

**University of Rajasthan  
Jaipur**

**SYLLABUS**

**POST P.G. DIPLOMA IN  
ENVIRONMENTAL  
STUDIES**

**(Semester Scheme)**

**2020-21**

*Raj / Jai*  
Dy. Registrar (Acad.)  
University of Rajasthan

**INDIRA GANDHI CENTRE FOR HUMAN ECOLOGY,  
ENVIRONMENTAL AND POPULATION STUDIES,  
UNIVERSITY OF RAJASTHAN, JAIPUR-302004**

**Post P.G. Diploma in Environmental Studies (Semester scheme)**

Post P.G. Diploma in Environmental Studies is divided into two semesters. There are Six theory papers and two practicals in each semester. Grades will be awarded as per norm considered for faculty of science.

**Eligibility for admission:**

Master's Degree in Science, Medicine, Engineering, Law (with B.Sc.) with at least 50% in aggregate (45% for SC and ST candidates).

**Post P.G. Diploma in Environmental Studies**

**I<sup>st</sup> Semester**

S.No.	Subject code	Course Title	Course category	Credit	Contact hours per week		
					Lecture	Tutorial	Practical
1.	DES 701	Fundamentals of Ecology	CCC	4	4	0	0
2.	DES 702	Natural Resources	CCC	4	4	0	0
3.	DES 703	Environmental Pollution	CCC	4	4	0	0
4.	DES 711	Core Lab	CCC	6	0	0	6
5.	DES A01	Elective-1 Environmental Impact Assessment (EIA)	ECC	4	4	0	0
6.	DES A02	Elective-2 Environment Management and Planning	ECC	4	4	0	0
7.	DES A03	Elective-3 Disaster Management	ECC	4	4	0	0
8.	DESA11	Elective Lab	ECC	6	0	0	6
		Total		36	24	0	12

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**Post P.G. Diploma in Environmental Studies  
II<sup>nd</sup> Semester**

S.No.	Subject code	Course Title	Course category	Credits	Contact hours per week		
					Lecture	Tutorial	Practical
1.	DES B01	Environmental Economics, Auditing and Design	CCC	4	4	0	0
2.	DES B02	Diversity of Ecosystems	CCC	4	4	0	0
3.	DES B03	Sustainable Development	CCC	4	4	0	0
4.	DES B11	Core Lab	CCC	6	0	0	6
5.	DES B01	Elective-I	LCC	4	4	0	0
6.	DES B02	Elective-II	ECC	4	4	0	0
7.	DES B03	Elective-III	FCC	4	4	0	0
8.	DES B11	Elective Lab	LCC	6	0	0	6
Total				36	24	0	12

**Post P.G. Diploma in Environmental Studies  
Semester-I**

Note: Each paper will have five questions. Questions No. 1 containing short answer type questions from the entire syllabus and will be compulsory.

**DES 701: Fundamentals of Ecology** **60 Hours**  
History of Ecology and Environmental Science, Historical development of ecology, Ecological principles.  
Organism-Environment Interaction, Commensalism, Mutualism, Parasitism, Predation, Symbiosis, Amensalism, (15 Hours)  
Concept of an Ecosystem, Ecological dynamics, Ecological amplitudes, and Ecological niches. (15 Hours)  
Structure and Function of an Ecosystem, Food Chain, Food Web, Trophic levels, Ecological energetic Flow of energy, Biogeochemical cycling. (15 Hours)

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<b>DES 702: Natural Resources</b>	<b>60 Hours</b>
Non-renewable resources, Their availability, distribution and economics.	(15 Hours)
Renewable Resources, Distribution, rate of depletion and imbalances.	(15 Hours)
Wildlife Resources-Necessity of Wildlife, State of Wildlife in India, National Parks, Sanctuaries, Biosphere Reserves and Tiger Projects.	(15 Hours)
Methods and Policies of Conservation of Natural resources and wildlife, WWF and CITES.	(15 Hours)

<b>DES 703: Environmental Pollution</b>	<b>60 Hours</b>
Air pollution: Types of air pollutants, sources of air pollution, methods of detection and effects of air pollution.	(15 Hours)
Water Pollution: Types of water pollutants, sources and impacts of water pollution.	(15 Hours)
Land Pollution: Sources and adverse impacts on environment and human health.	(15 Hours)
Noise Pollution: Sources and impacts; Radiation Pollution: Sources and Impacts; Space pollution; sources and impacts.	(15 Hours)

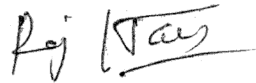
**DES 711: Core Lab based on theory papers**

**Elective-1**

<b>DES A01: Environmental Impact Assessment (EIA)</b>	<b>60 Hours</b>
Introduction, aims and objectives of EIA, Procedures of EIA, in different countries, methodologies of EIA. Cost benefit analysis.	(15 Hours)
EIA of Thermal Power and Nuclear Power Plants.	(15 Hours)
EIA of Chemical Industries, Steel industries, Paper and pulp industries and distilleries.	(15 Hours)
EIA of Mining, EIA of River Valley projects and major harbours.	(15 Hours)

**Elective-2**

<b>DES A02: Environmental Management and Planning</b>	<b>60 Hours</b>
Introduction to environmental management system (EMS): Goals ISO 14000 and ISO 14001.	(15 Hours)
Air pollution Control Technologies, Water Pollution control Technologies.	(15 Hours)
Impact of use and production of Energy and Mitigations.	(15 Hours)
Waste: Generation, Sources and types, Solid Waste management, Toxic and Hazardous waste management.	(15 Hours)

  
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**Elective-3**

<b>DES A03: Disaster Management</b>	<b>60 Hours</b>
Earth's process and disaster, Concepts of Hazard, Vulnerability, Risks. Types of Disasters, Causes and effects.	<b>(15 Hours)</b>
Geological Disasters: Earthquakes, Volcanic Eruption, Landslides; Wind and Water Related Natural Disaster: Floods and Flash Floods, Droughts, Cyclones, Tsunamis, Man-Made Disasters.	<b>(15 Hours)</b>
Disaster Cycle, Phases of Disaster, Disaster Risk Reduction, Disaster Preparedness, Disaster Mitigation.	<b>(15 Hours)</b>
National Policy on Disaster Management (NPDM), Institutional and Legal Arrangements, International Decade for Natural Disaster Reduction (IDNDR), Policy for disaster reduction.	<b>(15 Hours)</b>

**DES A11: Elective Lab based on theory papers**

**Post P.G. Diploma in Environmental Studies**  
**II Semester**

<b>DES 801: Environmental Economics, Auditing and Design</b>	<b>60 Hours</b>
Objectives and scope of EA, types, general audit methodology, Elements of audit process.	<b>(15 Hours)</b>
Waste audits, Liability Audits and site Assessment, EMS auditing, principals of green buildings.	<b>(15 Hours)</b>
Environmental economics definition, environmental cost, benefit taxes, accounting, environmental valuation, economy of natural resources, ecological economics.	<b>(15 Hours)</b>
Principals of environmental design, benefits and motivation for ED, ED for manufactured products, ED for building construction, Indian examples.	<b>(15 Hours)</b>
<b>DES 802: Diversity of Ecosystems</b>	<b>60 Hours</b>
Forest Ecosystem: Types and conservation, Distribution and Productivity of Forests, Conservation Policies and Acts.	<b>(15 Hours)</b>
Grassland: Grassland ecosystems, types, distribution and productivity in grassland ecosystems.	<b>(15 Hours)</b>
Desert: Desert ecosystems (Hot and Cold) distribution, productivity, and adaptations.	<b>(15 Hours)</b>
Aquatic ecosystem: fresh water, estuaries and marine ecosystem.	<b>(15 Hours)</b>

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<b>DES 803: Sustainable Development</b>	<b>60 Hours</b>
Sustainable agriculture: drip irrigation, organic fertilizers, organic pesticides, integrated pest management.	<b>(15 Hours)</b>
Sustainable industrialization: clean development mechanism, reduction of emission in air, reduction of effluents in water bodies.	<b>(15 Hours)</b>
Sustainable forest management: water shed development and conservation, soil conservation, ecosystem peoples' rehabilitation.	<b>(15 Hours)</b>
Sustainable mining: mining overburden utilization, mine reclamation, afforestation, conservation of indigenous species.	<b>(15 Hours)</b>

**DES 811: Core lab based on theory papers**

**Elective-1**

<b>DES B01: Social Issues and Environment</b>	<b>60 Hours</b>
Environmental ethics, Religion and Environment, Eco-Imperialism with regard to global distribution of resources, eco-fund.	<b>(15 Hours)</b>
Current environmental issues in India; Narmada Dam, Tehri Dam, Almetti Dam, Silent valley, Doon Valley, Sariska and Narayan Sarovar etc. Chipko movement, Appiko movement.	<b>(15 Hours)</b>
Scheme of labeling of environmentally friendly products (Ecomark), Public awareness.	<b>(15 Hours)</b>
Role of NGOs in environmental protection, KSSP, etc., problems and causes related to resettlement and rehabilitation of displaced people, dams-benefits and problems.	<b>(15 Hours)</b>

**Elective-2**

<b>DES B02 : Energy Resources</b>	<b>60 Hours</b>
Classification of energy resources, renewable and non-renewable energy resources, supply and demand of energy both in urban and rural areas.	<b>(15 Hours)</b>
Conventional energy resources, coal, oil, natural gas, nuclear energy.	<b>(15 Hours)</b>
Non-conventional energy sources, solar, wind, hydel, tidal and geothermal energy resources, the nuclear fuels, biomass energy, hydrogen as fuel etc.	<b>(15 Hours)</b>
Concept of alternative sources of energy, energy from waste, Alternative Fuels for Transportation.	<b>(15 Hours)</b>

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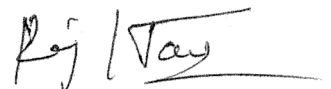
**Elective-3****DES B03 : Environmental Pollution Control****60 Hours**

Air pollution control technologies and equipments, air quality monitoring. (15 Hours)

Water pollution control: Waste Water Treatment, Groundwater Protection (15 Hours)  
Surface Water Management, Treatment and Supply of Drinking Water.

Control of soil pollution, Soil Conservation, mine land reclamation, (15 Hours)  
Wasteland reclamation, Control of noise pollution: structural and non-  
structural measures.

Role of an individual in prevention of pollution, Pollution case studies. (15 Hours)

**DES B11: Elective lab based on theory papers**

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