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DEPARTMENT OF ENVRONMENTAL SCIENCE

TEACHING PLAN FOR SEMESTER- I

NAME OF FACULTY : Arundhati Ganguly

PAPER : CC1 Unit-3

LECTURES ALLOTED: 15

ALLOTED SYLLABUS: Rocks, Minerals and Weathering

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1.	Minerals and Rocks definition and difference
2.	Properties of minerals, types of minerals
3.	Important rock forming minerals
4.	Types of rocks, rock laws, rock cycle
5.	Igneous rock
6.	Sedimentary rocks
7.	Metamorphic rocks
8.	Weathering of rocks 1(Physical)
9.	Weathering of rocks 2 (Chemical)
10.	Weathering of rocks 3 (Biological)
11.	Biogeochemical process
12.	Fluvial processes and erosion
13.	Aeolian processes and erosion, transportation

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14.	Glacial processes and erosion
15.	Coastal erosional process
TOPIC/SUBTOPIC: Remedial class	
1.	Important rocks and minerals
2.	Parent rocks and metamorphic rocks (Lithification and metamorphism)
3.	Previous year question answer discussion

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DEPARTMENT OF Environmental Science

TEACHING PLAN FOR SEMESTER-III

NAME OF FACULTY : Arundhati Ganguly

PAPER : CC6

LECTURES ALLOTED: 7

ALLOTED SYLLABUS: Ecologically safe products and processes

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	PGPR bacteria
2	Biofertilizers
3	Microbial insecticides
4	Pesticides and impacts
5	Bio-control of plant pathogen
6	Integrated Pest management
7	Development of stress tolerant plant
8	Bio-fuel
9	mining and biotechnology
10	Microbial transformation, accumulation and concentration of metals
11	Metal Leaching
TOPIC/SUBTOPIC:	

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DEPARTMENT OF Environmental Science

TEACHING PLAN FOR SEMESTER-III

NAME OF FACULTY : Arundhati Ganguly

PAPER : CC7 unit-4

LECTURES ALLOTED: 12 lectures

ALLOTED SYLLABUS: Global warming and climate change

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1.	Earth's climate through ages
2.	Trends of global warming and climate change drivers
3.	Greenhouse gases and greenhouse effect
4.	Global warming and climate change
5.	Climate change and indicators
6.	Atmospheric windows
7.	Changing weather pattern and its impacts
8.	Sea level rise, impact of SLR in India and West Bengal
9.	Climate change and impact on agriculture
10.	Climate change and rage shift of species
11.	Fertilizers and its relation with global warming
12.	Climate change and spread of diseases
13.	Impact on global economy and society

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TOPIC/SUBTOPIC: Tutorial	
1	Global warming and coral reef bleaching
2	Global climate change and epidemic
3.	Global warming and biodiversity loss
4.	Global warming and disaster

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DEPARTMENT OF Environmental Science

TEACHING PLAN FOR SEMESTER -V

NAME OF FACULTY : Arundhati Ganguly

PAPER : CC11 (Unit 2 & 3)

LECTURES ALLOTED: 14

ALLOTED SYLLABUS: Importance of biodiversity and threats to biodiversity

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Ecological services and types
2	Water purification and nutrient cycling
3	Climate control
4	Pollination and pest control
5	Protection of soil, soil fertility
6	Social, consumptive and ethical values of ecosystem
TOPIC/SUBTOPIC: threats to biodiversity	
1	Natural and anthropogenic disturbances
2	Habitat loss, degradation and fragmentation
3	Climate change and threats to biodiversity
4	Pollution, deforestation
5	Invasive species and impact on biodiversity
6	Hydropower and biodiversity loss

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7	Man- animal conflict
8	Consequences of biodiversity loss
9	Intermediate disturbance hypothesis
10	Land use changes and and biodiversity loss
11	How to protect biodiversity

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DEPARTMENT OF Environmental Science

TEACHING PLAN FOR SEMESTER -V

NAME OF FACULTY : Arundhati

PAPER : DSE-A1

LECTURES ALLOTED: 16

ALLOTED SYLLABUS: Our energy future

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Current energy status of the world and India
2	Evolution of energy use over time
3	Alternate energy sources and importance
4	Solar energy 1
5	Solar energy 2
6	Solar energy 3
7	Tidal energy 1
8	Tidal energy 2
9	Ocean energy 1
10	Ocean energy 2
11	Geothermal energy
12	Wind energy1
13	Wind energy 2

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14	biofuel
15	Nuclear energy
16	Energy efficiency and need
17	Energy conservation
18	Sustainable energy conservation strategies
TOPIC/SUBTOPIC:	

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DEPARTMENT OFENVIRONMENTAL SCIENCE

TEACHING PLANFOR SEMESTER I

NAME OF FACULTY :DR. SUBHAYAN DUTTA

PAPER : CC2

LECTURES ALLOTED: 20 (15)

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Atomic structure, electronic configuration
2.	PERIODIC TABLE
3.	types of chemical bonds
4.	types of chemical bonds
5.	Mole concept, molarity and normality
6.	quantitative volumetric analysis
7.	Types of chemical reactions; acids, bases and salts
8	Chemical equilibrium
9.	solubility products; solutes and solvents
10.	redox reactions
11.	Concepts of pH and pE
12.	electrochemistry
13.	Basic concepts of organic chemistry
14.	hydrocarbons, aliphatic and aromatic compounds

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15.	organic functional groups, polarity of the functional groups
16.	Colloid chemistry
17.	Xenobiotic compounds
18.	Chemistry of pesticides and dyes,
19.	synthetic polymers
20.	REVISION
TOPIC/SUBTOPIC:	

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DEPARTMENT OF ENVIRONMENTAL SCIENCE

TEACHING PLANFOR SEMESTER V

NAME OF FACULTY : DR. SUBHAYAN DUTTA

PAPER : DSE B2

LECTURES ALLOTED:33 (25)

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Sources and generation of solid waste
2.	drawbacks in waste management techniques
3.	Classification of solid waste
4.	chemical composition of solid waste
5.	Characterizationof municipal solid waste
6.	Characterizationof hazardous waste
7.	Characterizationof biomedical waste.
8.	Different techniques used in collection
9.	storage of municipal waste
10.	storage of biomedical waste
11.	storage, of hazardous waste
12.	transportation of solid waste
13.	Disposal of municipal waste
14.	Disposal of hazardous waste
15.	Disposal of biomedical waste

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16.	Traditional landfill
17.	sanitary landfill design
18.	Pyrolysis
19.	Incineration
20.	drawbacks in waste management techniques
21.	drawbacks in waste management techniques
22.	Municipal Solid Wastes(ManagementandHandling)Rules 2000;
23.	Municipal Solid Wastes(ManagementandHandling)Rules 2000;
24.	Hazardous Wastes Managementand Handling Rules1989
25.	Hazardous Wastes Managementand Handling Rules1989
26.	Bio-MedicalWaste(ManagementandHandling)Rules1998
27.	Bio-MedicalWaste(ManagementandHandling)Rules1998
28.	Bio-MedicalWaste(ManagementandHandling)Rules1998
29.	PlasticWaste (Management and Handling) Rules, 2011
30.	PlasticWaste (Management and Handling) Rules, 2011
31.	E-Waste(Management)Rules, 2016
32.	E-Waste(Management)Rules, 2016
33.	REVISION
TOPIC/SUBTOPIC:	

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DEPARTMENT OF ENVIRONMENTAL SCIENCE

TEACHING PLANFOR SEMESTER III

NAME OF FACULTY : DR. SUBHAYAN DUTTA

PAPER : CC7

LECTURES ALLOTED: 16(12)

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Ozone layer or ozone shield
2.	importance of ozone layer
3.	importance of ozone layer
4.	causes of ozone layer depletion
5.	causes of ozone layer depletion
6.	Chapman cycle
7.	Process of spring time ozone depletion over Antarctica
8.	Ozone depleting substances(ODS)
9.	effects of ozone depletion
10.	effects of ozone depletion
11.	mitigation measures
12.	mitigation measures
13.	Tropical cyclone
14.	Tropical cyclone

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15.	Indian monsoon and its development
16.	Indian monsoon and its development
TOPIC/SUBTOPIC:	

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DEPARTMENT OF **Environmental Science**

TEACHING PLAN FOR **SEMESTER I**

NAME OF FACULTY: **Sharamana Roy Barman**

PAPER : **CC1**

LECTURES ALLOTED:

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC: Earth System Processes	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Structure and composition of lithosphere
2	Continental drift
3	Continental drift cont.
4	Movement of lithosphere plates.
5	Mantle convection and plate tectonics
6	paleontological evidence of plate tectonics.
7	Major plates, and hotspots,
8	Pangaea and present-day continents,
9	Plate boundaries
10	Earthquakes;
11	Earthquakes cont.
12	Volcanism
13	Volcanism cont.
14	isostasy
15	Orogeny;
16	Sea floor spread.

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17	Magnetic fields of the earth;
18	Magnetosphere
19	Origin of the main geomagnetic field.
20	Gravitational field
TOPIC/SUBTOPIC: Mountain and river systems of India	
1	Continental collision and mountain formation;
2	Formation of Peninsular Indian mountain systems
3	Western and Eastern Ghats,
4	Vindhyas, Aravallis, Satpura range
5	Formation of the Himalaya;
6	Formation of the Himalaya cont.
7	Formation of Indo-Gangetic Plains,
8	Formation of Indo-Gangetic Plains cont.
9	Perennial river and non-perennial rivers systems
10	Evolution of monsoon in Indian subcontinent;
11	Withdrawing monsoon and lessons to draw.
12	Agriculture in the Indian subcontinent in Holocene;

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DEPARTMENT OF **Environmental Science**

TEACHING PLAN FOR **SEMESTER III**

NAME OF FACULTY: **Sharamana Roy Barman**

PAPER : **CC5 and CC7**

LECTURES ALLOTED:

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC: **Introduction to Ecology CC5**	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Basic concepts of Ecology
2	Ecological hierarchy, biosphere, ecosystems
3	Habitat, ecological niche;
4	Eltonian niche, Hutchinsonian niche,
5	Fundamental niche, realized niche
6	Autecology; synecology;
7	Ecological stability, resistance and resilience;. partitioning; niche differentiation
8	Major terrestrial biomes
9	Major terrestrial biomes cont.
10	Liebig's Law of the Minimum; Shelford's Law of Tolerance; Gausses law
11	Ecotypes and ecoclines; ecozones
12	phenotypic plasticity;
13	Ecological amplitude;
14	Acclimation ;niche breadth

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15	Landscape Ecology
16	Landscape Ecology cont.
TOPIC/SUBTOPIC: **Global energy balance CC7**	
1	Earth's energy balance; energy transfers in atmosphere; Earth's radiation budget
2	Global conveyor belt.

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DEPARTMENT OF **Environmental Science**

TEACHING PLAN FOR **SEMESTER IV**

NAME OF FACULTY: **Sharamana Roy Barman**

PAPER : **CC11**

LECTURES ALLOTED:

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC: **Biodiversity patterns and estimation**	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Introduction
2	Definition; Types
3	Alpha, Beta and Gamma diversity.
4	Sample problems
5	Spatial patterns: latitudinal
6	Spatial patterns: latitudinal
7	Spatial patterns elevational trends in biodiversity
8	Temporal patterns:
9	seasonal fluctuations in biodiversity patterns.
10	Sampling strategies and surveys
11	Sampling strategies and surveys cont.
12	Aquatic sampling
13	Richness, density, frequency
14	Abundance, Relative abundance evenness,
15	Diversity Indices with sample problems

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16	Biomass estimation;
TOPIC/SUBTOPIC: **Importance of biodiversity**	
1	Ecological services
2	Economic values - medicinal plants, drugs,
3	Economic values - fisheries and livelihoods; -
4	Primary productivity, role in hydrological cycle,
5	Biogeochemical cycling;

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DEPARTMENT OF ENVIRONMENTAL SCIENCE

TEACHING PLAN FOR SEMESTER 1ST

NAME OF FACULTY : Dr. Sruti Karmakar

PAPER : CC-1 Theory Earth and earth Surface Processes

LECTURES ALLOTED: 07

ALLOTED SYLLABUS: Land surface processes: fluvial and glacial processes, rivers and geomorphology; types of glaciers, glacier dynamics, erosional and depositional processes and glaciated landscapes

TOPIC/SUBTOPIC: Fluvial and glacial processes	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
02	Rivers and geomorphology
01	Types of glaciers
01	Glacier dynamics
02	Erosional and depositional processes
01	Glaciated landscapes

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TEACHING PLAN FOR SEMESTER 3RD

NAME OF FACULTY : Dr. Sruti Karmakar

PAPER : CC-5 Theory Ecology and Ecosystem

LECTURES ALLOTED: 06

ALLOTED SYLLABUS: Concept of exotics and invasives; natural spread versus man-induced invasions; characteristics of invaders; stages of invasion; mechanisms of invasions; invasive pathways; impacts of invasion on ecosystem and communities; invasive ecogenomics - role of polyploidy and genome size in determining invasiveness; economic costs of biological invasions.

TOPIC/SUBTOPIC: Ecosystem ecology	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
01	Concept of exotics and invasives; natural spread versus man-induced invasions
01	Characteristics of invaders; stages of invasion; invasive pathways
01	Impacts of invasion on ecosystem and communities;
02	Invasive ecogenomics - role of polyploidy and genome size in determining invasiveness
01	Economic costs of biological invasions.

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NAME OF FACULTY : Dr. Sruti Karmakar

PAPER : CC-6- Theory Environmental Biotechnology

LECTURES ALLOTED: 02

ALLOTED SYLLABUS: Composting and vermicomposting

TOPIC/SUBTOPIC: Biotechnology of Solid waste and solid waste treatment	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
01	Composting
01	Vermicomposting

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NAME OF FACULTY : Dr. Sruti Karmakar

PAPER : SEC A 2: Wildlife Management

LECTURES ALLOTED: 02

ALLOTED SYLLABUS: conservation and policies regarding protected areas in 21st century; positive values provided by wildlife conservation (monetary, recreational, scientific and ecological benefits)

TOPIC/SUBTOPIC: Biotechnology of Solid waste and solid waste treatment	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
01	Conservation and policies regarding protected areas in 21st century
01	Positive values provided by wildlife conservation (monetary, recreational, scientific and ecological benefits)

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TEACHING PLAN FOR SEMESTER 5TH

NAME OF FACULTY : Dr. Sruti Karmakar

PAPER : CC-11 Biodiversity and conservation Biology

LECTURES ALLOTED: 09

ALLOTED SYLLABUS: Importance of biodiversity: Economic values - medicinal plants, drugs, fisheries and livelihoods; ecological services - primary productivity, role in hydrological cycle, biogeochemical cycling, social, aesthetic, consumptive, and ethical values of biodiversity.

Conservation of biodiversity: biodiversity hotspots; IUCN Red List categorization - guidelines, practice and application; Red Data book; ecological restoration; afforestation; social forestry; agro forestry; joint forest management; role of remote sensing in management of natural resources.

TOPIC/SUBTOPIC: Importance of biodiversity	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
01	Economic values - medicinal plants, drugs, fisheries and livelihoods;
03	Ecological services - primary productivity, role in hydrological cycle, Biogeochemical cycling
01	Social, aesthetic, consumptive, and ethical values of biodiversity.
TOPIC/SUBTOPIC: Conservation of biodiversity	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
01	Biodiversity hotspots; IUCN Red List categorization - guidelines, practice and application; Red Data book
02	Ecological restoration; afforestation; social forestry; agro forestry; joint forest management
01	Role of remote sensing in management of natural resources.

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NAME OF FACULTY : Dr. Sruti Karmakar

PAPER : CC-12- Original and evolutionary biology

LECTURES ALLOTED:17

ALLOTED SYLLABUS: Unit 1: History of life on Earth: Part-A : Paleontology and evolutionary History; evolutionary time scale; eras, periods and epoch; major events in the evolutionary time scale; stages in primate evolution including Homo.

Unit 2: Evolution of unicellular life: Origin of cells and unicellular evolution and basic biological molecules; abiotic synthesis of organic monomers and polymers; Oparin-Haldane hypothesis; study of Miller; the first cell.

TOPIC/SUBTOPIC: History of life on Earth	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
02	Paleontology and evolutionary History
03	Evolutionary time scale; eras, periods and epoch; major events in the evolutionary time scale
03	Stages in primate evolution including Homo
TOPIC/SUBTOPIC: Evolution of unicellular life	
02	Origin of cells and unicellular evolution
02	Basic biological molecules
02	Abiotic synthesis of organic monomers and polymers
01	Oparin-Haldane hypothesis
01	Study of Miller
01	First cell

Sruti Karmakar

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Teaching Plan on Odd Semesters under CBCS, 2022

Name of the Teacher: Smt. Chandrani Dutta

Name of the Institute: Asutosh College, Kolkata

Subject: Environmental Science (H)

Semester-I

Course: CC2; Unit-1; Part-B: Fundamentals of Environmental Physics [7 Lectures]

Lecture-1:

- Basic concepts of pressure, force work & energy
- Types of forces and their relations (pressure gradient, Coriolis force)

Lecture-2:

Types of forces and their relations (viscous, gravitational, centripetal and centrifugal force)

Lecture-3:

- Concept of heat transfer, conduction, convection,
- Concept of temperature
- Lapse rate (dry and moist adiabatic)

Lecture-4:

- Laws of thermodynamics
- Concept of heat and work

Lecture-5:

Carnot engine

Lecture-6:

Numerical problems

Lecture-7:

Remedial class / Question papers solve (last 5 years) / Class test

contd.

Semester-III

Course: CC7; Unit-3: Meteorology and atmospheric stability [14 Lectures]

Lecture-1:

- Temperature (concept, units, significance)
- Relative humidity (concept, unit, significance)

Lecture-2:

- Temperature (measurement)
- Relative humidity (measurement)

Lecture-3:

Wind speed and direction (concept, units, significance)

Lecture-4:

Wind speed and direction (measurements)

Lecture-5:

Precipitation (concept, types, significance and measurement)

Lecture-6:

Precipitation (theories of precipitation)

Lecture-7:

Atmospheric stability (concept, significance) and mixing height

Lecture-8:

Temperature Inversion (concept, types, effects)

Lecture-9:

Plume behavior (dispersion of air pollutants, point and non-point sources of air pollution)

Lecture-10:

Plume behavior (types of plume, effects)

Lecture-11:

Gaussian Plume Model (equation with explanation)

Lecture-12:

Remedial class

Lecture-13:

Question papers solve (last 5 years)

Lecture-14:

Class test

contd.

Semester-V

Course CC12 Unit 3 Geography of Evolution [5 Lectures]

Lecture-1:

- Biogeography (concept, significance)
- Patterns of distribution (controlling factors)

Lecture-2:
Distribution pattern of flora

Lecture-3:
Distribution pattern of fauna

Lecture-4:
Biogeographic evidence of evolution

Lecture-5: Remedial class / Class Test

Course DSE B2: Unit-2: Effects of Solid Waste Disposal on Environment [5 Lectures]

Lecture-1:
Impact of solid waste on environment, human and plant health

Lecture-2:
Effects of solid waste and industrial effluent discharge on water quality and aquatic life

Lecture-3:
Mining waste and land degradation

Lecture-4:
Effects of land fill leachate on soil characteristics and groundwater pollution

Lecture-5:
Remedial class / Question papers solve (last 5 years)

Course DSE B2: Unit-6: Waste to Energy (WTE) ` [4 Lectures]

Lecture-1:
Concept of energy recovery from waste (concept and importance)

Lecture-2
Different WTE processes**:** combustion, pyrolysis, anaerobic digestion, gasification

Lecture-3:
Different WTE processes**:** Refuse Derived Fuel (RDF), Landfill Gas (LFG) recovery

Lecture-4:
Remedial class / Question papers solve (last 5 years) / Class test

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DEPARTMENT OF ENV SC

TEACHING PLAN FOR SEMESTER I

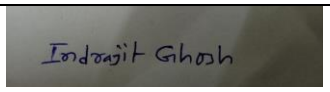
NAME OF FACULTY : INDRAJIT GHOSH

PAPER : CC2

LECTURES ALLOTED:

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC: UNIT 1: PART A	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Basic concepts of light and matter, spectrophotometric concepts
1	Absorption and transmission of light, Lambert-Beer's law
1	Scattering of light, Rayleigh and Mia scattering
TOPIC/SUBTOPIC: UNIT 5	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Soil composition
1	relation between organic carbon and organic matter
1	inorganic and organic components in soil
1	soil humus
1	cation and anion exchange reactions in soil
1	nitrogen in soil
1	nitrogen, phosphorus and potassium in soil



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DEPARTMENT OF ENV SC

TEACHING PLAN FOR SEMESTER III

NAME OF FACULTY : INDRAJIT GHOSH

PAPER : CC6: Unit I

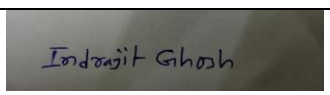
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Introduction to microorganisms
1	Classification of microorganisms
1	Microbial growth
2	Different factors for microbial growth
1	Staining techniques

Unit II

LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Protein: hierarchical structure (primary, secondary, tertiary, quaternary), types of amino acids
1	structural, functional (enzymes)

Unit IV

LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
2	Introduction to bioremediation techniques
3	specific bioremediation technologies: land farming, prepared beds, biopiles, composting, bioventing, biosparging, pump and treat method
1	use of bioreactors for bioremediation
1	phytoremediation; remediation of degraded ecosystems; degradation of xenobiotics in environment



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DEPARTMENT OF ENV SC

TEACHING PLAN FOR SEMESTER V

NAME OF FACULTY : INDRAJIT GHOSH

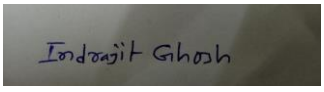
PAPER : ENVA-A-DSE-A-5-1-TH

Unit I

LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
1	Introduction to Energy resources
1	Defining energy
1	forms and importance
1	Global energy resources
3	renewable and non-renewable resources
1	distribution and availability
1	sources and sinks of energy
3	past, present, and future technologies for capturing and integrating these resources into our energy infrastructure

Unit II

LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
4	Global energy demand: historical and current perspective; energy demand and use in domestic, industrial, agriculture and transportation sector
3	generation and utilization in rural and urban environments; changes in demand in major world economies; energy subsidies; environmental costs



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DEPARTMENT OF ENVIRONMENTAL SCIENCE

TEACHING PLAN FOR SEMESTER I

NAME OF FACULTY: Dr. Santanu Chowdhury

PAPER: CC1 (1ST SEMESTER) ENV-A-CC-1-1-TH: EARTH AND EARTH SURFACE PROCESSES

CC2 (1ST SEMESTER) ENV-A-CC-1-2-TH: PHYSICS AND CHEMISTRY OF ENVIRONMENT

LECTURES ALLOTED: 6 lectures (CC1) & 2 Lectures (CC2)

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
	Unit 4: Earth atmosphere
1	Atmosphere: evolution of earth's atmosphere, , ,
1	composition of atmosphere,
2	physical and optical properties
1	Circulation; interfaces: atmosphere-ocean interface
1	Atmosphere-land interface, ocean-land interface.
Total: 6	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
	Unit 2: Fundamentals of environmental chemistry
2	Ozone layer depletion, role of CFCs in ozone depletion.

Santanu Chowdhury

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DEPARTMENT OF ENVIRONMENTAL SCIENCE

TEACHING PLAN FOR SEMESTER III

NAME OF FACULTY: Dr. Santanu Chowdhury

PAPER: **CC 5** (3RD SEMESTER) ENV-A-CC-3-5-TH: ECOLOGY AND ECOSYSTEMS

CC 7 (3RD SEMESTER) ENV-A-CC-3-7-TH: ATMOSPHERE AND GLOBAL CLIMATE CHANGE

SEC A 2: WILDLIFE MANAGEMENT

LECTURES ALLOTED: CC5 (9 Lecture) & CC7 (7 Lectures) & SEC A 2 (4Lectures)

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
	CC5, Unit 4: Ecosystem ecology
2	Types of ecosystem: forest, grassland, lentic, lotic, estuarine, marine, desert, wetlands.
2	Ecosystem structure and function; abiotic and biotic components of ecosystem; ecosystem boundary; ecosystem. Function; ecosystem metabolism
2	Primary production and models of energy flow; secondary production and trophic efficiency.
3	Ecosystem connections: food chain, food web; detritus pathway of energy flow and decomposition processes; ecological efficiencies; ecological pyramids: pyramids of number, biomass, and energy.
Total: 9	
	CC7, Unit 2: Atmospheric circulation
2	Movement of air masses;; El Nina and La Nina
1	Atmosphere and climate;
1	Southern oscillation; western disturbances;

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2	air and sea interaction
Total 7	
	SEC A 2: Unit-2, WILDLIFE MANAGEMEN
4	Species conservation projects in India (Tiger, Rhino, Lion)
Total 4	

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DEPARTMENT OF ENVIRONMENTAL SCIENCE

TEACHING PLAN FOR SEMESTER V

NAME OF FACULTY: Dr. Santanu Chowdhury

PAPER: **CC 11** (5th SEMESTER) ENV-A-CC-3-5-TH: ECOLOGY AND ECOSYSTEMS

LECTURES ALLOTED: CC11 (15 Lectures)

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
	Unit 4: Conservation of biodiversity
1	Importance of biodiversity patterns in conservation;
2	In-situ conservation (Biosphere Reserves, National Parks, Wildlife Sanctuaries);
2	Ex-situ conservation (botanical gardens, zoological gardens, gene banks, seed and seedling banks, pollen culture, tissue culture and DNA banks).
Total 5	
	Unit 5: Biodiversity in India
5	India as a mega diversity nation; phytogeographic and zoogeographic zones of the country;;
5	Forest types and forest cover in India; fish and fisheries of India
5	Impact of hydropower development on biological diversity; status of protected areas and biosphere reserves in the country; National Biodiversity Action Plan

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DEPARTMENT OF Environmental Science

TEACHING PLAN FOR SEMESTER 1

NAME OF FACULTY : Dr. Sayanti Kar

PAPER :**CC2 (1ST SEMESTER) ENV-A-CC-1-2-TH: PHYSICS AND CHEMISTRY OF ENVIRONMENT**

LECTURES ALLOTED: 7 lectures (as written in the syllabus)

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
	Unit 3: Atmospheric chemistry
1	Composition of atmosphere
2	Photochemical reactions in atmosphere
2	Smog formation, types of smog (sulphur smog and photochemical smog),
1	Aerosols
1	Chemistry of acid rain, reactions of NOx and SOx
Total: 7	

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DEPARTMENT OF Environmental Science

TEACHING PLAN FOR SEMESTER 3

NAME OF FACULTY : Dr. Sayanti Kar

PAPER : **CC 6 (3RD SEMESTER) ENV-A-CC-3-6-TH: ENVIRONMENTAL BIOTECHNOLOGY**

LECTURES ALLOTED: 8+10+2=20 lectures (as written in the syllabus)

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
	Unit 2: The Structure and Function of DNA, RNA
1	DNA: structural forms and their characteristics (B, A, C, D, T, Z); physical properties: UV absorption spectra, denaturation and renaturation kinetics; biological significance of different forms; Synthesis.
1	RNA: structural forms and their characteristics (rRNA, mRNA, tRNA; SnRNA, Si RNA, miRNA, hnRNA); biological significance of different types of RNA; synthesis.
4	Central dogma of biology
2	Genetic material prokaryotes, viruses, eukaryotes and organelles; mobile DNA; chromosomal organization (euchromatin, heterochromatin – constitutive and facultative heterochromatin).
Total: 8	
	Unit 3: Recombinant DNA Technology
5	Recombinant DNA: origin and current status; steps of preparation;
2	Toolkit of enzymes for manipulation of DNA: restriction enzymes, polymerases (DNA/RNA polymerases, transferase, reverse transcriptase),

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	other DNA modifying enzymes (nucleases, ligase, phosphatases, polynucleotide kinase);
2	Genomic and cDNA libraries: construction, screening and uses;
1	Cloning and expression vectors (plasmids, bacteriophage, phagmids, cosmids, artificial chromosomes)
Total 10	
	Unit 5: GMs and GMOs
1	Concept of GM and GMOs
1	Case studies, biosafety protocol
Total 2	

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DEPARTMENT OF Environmental Science

TEACHING PLAN FOR SEMESTER 5

NAME OF FACULTY : Dr. Sayanti Kar

PAPER : **DSE A1: (5th SEM) Energy & Environment**

LECTURES ALLOTED: 15 lectures (as written in the syllabus)

ALLOTED SYLLABUS:

TOPIC/SUBTOPIC:	
LEC. NO.	PROPOSED TOPIC(S) TO BE TAUGHT
	DSE A1: Energy & Environment
4	Energy production as driver of environmental change; nature, scope and analysis of local and global impacts of energy use on the environment;
2	Fossil fuel burning and related issues of air pollution
5	Nuclear energy and related issues such as radioactive waste, spent fuel; energy production, transformation and utilization associated environmental impacts (Chernobyl and Fukushima nuclear accidents, construction of dams, environmental pollution)
2	Energy over-consumption and its impact on the environment, economy, and global change;
2	social inequalities related to energy production, distribution, and use; energy conservation.
Total 15	

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