SEMESTER – V

DSE-03A : Discipline Specific Elective - 3
Climate Change and Environmental Degradation

B.A. (Hons.) Humanities & Social Sciences - Semester V
Cluster Innovation Centre, University of Delhi

Credit Distribution, Eligibility and Pre-requisites of the Course						
Course Title & Code	Credits	Credit Distribution			Eligibility Criteria	Pre-requisite
		L	T	P		
Climate Change and Environmental Degradation (UPC: 3123100013)	4	1	0	3	Class XII Pass	Students must be familiar with concepts taught in any course under DSE-02
L = Lecture; T = Tutorial; P = Practical/Practice; UPC = Unique Paper Code						

Learning Objectives

- To enable students to understand and address the risks from climate change and environment degradation.
- To enable students to assess the natural hazards, vulnerabilities and risks associated with climate change.
- To help students determine the public perception on climate change and environment degradation.

Learning Outcomes

- Students will develop adequate knowledge of the complexity and relationship between climate change and environment degradation.
- Students will be able to do quantitative and qualitative assessment of climate change using spatial data.
- Students will be able to design strategies to counter and change public perception on climate change and environment degradation.

Outline of DSE-03A

Environmental degradation which is a consequence of centuries of unsustainable practices has further been exacerbated by climate change in more recent times. The combined effect of climate change and environmental degradation affects all types of development initiatives that various countries have taken up. This project will thus involve encouraging students to understand the factors responsible for climate change, its relationship with environmental degradation, ways to mitigate the negative consequences of climate change and environmental degradation and also initiate discussions on sustainable efforts through workshops, awareness programs and hands-on learning.

Theoretical Component (15 Hours)

Overview of carbon emission, interaction between air pollutants in the atmosphere, introduction to atmospheric science and climatic phenomenon, introduction to water budget systems in the atmosphere, biosphere and lithosphere, climate change and impact to the various communities of plants and animals such as habit shift, drought, migration etc.

Indicative Themes

- Impact of Human Activity on Environment
- Preserving Ecosystems
- Mitigation and Adaptation

Practical component (90 hours)

- Mapping using GIS software
- Open Source Database from Earthexplorer.
- Open soure databse from IPCC (Intergovernmental Panel on Climate change e.g., Bioclim, Worldclim
- Spatial database creation, manipulation, analysis and visualisation.
- Vector and Raster database.
- Analysis of Land use Land cover analysis through Landsat series,, Sentinel database
- Analysis of Topography database through SRTM and Aster database.

Readings

1. IPCC. (2021). *Climate Change 2021: The Physical Science Basis*. Cambridge University Press.
2. Jacobson, M. Z. (2012). *Air Pollution and Global Warming*. Cambridge University Press.
3. Archer, D. (2011). *Global Warming: Understanding the Forecast*. Wiley.
4. McMichael, A. J. (2013). *Climate Change and the Health of Nations*. Oxford University Press.
5. Steffen, W. et al. (2015). "Planetary Boundaries." *Science*, 347(6223).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

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DSE-03B : Discipline Specific Elective - 3
Sustainable Energy and Natural Resources

B.A. (Hons.) Humanities & Social Sciences - Semester V
Cluster Innovation Centre, University of Delhi

Credit Distribution, Eligibility and Pre-requisites of the Course						
Course Title & Code	Credits	Credit Distribution			Eligibility Criteria	Pre-requisite
		L	T	P		
Sustainable Energy and Natural Resources (UPC: 3123100013)	4	1	0	3	Class XII Pass	Students must be familiar with concepts taught in any course under DSE-02
L = Lecture; T = Tutorial; P = Practical/Practice; UPC = Unique Paper Code						

Learning Objectives

- To address the environmental consequences associated with the exploitation of natural resources.
- To address the different environmental impacts caused by fossil fuels and thermal power plants.
- To make students aware about different ways of energy efficiency use.

Learning Outcomes

- Students will gain a comprehensive understanding of sustainable energy and natural resources.
- Students will be equipped with the knowledge and tools to make informed decisions about sustainable development in their personal and professional lives.

Outline of DSE-03B

The course will engage with some of the issues around the impact of energy use on climate change, the concept of renewable energy, energy efficiency, natural resource management, sustainable development, and policy and regulation. Students will learn about different renewable energy technologies, including solar, wind, hydroelectric, geothermal, and bioenergy. The course will also explore the importance of energy efficiency in buildings, appliances, and transportation. The concept of sustainable development will be discussed, with a focus on balancing economic development and environmental protection. The course will also cover policy and regulation related to energy and natural resources, as well as the socioeconomic impacts of sustainable development.

Theoretical Component (15 Hours)

Introduction to sustainable energy, natural resources and its depletion and different forms of impact caused by anthropogenic activities on natural resources.

Indicative Themes

- Renewable and non-renewable resources
- Renewable energy
- Affordable and clean energy

Practical component (90 Hours)

- Mapping using GIS software
- Open Source Database from Earthexplorer.
- Open soure databse from IPCC (Intergovernmental Panel on Climate change e.g., Bioclim, Worldclim.
- Generation of Forest cover through NDVI (Normalized Difference on Vegetation Index),
- Vector and Raster database.
- Analysis of Land use Land cover analysis through Landsat series, Sentinel database.
- Analysis of Topography database through SRTM and Aster database.

Readings

1. Boyle, G. (2012). *Renewable Energy: Power for a Sustainable Future*. Oxford University Press.
2. Smil, V. (2017). *Energy and Civilization*. MIT Press.
3. Sachs, J. D. (2015). *The Age of Sustainable Development*. Columbia University Press.
4. Stern, N. (2007). *The Economics of Climate Change*. Cambridge University Press.
5. UNEP. (2020). *Global Resources Outlook.*

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DSE-03C : Discipline Specific Elective - 3
Sustainable Agriculture and Food Systems

B.A. (Hons.) Humanities & Social Sciences - Semester V
Cluster Innovation Centre, University of Delhi

Credit Distribution, Eligibility and Pre-requisites of the Course						
Course Title & Code	Credits	Credit Distribution			Eligibility Criteria	Pre-requisite
		L	T	P		
Sustainable Agriculture and Food Systems (UPC: 3123100014)	4	1	0	3	Class XII Pass	Students must be familiar with concepts taught in any course under DSE-02
L = Lecture; T = Tutorial; P = Practical/Practice; UPC = Unique Paper Code						

Learning Objectives

- To introduce students to the elements of sustainable agriculture.
- To enable students to explore the economic, social and environmental dimension of sustainable agriculture and food systems.
- To explore the factors affecting ecological balance and sustainable agriculture systems.

Learning Outcomes

- Students will be able to appreciate and foreground the sustainable agricultural practices in the larger public sphere.
- Students will gain a holistic understanding entailing the economic, social and environmental dimensions of sustainable agriculture and food systems.
- Students will be equipped to make informed decisions about their food choices.

Outline of DSE-03C

With a rapidly increasing human population, spurt in urbanization, varying food needs, growing wealth, environment degradation affecting food production, knowledge and discussion about sustainable agriculture and sustainable food systems have become imperative. This course will encourage students to examine the principles and practices of sustainable agriculture and food systems. Principles of agroecology, sustainable livestock management, challenges of sustainable and equitable food systems and policy and regulation related to sustainable agriculture and food systems will also be studied under this course. The course will help students lead campaigns towards making the public more aware about sustainable agriculture and food practices.

Theoretical Component (15 Hours)

Overview of ecosystem, interaction between biotic and abiotic environment components, energy and nutrient cycles, ecosystem services and biodiversity functioning.

Indicative Themes

- Environmentally sustainable, socially just, and economically viable agricultural practices
- Access to healthy and sustainable food for all

Practical component (90 Hours)

- Data collection – methods, tools and techniques
- Data analysis techniques
- Field visits

Readings

1. Odum, E. P., & Barrett, G. W. (2004). *Fundamentals of Ecology*. Brooks Cole.
2. Millennium Ecosystem Assessment. (2005). *Ecosystems and Human Well-being*. Island Press.
3. Cardinale, B. J. et al. (2012). "Biodiversity Loss and Its Impact on Humanity." *Nature*.
4. Chapin, F. S. et al. (2011). *Principles of Terrestrial Ecosystem Ecology*. Springer.
5. Primack, R. (2020). *Essentials of Conservation Biology*. Sinauer.

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DSE-03D : Discipline Specific Elective - 3
Circular Economy

B.A. (Hons.) Humanities & Social Sciences - Semester V
Cluster Innovation Centre, University of Delhi

Credit Distribution, Eligibility and Pre-requisites of the Course						
Course Title & Code	Credits	Credit Distribution			Eligibility Criteria	Pre-requisite
		L	T	P		
Circular Economy (UPC: 3123100015)	4	1	0	3	Class XII Pass	Students must be familiar with concepts taught in any course under DSE-02
L = Lecture; T = Tutorial; P = Practical/Practice; UPC = Unique Paper Code						

Learning Objectives

- To gain a comprehensive understanding of circular economy.
- To understand the importance and practices of reducing waste, waste management, recycling, and reusing.
- To appreciate ethical production and consumption.

Learning Outcomes

- Students will be equipped with the knowledge and tools to make informed decisions about implementing circular economy practices in their personal and professional lives.
- Students will be able to practise ethical production and consumption in their personal and professional lives.

Outline of DSE-03D

The course engages with concepts such as circular economy, the importance of resource efficiency, the role of business models, the principles of the circular economy, and the challenges and opportunities of implementing circular economy practices. Students will learn about waste management, recycling, and reusing to gain an understanding of the importance of resource efficiency, including the efficient use of energy, water, and materials. The course will explore the role of business models in the circular economy, including product-as-a- service, sharing economy, and closed-loop supply chains. Students will be introduced to the policy and regulatory frameworks, the importance of stakeholder engagement, and the role of innovation and technology.

Theoretical Component (15 Hours)

Concept of circular economy, ethical production and consumption, waste management & recycling and sustainable product design

Indicative Themes

- Environmentally sustainable, socially just, and economically viable production and consumption practices.
- Learning from best practices of waste management, recycling towards efficient use of energy, water and other natural resources.
- Critically analysing the relevant policies and regulation mechanisms.
- Sustainable material and product design.

- Consumer awareness and behaviour change.
- Product life cycle analysis.

Practical component (90 Hours)

- Data collection – methods, tools and techniques
- Data analysis techniques
- Field visits

Readings

1. Ellen MacArthur Foundation. (2013). *Towards the Circular Economy*.
2. Geissdoerfer, M. et al. (2017). "The Concept of the Circular Economy." *Journal of Cleaner Production*.
3. Braungart, M., & McDonough, W. (2009). *Cradle to Cradle*. Vintage.
4. Bocken, N. M. P. et al. (2016). "Product Design and Business Model Strategies for a Circular Economy." *Journal of Industrial and Production Engineering*.
5. Korhonen, J. et al. (2018). "Circular Economy: The Concept and Its Limitations." *Ecological Economics*.

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DSE-03E : Discipline Specific Elective - 3
Social Justice and Equity

B.A. (Hons.) Humanities & Social Sciences - Semester V
Cluster Innovation Centre, University of Delhi

Credit Distribution, Eligibility and Pre-requisites of the Course						
Course Title & Code	Credits	Credit Distribution			Eligibility Criteria	Pre-requisite
		L	T	P		
Social Justice and Equity (UPC: 3123100016)	4	1	0	3	Class XII Pass	Students must be familiar with concepts taught in any course under DSE-02
L = Lecture; T = Tutorial; P = Practical/Practice; UPC = Unique Paper Code						

Learning Objectives

- To introduce students to the key concepts of social justice and equity.
- To examine the intersectionality of social identities.
- To develop strategies for promoting social justice and equity.

Learning Outcomes

- Students will be able to develop a comprehensive understanding of the principles and practices of social justice and equity.
- Students will be able to identify the role of representation and inclusion in social justice and equity.
- Students will be able to apply critical thinking skills to do case studies from different contexts.

Outline of DSE-03E

This course orients students to the history and theories of social justice including distributive justice and the principles of fairness, equality, and human rights, intersectionality of social identities, importance of representation and inclusion, and the challenges and opportunities of creating a more just and equitable society. Students will learn about the role of media, arts and culture in shaping social norms and values including the role of activism and social movements, and the need for policy and institutional change. Students will also gain an understanding of the socioeconomic and environmental impacts of social justice and equity, including the importance of addressing issues of poverty, inequality, and environmental degradation.

Theoretical Component (15 Hours)

Environmental Justice, Intersectionality, Environmental Racism, Just Transition, Eco-feminism and Participatory Democracy.

Indicative Themes

- Intersection of environmental sustainability and social justice
- Access to basic resources
- Education and awareness: engaging communities in collective action towards a sustainable future
- Gender and Environment

Practical component (90 Hours)

- Data collection – methods, tools and techniques
- Data analysis techniques
- Field visits

Readings

1. Schlosberg, D. (2007). *Defining Environmental Justice*. Oxford University Press.
2. Shiva, V. (2016). *Staying Alive: Women, Ecology, and Development*. North Atlantic Books.
3. Pulido, L. (2017). "Geographies of Race and Ethnicity." *Progress in Human Geography*.
4. Fraser, N. (2009). *Scales of Justice*. Columbia University Press.
5. Temper, L., & Martinez-Alier, J. (2013). "The Global Environmental Justice Movement." *Journal of Political Ecology*.

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DSE-03F : Discipline Specific Elective - 3
Sustainable Cities and Communities

B.A. (Hons.) Humanities & Social Sciences - Semester V
Cluster Innovation Centre, University of Delhi

Credit Distribution, Eligibility and Pre-requisites of the Course						
Course Title & Code	Credits	Credit Distribution			Eligibility Criteria	Pre-requisite
		L	T	P		
Sustainable Cities and Communities (UPC: 3123100017)	4	1	0	3	Class XII Pass	Students must be familiar with concepts taught in any course under DSE-02
L = Lecture; T = Tutorial; P = Practical/Practice; UPC = Unique Paper Code						

Learning Objectives

- To enable students to have a comprehensive understanding of key concepts of sustainable cities.
- To introduce students to the principles and best practices of sustainable cities.
- To examine the role of community in realisation and promotion of sustainable urban development.

Learning Outcomes

- Students will learn about the challenges and opportunities of creating sustainable cities and communities.
- Students will gain an understanding of the principles of sustainable urban planning.
- Students will be able to develop effective strategies in exploring and catalysing the role of community in sustainable urban development.

Outline of DSE-03F

The course engages with concepts of sustainable urban planning, community engagement, green infrastructure, and urban resilience. Students will also examine the role of community engagement in sustainable urban development, including the importance of stakeholder involvement in decision-making processes. Students will learn about the benefits of green infrastructure, urban resilience etc. Students will be encouraged to analyze case studies of sustainable cities and communities, and explore best practices and innovative solutions for creating sustainable urban environments.

Theoretical Component (15 Hours)

Urban sprawl and urbanisation in developing countries, inbound and outbound migration, satellite cities & urbanisation and urban ecology.

Indicative Themes

- Sustainable urban development that prioritises livability, accessibility, and environmental sustainability
- Urban Dualism

Practical component (90 Hours)

- Data collection – methods, tools and techniques
- Data analysis techniques

- Field visits

Readings

1. UN-Habitat. (2020). *World Cities Report*.
2. Sassen, S. (2001). *The Global City*. Princeton University Press.
3. McDonald, R. I. (2015). *Conservation for Cities*. Island Press.
4. Montgomery, C. (2013). *Happy City*. Farrar, Straus and Giroux.
5. Seto, K. C. et al. (2012). "Global Forecasts of Urban Expansion." *PNAS*.

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