

# FACULTY OF LIFE SCIENCES

## Syllabus

For

### Interdisciplinary Course in Botanical & Environmental Sciences (PG)

Examinations: 2019–20



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## Guru Nanak Dev University Amritsar

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**ESL061 – Environmental Challenges****Time: 3 Hrs.****Credits 4-0-0****Max. Marks : 100****Mid Semester Marks : 20****End Semester Marks : 80****Mid Semester Examination: 20% weightage****End Semester Examination: 80% weightage****Instructions for the Paper Setters:**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. **Environment:** Introduction to environment, Biotic and abiotic factors of environment, Structure of Earth's Lithosphere, Biosphere: Hydrosphere, Lithosphere and Atmosphere, Environment Education, Need and objectives of environment education, Major Global Environmental Problems.
2. **Environmental Pollution:** Definition, sources, effects and control measure of: Air, Water, Soil, Noise, Thermal, Marine and Radiation pollution. Solid Waste management: Causes, effects and control measure of urban and industrial waste. Role of Individuals in prevention of pollution.

**SECTION-B**

3. **Acid Rain:** Introduction to acid rain, Causes of acid rain, Gases involved in acid rain production, Consequences of acid rain, Effect of acid rain on forests and other ecosystems, Effect of acid rain on historical monuments, Abatement of acid rain production.
4. **Ozone Layer Depletion:** Stratospheric ozone layer, Importance of Ozone layer, Causes of ozone depletion, Mechanism of depletion of ozone, Consequences of ozone depletion, The Ozone Holes, Abatement of Ozone Depletion, The Montreal protocol.

**SECTION-C**

5. **Green House Effect:** The Green house effect, Green House Gases, Carbon dioxide as major source of green house gas, Causes of Green House effect, Consequences of Green House effect, Effect on Weather, Abatement of Green house effect, The Kyoto Protocol.
6. **Toxic Chemicals in the Environment-Air, Water and Soil:** Physical Properties of Hazardous Chemicals, Pesticides and heavy metals, Carcinogens, Hazardous Waste Handling Rules, 1989, Disaster Management and Risk Analysis.

**SECTION-D**

7. **Global Climate Change:** Introduction to climate change, Causes of climate change, Unpredictable and extreme climate change, Effect of climate change, Melting Ice and Rising sea level, Effect of climate change on Agriculture, Human beings and other organisms, Mitigation of climate change, International efforts deals with climate change.
8. **Environmental Ethics:** Introduction to environment ethics, Achievement of ethics, Moral responsibilities of individuals in the protection of environment.
9. **Energy:** Energy sources and uses, fossil fuels, coal and oil resources, Nuclear power, Solar power, Energy conservation, Energy from biomass, Biofuels, Wind energy, Geothermal energy.

**References:**

1. Agarwal, K. C. 2001. Environmental Biology. Nidhi Publications Ltd., Bikaner.
2. Bharucha, E. 2005. Textbook of Environmental Studies. Universities Press, Hyderabad.
3. Bhatia, A. L. 2012. Textbook of Environmental Biology, I.K. International Publishing House Pvt. Ltd., New Delhi.
4. Houghton, J. 1997. Global Warming, Cambridge University Press, Cambridge.
5. Kanta, S. 2012. Essentials of Environmental Studies. ABS Publications, Jalandhar.
6. Raven, P. H., Berg, L. R. and Hassenzahl, D. M. 2008, Environment. John Wiley & Sons, Inc. USA.
7. Sodhi, G. S. 2000, Fundamental Concepts of Environmental Chemistry, Narosa Publishing.