

1.	Title of the course	Sustainability in Civil Engineering
2.	Course number	CE320L
3.	Structure of credits (L-T-P-C)	2-0-0-2
4.	New course/modification to	New
5.	To be offered by	Civil and Environmental Engineering
6.	Proposed by	Suresh Jain
7.	Prerequisite	None
8.	<b>Course Objective(s):</b> To introduce the interdisciplinary aspects of sustainability and analyse civil engineering's role in achieving sustainable development goals focusing on industry, innovation, infrastructure and urban development. To apply sustainability tools for designing smart infrastructure, emphasising materials, energy, water, waste and resilience across diverse domains.	
9.	<b>Course Content:</b> Sustainability: introduction, need for sustainability, concept of sustainability; Economic, environmental and social sustainability; Science, technology and engineering sustainable development; Sustainable development goals (SDGs): SDGs and role of civil engineering in achieving SDGs; SDG 9: industry, innovation and infrastructure; SDG 11: sustainable cities and communities; Sustainable and smart infrastructure: buildings, transportation, environment, geotechnical and water resources; Engineering for sustainable development; Guiding principles: materials, energy, water resources, carbon and ecological footprints, waste management and resilient infrastructure; Sustainability tools: cost-benefit analysis, life cycle costing, social and environmental life cycle analysis, circular economy and integrated impact assessment; Case examples.	
10.	<b>Textbook(s):</b> 1. Braham A and Casillas S, Fundamentals of Sustainability in Civil Engineering, 2nd Edition, CRC Press (2020). 2. Bakshi B R, Sustainable Engineering: Principles and Practice, Cambridge University Press (2019).	
11.	<b>Reference(s):</b> 1. Field C and Zawislak C, Integrating Resilience and Sustainability into Civil Engineering Projects, American Society of Civil Engineers (2023). 2. Biswas W K and John M, Engineering for Sustainable Development: Theory and Practice, John Wiley and Sons, Inc. (2022). 3. Broadbent O, Embedding Sustainability in Undergraduate Civil Engineering Courses: A Practical Guide, Think Up (2012). 4. Reddy K R, Cameselle C and Adams J A, Sustainable Engineering: Drivers, Metrics, Tools and Applications, Wiley (2019).	