Integral University, Lucknow

Attributes & SDGs Common for all branches/Disciplines

Course Code	Course Title	Attributes							SDGs No.
ES115	Fundamentals of Environmental Science	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
						√			SDGs 6,13,14,& 15

Department of Computer Application
(Program: B.C.A)

Effective from Session:							
Course Code	ES 115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes

CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Energy Resources:	Renewable and non renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context.	8	CO4
5	Human Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

Agarwal, K.C. 2001 Environmental; Biology, Nidi Pub. Ltd.Bikaner.

Bharucha Erach, the Biodiversity of India, Mapin Pub. Pvt. Ltd., Ahemdabad-380, India.

Brunner R.C. 1989. Hazardous waste incineration, Mc Graw Hill.

Clark R.S. Marine Pollution, Clanderon Press Oxford (TB).

Cunningham W.P.2001.Cooper, T.H. Gorhani, E & Hepworth, Environmental encyclopedia, Jaicob Publication House, Mumbai.

e-Learning Source:

https://www.biologydiscussion.com/ecosystem/ecosystem-its-structure-and-functions-with-diagram/6666

https://youmatter.world/en/definition/definitions-biodiversity-what-is-it-definition-protection-loss-and-csr-commitments/

https://www.conserve-energy-future.com/environmental-ethics.php

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1					2	1			-	-	-	-			-	-	-	-
CO2				1	2	1			-	-	-	-	2		-	-		-
CO3				1	2	1			-	-	-	-	2		-	-		-
CO4				1	1	1			-	-	-	-	2		-	-	-	-
CO5				1	3	1			-	-	-	-	1		-	-	-	-

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	Sign & Seal of HoD

Integral University, Lucknow
Department of Economics

Effective from Session: 2022-2023							
Course Code	ES115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes	
CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Natural Resources	Energy Resources: Renewable and non renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context	8	CO4
5	Human Population and the Environment Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

1)Agarwal, K.C. 2001 Environmental; Biology, Nidi Pub. Ltd. Bikaner.

2) Bharucha Erach, The Biodiversity of India, Mapin Pub. Pvt. Ltd., Ahemdabad-380, India.

3) Brunner R.C. 1989. Hazardous waste incineration, Mc Graw Hill

e-Learning Source:

https://byjus.com/biology/difference-between-environment-and-ecosystem.

https://www.youtube.com/watch?v=dRPl4TB8w7k

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	1	1	1	1	2	2	-	-	-	-	-	1	1	1	1	-	-
CO2	1	1	1	1	1	2	2	-	-	-	-	-	1	1	1	1	-	-
CO3	1	1	1	1	1	2	2	-	-	-	-	-	1	1	1	1	-	-
CO4	1	1	1	1	1	2	2	-	-	-	-	-	1	1	1	1	-	-
CO5	1	1	1	1	1	2	2	-	-	-	-	-	1	1	1	1	-	-

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow
Department of Sociology

Effective from Session:2022-2023							
Course Code	ES115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes	
CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Natural Resources	Energy Resources: Renewable and non-renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context	8	CO4
5	Human Population and the Environment Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

1)Agarwal, K.C. 2001 Environmental; Biology, Nidi Pub. Ltd. Bikaner.

2) Bharucha Erach, The Biodiversity of India, Mapin Pub. Pvt. Ltd., Ahemdabad-380, India.

3) Brunner R.C. 1989. Hazardous waste incineration, Mc Graw Hill

e-Learning Source:

https://byjus.com/biology/difference-between-environment-and-ecosystem.

https://www.youtube.com/watch?v=dRPl4TB8w7k

https://www.youtube.com/watch?v=3fbEVytyJCk

https://www.vedantu.com/biology/conservation-of-biodiversity

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-
CO2	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-
CO3	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-
CO4	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-
CO5	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow
Department of History

Effective from Session:2022-2023							
Course Code	ES115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes	
CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Natural Resources	Energy Resources: Renewable and non renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context	8	CO4
5	Human Population and the Environment Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

1)Agarwal, K.C. 2001 Environmental; Biology, Nidi Pub. Ltd. Bikaner.

2) Bharucha Erach, The Biodiversity of India, Mapin Pub. Pvt. Ltd., Ahemdabad-380, India.

3) Brunner R.C. 1989. Hazardous waste incineration, Mc Graw Hill

4) Clark R.S. Marine Pollution, Clanderon Press Oxford (TB)

e-Learning Source:

https://byjus.com/biology/difference-between-environment-and-ecosystem.

https://www.youtube.com/watch?v=dRPl4TB8w7k

https://www.youtube.com/watch?v=3fbEVytyJCk

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-
CO2	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-
CO3	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-
CO4	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-
CO5	1	1	1	1	1	1	2	1	-	-	-	-	1	1	1	1	1	-

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow
Department of Political Sciences (Humanities & Social Sciences)

Effective from Session:2022-2023							
Course Code	ES115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	**I**	**Semester**	I	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes

CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Natural Resources	Energy Resources: Renewable and non renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context	8	CO4
5	Human Population and the Environment Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

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2) Bharucha Erach, The Biodiversity of India, Mapin Pub. Pvt. Ltd., Ahemdabad-380, India.

3) Brunner R.C. 1989. Hazardous waste incineration, Mc Graw Hill

e-Learning Source:

https://byjus.com/biology/difference-between-environment-and-ecosystem.

https://www.youtube.com/watch?v=dRPl4TB8w7k

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	1	1	1	1	1	1	1	1	1	1	2	1	3	1	1	-	-
CO2	1	1	1	1	1	1	1	1	1	1	1	2	1	3	1	1	-	-
CO3	1	1	1	1	1	1	1	1	1	1	1	2	1	3	1	1	-	-
CO4	1	1	1	1	1	1	1	1	1	1	1	2	1	3	1	1	-	-
CO5	1	1	1	1	1	1	1	1	1	1	1	2	1	3	1	1	-	-

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow
Department of Psychology (Humanities & Social Sciences)

Effective from Session: 2022-2023							
Course Code	ES115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes	
CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Natural Resources	Energy Resources: Renewable and non renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context	8	CO4
5	Human Population and the Environment Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

1)Agarwal, K.C. 2001 Environmental; Biology, Nidi Pub. Ltd. Bikaner.

2) Bharucha Erach, The Biodiversity of India, Mapin Pub. Pvt. Ltd., Ahemdabad-380, India.

3) Brunner R.C. 1989. Hazardous waste incineration, Mc Graw Hill

e-Learning Source:

https://byjus.com/biology/difference-between-environment-and-ecosystem.

https://www.youtube.com/watch?v=dRPl4TB8w7k

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	1	2	1	1	1	2	2	-	-	-	-	-	1	1	1	1	2	-
CO2	1	2	1	1	1	2	2	-	-	-	-	-	1	1	1	1	2	-
CO3	1	2	1	1	1	2	2	-	-	-	-	-	1	1	1	1	2	-
CO4	1	2	1	1	1	2	2	-	-	-	-	-	1	1	1	1	2	-
CO5	1	2	1	1	1	2	2	-	-	-	-	-	1	1	1	1	2	-

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Integral University, Lucknow

Department of English (Program: Humanities & Social Sciences)

Effective from Session: 2017-2018							
Course Code	ES 115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes	
CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Energy Resources:	Renewable and non renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context.	8	CO4
5	Human Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

Agarwal, K.C. 2001 Environmental; Biology, Nidi Pub. Ltd.Bikaner.

Bharucha Erach, the Biodiversity of India, Mapin Pub. Pvt. Ltd., Ahemdabad-380, India.

Brunner R.C. 1989. Hazardous waste incineration, Mc Graw Hill.

Clark R.S. Marine Pollution, Clanderon Press Oxford (TB).

Cunningham W.P.2001.Cooper, T.H. Gorhani, E & Hepworth, Environmental encyclopedia, Jaicob Publication House, Mumbai.

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https://www.biologydiscussion.com/ecosystem/ecosystem-its-structure-and-functions-with-diagram/6666

https://youmatter.world/en/definition/definitions-biodiversity-what-is-it-definition-protection-loss-and-csr-commitments/

https://www.conserve-energy-future.com/environmental-ethics.php

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	1	1	1	1	2	1	1	-	-	-	-	-	1	1	1	1	-	-
CO2	1	1	1	1	2	1	1	-	-	-	-	-	1	1	1	1	-	-
CO3	1	1	1	1	2	1	1	-	-	-	-	-	1	1	1	1	-	-
CO4	1	1	1	1	2	1	1	-	-	-	-	-	1	1	1	1	-	-
CO5	1	1	1	1	2	1	1	-	-	-	-	-	1	1	1	1	-	-

2- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HoD**

Department of Commerce and Business Management
(Programme: B. Com)

Effective from Session:							
Course Code	ES 115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	**I**	**Semester**	II	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes	
CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Energy Resources:	Renewable and non -renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context.	8	CO4
5	Human Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

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Jadhave, H. and Bhosale,V. M. 1995 Environmental protection and laws, Himalaya pub, house,Delhi.284 p.
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https://www.conserve-energy-future.com/environmental-ethics.php

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1		2	2		3	1											
CO2	1		1	1		2	1											
CO3	1		1	1		2	1											
CO4	1		1	1		3	1											
CO5	1	3	2	2	2	3	1								2			

3- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HOD**

Department of Commerce and Business Management
(Programme: B.BA)

Effective from Session:							
Course Code	ES 115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	**I**	**Semester**	I	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes	
CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Energy Resources:	Renewable and non renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context.	8	CO4
5	Human Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

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https://youmatter.world/en/definition/definitions-biodiversity-what-is-it-definition-protection-loss-and-csr-commitments/
https://www.conserve-energy-future.com/environmental-ethics.php

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1		2	2		3	1											
CO2	1		1	1		2	1											
CO3	1		1	1		2	1											
CO4	1		1	1		3	1											
CO5	1	3	2	2	2	3	1								2			

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HOD**

Department of Biosciences
(Programme: B.Sc. Life Sciences)

Effective from Session:							
Course Code	ES 115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	**I**	**Semester**	II	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes	
CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Energy Resources:	Renewable and non renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context.	8	CO4
5	Human Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

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	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2		2	1		3	1						1	1	1			
CO2	1		1			2	1						1		1			
CO3	1		1			2	1						1	1	2			
CO4	1		1			3	1						1		1			
CO5	1	2	2	2	3	3	1							1	1			

2- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HOD**

Department of Biosciences
(Programme: B.Sc. ZBC)

Effective from Session:							
Course Code	ES 115	**Title of the Course**	Fundamentals of Environmental Science	**L**	**T**	**P**	**C**
Year	**I**	**Semester**	II	**3**	**1**	**0**	**4**
Pre-Requisite	10+2	**Co-requisite**					
Course Objectives	To study about the Environment and the Ecosystem. To study about the Natural Resources. To study about Biodiversity and Conservation. To study Environmental pollution, its policies and practices. To study Human Population and Environmental Ethics.						

Course Outcomes	
CO1	Gain knowledge about environment and ecosystem.
CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
CO3	Gain knowledge about the conservation of biodiversity and its importance.
CO4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
CO5	Students will learn about increase in population growth and its impact on environment.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	Introduction to Environment and Ecosystems	Environment, its components and segments, Multidisciplinary nature of Environmental studies Scope and Importance, Concept of Sustainability and sustainable development, Environmental movements (Chipko and Bishnois etc.), Ecosystem, Structure, Function and types, Energy flow in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.	8	CO1
2	Energy Resources:	Renewable and non renewable energy sources, Soil erosion and desertification, Deforestation its causes and impacts, Impact of Modern Agriculture activities on Environment, Impact of Mining Activities on Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies.	8	CO2
3	Biodiversity and Conservation	Levels of biological diversity (Genetic, Species and Ecosystem diversity), Hot spots of biodiversity (Indian /Global), India as a Mega Diversity Nation, Endangered and endemic species of India, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values).	8	CO3
4	Environmental Pollution, Policies and Practices	Environmental pollution: types, causes, effects and controls, Solid waste management (urban and industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife protection Act, Forest conservation Act, International agreements: Montreal and Kyoto protocols and convention on Biological Diversity (CBD), Tribal rights, Human wildlife conflicts in Indian context.	8	CO4
5	Human Population and the Environment	Human population growth: Impacts on environment, human health and welfare, Resettlement and rehabilitation of project affected persons, case studies, RR, EIA, Environmental ethics: Role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.	8	CO5

Reference Books:

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Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2		2	1		3	1						2		1	1		
CO2	1		1			2	1						1		1	1		
CO3	1		1			2	1						1		1	1		
CO4	1		1			3	1						1		1	1		
CO5	1	2	2	2	3	3	1								1	1		

3- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Name & Sign of Program Coordinator	**Sign & Seal of HOD**