



COURSE CURRICULUM

Course Title: Ecosystem Ecology

Course Code:

Credit Units: 02

Level: PG

Course Objectives:

The goal is to develop a solid understanding of the links between ecosystem structure and function. This course will also describe the principles of ecosystems ecology, with an emphasis on their application to terrestrial ecosystems.

Prerequisites:

Graduate from Biological science Bachelor degree in Science/Zoology/Botany/ Anthropology/Veterinary/Environmental Science/Forestry/ Agriculture/Geography/Natural Resources/Ecology and minor in any of these subjects, and understanding of basics of life sciences.

Course Contents/Syllabus:

	Weightage (%)
Module I	40
The Ecosystem Concept: Introduction; Overview of Ecosystem Ecology; History of Ecosystem Ecology; Ecosystem Structure; Controls over Ecosystem Processes; Human-Caused Changes in Earth's Ecosystems. Earth's Climate System: Earth's Energy Budget; The Atmospheric System; The Oceans; Landform Effects on Climate; Vegetation Influences on Climate; Temporal Variability in Climate Long-Term Changes; Interannual Climate Variability; Seasonal	

L	T	P/S	SW/FW	TOTAL CREDIT UNITS
2	0	0	0	2

and Daily Variations	
Module II	30
Terrestrial Nutrient Cycling: Nitrogen Inputs to Ecosystems; Overview of Mineralization; Production and Fate of Dissolved Organic Nitrogen; Pathways of Nitrogen Loss; Other Element Cycles- Phosphorus; Sulfur; Essential Cations; Nonessential Elements; Interactions Among Element Cycles	
Module III	30
Trophic Dynamics: Plant-Based Trophic Systems; Controls over Energy Flow Through Ecosystems Ecological Efficiencies; Food Chain Length and Trophic Cascades; Seasonal Patterns; Nutrient Transfers; Detritus-Based Trophic Systems; Integrated Food Webs; Mixing of Plant-Based and Detritus-Based Food; Chains Food Web Complexities.	

Student Learning Outcomes:

1. Present an overview of diversity of life forms in an ecosystem.
2. Identify a number of habitats from the selected ecosystem.
3. Explain the difference between a Qualitative & Quantitative study for plants and animals.
4. Explain the necessity for and give examples of Structural/Competitive/Behavioural adaptations
5. Explain and identify the role of the organism in energy transfers.
6. Identify local ecological issues related to selected organisms

Pedagogy for Course Delivery:

Class room lectures, PowerPoint presentations, Tutorial sessions, Discussions and Interactions

Assessment / Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	End Term Examination
30%	NA	70%

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Component					

(Drop down)	Mid-Term Exam	Project	Viva	Attendance	
Weightage (%)	10	10	5	5	70

References:

- Chapin, F. S. III, P.A. Matson, and H. A. Mooney, 2002. Principles of Terrestrial Ecosystem Ecology. Springer-Verlag, New York

Additional References:

1. Carpenter, S.R. 1998. Ecosystem ecology: Integrated physical, chemical and biological processes. pp. 123-162 in S.I. Dodson (ed.), Ecology. Oxford University Press, London.
2. Pace, M.L. Revisiting the ecosystem concept: important features that promote generality and understanding. In K.C. Weathers, D.L Strayer, and G.E Likens (editors). Fundamentals of Ecosystem Ecology.
3. Aber, J. and J. Melillo. 2001. Terrestrial Ecosystems. 2nd edition.
4. Brady, N.C. 1990. The Nature and Property of Soils. 10th edition. MacMillan Publishing, New York and London.
5. Schlesinger, W.H. 1997. Biogeochemistry. Academic Press. San Diego and London.