ENGINEERING FOR COMMUNITY SERVICES

Course Code	19HS5501C	Year	III	Semester	I
Course Category	Open Elective	Branch	ME	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	NIL
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes	
Upon successful completion of the course, the student will be able to:	
CO1	Understand the intricacies of engineering profession. (L2)
CO2	Examine the role that engineering might play in the different aspects of sustainability development. (L3)
CO3	Solve basic analytical and design problems using engineering tools, and be proficient and efficient in the use of these tools. (L3)
CO4	Explore various awareness methods about safety, risk & risk benefit analysis (L4)
CO5	Analyze what constitutes social justice in different areas of social life and the role that engineering might play in these. (L4)

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (H-High3, M-Medium-2, L- Low-1)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1						3	3	3				2	2	
CO2						3	3	3				2	2	
CO3						3	3	3				2	2	
CO4						3	3	3				2	2	
CO5						3	3	3				2	2	

SYLLABUS		
UNIT NO.	**CONTENT**	Mapped CO
I	**The Engineering Profession** 1.1 On being a Professional 1.2 Technical Expertise and Ethical Obligations 1.3 Organization of Professional Engineering 1.4 Engineering Codes of Ethics	CO1, CO2, CO5
II	**Engineering and Sustainable Community Development** 2.1 Understanding Community 2.2 Engineers' Beliefs about Community Development 2.3 Measuring Sustainability 2.4 Engineers as Problem Solvers	CO1, CO2, CO4
III	**Engineers and Development** 3.1 Engineering Disasters: Lessons to be Learned 3.2 Technology for Community Development 3.3 Renewable Sources of Energy	CO1, CO3, CO4

	3.4 Green and Smart Cities	
IV	**Safety of the Public** 4.1 Ethical Dilemmas 4.2 Calculating the Value of Life 4.3 Whistle blowing 4.4 Trusting the Experts 4.5 Case Studies: a. Sinking of the Titanic b. Bhopal Gas Tragedy	CO1, CO3, CO4
V	**Engineering and Social Justice** 1.1 Social Justice in Engineering Sciences 1.2 Humanities and Social Sciences in Engineering Education 1.3 Transforming Engineering Education and Practice 1.4 Making Social Justice Visible and Valued	CO1, CO3, CO5

LEARNING RESOURCES

Reference Books:

1. Deborah G. Johnson. (2020) *Engineering Ethics: Contemporary and Enduring Debates*. Yale University Press.
2. Vesilind, P. Aarne., Gunn, Alastair S. (2010) *Hold Paramount: The Engineer's Responsibility to Society*. Cengage Learning.
3. Luegenbiehl, Heinz., Clancy, Rockwell. (2017) *Global Engineering Ethics*. Butterworth-Heinemann, UK.
4. Traer, Robert. (2018) *Doing Environmental Ethics*. New York: Routledge.
5. Leydens, Jon., Lucena, Juan. (2017) *Engineering Justice: Transforming Engineering Education and Practice.* Wiley: IEEE Press.