

Course title: Environmental Geosciences				
Course code: NRE 139		No. of credits: 3	L-T-P: 42-0-0	Learning hours: 42
Pre-requisite course code and title (if any):				
Department: Department of Natural Resources				
Course coordinator: Dr Chubamenla Jamir			Course instructor: Dr Chubamenla Jamir	
Contact details:				
Course type: Core			Course offered in: Semester 1	
Course Description The purpose of the course is to develop a holistic understanding of environment and nature. It attempts to illustrate the reasons for why things happen in nature the way they happen and how humans have adapted and influenced the natural processes. The course will have application in ecosystem management, conservation and understanding of environmental hazards. It provides vital inputs to grasp the concept of sustainable development.				
Course objectives 1. To orient students towards systematic approach to studying earth's system 2. To learn the science of and processes of earth's system and its importance in ecosystem management, conservation and understanding of environmental hazards. 3. To learn ways of addressing various sustainability challenges (e.g., natural disasters, climate change, food security, population dynamics, etc.)				
Course content				
SNo	Topic	L	T	P
1.	Overview; Systems approach to understand and analyze environmental systems; Sustainability and challenges	2		
2.	Ocean Marine food and economic resources; sustainability issue; distribution of temperature and salinity; ocean currents; ocean and climate	5		
3.	Climate Temperature and pressure belts of the world; Heat budget of the earth; Atmospheric circulation; atmospheric stability and instability. Air masses and fronto-genesis, Temperate and tropical cyclones; Climatic regions; Global climatic change and role and response of man in climatic changes	6		
4.	Biogeography Genesis, classification and distribution of soils; Factors influencing world distribution of plants and animals; conservation measures; Sustainability issues.	5		
5.	Earth dynamism Earth's interior; Geosynclines; Plate tectonics; mountain building; Volcanicity; Earthquakes and Tsunamis, management of natural disasters.	4		
6.	Human population Growth and distribution of world population; demographic attributes; concepts of over-under-and optimum population;	5		

	Population theories, Regional planning and planning for sustainable development.			
7.	India's environmental setting Structure and relief; Drainage system and watersheds; Mechanism of Indian monsoons and rainfall patterns, Floods and droughts; Climatic regions; Soil types and distribution.	7		
8.	India's Environmental resources and management India's environmental and economic resources; agriculture and food security: Infrastructure: irrigation, seeds, fertilizers, power; Institutional factors: land holdings, land tenure and land reforms; Cropping pattern, agricultural productivity, agricultural intensity, crop combination, land capability; Green revolution and its socio- economic and ecological implications.	8		
	Total	42		
Evaluation criteria				
<ul style="list-style-type: none"> ▪ 2 Minor exams 40% ▪ Assignments 10% ▪ Major test: 50% 				
Learning outcomes				
<ol style="list-style-type: none"> 1. A holistic understanding of the earth's system. 2. To be able to apply the knowledge of the science of and processes of earth's system in ecosystem management, conservation and understanding of environmental hazards. 3. Equip the students with necessary skills for systems approach towards addressing various sustainability challenges (e.g., natural disasters, climate change, food security, population dynamics, etc.) 				
Pedagogical approach				
Materials				
The course is reviewed and commented by the following experts				
<ol style="list-style-type: none"> 1. Prof. N M Kanhe, Principal, GN Institute of Engineering and management, Nagpur University, Nagpur. 2. Prof. J K Garg, University School of Environment Management, GGS Indra Prastha University, Delhi. 				
Textbooks				
<ol style="list-style-type: none"> 1. Strahler and Strahler (2001), <i>Modern Physical Geography</i>, John Wiley & Sons, Inc. 2. Bryant R.H. (1990) <i>Physical Geography: Made Simple</i>, New Delhi, Rupa Publications. 3. Chorley R.J. (1969) <i>Water, Earth and Man: A Synthesis of Hydrology, Geomorphology and Socio-economic Geography</i>, London: Methuen Young Books. 4. Ehrlich P.R., Holdren J.P. and Ehrlich A.H. (1978) <i>Ecoscience: Population, Resources, Environment</i>, 3rd ed. San Francisco, W.H. Freeman. 				
Suggested Readings				
<ol style="list-style-type: none"> 1. Knowled R. and Wareing J. (1990) <i>Economic and Social Geography: Made Simple</i>, New Delhi, Rupa Publications. 				

2. National Geographic (2005) *National Geographic Atlas of the World*, 8th ed. Washington, DC, National Geographic.
3. OUP (2010) *Oxford Reference Atlas for India and the World*, New Delhi, Oxford University Press.
4. White G.F. (1976) *Natural Hazards: Local, National, Global*, London, Oxford University Press.
5. Other Specific References will be suggested in class.

Journals

1. Geoscience Frontiers
2. Geoscience Journal
3. Nature Geoscience

Additional information (if any)**Student responsibilities**

Attendance, feedback, discipline, guest faculty etc