Approved 2019-20

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Environment
Non-credit PG course (CBSC regulation)
Skill Enhancement Course

2 Credit **50 Marks**

Unit-I: **1 Credit (25 Marks)**

Fundamentals of Environment **(2 Lectures)**

- Definition, Principles and Scope of Environment, Interaction between Earth, Man and Environment.
- Remote Sensing and GIS and Environmental studies

Environment and education

- Environmental ethics, environmental education, Education for Sustainable Development, UN 2030 Agenda , UCLG **(1 Lecture)**

Environmental Chemistry **(3 Lectures)**

- Composition of air. Particles, ions and radicals in the atmosphere, Oxygen and Ozone chemistry Photochemical smog.
- Hydrological cycle. Concept of DO. BOD and COD. Sedimentation, coagulation, flocculation, filtration, pH.
- Toxic chemicals: Pesticides and their classification and effects. Biochemical aspects of heavy metals (Hg, Cd, Pb, Cr) and metalloids (As, Se). CO, O3, PAN, VOC and POP. Carcinogens in the air.

Environmental Biology **(6 Lecturers)**

- Ecology and Ecosystem (energy flow in ecosystems, energy flow models, food chains and food webs. Biogeochemical cycles, Ecological succession. Species diversity, ecotone, edge effects, ecological habitats and niche. Ecosystem stability and factors affecting stability.
- Biomes, Population ecology (Population fluctuations, dispersion and metapopulation. Concept of 'r' and 'k' species. Keystone species).
- Community ecology, Biological invasions.
- Biodiversity ('Hotspots'; hotspots, situ, ex situ and vitro conservation. National parks, Sanctuaries, Protected areas and Sacred groves, gene pool, biopiracy and bioprospecting, restoration ecology. Extinct, Rare, Endangered and Threatened species), Industrial Ecology.

Environment and Economics **(1 Lecture)**

Environmental economics, Economics for environment

Environment and ICT **(1 Lecture)**

Application of ICT in Environmental Management

Environment and Geography **(3 Lectures)**

- Origin of earth, formation of landforms, Weathering , Soil formation, Mineralogical controls.
- Geochemical classification, Paleoclimate, hydrology and hydrogeology, groundwater provinces, Natural resource exploration and exploitation
- Natural HazardsAir, Noise, Water, Soil Pollution, Thermal, Marine Pollution and Radioactive
- Waste Management : Solid Waste, Solid waste processing and recovery, Hazardous waste, e-waste, Plastic waste

Environmental Laws, Assessment and Management **(4 Lectures)**

- EIA, EIS, EMP, Environmental Audit, ISO 14000 series, Eco-labeling schemes.
- Risk Assessment
- Environmental Laws and Protocols
- IPCC, Rain water harvesting and ground water recharge, Conservation of wetlands, Ramsar sites, Soil erosion, reclamation of degraded land, desertification and its control.

- Chipko movement, Appiko movement, Silent Valley movement and Gandhamardan movement. People Biodiversity register, Project tiger, Project Elephant, Crocodile Conservation, GOI-UNDP Sea Turtle project, Indo-Rhino vision.
- Carbon sequestration and carbon credits. Swachh Bharat Abhiyan. Sustainable Habitat: Green Building, GRIHA Rating Norms

Environment and Statistics: **(3 Lectures)**

- Application of Statistics in Environmental Studies and science (types of variables, scales of measurement, measurement of Central tendency and Dispersion, Standard error, Moments – measure of Skewness and Kurtosis, Basic concept of probability theory, Sampling theory, Distributions – Normal, log-normal, Binomial, Poisson, t, X2 and F-distribution. Correlation, Regression, tests of hypothesis (t-test, X2 -test ANOVA)

Literature, Environmental Thinkers and Sustainable Development **(1 Lecture)**

Contemporary Environmental Issues **(4 Lectures)**

- Biodiversity loss, Climate change, Ozone layer depletion, Sea level rise
- Plastic pollution, Drinking water scarcity, Forest Fire (Amazon, Kongo)
- Water resource projects – Narmada dam, Tehri dam, Almatti dam
- Environmental Disasters: Minamata Disaster, Love Canal Disaster, Bhopal Gas Disaster, 1984, Chernobyl Disaster, 1986, Fukushima Daiichi nuclear disaster, 2011.

Unit II:

Field Work / Project / Term Paper /Assignment/ case Study

1 Credit (15 in Project + 10 in viva-voce = 25 marks)
(10 Lectures)

Topic of the project must be syllabus oriented.

Project can be prepared based on both or either Primary and Secondary data. Both the Computer typed of Hand writing are allowed to submit it. Viva-voce may be conducted by both subject teacher and one external teacher from any department of Raiganj University or else.

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Dept. of Zoology RGV

Dept of Geography RGV.