17.4 Education for the SDGs

17.4.2 Education for SDGs: Specific courses on sustainability

S.No	Course title	Notes	Related Goals
1.	NGOs and Sustainable Development (OMG352)	It covers strategies NGOs use to address environmental, social, and economic challenges, along with frameworks like the UN's Sustainable Development Goals (SDGs). Emphasis is placed on partnerships, policy advocacy, and community-based approaches.	SDG 7, 11, 12, 13, 15 & 17
2.	Environment and Social Impact Assessment (OCE351)	It covers methods for impact identification, mitigation strategies, and regulatory frameworks to ensure sustainable development. The course also emphasizes public participation and environmental policy compliance.	SDG 6, 11, 13 & 16
3.	Environmental Sciences and Sustainability (GE3451)	This course explores the principles of environmental science, focusing on ecological systems, pollution, and climate change. It emphasizes sustainable practices, environmental policy, and resource management to address global environmental challenges.	SDG 6, 11 & 13
4.	Environmental Science and Engineering (GE8291)	It covers topics like air, water, and soil pollution, environmental policies, and eco-friendly technologies, aiming to equip students with knowledge for addressing environmental challenges through engineering solutions.	SDG 6, 11, 12, 13, 14 & 15
5.	Renewable and Non - Renewable Power Generation Systems	It explores methods of generating electricity using sustainable sources like solar, wind, and hydro, alongside conventional sources like coal, oil, and natural gas. The course covers the technologies, environmental impacts, and efficiency of both systems, emphasizing the transition to cleaner energy solutions.	SDG 7, 11 & 13

6.	Smart Grids	It involves modernizing traditional electrical grids by integrating advanced communication, control technologies, and IoT. They enable efficient energy management, real-time monitoring, and seamless integration of renewable energy sources, enhancing grid reliability and sustainability.	SDG 7 & 13
7.	Energy storage systems	It explores their design, applications in renewable energy, grid management, and electric vehicles, and evaluates key metrics like efficiency, capacity, and environmental impact.	SDG 7 & 13
8.	Electric Vehicles and Transportation Systems	This course explores the fundamentals of electric vehicle technology, including battery systems, charging infrastructure, and energy management. It also examines the impact of electric vehicles on transportation systems, urban planning, and sustainability, highlighting the transition towards greener mobility solutions. Students will analyze case studies and engage in discussions on policy and technological advancements in the electric vehicle sector.	SDG 7 & 13
9.	Disaster Management (Mandatory Course, III)	This course explores the principles and practices of disaster management, focusing on preparedness, response, recovery, and mitigation strategies for various types of disasters, including natural and man-made events.	SDG 11, 13, 14 & 15
10.	Life Cycle Assessment (CE46O2)	This course covers the principles and methodologies of Life Cycle Assessment (LCA), a systematic approach for evaluating the environmental impacts of products or services throughout their entire life cycle—from raw material extraction to disposal.	SDG 12 & 13
11.	Environmental Impact Assessment (CE46O5)	It is a systematic process used to evaluate the potential environmental effects of proposed projects or developments before they are approved. It	SDG 11, 12, 13 & 15

		involves assessing factors such as air and water quality, biodiversity, and social impacts to inform decision-making and mitigate negative effects.	
12.	Drinking Water Supply and Treatment (EE47O4)	This course covers the principles and practices of sourcing, treating, and distributing safe drinking water. It explores water quality standards, treatment processes (such as filtration and disinfection), and the management of water supply systems to ensure public health and environmental sustainability.	SDG 6, 11 & 14
13.	Renewable Energy Technologies (ME47O5)	It focuses on the various methods and systems used to harness energy from renewable sources, such as solar, wind, hydro, and geothermal. The course covers the principles of energy generation, conversion, and storage, emphasizing sustainability and environmental impact.	SDG 7, 11 & 13
14.	Green Computing (CS47O3)	It aims to reduce energy consumption and waste while promoting eco-friendly technologies and practices throughout the lifecycle of computing systems. Key topics include energy-efficient hardware, sustainable data centers, and the impact of computing on climate change.	SDG 7, 12 & 13
15.	IoT Networks (CS4V62)	This course explores the principles and technologies that enable the Internet of Things (IoT). Students will also learn about data management and analytics to optimize IoT applications across various industries.	SDG 9 & 11
16.	Industrial IoT & Healthcare Systems (CS4V66)	This course explores the integration of Industrial Internet of Things (IoT) technologies in healthcare systems, emphasizing data collection, real-time monitoring, and improved patient outcomes.The course also examines case studies demonstrating the impact of IoT on operational efficiency and patient care in healthcare settings.	SDG 3, 9 & 11
17.	Smart Cities (CS4V67)	This course explores the integration of digital technologies and data analytics in urban planning and management to enhance the quality of life, sustainability, and efficiency in cities.Students will examine case studies	SDG 7, 11 & 13

		and develop strategies for creating more resilient and interconnected urban environments.	
18.	Renewable Energy Systems	This course explores the intersection of human behavior, societal needs, and renewable energy technologies, emphasizing sustainable practices and energy management.	SDG 7 & 13
19.	Waste Management and Recycling	It focuses on strategies for reducing, managing, and recycling waste to minimize environmental impact. The course covers waste types, disposal methods, and the importance of sustainable practices. It emphasizes the role of recycling in resource conservation and pollution reduction.	SDG 12 & 15
20.	Environmental Engineering	It focuses on the development of technologies and practices to protect and improve the environment. The course aims to equip students with the knowledge and skills needed to address environmental challenges and promote sustainability.	SDG 7, 11 & 13
21.	Smart Materials and Structures	This course explores the properties and applications of smart materials that respond dynamically to environmental changes. Students will also investigate the design and analysis of systems utilizing these materials for improved functionality and efficiency.	SDG 9, 11 & 12
22.	Water Resources and Irrigation	This course explores the management and sustainable use of water resources for agricultural and non-agricultural purposes. Students will also analyze water policy and governance frameworks to address challenges in water resource management.	SDG 6, 13, & 14
23.	OPE352-Energy Conservation and Management	To educate students on the various dimensions of energy management across the entire value chain Energy. It is a key instrument to reduce greenhouse gas emissions, besides increasing the cost competitiveness of the entity/ facility while enhancing the energy security of the nation.	SDG 7, 12 & 13

24.	OIE352-Resource Management Techniques	It is the process of planning, scheduling, and allocating organizational resources in the best way possible to maximize the value and potential of your resources.	SDG 7, 12, & 15
25.	GE 3791 Human Values and Ethics	Moral and Social Values and Loyalty and to appreciate the rights of others and for sustainable growth of community	SDG 8, 10 & 16
26.	MC2303 Universal human values	Moral and Social Values and Loyalty and to appreciate the rights of others and for sustainable growth of community	SDG 5, 10 & 16
27.	CBM 357 Medical Device Regulations	Standards to followed design sustainable medical products	SDG 3, 9 & 12
28.	BM2V16 Medical device design and regulation	Standards to followed design sustainable medical products	SDG 3, 9 & 12
29.	CE8512- Water and Wastewater Analysis Laboratory	Physical, Chemical and Biological characteristics of water and wastewater	SDG 6, 13, 14 & 15
30.	EN8592- Wastewater Engineering	Planning And Design Of Sewerage System, Primary Treatment Of Sewage, Secondary Treatment Of Sewage, Disposal Of Sewage, Sludge Treatment And Disposal	SDG 6, 13, 14 & 15
31.	CE8001- Ground Improvement Techniques	Problematic Soil And Improvement Techniques, Dewatering, Institution Treatment Of Cohesion-less And Cohesive Soils, Earth Reinforcement, Grouting Techniques	SDG 11, 13 & 15
32.	CE8005- Air Pollution and Control Engineering	Control Of Particulate Contaminants, Control Of Gaseous Contaminants, Indoor Air Quality Management	SDG 3, 11, 13 & 15

33.	EN8591- Municipal Solid Waste Management	Source Reduction , Waste Storage And Recycling, Collection And Transfer Of Wastes , Processing Of Wastes, Waste Disposal	SDG 6, 11, 12, 13 &15
34.	Introduction to Women and Gender Studies	Women and Gender Studies (WGS) and sustainability are deeply interconnected, as both fields examine power dynamics, social justice, and the implications of societal structures on people and the environment.	SDG 5 & 10
35.	Smart mobility and Intelligent Vehicles	Smart mobility and intelligent vehicles are pivotal in advancing sustainability within transportation systems.	SDG 7, 11, 13 & 15
36.	Electric and Hybrid Vehicles	Electric and hybrid vehicles (EVs and HEVs) play a crucial role in promoting sustainability within the transportation sector.	SDG 7, 11, 13 & 15