

CEEY 255	SUSTAINABLE CONSTRUCTION	L	T	P	C
		3	0	0	3

SDG: 11

COURSE OBJECTIVES: The course will impart knowledge on

COB1: about sustainable construction

COB2: the concepts of sustainable materials

COB3: energy calculations methods,

COB4: green buildings concepts

COB 5: sustainable environmental effects in construction

MODULE I INTRODUCTION 9

Introduction and definition of Sustainability - Carbon cycle - role of construction material: concrete and steel, etc. - Carbon dioxide (CO₂) contribution from cement and other construction materials.

MODULE II MATERIALS USED IN SUSTAINABLE CONSTRUCTION 9

Construction materials and indoor air quality - No/Low cement concrete - Recycled and manufactured aggregate - Role of QC and durability - Life cycle and sustainability.

MODULE III ENERGY CALCULATIONS 9

Components of embodied energy - calculation of embodied energy for construction materials - Energy concept and primary energy - Embodied energy via-a-vis operational energy in conditioned building - Life Cycle energy use

MODULE IV GREEN BUILDINGS 9

Control of energy use in building - ECBC code, codes in neighboring tropical countries - OTTV concepts and calculations – Features of LEED and TERI – Griha ratings - Role of insulation and thermal properties of construction materials - influence of moisture content and modeling - Performance ratings of green buildings - Zero energy building

MODULE V ENVIRONMENTAL EFFECTS 9

Non-renewable sources of energy and Environmental aspects – energy norm, coal, oil, natural gas - Nuclear energy - Global temperature, Green house effects, global warming - Acid rain: Causes, effects and control methods - Regional impacts of temperature change.

L – 45 TOTAL HOURS –45

TEXT BOOKS:

1. Kibert C.J., John, Sustainable Construction Green Building Design and Delivery, Wiley, 2022

REFERENCES:

1. Charles J Kibert, Sustainable Construction: Green Building Design & Delivery, 4th Edition, Wiley Publishers 2016.
2. Steve Goodhew, Sustainable Construction Process, Wiley Blackwell, UK, 2016.
3. Craig A. Langston & Grace K.C. Ding, Sustainable Practices in the Built Environment, Butterworth Heinemann Publishers, 2011.
4. William P Spence, Construction Materials, Methods & Techniques (3e), Yesdee Publication Pvt. Ltd, 2012.
5. New Building Materials and Construction World magazine, 2021

COURSE OUTCOMES: On completion of the course, students will be able to
CO1: describe the various sustainable materials used in construction.

CO2: explain the method of estimating the amount of energy required for building.

CO3: describe the features of LEED, TERI and GRIHA ratings of buildings.

CO4: explore the concept and performance of zero-energy buildings.

CO5: select less carbon emission materials for construction.

Board of Studies (BoS) :

17th BoS of Civil held on 10.08.2022

Academic Council:

19th AC held on 29.09.2022

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	L	M	L	-	L	M	L	-	-	-	-	-	-	M
CO2	-	L	M	L	L	L	M	L	-	-	-	-	L	L	-
CO3	-	L	M	L	-	-	M	L	-	-	-	-	L	L	-
CO4	-	L	M	L	L	L	M	L	-	-	-	-	L	L	-
CO5	-	L	M	L	L	L	M	L	-	-	-	-	-	-	-

Note: L- Low Correlation M -Medium Correlation H -High Correlation

SDG 11 :Make cities and human settlements inclusive, safe, resilient and sustainable

To ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums