



ಕ್ರ. ಸಂ. ಗುವಿಗು/ವಿಮವಿ/ಬಿಟಿಎಸ್/2015-16/ 277

ದಿನಾಂಕ: 21/05/2016

**ಅಧಿಸೂಚನೆ**

ವಿಷಯ: ಎಂ.ಎಸ್ಸಿ. ಪರಿಸರ ವಿಜ್ಞಾನ ಕೋರ್ಸಿನ I ರಿಂದ IVನೇ ಸೆಮೆಸ್ಟರ್‌ಗಳ ಪಠ್ಯಕ್ರಮ ಹಾಗೂ ಪದವಿ ಕೋರ್ಸಿನ ಐಚ್ಛಿಕ ಪರಿಸರ ವಿಜ್ಞಾನ ಪ್ರತಿಕೆಯ I ರಿಂದ VIನೇ ಸೆಮೆಸ್ಟರ್ ಪಠ್ಯಕ್ರಮ ಪರಿಷ್ಕರಿಸಿ ಜಾರಿಗೊಳಿಸುವ ಬಗ್ಗೆ.

- ಉಲ್ಲೇಖ: 1) ಸ್ನಾತಕೋತ್ತರ ಅಧ್ಯಯನ ಮಂಡಳಿ ಸಭೆ ದಿನಾಂಕ: 28.12.2015.  
2) ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ಗೊತ್ತುವಳಿ ಸಂಖ್ಯೆ 3.3 ದಿನಾಂಕ 19.03.2016.  
3) ಕುಲಪತಿಗಳ ಅನುಮೋದನೆ ದಿನಾಂಕ: 26.04.2016.

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ಉಲ್ಲೇಖ (2) ರಲ್ಲಿನ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್‌ನ ಸಭೆಯ ಗೊತ್ತುವಳಿ ಸಂಖ್ಯೆ 3.3ನ್ನು ಅನುಷ್ಠಾನಗೊಳಿಸುತ್ತಾ, ಎಂ.ಎಸ್ಸಿ. ಪರಿಸರ ವಿಜ್ಞಾನ ಕೋರ್ಸಿನ I ರಿಂದ IVನೇ ಸೆಮೆಸ್ಟರ್‌ನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹಾಗೂ ಬಿ.ಎಸ್ಸಿ. ಪದವಿ ಕೋರ್ಸಿನ ಪರಿಸರ ವಿಜ್ಞಾನ ಐಚ್ಛಿಕ ಪ್ರತಿಕೆಯ I ರಿಂದ VIನೇ ಸೆಮೆಸ್ಟರ್‌ವರೆಗಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಪರಿಸರ ವಿಜ್ಞಾನ ಸ್ನಾತಕೋತ್ತರ ಅಧ್ಯಯನ ಮಂಡಳಿಯು ಪರಿಷ್ಕರಿಸಿ ಅನುಮೋದಿಸಿರುವುದರಿಂದ, ಈ ಪಠ್ಯಕ್ರಮವನ್ನು 2016-17 ನೇ ಸಾಲಿನಿಂದ ಅನ್ವಯವಾಗುವಂತೆ ಜಾರಿಗೊಳಿಸಲಾಗಿದೆ.

ಮೇಲಿನ ಬದಲಾವಣೆಯನ್ನು ಸಂಬಂಧಪಟ್ಟ ಶಿಕ್ಷಕರ ಹಾಗೂ ವಿದ್ಯಾರ್ಥಿಗಳ ಗಮನಕ್ಕೆ ತರಲು ಸೂಚಿಸಲಾಗಿದೆ. ಪಠ್ಯಕ್ರಮದ ವಿವರವನ್ನು ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್‌ಸೈಟ್ [www.gulbargauniversity.ac.in](http://www.gulbargauniversity.ac.in) ದಿಂದ ಪಡೆಯಬಹುದು.

  
ಕುಲಸಚಿವರು 14/5/16

ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ

ಗೆ,

- 1) ಮುಖ್ಯಸ್ಥರು, ಪರಿಸರ ವಿಜ್ಞಾನ ಸ್ನಾತಕೋತ್ತರ ಅಧ್ಯಯನ ವಿಭಾಗ, ಗು.ವಿ.ಕಲಬುರಗಿ.

ಪ್ರತಿ:

- 1) ಡೀನ್‌ರು, ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ನಿಕಾಯ, ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ  
2) ಕುಲಸಚಿವರು (ಮೌಲ್ಯಮಾಪನ), ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ.  
3) ಎಲ್ಲಾ ವಿಜ್ಞಾನ ಮಹಾವಿದ್ಯಾಲಯಗಳ ಪ್ರಾಂಶುಪಾಲರಿಗೆ ಮಾಹಿತಿಗಾಗಿ.  
4) ಮುಖ್ಯಸ್ಥರು, ವಿಶ್ವವಿದ್ಯಾಲಯ ಗಣಕ ಕೇಂದ್ರ, ಗು.ವಿ.ಕಲಬುರಗಿ ಇವರಿಗೆ ಸದರಿ ಪಠ್ಯಕ್ರಮವನ್ನು ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್‌ ಸೈಟ್ ನಲ್ಲಿ ಪ್ರಕಟಿಸಲು ತಿಳಿಸಲಾಗಿದೆ.  
5) ಕುಲಪತಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ / ಕುಲಸಚಿವರ ಆಪ್ತ ಸಹಾಯಕರ ಮಾಹಿತಿಗಾಗಿ.



DEPARTMENT OF P.G. STUDIES AND RESEARCH IN  
ENVIRONMENTAL SCIENCE  
GULBARGA UNIVERSITY  
KALABURAGI-585 106

Proposed Syllabus of Environmental Science to be  
introduced as one of the optional subject in  
B.Sc., Semester Course for the academic year 2016- 17  
and onwards

Board of Studies in Environmental Science  
Dept. of P.G Studies and Research in Environmental Science  
Gulbarga University, Kalaburagi

2016- 17



# GULBARGA UNIVERSITY

Department of Environmental Science

B.Sc., Environmental Science: **SYLLABUS**: effect from 2016-17

Introducing Environmental Science Subject as One of the Optional Paper for  
B.Sc. Degree

Semester	Title of the Paper	Teaching Hours/ week	Marks		
			IA	Main	Total
I	<b>Paper-1: Introduction To Environmental Science</b>	4	20	80	100
	Practical based on Paper 1	3	10	40	50
II	<b>Paper -2: Earth and Environment</b>	4	20	80	100
	Practical based on Paper 2	3	10	40	50
III	<b>Paper -3: Environmental Chemistry and Biology</b>	4	20	80	100
	Practical based on Paper 3	3	10	40	50
IV	<b>Paper- 4: Environmental Resources and Conservation</b>	4	20	80	100
	Practical based on Paper 4	3	10	40	50
V	<b>Paper- 5.1 Environmental Pollution and Climatic Change</b>	3	20	80	100
	<b>Paper- 5.2 Environmental Laws and Education</b>	3	20	80	100
	Practical based on Paper 5.1	3	10	40	50
	Practical based on Paper 5.2	3	10	40	50
VI	<b>Paper 6.1 Occupational Health and Safety</b>	3	20	80	100
	<b>Paper 6.2 Natural Disaster and Management</b>	3	20	80	100
	Practical based on Paper 6.1	3	10	40	50
	Practical based on Paper 6.2	3	10	40	50

**Note: 1.** Environmental Science as an optional subject can be offered as one of the 3 optionals in combination with any of the Life Science, Chemical Science and Physical Science subjects.

**2.** The detailed unit wise syllabus for first two semesters is finalized and enclosed. The detailed unit wise syllabus remaining semesters is being finalized and the same will be submitted after the approval of BOS

# ENVIRONMENTAL SCIENCE SYLLABUS FOR B.Sc. COURSE

## I SEMESTER

### PAPER-1: INTRODUCTION TO ENVIRONMENTAL SCIENCE

**Unit- 1: Environmental Science**-Definition, Scope, Importance, Relationship with other branches of science; environmental biology, environmental chemistry, environmental engineering, environmental geology, Environmental Geography, environmental physics, Environmental Toxicology, Environmental Education and its importance. - 12hrs

**Unit- 2: Evolution of Universe** – Theories – Big bang theory, steady state theory and pulsating theory; Origin of elements – origin of earth, sun and solar system, origin and evolution of life and life forms. -10hrs

**Unit- 3: The earth system:** atmosphere, hydrosphere, lithosphere and biosphere. Water resource: Hydrological cycle – introduction, components- Evaporation, Transpiration, Trans - evaporation, condensation, percolation and precipitation. Factors affecting hydrological cycle. -10 hrs

**Unit- 4: Meteorology:** Weather and climate, tropical monsoon climate - Humidity, temperature, pressure, wind. El-nino and La nina effect. Use of natural resources and non- renewable energy and its effect on climate change. -10 hrs

**Unit- 5: Abiotic factors** - Importance of temperature and light, Essential elements and limiting factors - Liebig –Black-Mans Law of limiting factors. Shelfords law of tolerance. Classification of organisms according to temperature tolerance and regulation. Thermal adaptation of plants and animals. Effect of light on plants and animals. - 12hrs

**Unit- 6: Human and Environment-** Overview of Ecology and Biodiversity; Biogeographical classification of India, Hotspots of biodiversity, Endangered and endemic species of India; Role of human in conservation of natural resources. -10 hrs

### PRACTICALS I:

Time: 3 hours/week

1. Determination of pH of water sample using pH paper/ pH meter
2. Humidity: Principle and use of dry & wet bulb thermometer.
3. Pressure: Anaeroid barometer
4. Wind: direction and speed- wind vane and anemometer.
5. Observation & Identification of plants, animals and birds of surrounding region.
6. List out the natural resources of surrounding region.
7. List out the endangered species of the surrounding region.
8. Determination of turbidity of water sample using sacchi disc.
9. Determination of  $\text{CaCO}_3$  in water sample.
10. Field visit

### Reference:

1. Fundamentals of Soil Science – Forth H.D. (1984) – John Wiley
2. Environmental Science- Turk J & Turk A (1984) - Saunders
3. Geography and man's environment Strahler & Strahler (1977) - Eiley
4. Environmental Science –Eugene E.D. (1983) - W.C. Brown Co.
5. Man and Biosphere today-Dusman, R.S. (1974) Sterling publication
6. Man and Changing environment- R.G. Franke, D.N. Franks Publ: Holt, Rinehart & Winston.
7. The Earth: Our physical Environment- W.L. Donn-John Wiley & Sons ,N. Y.
8. Environmental Science- S. C. Santra, New Central Book Agency Private limited, London



## II SEMESTER

### PAPER -2: EARTH AND ENVIRONMENT

**Unit 1: Earth system-** origin and evolution of earth, composition of earth, common rocks and minerals-types, geological agents of changing environment viz. Tectonics, magnetism, weathering, erosion and deposition; common geological structures -bedding, fold, faults. -12 hrs

**Unit 2: Geochemical and geological process-** Exogenic and Endogenic – Earthquakes volcanoes – cyclones, Tsunami - their impact on flora and fauna and human beings. River action, wind action and glaciers. -10 hrs

**Unit 3: Land use planning:** Terrain evaluation Environmental impact of mining, Conservation of matter in various geosphere. Soil-characteristics, formation of soil, role of soil organisms in soil formation, soil erosion, types, soil conservation. -12 hrs

**Unit 4: Rare Earth Elements (REE):** Concept of major trace and REE classification and mobility of trace element Geochemical cycle, Human use, trace elements and health, Diseases induced by human use of land. -10 hrs

**Unit 5: Land Resources:** Concept of environmental geography, man's modification of environmental systems. Environmental degradation-concept, land use impact, deforestation, agricultural activities, urbanization and desertification -08 hrs

**Unit 6: Natural hazards and disaster management** -Natural and Manmade disasters - types, causes, onset, impacts, forecasting and managements (viz. earthquake, flood, drought, cyclone, tsunami, volcanics, landslide, avalanches). Impacts studies on use of natural resources under earth crust-water, minerals, and fossil fuels. -12 hrs

#### PRACTICAL 2:

Time: 3 hours/week

1. Identification of Minerals and Rocks.
  - a. Physical properties & chemical composition of various rock forming and economic minerals,
  - b. Hand specimen study of Igneous, sedimentary & metamorphic rocks.
2. Classification of soils, sediment their texture, mineralogy
3. Interpretation of topo sheets
4. Estimation of water holding capacity of types of soil.
5. Estimation of water balance.
6. Estimation of Humidity of types of soil.

#### References:

1. Earth Science and the Environment, Richard J.Ordway, D.Van Nostrand and Company, London.
2. Encounter with the Earth, L.F. Oxford press, San Francisco., Laporte,
3. Soil and water conservation Engineering, Schwab. S.O, Frevert.R.K, Edimster. T.W, and Barns, K.K., John Wiley and Sons, 1975.
4. Land Application of Wastes, Loehr, R.C.Jesel, W.J.Novak, N.D., Clarkson, W.S. and Friedeman G.S., Van Nostrand Reinhold Co., New. York., Vol-I and II, 1979
5. Environmental Geology, Valdia K.S., 1987
6. The nature of Oceanic life, Menard H.W., W.H.Freeman and Company, San
7. Francisco, The Ocean – A Scientific American Book, (1969).
8. Essentials of Geology, Reed Wicander & James S. Monroe, Wadsworth publishing company, (2002).
9. Text book of Environmental Studies, Erach Bharucha UGC., Universities press (India) Pvt.Ltd.,(2005)

Note: Scheme of Examination is as per the other Optional Science Subjects

  
Chairman BOS in Environmental Science

COORDINATOR  
DEPARTMENT OF ENVIRONMENTAL SCIENCE  
GATEWAY TO KNOWLEDGE