GUJARAT TECHNOLOGICAL UNIVERSITY

ME Civil (Construction Engineering & Management)
Sustainable Construction Practices
SUBJECT CODE: 3711415

Type of Course: Elective Subject
Prerequisite: NIL

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA(M)	Viva	PA (I)	
3	0	2	4	70	30	30	20	150

Course Contents:

Sr.No.	Topics	Hrs.	% Weightage
1	**Sustainable Planning:** Energy Efficient Shelters, Housing Options Today, Site Planning And Use Of On-Site Resources, Studio House, Convertible Space Concept, Material Efficient Planning, Working With Nature, Balancing Energy And Aesthetic Needs, etc.	7	19
2	**Sustainable Materials & Systems:** Sensing Technology: Types of Sensors, Physical Measurement , Chemical & Bio- Chemical Measurement, Actuator Techniques: Actuator and actuator materials, etc.	9	25
3	**Sustainable Materials:** Vernacular building materials - Soil, Fly ash, Ferro cement, Lime, Fibers, Stone Dust, Red mud, Gypsum, Alternate Wood, Polymer-ADOBE, Cob Rammed Earthlight Clay, Straw-Bale, Bamboo, Agro-Industrial Waste, Structural Properties Of Alternate Building Materials, Innovative Materials of CBRI, etc.	5	14
4	**Construction Equipment**: Productivity of cranes, earth movers and excavators, etc., Brick moulding machine, Stabilized soil block making machines, Plants for the	9	25

	manufacturing of concrete blocks, Tile making machines, Wall panel & Roofing channel making machine, etc.		
5	**Construction Techniques:** Innovative Construction Techniques for foundation, superstructure, roofing, wall panelling, etc. Precast construction techniques, Pre Engineering Building Techniques, modular contained earth, earth bag construction, Innovative lapping methods, glass panels and facades, etc.	6	16
	Total	**36**	**100**

Reference Book(s)

1. Lynne, Cassandra Adams "Alternative Construction: Contemporary Natural Building Methods", Soft cover, Wiley & Sons Australia, Limited, John, 2005.
2. Eugene Eccli, "Low Cost, Energy efficient shelter for owner & builder", Rodale Press, 1976.
3. Givoni, "Man, Climate, Architecture", Van Nostrand, New York, 1976.
4. Charles J. Kibert, "Sustainable Construction: Green Building Design and Delivery", John Wiley & Sons, 2005.
5. Brain Culshaw, "Smart Structure and Materials", Artech House - Borton. London-1996.
6. Srinivasan A.V and Michael McFarland. D, "Smart Structures - Analysis and Design", Cambridge University Press, 2001.
7. L. S. Srinath, "Experimental Stress Analysis", Tata McGraw-Hill, 1998.
8. J. W. Dally and W. F. Riley, "Experimental Stress Analysis", Tata McGraw-Hill, 1998.
9. Mukesh V. Gandhi and Brian S. Thompson, "Smart Materials and Structures", Springer, May-1992.