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**GURU JAMBHESHWAR UNIVERSITY OF SCIENCE &
TECHNOLOGY, HISAR**
(Established by State Legislature Act 17 of 1995)
'A' Grade, NAAC Accredited State Govt. University

NOTIFICATION

In pursuance of the directives from the Secretary, University Grants Commission, New Delhi vide D.O. No. F.1-2/2017 (CPP-II) dated 19th June, 2017 for implementation of Environmental Studies as compulsory module syllabus at undergraduate courses level of all branches of higher education in universities and colleges as per directives of the Hon'ble Supreme Court of India, the University Grants Commission with the help of an Expert Committee has framed 8 units module syllabus for Ability Enhancement compulsory Courses (AECC-Environmental Studies) under CBCS.

The Vice-Chancellor on the recommendations of the Academic Council vide resolution no.34 in its meeting held on 06.03.2017 has constituted a Committee to re-look the guidelines of apex court regarding introduction of Environmental Studies as compulsory course in all UG courses. The recommendation of the Committee are as under:-

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2. The environmental studies course comprising of 45 lectures + 5 practical classes/ field works will be taught once in all UG programmes as a compulsory subject.
3. The marks of environmental studies will be included in the DMC/ Degree as in case of other core subjects.
4. Necessary amendments, if any, in this respect will be made in the scheme and syllabi of undergraduate programmes in terms of credits.
5. The subject should be taught by the eligible subject teachers only in terms of guidelines of UGC.
6. In Engineering B.Tech. programmes, Environmental Studies courses having 3 credits has already been included as compulsory subject w.e.f. academic session 2016-17 while for other undergraduate courses in campus of Guru Jambheshwar University of Science & Technology and all affiliated colleges, the said subject will be compulsory subject of 4 credits w.e.f. academic session 2017-18.

Further, if the above said subject of Environmental Studies already exist in the scheme & syllabi of UG programme(s) as optional/ qualifying, the same may be replaced by above said subject as compulsory subject of 4 credits with its new syllabi (copy enclosed). The total credits/ marks if any of the said semester of first year will be increased accordingly in the scheme & syllabi of KUK and the same will be treated as amendments in the said scheme & syllabi of first year of KUK followed by this University in case of all UG programmes/ courses being run by all affiliated degree colleges except BBA and BCA programmes.

DA/As above

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Endst. No. Acad./AC-III/2017/4831-4885

Dated: 3/8/17

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Deputy Registrar (Academic)
For Registrar 3/8/17

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Environmental Studies

<p>Course Code: EVS-201-L Course Credits: 4 Mode: Lecture(L) and Tutorial(T) Type: Compulsory Contact Hours: 4 hours (L) per week. Examination Duration: 03 hours.</p>	<p>Course Assessment Methods (Internal: 30; External: 70) Two minor test each of 20 marks, class performance measured through percentage of lecture attended (4 marks), assignments, quiz etc. (6 marks) and end semester examination of 70 marks. For the end semester examination, nine questions are to be set by the examiner. Question number one will be compulsory and based on the entire syllabus, it will contain seven short answer type question. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt any other four questions selecting one from each of the four units. All questions carry equal marks.</p>
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Prerequisite: Student should have prior knowledge of basic environment science.

Objectives:

- To enhance knowledge skills and attitude towards environment.
- To understand natural environment and its relationship with human activities.

Course outcomes:

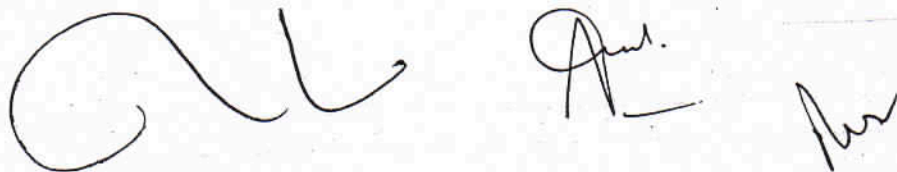
- CO-1 Students will be able to enhance and analyze human impacts on the environment.
CO-2 Integrate concepts & methods from multiple discipline and apply to environmental problems.
CO-3 Design and evaluate strategic terminologies and methods for sustainable management of environmental systems.
CO-4 Field studies would provide students first-hand knowledge on various local environment aspects which forms an irreplaceable tool in the entire learning process.

Unit-I

Multidisciplinary nature of Environmental studies: Definition, scope and importance, need for public awareness; Concept, Structure and function of an ecosystem: Producers, consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, Food webs and ecological pyramids; Introduction, characteristics features, structure and function of different ecosystems such as Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystem (Ponds, Stream, lakes, rivers, oceans, estuaries); Biodiversity: Introduction, Definition: genetic, species and ecosystem diversity, Bio-geographical classification of India, Ecosystem & biodiversity services: ecological, economic, social, consumptive use, productive use, social ethical, aesthetic and option values; Biodiversity at global, national and local level, India as a mega-diversity nation, Global Hot-spot of biodiversity, Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, Biological invasions, Endangered and endemic species of India, Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

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Renewable and non-renewable resources, 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, droughts conflicts over water, dams benefits and problems; Mineral resources: Use and exploitation, environmental effects of extracting and mineral resources; Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity; Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies; Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.



Unit-III

Definition of Environment Pollution; Causes, effects and control measures of: Air Pollution, Water Pollution, Soil pollution, Noise pollution, Nuclear hazards and human health risks; Solid waste Management: Causes, effects and control measures of urban and industrial wastes; Pollution case studies; Disaster management: floods, earthquake, cyclone and landslides; Climate change: global warming, acid rain, ozone layer depletion; different laws related to environment: Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act.; International agreements :Montreal & Kyoto Protocol & Nature reserves, tribal populations and human health,

Unit-IV

Concept of sustainability & sustainable development, water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of project affected persons; case studies : Environment ethics; role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness; case studies(eg.CNG vehicles in Delhi); Human Population growth: Impact on environment, human health & welfare ,Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.

Field Work: Visit to a local area to document environmental assets- river/forest/grassland/hill/mountain; Study of simple ecosystems – ponds, river, hill slopes etc; Study of common plants, insects, birds; Visit to a local polluted site- Urban/Rural/Industrial/Agricultural.

TEXT BOOK:

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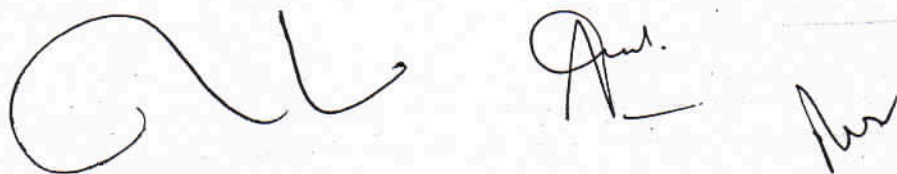
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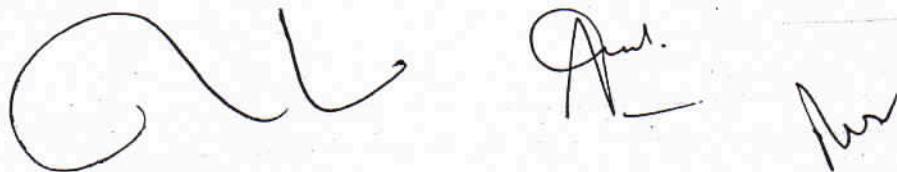
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5. The subject should be taught by the eligible subject teachers only in terms of guidelines of UGC.
6. In Engineering B.Tech. programmes, Environmental Studies courses having 3 credits has already been included as compulsory subject w.e.f. academic session 2016-17 while for other undergraduate courses in campus of Guru Jambheshwar University of Science & Technology and all affiliated colleges, the said subject will be compulsory subject of 4 credits w.e.f. academic session 2017-18.

Further, if the above said subject of Environmental Studies already exist in the scheme & syllabi of UG programme(s) as optional/ qualifying, the same may be replaced by above said subject as compulsory subject of 4 credits with its new syllabi (copy enclosed). The total credits/ marks if any of the said semester of first year will be increased accordingly in the scheme & syllabi of KUK and the same will be treated as amendments in the said scheme & syllabi of first year of KUK followed by this University in case of all UG programmes/ courses being run by all affiliated degree colleges except BBA and BCA programmes.

DA/As above

REGISTRAR

(contd. p. 3)

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Endst. No. Acad./AC-III/2017/4831-4885

Dated: 3/8/17

A copy of the above is forwarded to the following for information and necessary action:-

1. All Deans of Faculties, GJUS&T, Hisar.
2. Controller of Examinations, GJUS&T, Hisar.
3. All Chairpersons, University Teaching Departments, GJUS&T, Hisar.
4. All Director-Principals of the affiliated Institutes/ Colleges, GJUS&T, Hisar (except the colleges there is no UG programmes)
5. All above members of the Committee.
 - (i) Prof. Rajesh Malhotra, Dean Academic Affairs
 - (ii) Prof. Narsi Ram Bishnoi, Dean of Colleges
 - (iii) Prof. Asha Gupta, Chairperson, Department of Environmental Science & Engineering
6. Secretary to Vice-Chancellor (for kind information of the Vice-Chancellor), GJUS&T, Hisar.
7. Superintendent O/o the Registrar (for kind information of the Registrar), GJUS&T, Hisar.

Deputy Registrar (Academic)
For Registrar 3/8/17

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Environmental Studies

<p>Course Code: EVS-201-L Course Credits: 4 Mode: Lecture(L) and Tutorial(T) Type: Compulsory Contact Hours: 4 hours (L) per week. Examination Duration: 03 hours.</p>	<p>Course Assessment Methods (Internal: 30; External: 70) Two minor test each of 20 marks, class performance measured through percentage of lecture attended (4 marks), assignments, quiz etc. (6 marks) and end semester examination of 70 marks. For the end semester examination, nine questions are to be set by the examiner. Question number one will be compulsory and based on the entire syllabus, it will contain seven short answer type question. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt any other four questions selecting one from each of the four units. All questions carry equal marks.</p>
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Prerequisite: Student should have prior knowledge of basic environment science.

Objectives:

- To enhance knowledge skills and attitude towards environment.
- To understand natural environment and its relationship with human activities.

Course outcomes:

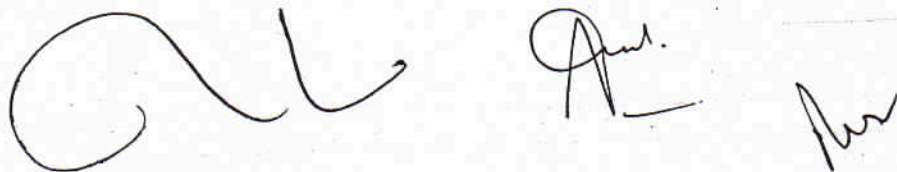
- CO-1 Students will be able to enhance and analyze human impacts on the environment.
CO-2 Integrate concepts & methods from multiple discipline and apply to environmental problems.
CO-3 Design and evaluate strategic terminologies and methods for sustainable management of environmental systems.
CO-4 Field studies would provide students first-hand knowledge on various local environment aspects which forms an irreplaceable tool in the entire learning process.

Unit-I

Multidisciplinary nature of Environmental studies: Definition, scope and importance, need for public awareness; Concept, Structure and function of an ecosystem: Producers, consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, Food webs and ecological pyramids; Introduction, characteristics features, structure and function of different ecosystems such as Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystem (Ponds, Stream, lakes, rivers, oceans, estuaries); Biodiversity: Introduction, Definition: genetic, species and ecosystem diversity, Bio-geographical classification of India, Ecosystem & biodiversity services: ecological, economic, social, consumptive use, productive use, social ethical, aesthetic and option values; Biodiversity at global, national and local level, India as a mega-diversity nation, Global Hot-spot of biodiversity, Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, Biological invasions, Endangered and endemic species of India, Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

Unit-II

Renewable and non-renewable resources, 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, droughts conflicts over water, dams benefits and problems; Mineral resources: Use and exploitation, environmental effects of extracting and mineral resources; Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity; Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies; Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.



Unit-III

Definition of Environment Pollution; Causes, effects and control measures of: Air Pollution, Water Pollution, Soil pollution, Noise pollution, Nuclear hazards and human health risks; Solid waste Management: Causes, effects and control measures of urban and industrial wastes; Pollution case studies; Disaster management: floods, earthquake, cyclone and landslides; Climate change: global warming, acid rain, ozone layer depletion; different laws related to environment: Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act.; International agreements :Montreal & Kyoto Protocol & Nature reserves, tribal populations and human health,

Unit-IV

Concept of sustainability & sustainable development, water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of project affected persons; case studies : Environment ethics; role of Indian and other religions and cultures in environmental conservation, Environmental communication and public awareness; case studies(eg.CNG vehicles in Delhi); Human Population growth: Impact on environment, human health & welfare ,Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.

Field Work: Visit to a local area to document environmental assets- river/forest/grassland/hill/mountain; Study of simple ecosystems – ponds, river, hill slopes etc; Study of common plants, insects, birds; Visit to a local polluted site- Urban/Rural/Industrial/Agricultural.

TEXT BOOK:

1. Erach Bharucha , "Environmental Studies for Undergraduate Courses", University Grants Commission and Bharati Vidyapeeth Institute of Environment Education and Research, Pune, University press pvt. Ltd. (India)
2. Fundamental concepts in Environmental studies by Dr. D.D. Mishra. S. Chand publications

REFERENCE BOOKS:

1. Essentials of Ecology and Environmental Science by Dr. S .V .S. Rana, PHI Learning Pvt. Ltd, Delhi
2. Environmental Chemistry by Anil Kumar De, Wiley Eastern Limited.
3. Environmental Science by T.G. Miller, Wadsworth Publishing Co, 13th edition.
4. Ecology and Environment by P. D. Sharma, Rastogi publications

Acpt.

Ans