd Edition, Gregory, John Wiley & Sons, Inc.
2. Borko Furht , *Handbook of Augmented Reality*, Springer, 2011.

Reference Books

1. Alan B. Craig, 2013, *Understanding Augmented Reality, Concepts and Applications*, Morgan Kaufmann, Elsevier.
2. Dieter Schmalstieg & Tobias Hollerer, 2016, *Augmented Reality: Principles and Practice (Usability)*, by Pearson Education (US), Addison-Wesley Educational Publishers Inc, New Jersey, United States.
3. Jason Jerald. 2015, *The VR Book: Human-Centred Design for Virtual Reality, Association for Computing Machinery and Morgan & Claypool*, New York, USA.

Course Code	Course Name	L	T	P	C
OIT702	**PRINCIPLES OF DATABASE MANAGEMENT SYSTEM**	3	0	0	3

Category: Open Elective Course

a.   **Preamble**

This course enables the students to understand the fundamentals of data models and to represent a database system using ER diagrams. This helps students to study SQL and relational database design. This course makes the students to understand the internal storage structures using different file and indexing techniques which will help in physical DB design. This course makes the students to understand the fundamental concepts of transaction processing concurrency control techniques and recovery procedures. This course familiarizes the students to have an introductory knowledge about the Storage and Query processing Techniques.

b.   **Course Outcome (Theory)**

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

CO. No.	Course Outcome	Knowledge Level
CO1	Construct SQL Queries and relational algebra expressions.	K2
CO2	Draw E-R diagrams and normalize databases for real time applications.	K2
CO3	Demonstrate the need for concurrency control in a multi-user database environment.	K2
CO4	Illustrate the importance of storing and organization of records.	K2
CO5	Infer the various indexing and hashing techniques, algorithms for query processing and optimization.	K2

c. **Course Syllabus**   **Total : 45 Periods**

RELATIONAL DATABASES   **9**

Purpose of Database System - Views of data - Data Models - Database System Architecture – Introduction to relational databases - Relational Model - Keys - Relational Algebra - SQL fundamentals - Advanced SQL features - Embedded SQL - Dynamic SQL.

DATABASE DESIGN   9

Entity-Relationship model - E-R Diagrams - Enhanced-ER Model - ER-to-Relational Mapping - Functional Dependencies - Non-loss Decomposition - First, Second, Third Normal Forms, Dependency Preservation - Boyce/Codd Normal Form - Multi-valued Dependencies and Fourth Normal Form.

TRANSACTIONS   9

Transaction Concepts - ACID Properties - Schedules - Serializability - Transaction support in SQL - Need for Concurrency - Concurrency control - Two Phase Locking - Timestamp - Multiversion - Validation and Snapshot isolation - Multiple Granularity locking - Deadlock Handling - Recovery Concepts - Recovery based on deferred and immediate update - Shadow paging - ARIES Algorithm .

ORGANIZATION OF RECORDS   7

RAID - File Organization - Organization of Records in Files - Data dictionary Storage - Column Oriented Storage.

INDEXING AND HASHING   11

Indexing and Hashing - Ordered Indices - Static Hashing - Dynamic Hashing - Query Processing Overview - Algorithms for Selection, Sorting and join operations - Query optimization using Heuristics - Cost Estimation.

d. Activity

- Quiz

e. **Learning Resources**

Text Books

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, *Database System Concepts*, Seventh Edition, McGraw Hill, 2020.
2. Ramez Elmasri, Shamkant B. Navathe, *Fundamentals of Database Systems*, Seventh Edition, Pearson Education, 2017

Reference Book

1. C.J.Date, A.Kannan, S.Swamynathan, *An Introduction to Database Systems*, Eighth Edition, Pearson Education, 2006.

Course Code	Course Name	L	T	P	C
OIT703	**PROBLEM SOLVING TECHNIQUES**	3	0	0	3

Category: Open Elective Course

a. Preamble

This course enables the students to understand the basics of Problem Solving Techniques. This course helps the students to represent the solution in algorithm or as a flowchart. This subject encounters various challenges from debugging code to designing complex algorithms by using various approaches.

b. Course Outcome (Theory)

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

CO. No.	Course Outcome	Knowledge Level
CO1	Discuss the problems statement by writing an efficient algorithm and representing it diagrammatically.	K2
CO2	Illustrate the need of basics of programming to solve problems.	K2
CO3	Demonstrate the usage of arrays to crack the problems.	K2
CO4	Discuss the different ways to handle sorting problems.	K2
CO5	Infer the solution for searching problems.	K2

c. Course Syllabus   **Total : 45 Periods**

INTRODUCTION   **9**

Problem Specification, input-output analysis, Algorithms - Design and Analysis, Implementation of Algorithms, Flowcharts, Programming - High level languages: Language translators, syntax, semantics, compilation and execution, Debugging and Program verification

PROBLEM SOLVING – LEVEL I   **9**

Introduction: The Role of Algorithms in Computing, Algorithms as a technology, Analyzing algorithms, Designing algorithms, Growth of Functions, Asymptotic notation, Standard notations and common functions.

Fundamental Algorithms: Exchanging the values of two variables, Counting, Summation of a set of numbers, Factorial Computation, Generating of the Fibonacci sequence, Reversing the digits of an integer, Character to number conversion.

PROBLEM SOLVING – LEVEL II 9

Factoring Methods: Finding the square root of a number, the smallest Divisor of an integer, the greatest common divisor of two integers, computing the prime factors of an integer, generation of pseudo random numbers, raising a number to a large power.

Array Techniques: Array order Reversal, Array counting or Histogramming, Finding the maximum number in a set, removal of duplicates from an ordered array, partitioning an array, Finding the kth smallest element, multiplication of two matrices.

SORTING 9

Merging: the two-way merge. Sorting: Sorting by selection, sorting by exchange, sorting by insertion, sorting by diminishing increment, sorting by partitioning.

SEARCHING 9

Searching: binary search, hash search. Text processing and Pattern searching: text line length adjustment, keyword searching in text, text line editing, linear pattern search.

d. Activity

- Quiz

e. Learning Resources

Text Books

1. Anany Levitin, *Introduction to the Design and Analysis of Algorithms*, 3rd edition, Pearson Education, 2012.

2. Reema Thareja, *Programming In C*, Oxford University Press, 2015.

3. Reema Thareja, *Python Programming Using Problem Solving Approach*, Oxford University Press, 2015.

Reference Books

1. Thomas H Cormen, Charles E Leiserson, Ronald L Rivest & Clifford Stein, *Introduction to Algorithms*, 3rd edition, PHI Learning Private Limited, 2012

2. Alfred V Aho, John E Hopcroft & Jeffrey D Ullman, *Data Structures and Algorithms*, Pearson Education, Reprint, 2006.

Course Code	Course Name	L	T	P	C
OIT704	**PRINCIPLES OF PROGRAMMING LANGUAGE**	**3**	**0**	**0**	**3**

Category: Open Elective Course

a. Preamble

This course enables the student to understand the fundamentals of programming languages. This course summarizes the programming paradigm in detail. The programming languages like Procedural, Object Oriented, are discussed in elaborated thereby students can understand the basics of JAVA, Python and R programming.

b. Course Outcome (Theory)

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

CO. No.	Course Outcome	Knowledge Level
CO1	Summarize the programming language fundaments along with syntax and semantics.	K2
CO2	Outline the various concepts of procedural language.	K2
CO3	Interpret the object oriented programming concepts for JAVA programming.	K2
CO4	Demonstrate the Python programming for analyzing the data.	K2
CO5	Discuss the basic concepts of R programming.	K2

c. Course Syllabus **Total : 45 Periods**

INTRODUCTION **9**

Overview of Programming Language – Language Evaluation Criteria – Language Categories – Syntax and Semantics.

PROCEDURAL PROGRAMMING LANGUAGE **9**

Names, Binding and Scope – Data types, Abstract Data Types (ADT) – Type Conversion - Fundamentals of Sub-programs – Design Issues of Subprograms – Local Referencing Environments - Parameter Passing Methods - Overloaded Sub-programs - Generic Sub-programs.

OBJECT ORIENTED PROGRAMMING LANGUAGE **9**

Introduction – Object Oriented Programming Concepts – Design Issues – Support for OOPs in JAVA – Implementation of Object Oriented Constructs.

SCRIPTING LANGUAGE **9**

Introduction to NumPy - Operations on NumPy Arrays - Introduction to Pandas - Arithmetic, Function Application and Mapping with Pandas - Managing, Indexing and Plotting.

R PROGRAMMING   **9**

Reading and Getting Data into R - Viewing Named Objects - Types of Data Items - Manipulating Objects - Viewing Objects - Forms of Data Objects - Descriptive Statistics and Tabulation - Data Distribution.

d. Activity

- Quiz

e. Learning Resources

Text Books

1. Robert W. Sebesta, *Concepts of Programming Languages*, Pearson Education, Pearson Publications, 12th Edition, 2018.

2. Curtis Miller, *Hands-On Data Analysis with NumPy and Panda,* Packt Publishing, 2018, ISBN: 9781789530797.

3. Gardener, M., *Beginning R: The Statistical Programming Language*, Wiley Publications (Wrox), 2013, ISBN: 978-1-118-22616-2.

Reference Books

1. D. A. Watt, *Programming Language Design Concepts*, Wiley India Edition, 2012.

2. A.B. Tucker, R.E. Noonan, *Programming Languages*, TMH, 2012.

Course Code	Course Name	L	T	P	C
OIT705	**WEB DESIGN BASICS**	**3**	**0**	**0**	**3**

Category: Open Elective Course

a. Preamble

This course enables the student to understand the basics terminologies of website and webpage. This helps the students to develop a website using HTML and CSS. This also enriches the student's knowledge to carry-out the client-side validation. This course demonstrates the website creation using WordPress.

b. Course Outcome

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

CO. No.	Course Outcome	Knowledge Level
CO1	Outline the fundamental concepts of website.	K2
CO2	Demonstrate the basic HTML tags for designing the website.	K2
CO3	Infer the HTML 5 tags and CSS properties to format the web page.	K2
CO4	Summarize the programming constructs in JavaScript.	K2
CO5	Elaborate the steps to create website using WordPress.	K2

c. Course Syllabus   **Total : 45 Periods**

WEBSITE BASICS   **9**

Internet Overview - Basic Internet Protocols - HTTP Request Message - HTTP Response Message - Web Clients - Web Servers.

HTML   **9**

Formatting text - Lists and backgrounds - Hyperlinks - Menu Creation - Image Map - Creating and Formatting Table - Creating Forms.

HTML 5 and CSS   **9**

HTML5 Semantic tags - Incorporating Sound and Video - Animation using HTML - Introduction to CSS - Types of CSS - Selectors - Text Properties - Box Model - Backgrounds and Borders - Animations - Multiple Column Layout.

JAVASCRIPT   **9**

JavaScript Introduction - Variables and Data Types-Statements - Operators Literals - Functions - Objects - Arrays - Built-in Objects - Event handling - Validation.

WORDPRESS **9**

Introduction to WordPress - Getting Started with WordPress - Creating Blog Content - Pages, Media, and Importing/Exporting Content - Plugins - Securing the Website - Themes - Social Media Integration - Third Party Integration.

d. Activities

- Quiz

e. Learning Resources

Text Books

1. Jeffrey C. Jackson, *Web Technologies--A Computer Science Perspective*, Pearson Education, 2012.

2. Karol Król, *WordPress 5 Complete*, Seventh Edition, Packt Publishing, 2019.

Reference Books

1. Robert. W. Sebesta, *Programming the World Wide Web*, Fourth Edition, Pearson Education, 2011.

2. Deitel, Deitel, Goldberg, *Internet & World Wide Web How To Program*, Third Edition, Pearson Education, 2021.

Course Code	Course Name	L	T	P	C
GE2491	**PRINCIPLES OF MANAGEMENT**	**3**	**0**	**0**	**3**

Category: Management Elective

a. Preamble

This course introduces fundamental principles of management, emphasizing their universal applicability in diverse organizations. It covers core managerial functions, explores organizational structures, and provides insights into effective global leadership qualities and skills.

b. Course Outcome

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

CO. No.	Course Outcome	Knowledge Level
CO1	Discuss the trends and challenges of management in global scenario, the different types of organization and its effectiveness.	K2
CO2	Describe the strategies and policies which are involved in process planning and decision making.	K2
CO3	Illustrate the structure, purpose, selection and recruitment process in organizations.	K2
CO4	Elucidate the various motivational theories and processes of management including its functions.	K2
CO5	Explain the process and control techniques for budgeting and inventory management.	K2

c. Course Syllabus   **Total : 45 Periods**

INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS   9

Definition of Management - Nature, Scope and Functions of Management - Evolution of Management - Contributions of FW Taylor (14 principles of Management), Henri Fayol, Elton Mayo, Roethilisberger, H.A.Simon and P.F Drucker - Management theories - Science or Art - Manager Vs Entrepreneur- types of managers managerial roles and skills - Evolution of Management - Scientific, human relations, system and contingency approaches - Current trends and issues in Management.

PLANNING 9

Nature and purpose of planning - Planning process - Types of planning - Objectives - Setting objectives - Policies - Planning premises - Strategic Management - Planning Tools and Techniques - Decision making steps and process.

ORGANISING 9

Nature and purpose - Formal and informal organization - Organization chart - Organization structure - Types - Line and staff authority - Departmentalization - delegation of authority - Centralization and decentralization - Job Design - Human Resource Management - HR Planning, Recruitment, selection, Training and Development, Performance Management , Career planning and management.

DIRECTING 9

Directing meaning - importance - principles of directing - Motivation - Motivation theories - Motivational techniques - Job satisfaction - Job enrichment - Leadership - 14 types and theories of leadership - Communication - Process of communication, types of communication and its uses - Barrier in communication - Effective Communication - Communication and IT.

CONTROLLING 9

System and process of controlling - Budgetary and non - Budgetary control techniques - Use of computers and IT in Management control - Productivity problems and management - Inventory Management - PERT, CPM - Application - Control and performance - Direct and preventive control.

d. Activities

Students shall be given exposure to various concepts of delegation of authority, centralization, and decentralization within the college premises.

e. Learning Resources

Text Books

1. Harold Koontz and Heinz Weihrich, *Essentials of Management*, Tata McGraw Hill,2020.

2. Stephen P. Robbins and Mary Coulter, *Management*, Pearson ,2019.

Reference Books

1. Robert Kreitner and Mamata Mohapatra, *Management*, Biztantra, 2008.

2. Stephen A. Robbins and David A. Decenzo and Mary Coulter, *Fundamentals of Management*, Pearson Education, 9th Edition,2016.

3. Tripathy PC and Reddy PN, *Principles of Management*, Tata McGraw Hill, 2021.

Course Code	Course Name	L	T	P	C
GE2492	**TOTAL QUALITY MANAGEMENT**	3	0	0	3

Category: Management Elective

a. Preamble

Quality is the mantra for success or even for the survival of any organization in this competitive global market. Total Quality Management (TQM) is an enhancement to the traditional way of doing business. It is a proven technique to guarantee survival in world class competition. It integrates fundamental management techniques, existing improvement efforts, and technical tools under a disciplined approach. At the end of the course the students are expected to recognize the quality issues in an organization and analyze the ways to solve those using TQM techniques, and demonstrate skills in using modern TQM tools.

b. Course Outcome

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

CO. No.	Course Outcome	Knowledge Level
CO1	Describe the concepts of TQM for an enterprise.	K2
CO2	Comprehend the TQM principles and its implementation.	K2
CO3	Discuss the various traditional and new TQM tools.	K2
CO4	Examine the fundamental concepts of QFD and TPM with applications.	K3
CO5	Apply QMS and EMS in business organization.	K3

c. Course Syllabus   **Total : 45 Periods**

INTRODUCTION   9

Concept of Quality and Quality Management - Determinants of quality of a product & Service - Reliability - Definition of TQM - Basic concepts of TQM - TQM Framework - Barriers to TQM - Benefits of TQM - Gurus of TQM (Brief Introduction) - Quality statements - vision, mission, and policy.

TQM PRINCIPLES   9

Continuous Improvement Process - Deming Philosophy - Juran Trilogy - PDSA cycle - Kaizen - Concepts of Quality circle - Japanese 5S principles and 8D methodology.

TQM TOOLS & TECHNIQUES I   9

The seven traditional tools of quality - New management tools - Six-sigma Process Capability - Bench marking: Reasons for benchmarking, Benchmarking process, Understanding Current Performance, Planning, Pitfalls and Criticisms of Benchmarking - FMEA: Intent, Documentation, Stages: Design FMEA and Process FMEA.

TQM TOOLS & TECHNIQUES II   9

Quality circles - Quality Function Deployment: QFD Team - Benefits of QFD - Voice of the customers - Organization of Information - House of Quality - QFD Process - Taguchi quality loss function - TPM: Concepts, improvement needs - Performance measures - Cost of Quality - Applications.

QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEM   9

Introduction - Benefits of ISO Registration - ISO 9000 Series of Standards - Sector Specific Standards: AS 9100, TS16949 and TL 9000 - ISO 9001 Requirements - Implementation - Documentation - Internal Audits - Registration - ENVIRONMENTAL MANAGEMENT SYSTEM: Introduction - ISO 14000 Series Standards - Concepts of ISO 14001 - Requirements of ISO 14001 - Benefits and applications of EMS.

d. Activities

Students shall be exposed to learn the knowledge and skills necessary to drive organizational excellence through the implementation of effective quality management strategies.

e. Learning Resources

Text Books

1. Dale H.Besterfiled, Carol B.Michna,Glen H. Besterfield, Mary B.Sacre, Hemant Urdhwareshe and Rashmi Urdhwareshe., *Total Quality Management*, Revised 3rd Edition, Pearson Education Asia, 2013.

2. Suganthi L & Anand Samuel., *Total Quality Management*, Prentice Hall Publications, 2004.

Reference Books

1. Kiran. D.R., *Total Quality Management: Key concepts and case studies,* Butterworth – Heinemann Limited, 2016.

2. Shridhara Bhat K., *Total Quality Management: Text and Cases*, Himalaya Publishing House India, 2nd Edition, 2016.