5.7 PROGRAMME ELECTIVE-I
5.7.1 SUSTAINABLE DEVELOPMENT

L	P
3	-

RATIONALE

This aim of this course is to develop the concept of sustainable development and to gain an empirical understanding of the emerging global challenges for sustainable environmental and societal governance systems. This would enable students to visualize various factors that impact sustainability and propose a plan of action for building sustainable communities.

COURSE OUTCOMES

After undergoing the subject, the students will be able to:

CO1 Describe concept and types of sustainable development
CO2 Discuss sustainable materials selection and use in construction
CO3 Discuss climate Change Mitigation and Adaptation
CO4 Explain Life Cycle Assessment and Sustainable Design Evaluation

DETAILED CONTENTS

UNIT-I

1.1 Introduction to Sustainability
1.1.1 Concept and types of sustainable development
1.1.2 Triple Bottom Line Approach
1.1.3 Sustainable Development Goals (SDGs)

1.2 Environmental Considerations
1.2.1 Environmental Impact Assessment (EIA)
1.2.2 Sustainable Site Planning and Design
1.2.3 Sustainable Water Management

UNIT-II

2.1 Green Building and Infrastructure
2.1.1 Principles of Green Building Design
2.1.2 Sustainable Materials Selection
2.1.3 Energy-Efficient Building Design
2.1.4 Sustainable materials selection and use in construction

2.2 Transportation Planning and Sustainable Mobility
2.2.1 Sustainable Transportation Infrastructure
2.2.2 Carbon Emission Reduction Strategies
2.2.3 Strategies for promoting sustainable mobility

UNIT-III

3.1 Waste Management and Recycling
3.1.1 Principles of Solid Waste Management
3.1.2 Designing Sustainable Waste Treatment Facilities
3.1.3 Incorporating Recycled Materials
3.1.4 Techniques for using recycled materials in civil engineering projects

3.2 Climate Change Mitigation and Adaptation
3.2.1 Impacts of Climate Change on Infrastructure
3.2.2 Mitigation Strategies
3.2.3 Resilience Building Measures

UNIT-IV

4.1 Social Aspects of Sustainable Development
4.1.1 Concept of social aspects of sustainable development
4.1.2 Social Equity Considerations
4.1.3 Community Engagement
4.1.4 Environmental Justice

4.2 Life Cycle Assessment and Sustainable Design Evaluation
4.2.1 Life Cycle Assessment (LCA)
4.2.2 Concept of sustainable design evaluation
4.2.3 Sustainability Assessment Tools

UNIT-V

5.1 Regulatory Frameworks and Policies
5.1.1 Concept of regulatory frameworks and Policies
5.1.2 National and International Policies
5.1.3 Regulatory Requirements

5.2 Professional Ethics and Responsibilities
5.2.1 Ethical Considerations
5.2.2 Professional Responsibilities
5.2.3 Case Studies on Ethical Dilemmas

RECOMMENDED WEBSITES

1. https://swayam.gov.in/
2. https://www.udemy.com/
3. https://www.upgrad.com/
4. https://www.khanacademy.org//

INSTRUCTIONAL STRATEGY

The teachers should use teaching aids for classroom teaching. Arrange industry visits to augment classroom teaching-learning process. Arrange expert lectures from the industry experts. This subject contains five units of equal weightage.