

COURSE CODE: ENS-211
COURSE NAME: Applied Ecology
CREDIT HOURS: Theory = 3 Practical = 0 Total = 3
CONTACT HOURS: Theory = 48 Practical = 0 Total = 48
PREREQUISITE: None
MODE OF TEACHING: Three hours of lecture per week

Course Description:

This course will make the students aware of the concepts of applied ecology and understand some major environmental issues such as global climate change, sustainable agriculture, conservation of resources in ecological perspectives, their management and ecological restoration.

TOPICS COVERED:

Week	Topic
1	Background and scope of applied ecology
2	Applications of ecological knowledge in solving different environmental issues
3	Energy and carbon balance: carbon emission and global climate change, effect of increased carbon dioxide concentration on agriculture
4	Energy and carbon balance: carbon emission and global climate change, effect of increased carbon dioxide concentration on agriculture
5	Human impact on Nitrogen cycle
6	Water as an ecological resource
7	Water and distribution of species, farming practices under limited water supply
8	Water and distribution of species, farming practices under limited water supply
9	Mid Semester Exam
10	Soil as a natural resource: soil salinity and water logging issues in Pakistan, soil erosion and conservation
11	Agro37ecology: ecology of food production, Sustainable agricultural practices

12	Forest ecology: conservation and management of forests and rangelands in Pakistan
13	Industrial ecology: impact of industrial pollution on ecosystems, pollutant transfer in plant and animals, phyto-remediation
14	Industrial ecology: impact of industrial pollution on ecosystems, pollutant transfer in plant and animals, phyto-remediation
15	Urban ecology: urban ecological footprint, urban environmental degradation, green cities.
16	Ecological modeling in defining ecosystem problems
17	Ecological restoration: concepts and techniques
18	End Semester Exam

Text and Material:

1. Ecological Restoration: Principles, Values, and Structure of an Emerging Profession. 2013. Clewell, A.F. 2nd Edition. Island Press.
2. A Primer of Conservation Biology. 2012. 5th Ed. Sinauer, P.R.B. Associates Inc. Publ. Sunderland.
3. Urban Ecology: Patterns, Processes, and Applications. 2011. Jari Niemela, Jurgen H. Breuste, Glenn Guntenspergen, Nancy E. McIntyre, Thomas Elmqvist, Philip James. Oxford University Press.
4. Ecology of Industrial Pollution. 2010. Ed. Lesley C. Batty and Kevin B. Hallberg. Cambridge University Press.
5. Applied Ecology and Environmental Management. Newman. E.I. 2nd ed. Blackwell Scientific Publications, Oxford.

ASSESSMENT SYSTEM:

Theoretical/Instruction	100%
Assignments	10%
Quizzes	15%
Mid Semester Exam	25%

End Semester Exam	50%
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Practical Work	0%
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Lab Attendance	0%
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Lab Report	0%
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Lab Quiz	0%
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Lab Rubrics	0%
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