Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
CE-604	Green Building Infrastructure and Architecture	PCC	4	3	1	0	50	100	150

Course Outcomes:

At the end of the course the students will be able to	
CO1	Practise advanced intelligent building technologies.
CO2	Describe the concept of Green building.
CO3	Explain the techniques for energy in building Design.
CO4	Describe the underlying principles, operation and maintenance of the energy efficient building.
CO5	Discuss characteristics and limitations of various automation systems in buildings.

Detailed Syllabus

Section-A

UNIT 1: Green Building Concepts and Practices: Principles of planning, Relevant building by laws, site selection for buildings, orientation of buildings, common errors in planning, Provision of rain water harvesting**.** Green Building Materials and Equipment in India, Important Sustainable features for Green Building**.**

(10 Hrs)

UNIT 2: Principles of Planning Green building: Indian Green Building Council, Benefits Experienced in Green Buildings, Launch of Green Building Rating Systems, Residential Sector, Market Transformation Principles of green building, Selection of site and Orientation of the building , usage of low energy materials , effective cooling and heating systems , effective electrical systems, Natural building design consideration. **(10 Hrs)**

UNIT 3: Energy management in services: Energy in building design, Energy efficient and environment friendly building. Thermal phenomena, thermal comfort, Indoor Air quality, passive heating and cooling systems. Energy Analysis- Active HVAC systems. Energy audit - Types of audit, energy flow diagram and consumption. Identification of wastage -Priority of conservative measures, Maintenance of management programme. **(10 Hrs)**

Section-B

UNIT 4: Building energy conservation technologies: Standards of energy efficiency in buildings. Trends in energy consumption. Energy efficiency measures in buildings: approaches, materials and equipment, operating strategies, evaluation methods of energy savings. Optimum selection of energy sources. Air-to-air energy recovery. **(10 Hrs)**

UNIT 5: Control systems in buildings: Introduction to automatic control systems, control issues related to energy conservation, interior air quality and thermal comfort in buildings – Ventilation. Classification of HVAC control system: selection and size of sensors, actuators, and controllers. Practical HVAC control system Designing and turning controllers – Building automation systems, design for security. **(10 Hrs)**

Text Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Advanced Technology for Smart Buildings	James Sinopoli	Artech House	2016
2	Smart Buildings Systems for Architects, Owners and Builders	James M. Sinopoli,	Butterworth-Heinemann	2009

Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Passive Solar House: The Complete Guide to Heating and Cooling Your Home	James Kachadorian	Chelsea Green Publishing	2nd ,2006