

**UNIVERSITY OF DAR ES SALAAM
DEPARTMENT OF ZOOLOGY AND WILDLIFE CONSERVATION
COLLEGE OF NATURAL AND APPLIED SCIENCES**



BL 213: ECOLOGY II (ACM STUDENTS)

COURSE SYLLABUS

SEPTEMBER 2010

COURSE INSTRUCTOR

Prof. J.D..L. Kabigumila Room 103B, Zoology Bldg +255-784-388950 jkabigu@uccmail.co.tz

LECTURE VENUE

Zoology Bldg, Zoology Lab II Second Floor

COURSE DESCRIPTION

According to the UDSM Prospectus, BL 213 (Ecology II) is a 2-unit course equivalent to 60 contact hours (i.e. 15 lecture-hours and 45 practical-hours). The course will involve classroom as well as field instruction, in Dar es Salaam and Lake Manyara/Serengeti National Parks, respectively.

Classroom Instruction (Week 5-7)

The purpose of classroom instruction is to acquire an understanding of the fundamental principles of ecology, and the role of ecology in identifying and addressing environmental problems. The lectures will cover the following topics (Table 1):

- Introduction to biotic interactions:
 - Intraspecific and interspecific competition; competitive exclusion or coexistence; life history strategies: *r/K* selection concept;
 - Facilitation: mutualistic and commensal interactions. Role of facilitation in natural communities;
 - Predation: behaviour of predators and its role on predation rates. Behaviour of prey and its role on dynamics of predation. Evolutionary consequences of group-living on the ecology and foraging strategies of animals.
- Conservation of biodiversity:
 - Values of biodiversity;
- Role of economics in biodiversity loss;
- Tanzania as a biodiversity hotspot;
- Conservation efforts

Table 1: Schedule of Classroom Instruction.

Week	Topic
5	<ul style="list-style-type: none">● Introduction to biotic interactions● Competition
6	<ul style="list-style-type: none">● Life history strategies● Facilitation● Predation
7	<ul style="list-style-type: none">● Evolutionary consequences of group-living on the ecology and foraging strategies of animals● Conservation of biodiversity● Conservation of biodiversity in Tanzania

Field Instruction

The purpose of the field instruction in Lake Manyara and Serengeti National Parks is twofold:

- To reinforce the concepts and principles covered in the lectures, and attempt to document the various biotic interactions in the field:
 - Identification of habitat types and associated vertebrate fauna and flora;
 - To expose you to Tanzania's efforts in conserving biodiversity;

- Challenges to conserving biodiversity in Tanzania's protected areas

Learning Competencies¹

- This course will:
 - o Enable you to use ecological principles in interpreting field observations;
 - o Provide an opportunity for you to discuss topical issues in environmental and biodiversity conservation;
 - o Expose you to the challenges of conserving biodiversity in Tanzania's protected areas; and
 - o Provide you with field practice for identifying common species of fauna and flora and their preferred habitats.

Learning Objectives²

- By the end of this course, you should be able to:
 - o Demonstrate knowledge of ecological phenomena, such as competition, facilitation, and predation and their role in the structure and function of natural communities;
 - o Effectively apply knowledge of ecological principles in addressing environmental challenges of the new millennium;
 - o Demonstrate the ability to identify the large and common species of fauna and flora and associated habitats in Lake Manyara and Serengeti National Parks; and
 - o Integrate ecological principles with socioeconomics and their consequence on biodiversity loss in Tanzania.

Learning Outcomes³

On successful completion of this course, you will be able to improve:

- Ecological literacy by learning the theoretical principles and concepts and their application in the field;
- Scientific skills by learning how ecologists construct knowledge and apply it in dealing with environmental issues;
- Analytical and writing skills through articulation and interpretation of ecological literature and field observations

Main Textbooks

Begon, M., Harper, J.L., & Townsend, C.R. (1996) *Ecology*. Blackwell, Cambridge⁴.

Caughley, G. & Sinclair, A.R.E. (1994) *Wildlife Ecology and Management*. Blackwell Science, Oxford.

Chapman, J.L. & Reiss, M.J. (1999) *Ecology: Principles and Applications*. 2nd Edn. Cambridge University Press.

Ricklefs, R.E. (1997) *The Economy of Nature*. W.H. Freeman and Company. New York.

Course Assessment

There will be:

- 1 midcourse test (20%) (Week 7);

¹ A learning competency is an educational term relating to the skills, behaviours and knowledge, which are necessary for a student's successful completion of the course.

² A learning objective describes what the student should be able to achieve at the end of a course. Hence, learning objectives are specific, measurable statements usually written in behavioural terms.

³ A learning outcome is a statement, which specifies what a student will know or be able to do because of pursuing a particular course. It describes what a student should know, understand, or be able to do at the end of that course. Thus, outcomes are usually expressed as knowledge, skills, or attitudes.

⁴ This is a standard textbook for this course, and it is available in the ACM Library. A later edition is Begon, M., Harper, J.L. and Townsend, C.R. (2005) *Ecology: From Individuals to Ecosystems*. 4th Ed. John Wiley-Blackwell, Cambridge.

- 1 final examination (60%) (Week 17);
- 3 assignments/case studies (20%)
 - Discuss the factors regulating populations of the following species in the Serengeti ecosystem (5 students each species)⁵ (Week 5; Due date - end of Week 9):
 - African buffalo (*Syncerus caffer*)
 - African lion (*Panthera leo*)
 - Cheetah (*Acinonyx jubatus*)
 - Spotted hyaena (*Crocuta crocuta*)
 - Discuss ecological separation and overlap between the following species in the Serengeti ecosystem (7 students each set of species)⁶ (Week 6; Due date - end of Week 9):
 - Grant's gazelle (*Gazella granti*) and Thomson's gazelle (*G. thomsoni*);
 - Rock hyrax (*Procavia capensis*) and tree hyrax (*Heterohyrax brucei*);
 - Five topmost predators (lion, cheetah, leopard *Panthera pardus*, spotted hyaena, and wild dog *Lycaon pictus*)
 - Discuss the challenges and constraints to conserving biodiversity in the Tarangire National Park and environs⁷ (Week 9; Due date - end of Week 15)

Grading

The course will be graded based on the UDSM System as outlined hereunder:

A: ≥ 70	-	Excellent
B+: 60-69	-	Very Good
B: 50-59	-	Good
C: 40-49	-	Fair
D: 35-39	-	Fail
E: <35	-	Fail

Examination/test questions will be drawn from case studies, field instruction, and lecture notes, which will be available to you in hardcopy. The test will comprise short answer questions, while the final examination will have short answer questions in Section A and essay-type questions in Section B. the UDSM Examination Regulations shall apply. Hence, no unauthorised material including notes, books, cell phones, palm pilots or any other material defined as such will be allowed during the examination/test. Due to time constraints, no make-up examination/test will be set.

CHALLENGES AND STRATEGIES TO TEACHING BL 213: ECOLOGY II

Challenges

- Compressed Calendar:
 - Courses offered for the ACM Programme are based on regularly offered semester-long courses by the Department of Zoology and Wildlife Conservation, but are run on a very short calendar. One unfortunate result of this "compressed offering" is a lack of class time for discussion and other time-intensive activities.
- Bimodal Student Population:
 - Delivery of BL 213: Ecology II needs to accommodate students both with and without prior background in ecology. This presents a significant instructional challenge for the Lecturer.

⁵ Students will work in groups and submit a joint paper.

⁶ Each student will submit a separate paper.

⁷ Each student will submit a separate paper.

- This challenge was partly the reason for renaming the ACM Ecology Course some years back so that it would offer a different approach (Ecology of the Maasai Ecosystem) for those students who have already had ecology before coming to Tanzania.
- An additional constraint is because ACM Courses must have a parallel course offering, which is already in the University of Dar es Salaam (UDSM) Prospectus, namely BL 213: Ecology II. This constraint has been overcome by modelling the offering in such a way that wherever possible and applicable, examples are drawn from the Serengeti or other ecosystems found in Tanzania.
- Different Educational System:
 - Your educational system is based mostly on active learning strategies, which include discussion and inquiry-based learning in the classroom. This contrasts with the local system, which is largely lecture-based;
 - Furthermore, you are accustomed to courses, which have numerous assessments spaced throughout the course, and thus may experience a sense of heightened anxiety in courses with fewer, more heavily weighted assessments;
- Complexity of the Programme:
 - The ACM Programme is unique in its structure and composition, especially considering the mix of classroom and field experience, which results in additional challenges for the Lecturer. Further complications result from the difficulties of working in the field, such as:
 - Dangerous game;
 - Park Regulations;
 - Separate field vehicles;
 - Divided students' attention between learning and admiring the wildlife and magnificent view.

Strategies to Overcoming the Challenges

- Articulating explicit learning objectives, competencies and outcomes, to:
 - Improve learning;
 - Ease your anxieties as you adapt to new:
 - Instructors;
 - Course content;
 - Calendar;
 - Educational system; and
 - Culture.
- Aligning goals, assessments and instruction, by:
 - Ensuring that the course title, objectives, instructional activities, and assessments are all aligned and consistent with one another;
 - Consistently reminding you of these at critical points throughout the course.
- Using active learning to increase engagement and motivation whereby you construct your own knowledge⁸ and understanding by incorporating a variety of strategies, such as:
 - Discussion;
 - Small group assignments;
 - Case studies;
 - Problem-solving, etc.

⁸ Knowledge construction relates to the extent to which instructors help students to understand, investigate, and determine how cultural assumptions, frames of references, perspectives, and biases within a discipline influence the ways in which knowledge is constructed within it" (<http://www.siue.edu/~ptheodo/foundations/knowledgeconstruction.html>)