Name of Subject	Civil Engineering and Sustainability	
L-T-P	3-0-0	
Credits	3	
Name of the Department	Civil Engineering	
Status of the subject	(a) Semester: Spring (b) Level of Subject: 1st year UG (c) Nature of Subject: Core (d) Semester to be offered: 2nd (e) Programme in which the course is included: B.Tech. (H) in Civil Engineering	
Prerequisites	None	
Objectives	The objective of this course is to introduce the concept of sustainability in Civil Engineering, while giving a wholistic view of what Civil Engineering is all about.	
Names of the faculty members of the department who have the necessary expertise to teach the course	All Environmental Engineering Faculty	
Any overlap with existing subjects	NONE	
Recommended Text Books	1. A. Braham (2017). Fundamentals of sustainability in civil engineering. CRC Press.	
Topics to be Covered	**Name of the Topic**	**Hourly Breakup**
	Civilization, Wonders of the World, New Wonders of the World	1 hour
	Evolution of Civil Engineering	1 hour
	Know the Department	1 hour
	Different Sections in Civil Engineering. Impact of Different Sections on Society	6 hours
	Advancement of Industry (from 1.0 to 4.0) and society (from 1.0 to 5.0)	1 hour
	Sustainable Development: Three pillars of sustainability – economic, environmental and social	2 hours
	Materials: Clay bricks, cement, sand, water and coarse aggregates, mortar and plaster, cement and concrete blocks, reinforced concrete, steel	8 hours
	Development of Sustainable Materials	2 hours

	Sustainable Development: 1. Economic point of view: Life cycle cost analysis, present, future and annual worth, rate of return, cost/benefit ratio	3 hours
	Sustainable Development: 2. Environmental point of view: Life cycle impact assessment (LCIA) methods and categories, product category rule (PCR) and environmental product declaration (EPD), alternative environmental frameworks: ecological footprint, water footprint and planet boundary	3 hours
	Sustainable Development: 3. Social point of view: Social Media and Civil Engineering, United Nations, Oxfam Doughnut, and Human Development Index (HDI), Social Impact Assessment	3 hours
	Applications of sustainability in Environmental Engineering, Geotechnical Engineering, Transportation Engineering and Structural Engineering	4 hours
	Introduction of BIS codes	4 hours