

CSR102:DESIGN THINKING AND COMPLEX PROBLEM SOLVING

L:3 T:0 P:0 Credits:3

Course Outcomes: Through this course students should be able to

CO1 :: explain the principles of Design Thinking, problem-solving approaches and human-centered methodologies used in addressing real-world challenges

CO2 :: identify stakeholder needs, problem contexts, constraints and objectives to formulate well-defined problem statements

CO3 :: apply analytical reasoning, critical thinking and structured frameworks to examine problems and solution alternatives

CO4 :: analyze solution options using relevant criteria, decision-making techniques and problem-solving methodologies

CO5 :: evaluate workflow designs using validation, testing, feedback and iterative refinement techniques to improve problem-solving processes

CO6 :: demonstrate effective communication, reflection and feedback integration to support continuous learning and professional problem-solving

Unit I

Foundations of Problem Solving and Design Thinking : Introduction to Design Thinking as a structured approach to problem solving, Understanding different types of problems, Problem framing, Human-centered thinking

Unit II

Problem Definition and Analysis : Understanding stakeholder needs and contextual factors influencing problems, Techniques for problem identification, Problem statement formulation, Scope definition, Constraint analysis, and objective setting

Unit III

Analytical and Critical Thinking : Application of analytical reasoning and critical thinking for evaluating alternatives, Understanding cognitive biases, Decision-making approaches, Structured analysis techniques and evidence-based evaluation methods

Unit IV

Ideation and Creative Problem Solving : Exploration of Creative Thinking methods for generating solution alternatives, Techniques for idea generation, Evaluation, Prioritisation and selection of solutions based on defined criteria and objectives

Unit V

Workflow Design and Iterative Refinement : Introduction to workflow and process design for solution development, Methods for validation, Testing, Iterative refinement, Feedback incorporation and continuous improvement of proposed solutions

Unit VI

Solution Communication and Reflection : Principles of effective communication of solutions to diverse stakeholders, Development of presentation, Reporting, Reflection, Feedback integration and continuous learning practices for professional problem solving

Text Books:

1. INTRODUCTION TO INDIAN KNOWLEDGE SYSTEM: CONCEPTS AND APPLICATIONS by MAHADEVAN, B. BHAT, VINAYAK RAJAT NAGENDRA PAVANA R.N., PHI Learning

References:

1. DESIGN THINKING FOR DUMMIES by CHRISTIAN MULLER-ROTERBERG, WILEY

