



Graphic Era
UNIVERSITY

University under section 3 of UGC Act, 1956

Accredited by NAAC with Grade A

Department of Environmental Science

Meeting of Board of Studies

on

15 July 2016 at 10:30am at Chanakya Block

Agenda

- i. Review of the proposed syllabus for undergraduate course 2016 onwards.
- ii. Review of the proposed syllabus for PhD programme 2016 onwards.

Pratibha
(Dr. Pratibha Nandan)
HOD

Agenda Items for Academic Council Meeting 2016

For

Department of Environmental Science

The Department of Environmental Science had conducted Board of Studies on 15 July 2016. The proposed agenda items of the BOS along the recommendation on proposed syllabus of Environmental Science for undergraduates and PhD course(s), as recorded in the minutes of the Meeting document (Annexure(s) A, B and C), is provided herewith and presented for approval of Academic Council.

To summarize the major revision(s) in the new syllabus of undergraduate and PhD program 2016 onwards are as follows:

- i. The undergraduate syllabus is moderated in accordance to the UGC guidelines.
- ii. The PhD syllabus is also been restructured as per UGC guidelines.

Naikhan
(Dr. Pratibha Naikhan)
HOD
Environmental Science




NOTES AND ORDERS


Ref:.....

Date:.....

Board of Studies has been proposed to be held on 15th July 2016 to discuss and moderate the syllabus related to undergraduate and PhD course in Environmental Science. The external members nominated for Board of Studies are Dr. H. B. Vasistha, Scientist E, F.R.I. and Dr. K. K. Joshi, HOD, GEHU. Kindly provide your approval for the arrangement of meals for six members and honorarium for above mentioned external experts.

Thanking You
With Warm Regards


Dr. Pratibha Naithani
HOD Environmental Science
GEU, Dehradun.


13/2/16



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Department of Environmental Science

A meeting of Board of Studies is proposed to convene on 15th July 2016 to discuss the syllabus related to undergraduate course of Environmental Science (BTech, BBA, BCA, BCom) and PhD. The members nominated for Board of Studies are as follows:

S.No.	Name	Position
1	Dr. Pratibha Naithani	Convenor
2	Dr. Archana Bachheti	Co-Convenor
3	Dr. H. B. Vasistha	Expert
4	Dr. K. K. Joshi	Expert
5	Dr. Pradeep Kumar Sharma	Member
6	Mrs. Shalini Jha	Member

Kindly grant permission to conduct the meeting.

Pratibha Naithani
13/7/16
Dr. Pratibha Naithani
Head of Environmental Science
GEU, Dehradun

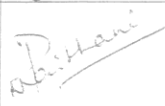
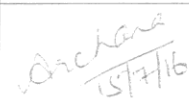
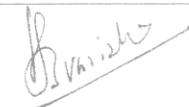

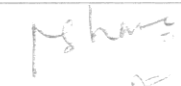

13 July 2016

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13/7/16

Minutes of the meeting of Board of Studies held on 15th July 2016 at 10:30 am in New MBA Conference hall, Graphic Era University, Dehradun.

Course: Environmental Science

Members:

S. No.	Name	Address	Position	Signature
1.	Dr. Pratibha Naithani	Department of Environmental Science, GEU, Dehradun.	Convener	
2.	Dr. Archana Bachheti	Department of Environmental Science, GEU, Dehradun.	Co-Convener	
3.	Dr. H. B. Vasistha	Forest Ecology and Environment Division, FRI, Dehradun	Expert	
4.	Dr. K. K. Joshi	Department of Environmental Science, GEHU, Dehradun.	Expert	
5.	Dr. Pradeep Kumar Sharma	Department of Environmental Science, GEU, Dehradun.	Member	
6.	Mrs. Shalini Jha	Department of Environmental Science, GEU, Dehradun.	Member	



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A. AGENDA ITEMS

1. The new undergraduate syllabus was proposed for batch 2016 onwards was presented before the Board of Studies for review.
2. The BOS was apprised of the following major initiatives/ improvements introduced in the proposed syllabus of undergraduate course (Environmental Science) and PhD course 2016 onwards.

C. OBSERVATIONS/ SUGGESTION/ RECOMMENDATIONS

Further to the deliberations and review, the following recommendations were made by the panel:

Undergraduate Course

1. The name of first unit was changed from Ecology and Ecosystem to Environmental Science and Ecosystem. Ecological succession, introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) suggested to be included in this unit.
2. Mineral, Food and Land Resources was suggested to include in unit two.
3. Environmental ethics, Disaster management, Population growth, Population explosion, Human rights, Value education, HIV/ AIDS, Women and Child Welfare, Role of Information Technology in Environment and human health was suggested to include in unit four.
4. It was also recommended that the course will be of three credit hours instead of two as per UGC guidelines from 2016 onwards.

PhD Course

1. Energy Resources and Conservation, Environmental pollution and chemistry, Environmental Biotechnology and Environmental Management were suggested to be included in Advanced Environmental Science (PHS001).
2. Basic Laboratory Techniques, Advanced Laboratory Techniques, Ecological and Biotechnological Techniques and Biostatistics and computer application was recommended to include in Instrumentation Principles and Applications (PHS002).
3. Ecorestoration (PHS003) was suggested to include as paper 3.

Decision

The contents of the proposed syllabus were revised by BOS members. The revision has been carried out as per guidelines of the University for Undergraduate and PhD courses.


Convener


Co-Convener


External Expert


External Expert


Member


Member

Proposed Syllabus for Undergraduates

Unit 1: Environmental Science and Ecosystem

08

- a. Definition of Environmental Science, multidisciplinary nature, Objective, scope and importance.
- b. Concept of an ecosystem, structure and function, energy flow, ecological succession, food chains, food webs, ecological pyramids.
- c. Introduction, types, characteristic features, structure and function of the following ecosystem:
 - Forest ecosystem
 - Grassland ecosystem
 - Desert ecosystem
 - Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 2: Natural Resources and Biodiversity

16

- a. Renewable and non-renewable resources.
- b. Natural resources and associated problems:
 - **Forest resources:** Use and over-exploitation, deforestation, case studies, Timber extraction, mining, dams and their effects on forests and tribal people.
 - **Water Resources:** Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams – benefits and problems, water conservation, rainwater harvesting, watershed management.
 - **Mineral Resources:** Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
 - **Food Resources:** World food problems, Changes in land use by agriculture and grazing, Effects of modern agriculture, Fertilizer/ pesticide problems, Water logging and salinity
 - **Energy Resources:** Increasing energy needs, Renewable/ non renewable, Use of Alternate energy sources, urban problems related to energy, Case studies
 - **Land resources:** Land as a resource, land degradation, man-induced land-slides, soil erosion and desertification, wasteland reclamation
- c. Role of an individual in conservation of natural resources, equitable use of resources for sustainable lifestyles.

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- d. Definition of biodiversity, levels of biodiversity, value of biodiversity, threats to biodiversity (habitat loss, poaching of wildlife, man-wildlife conflicts).
- e. Biodiversity at global, national and local levels, India as a biodiversity nation, biogeographical classification of India, hotspots of biodiversity.
- f. Endangered and endemic species of India.
- g. Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity.

Unit 3: Environmental Pollution

08

- a. Definition, causes, effects and control measures of Air Pollution, water pollution, soil pollution, marine pollution noise pollution, thermal pollution, nuclear hazards.
- b. Solid waste Management: causes, effects and control measures of urban and industrial wastes
- c. Role of an individual in prevention of pollution, pollution case studies

Unit 4: Important Environmental and Social Issues, Management and Legislation

14

- a. Climate change, global warming, acid rain, Ozone layer depletion, nuclear accidents and holocaust. Case studies.
- b. Sustainable development, Resettlement and rehabilitation of people (its problems and concerns, case studies), Environmental ethics (issues and possible solutions), consumerism and waste products.
- c. Disaster management: floods, earthquake, cyclone and landslides.
- d. Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act,
- e. issues involved in enforcement of environmental legislation, Public Awareness
- f. Population growth (variation among nation), Population explosion (family welfare programme), Environment and human health, human rights, value education, HIV/AIDS, Women and Child Welfare, Role of Information Technology in Environment and human health, case studies.

Prakash

Neha

Divya

Archana
15/7/16

Prachi

Shalini
15/7/16

Unit 5: Field work

- a. Visit to a local area to document environmental assets- river/ forest/ grasslands/ hill /mountain.
- b. Visit to a local polluted site- Urban/ Rural/ Industrial/ Agricultural
- c. Study of common plants, insects, birds
- d. Study of simple ecosystems- pond, river, hill slopes, etc.

References

1. Joseph K. & Nagendran R.: Essentials of Environmental studies; Pearson Edition
2. Santra S. C., Environmental Science; Central Book Agency.
3. Dhameja, S. K.: Environmental Studies; Katson books.
4. Srivastava Smriti: Environmental Studies; Katson books.
5. Deswal, S. & Deswal A.: A Basic Course In Environmental Studies; Dhanpat Rai & Co.

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Undergraduate Course (BTech, BBA, BCom, BCA)

(Common to all branches)

Session: 2016 onwards

Scheme of Evaluation and Credit Assignment to Course

Semester I/ II

	Code	Subjects	L	T	P	Credits	MTE	ASmt./ Att. LR	ESE	Subject total
1.										
2										
3										
4										
5										
6	TEV 101/ 201/211	Environmental Science	3	0	0	3	30	10	60	100
7										
	Laboratories									
1										
2										
3										
4										
5										
6										

Note: MTSE: Mid Term Examination

Asmt: Assignments (for theory subjects)

LR: Lab Record

ESE: End term Examination

D. Patil
(Dr. Pratibha Nisale)
HOD

Syllabus for Undergraduates (2012-2016)

- Unit 1: Ecology and ecosystem** **04**
- General Introduction (Scopes and Importance, Components and Segments)
 - Ecosystem (components and structure, energy and nutrient flow, food chain, food web)
 - UNCED (1972), Earth Summit (1992), Rio+20 (2012), UNFCCC, CBD
- Unit 2: Natural Resources and Biodiversity** **09**
- Energy Resources (Renewable/Non-renewable; Traditional/Alternative) and types (Hydel, Solar, Wind, Geothermal).
 - Forest Resources: types and benefits from forest and Sustainable Forest Management, Forest (Conservation) Act, 1980.
 - Water resources: Water resources in Himalayan region, Dams and their impacts, Rain water harvesting and Watershed development, Law and Policy.
 - Biodiversity: Definition and Types, importance, threats and Hotspots, Biodiversity conservation (in situ, ex situ) threatened categories as per IUCN, Law and Policy.
 - Remote sensing and Geographical Information System (GIS) and applications in environmental management.
- Unit 3: Environmental Pollution** **09**
- Air Pollution: Definition, sources, classification and its effects, control strategies and devices, Law and Policy.
 - Water Pollution: Definition, sources, Impacts and toxic effects of some specific pollutants, measurement of DO/BOD/COD, Bio-accumulation and Bio-magnification, Law and Policy.
 - Waste water treatment (Aerobic and anaerobic) and Sewage Treatment Plant.
 - Thermal Pollution and Radioactive pollution and its hazards, Noise pollution.
 - Soil pollution: Definition, sources and solid waste management.
- Unit 4: Important Environmental Issues, Management and legislation** **06**
- Climate change, global warming, smog, ozone layer depletion, acid rain, floods, river blockades, cloud bursting, landslides and earthquakes effects and mitigation.
 - Environmental Impact Assessment (Aims, objectives, constraints in EIA), Environment Assessment Process, EIS, Environment Audit (Introduction and methodology) and Environmental Certification
 - Sustainable Development, Environment and human health.
 - Environmental Management System (EMS), Environmental (Protection) Act 1986, ISO norms
- Unit 5: Field /Project Work.** **04**
- Visit and documentation of protected habitats/ Sites/ Research Institutions/ Industries.
 - Project work/Assignment on recent environmental issues and reporting/ Review writing.

References:

1. Odum E. P. Fundamentals of Ecology; W. B. Sanders Co. & Natraj (Indian publication).
2. Santra S. C., Environmental Science; Central Book Agency.
3. Dhameja, S. K.: Environmental Studies; Katson books.
4. Joseph K. & Nagendran R.: Essentials of Environmental studies; Pearson Edition.
5. Srivastava Smriti: Environmental Studies; Katson books.
6. Environmental Chemistry: A. K. De; New Age International Publication.
7. Masters G. M.: Introduction to Environmental Science and Engineering; PHI publication.
8. Joshi, P.C and Namita Joshi: A textbook of Environment and Ecology, Himalaya Publishing House