S. No.	Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
8	NCC-201	Environment & Sustainability	NCC	0	2	0	0	-	-	S/NS*

Course Outcomes:

At the end of the course the student will be able to :	
CO1	Describe the relationship between Humans, Environment and Sustainability.
CO2	Articulate different environmental risks and issues and potential interventions to tackle them.
CO3	Appraise sustainable energy systems through case-studies and real-world examples.
CO4	Articulate Sustainable Infrastructure Development plan.
CO5	Appreciate global sustainability best practices in diverse domains.

Detailed Syllabus

Section-A

Unit 1: Introduction to Sustainability: Humanity and the Environment: What is Sustainability? The IPAT Equation, Human Consumption Patterns and the "Rebound" Effect, Challenges for Sustainability.
Climate and Global Change: Climate Processes; External and Internal Controls, Milankovitch Cycles and the Climate of the Quaternary, Modern Climate Change, Climate Projections.

(3 Hrs)

Unit 2: Biosphere: Introduction, Biogeochemical Cycles and the Flow of Energy in the Earth System. Biodiversity, Species Loss, and Ecosystem Function. Soil and Sustainability.
Physical Resources: Water, Pollution, and Minerals. Water Cycle and Fresh Water Supply. Water Pollution. Mineral Resources: Formation, Mining, Environmental Impact.

(4 Hrs)

Unit 3: Environmental and Resource Economics: Tragedy of the Commons. Environmental Valuation. Evaluating Projects and Policies. Solutions: Property Rights, Regulations, and Incentive Policies.
Modern Environmental Management: Systems of Waste Management. Case Study: Electronic Waste and Extended Producer Responsibility. Government and Laws on the Environment. Risk Assessment Methodology for Conventional and Alternative Sustainability Options.

(4 Hrs)

Section-B

Unit 4: Sustainable Energy Systems: Environmental Challenges in Energy, Carbon Dioxide, Air, Water and Land Use. Energy Sources and Carriers. Electricity. Energy Uses. Applications of Phase Change Materials for Sustainable Energy. Problem-Solving, Metrics, and Tools for Sustainability.

(6 Hrs)

Unit 5: Sustainable Infrastructure: The Sustainable City. Sustainability and Buildings. Sustainable Energy Practices: Climate Action Planning. Sustainable Transportation: Accessibility, Mobility, and Derived Demand. Sustainable Stormwater Management.

(4 Hrs)

Text Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Sustainability: A Comprehensive Foundation	Tom Theis and Jonathan Tomkin	Open Textbook Library	1st (2015)
2	Energy, Environment, and Sustainability with MindTap	Saeed Moaveni	Cengage India Private Limited	1st (2012)
3	Improving the Sustainable Development Goals: Strategies and the Governance Challenge (Routledge Focus on Environment and Sustainability)	Lars Niklasson	Routledge	1st (2019)

Reference Book

S. No.	Name of the Book	Author	Publisher	Edition (Pub. Yr.)
1	Global Challenges to CSR and Sustainable Development: Root Causes and Evidence from Case Studies (CSR, Sustainability, Ethics and Governance)	Stephen Vertigans, Samuel O. Idowu	Springer	1st (2021)