VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

COURSE NAME-CRITICAL THINKING
(Credit Course) SYLLABUS FOR B.E. 2/4 – III & IV SEMESTERS

W.E.F-2025-2026

Instruction: 2 (1+1)Hours	**SEE: 40**	**Course code: U25HS310EH**
Credits: 1	**CIE: 30**	**Duration of SEE: 2 Hours**

COURSE OBJECTIVES	**COURSE OUTCOMES**
The course will enable the learners to:	**At the end of the course the learners will be able to:**
1. Understand the basics of logic, reasoning, and identifying biases. 2. Learn to evaluate evidence and differentiate between facts and opinions. 3. Introduce frameworks like SWOT and root cause analysis for problem-solving. 4. Develop critical thinking skills through case studies and ethical debates.	- 1. Students will identify assumptions, biases, and logical fallacies in real-world scenarios. 2. Learn to evaluate evidence and differentiate between facts and opinions. 3. Students will apply structured methods to analyze problems and propose actionable solutions. 4. Students will demonstrate critical thinking through group discussions and case study analyses.

OVERVIEW:

In a world where automation and AI are rapidly transforming the workforce, critical thinking has become a vital human skill that sets professionals apart. This course empowers engineering students to think independently, evaluate information logically, and make well-reasoned decisions. Through engaging with real-world problems, ethical dilemmas, and structured problem-solving tools, students will develop the ability to question intelligently, respond thoughtfully, and contribute meaningfully in AI-assisted environments.

UNIT 1: Fundamentals of Critical Thinking
Introduces the foundations of logical thinking and the importance of recognizing faulty reasoning.

1.1 Logic and Reasoning
1.2 Identifying Assumptions
1.3 Bias and Fallacies

Learning Outcomes:

- Understand and apply the basics of logical thinking and structured reasoning
- Identify personal and systemic assumptions in real-world and technical contexts
- Detect common biases and fallacies in digital content and AI-generated outputs

UNIT 2: Analytical Thinking
Equips students to analyze information critically and draw conclusions based on solid evidence.

2.1 Evaluating Evidence
2.2 Drawing Logical Conclusions
2.3 Differentiating Facts from Opinions

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Learning Outcomes:

- Evaluate the reliability and relevance of data from human and AI sources
- Draw logical conclusions from complex and sometimes incomplete datasets
- Differentiate between subjective opinions and objective, verifiable information

UNIT 3: Problem-Solving Frameworks
Builds practical decision-making skills using structured, human-driven analytical tools.

3.1 Root Cause Analysis (5 Whys)
3.2 Decision Trees
3.3 SWOT Analysis

Learning Outcomes:

- Break down problems systematically to identify core issues beyond surface symptoms
- Use structured tools to support decision-making in multidisciplinary and tech-enabled environments
- Integrate strategic thinking with ethical judgment when proposing solutions

UNIT 4: Applications of Critical Thinking
Applies critical thinking to real-life contexts through discussions, debates, and case studies.

4.1 Case Studies
4.2 Group Discussions on Ethical Dilemmas
4.3 Critical Thinking in Action: Debating Complex Engineering Issues

Learning Outcomes:

- Apply critical thinking to analyze real-world problems in engineering, business, and society
- Collaborate effectively and respectfully in group settings, including diverse viewpoints
- Demonstrate ethical reasoning and informed argumentation in AI-influenced scenarios

ADDITONAL READING:

- Martha Nussbaum Not for Profit: Why Democracy Needs the Humanities (2010).
- The Invisible Man : Ralph Ellison
- Thinking, Fast and Slow by Daniel Kahneman
- The McKinsey Mind: Understanding and Implementing the Problem-Solving Tools and Management Techniques of the World's Top Strategic Consulting Firm by Ethan M. Rasiel and Paul N. Friga

LEARNING RESOURCES

learn.talentsprint.com

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal tests :	1	Max. Marks :	20	

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2	No. of assignments	:	1	Max. Marks	:	5
3	No. of Quizzes	:	1	Max. Marks	:	5

Duration of Internal Tests : 90 Minutes

SIGNATURES:-

Dr. JACQUELINE AMARAL HEAD-HSS CHAIRMAN-BOS, HSS, VCE	**PROF. B. VIJAYA** HEAD, DEPARTMENT OF ENGLISH, OSMANIA UNIVERSITY &DIRECTOR, ENGLISH LANGUAGE TEACHING CENTRE (ELTC), OSMANIA UNIVERSITY PROFESSOR & HEAD Department of English OSMANIA UNIVERSITY HYDERABAD-500 007.
Dr. JOY ANURADHA SUBJECT EXPERT UNIVERSITY OF HYDERABAD	**DR. JOY HANS** CORPORATE REPRESENTATIVE
MS.VATHSALA NARASIMMAN DIRECTOR- DELIVERY, TALENT SPRINT	
MEMBERS OF HSS, VCE :- **Dr. G. MEENA** **Dr. K. JHANSI RANI**	MEMBERS OF HSS, VCE :- **Dr. B. SHEELA RANI SIMON** **Dr. T. SUNAND EMMANUEL**