

Attributes & SDGs Common for all branches/Disciplines

Course Code	Course Title		Attributes											
ES115	Fundam entals of Environ	Employa bility	Entrepreneurship	Skill Develo pment	Develo Gender Environment Equality Sustainabilit			Professional Ethics	SDGs No.					
	mental Science					√			SDGs 6,13,14,& 15					

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

				(110gram. b.C.A)										
Effective	from Session:													
Course C	Code	ES 115		Title of the Course	Fundamentals of Environmental Science	L	T	P	C					
Year		I		Semester	I	3	1	0	4					
Pre-Req	uisite	10+2		Co-requisite										
Course (Objectives	To study To study To study	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 knowledg	e about	about environment and ecosystem.											
CO2	Students will le	arn abou	rn about natural resource, its importance and environmental impacts of human activities on natural resource.											
CO3	Gain knowledg	e about t	the conservation of biodiv	versity and its importance.										
CO4	Aware students	about p	roblems of environmenta	l pollution, its impact on hum	an and ecosystem and control measures.									
CO5	Students will le	arn abou	ut increase in population	growth and its impact on envi	ronment.									
Unit No.	Title of the U	nit		Content of Unit		Con Hi	tact rs.	Mapp CO						
1	Introduction Environment a Ecosystems	and	and Importance, Concept of (Chipko and Bishnois etc.),	nvironment, 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, and Chains, Food webs, Ecological Pyramids and Ecological Succession.										
2	Energy Resour	res.	and impacts, Impact of Mod	vable energy sources, Soil erosion and desertification, Deforestation its causes lodern Agriculture activities on Environment, Impact of Mining Activities on 8 CO2										

Environment, Water: Use and over exploitation of surface and ground water, Impacts of large Dams (Advantages and Disadvantages), Case studies. 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 and 3 Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Conservation of Biodiversity: 8 CO3 Conservation In-situ and Ex-situ conservation of biodiversity, Ecosystem and biodiversity services (Ecological, Consumptive, Productive, Social, Ethical, Aesthetic, National and Option values). Environmental pollution: types, causes, effects and controls, Solid waste management (urban and

on human communities and Environment, Environmental Laws: Environment Protection Act, Air (Prevention & Control of pollution)Act, Water (Prevention & Control of pollution)Act, Wildlife 4 Pollution, Policies and 8 CO4 Practices 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. 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 Human Population and 5 CO5 8 the Environment and other religions and cultures in environmental conservation, Environmental communication and public awareness, case studies.

industrial waste), Ill effects of fireworks, Climate change, Ozone layer depletion, acid rain and impacts

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).

Environmental

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/properties of the commitment of t

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

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		Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO	FOI	FO2	103	104	103	100	107	108	109	FO10	FOII	FOIZ	F301	F3O2	1304	1303	1300	1307
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 a To study about the Natural Resou To study about Biodiversity and C To study Environmental pollution To study Human Population and I	rces. Conservation. a, its policies and prac					

Course Outcomes

	Course Outcomes										
CO1	Gain knowledge ab	out environment and ecosystem.									
CO2		about natural resource, its importance and environmental impacts of human activities on natural res	ource.								
CO3	Gain knowledge ab	out the conservation of biodiversity and its importance.									
CO4	Aware students abo	ut 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	in the Ecosystem, Food chains, Food webs, Ecological Pyramids and Ecological Succession.									
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									
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									
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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO																		
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



Effective from Session:2022-2023											
Course Code	ES115	ES115 Title of the Course Fundamentals of Environmental Science									
Year	I	Semester	I	3	1	0	4				
Pre-Requisite	10+2	Co-requisite									
Course Objectives	To study about the Natu To study about Biodiver To study Environmental		practices.								

	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

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		Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO	101	102	103	104	103	100	107	100	10)	1010	1011	1012	1501	1502	1503	1504	1503	1500
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	-

Name & Sign of Program Coordinator	Sign & Seal of HoD



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								
	,	To study about the Environment and the Ecosystem.								
		the Environment and the I	Ecosystem.							

Course Objectives

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

						Cours	e Artic	ulation	Matri	x: (Map	oing of C	Os with	POs and	d PSOs)				
PO-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO	101	102	103	101	103	100	107	100	10)	1010	1011	1012	1501	1502	1505	1501	1503	1500
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	-

Name & Sign of Program Coordinator	Sign & Seal of HoD



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

Course Coo	de	ES115	Title of the Course	Fundamentals of Environmental Science	L	T	P	С
Year	uc	I	Semester	I		1	0	4
Pre-Requis	site	10+2	Co-requisite					
Course Ob	jectives	To study about To study about To study about To study Envir	the Environment and the I the Natural Resources. Biodiversity and Conserv. commental pollution, its pol an Population and Environ	ation. icies and practices.	I			
				Course Outcomes				
CO1	Gain knowledge abou							
CO2				and environmental impacts of human activities on natural re-	source.			
CO3	Gain knowledge abou	at the conserv	ation of biodiversity an	d its importance.				
CO4	Aware students abou	t problems of	environmental pollution	n, its impact on human and ecosystem and control measures.				
CO5	Students will learn ab	out increase	in population growth an	nd its impact on environment.				
Unit No.	Title of the Unit			Content of Unit	Conta Hrs		Mappe	ed CO
1	Introduction to Environment and Ecosystems	studies Sc Environme types, Ene Ecological	ope and Importance, ontal movements (Chiplergy flow in the Ecosys Succession.	nd segments, Multidisciplinary nature of Environmental Concept of Sustainability and sustainable development, ko and Bishnois etc.), Ecosystem, Structure, Function and stem, Food chains, Food webs, Ecological Pyramids and	8		CO) 1
2	Natural Resources	desertificat on Environ	ion, Deforestation its cannent, Impact of Min	and non renewable energy sources, Soil erosion and auses and impacts, Impact of Modern Agriculture activities ning Activities on Environment, Water: Use and over und water, Impacts of large Dams (Advantages and	8		CO)2
3	Biodiversity and Conservation	biodiversity species of Conflicts, Ecosystem	y (Indian /Global), Ind India, Threats to Biodi Conservation of Biodi	Genetic, Species and Ecosystem diversity), Hot spots of it is as a Mega Diversity Nation, Endangered and endemic versity: Habitat Loss, Poaching of Wildlife, Man-Wildlife versity: In-situ and Ex-situ conservation of biodiversity, tes (Ecological, Consumptive, Productive, Social, Ethical, lues).	8		CO)3
4	Environmental Pollution, Policies and Practices	Environme and industrain and Environme & Control agreements	ntal pollution: types, ca rial waste), Ill effects of impacts on human nt Protection Act, Air (of pollution)Act, Wild	uses, effects and controls, Solid waste management (urban of fireworks, Climate change, Ozone layer depletion, acid communities and Environment, Environmental Laws: (Prevention & Control of pollution)Act, Water (Prevention life protection Act, Forest conservation Act, International protocols and convention on Biological Diversity (CBD),	8		CC)4
5	Human Population and the Environment Population and the Environment	Resettleme Environme	nt and rehabilitation ntal ethics: Role of In	npacts on environment, human health and welfare, of project affected persons, case studies, RR, EIA, ndian and other religions and cultures in environmental munication and public awareness, case studies.	8		CO)5
Reference	Books:							

Reference Books

Effective from Session:2022-2023

- 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 = dRP14TB8w7k

		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: 2022-20	23									
Course Code	ES115	Title of the Course	Fundamentals of Environmental Science	L	T	P	C			
Year	I	Semester I 3 1 0								
Pre-Requisite	10+2	10+2 Co-requisite								
Course Objectives	To study about To study about To study Envir	the Environment and the E the Natural Resources. Biodiversity and Conserva onmental pollution, its poli in Population and Environr	ition. cies and practices.							

	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.	Mappe d 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

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		Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO- PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO																		
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: 20	017-2018						
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 Environmer To study about the Natural Res To study about Biodiversity an To study Environmental pollut To study Human Population an	ources. d Conservation. ion, its policies and practices.					

	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	Blodiversity, Habitat Loss, Loaching of Mildlife, Man-Mildlife Conflicts, Conservation of Blodiversity, L					
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.

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e-Learning Source:

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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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO	101	102	103	101	103	100	107	100	10)	1010	1011	1012	1501	1502	1504	1503	1500	1507
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	_	_

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	С				
Year	I	Semester	II	3	1	0	4				
Pre-Requisite	0+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 p To study Human Population and Environmental Eth	ractices.									

	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://you matter.world/en/definition/definitions-biodiversity-what-is-it-definition-protection-loss-and-csr-commitments/protection-los

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

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



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 Eco To study about the Natural Resources. To study about Biodiversity and Conservation To study Environmental pollution, its policies To study Human Population and Environmental	on. es and practices.										

	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:	(Advantages and Disadvantages), Case studies.						
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, Posching of Wildlife, Man Wildlife Conflicts, Conservation of Biodiversity.						
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://www.conserve-energy-future.com/environmental-ethics.php

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

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	С					
Year	I	Semester	II	3	1	0	4					
Pre-Requisite	10+2 Co-requisite											
Course Objectives	To study about the Environment and the Eco To study about the Natural Resources. To study about Biodiversity and Conservatio To study Environmental pollution, its policie To study Human Population and Environmental	on. es and practices.										

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

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

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	П	3	1	0	4					
Pre-Requisite	10+2 Co-requisite											
Course Objectives	To study about the Environment and the Eco To study about the Natural Resources. To study about Biodiversity and Conservatio To study Environmental pollution, its policie To study Human Population and Environmental	on. es and practices.										

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

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