



## FACULTY OF ENGINEERING & TECHNOLOGY

### First Year Master of Technology

#### Semester II

**Course Code: 102450204**

**Course Title: GREEN BUILDINGS**

**Type of Course: Program Elective III**

**Course Objectives:** To familiarize the concepts of green buildings and energy utilization.

#### Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
Lecture	Tutorial	Practical		Internal		External		Total
				Theory	J/V/P*	Theory	J/V/P*	
3	0	2	4	30/15	20/10	70/35	30/15	150/75

\* J: Jury; V: Viva; P: Practical

#### Detailed Syllabus:

Sr.	Contents	Hours
1	GREEN BUILDING CONCEPTS: High-performance green buildings - Impacts of building construction, operation, and disposal - Methods and tools for building assessment, LEED, Green Globes, Living Building Challenge, Green Building Coalition.	9
2	BUILDING ASSESSMENT AND THE GREEN BUILDING PROCESS: Design and construction relationships -project management- BREEAM, CASBEE, green star, DGNB - site and landscape strategies, building energy system strategies, low energy buildings, renewable energy systems, building hydrologic cycle strategies, case studies on energy assessment.	10
3	GREEN MATERIALS AND STRATEGIES: Materials selection strategies - multi-attribute standards (MAS) - life cycle assessment - indoor environmental quality (IEQ) analysis and strategies - construction team responsibilities and controls - building commissioning strategies - site operations.	10
4	COST ANALYSIS AND STANDARDS: Carbon Accounting - economic issues and analysis - life cycle costing - business case for green buildings - green building codes and standards - International Green Construction Code ASHRAE 189P, ANSI/GG 01 - green building specifications - future directions in green high performance building technologies.	10



## Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks						R: Remembering; U: Understanding; A: Application, N: Analyze; E: Evaluate; C: Create
R	U	A	N	E	C	
20	20	15	15	15	15	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

## Reference Books:

1	Abe Kruger, Carl Seville, "Green Building: Principles and Practices in Residential Construction", Wiley, 2012.
2	Francis D. K. Ching, Ian M. Shapiro, "Green Building Illustrated" Wiley-2014.
3	Charles J. Kibert, "Sustainable Construction: Green Building Design and Delivery" John Wiley and Sons 2016.
4	The World Business Council on Sustainable Development (WBCSD) website: <a href="http://www.wbcsd.org">http://www.wbcsd.org</a> .

## Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Demonstrate knowledge on green building concepts to reduce carbon emission.	35 %
CO-2	Evaluate methods of building assessment for green buildings	40 %
CO-3	To know the standards of green buildings and able to cost analysis.	25 %

## List of Practicals / Tutorials:

1	Study the concepts of building planning and various aspects of green buildings
2	Study the Green Rating based Integrated Habitat Assessment (GRIHA)
3	Study the electric energy conservation in building heating and lighting system.
4	Study the Energy Conservation Building Code (ECBC)
5	Study of concepts of Eco Friendly building materials for building construction
6	Case study :Cost analysis of green buildings and ordinary buildings
7	Study of Building Research Establishment Environmental Assessment Method for ratings.
8	Study of Comprehensive Assessment System for Built Environment Efficiency (CASBEE) method for evaluating and rating the environmental performance of buildings
9	Study the DGNB system for building ratings.
10	Study and calculate detailed energy, water savings, daylight and embodied energy in building.

## Supplementary learning Material:

### Curriculum Revision:

Version:	1
Drafted on (Month-Year):	Apr-20
Last Reviewed on (Month-Year):	Jul-20
Next Review on (Month-Year):	Apr-22