BOTANY & ZOOLOGY (BDE) 214: Principles of Ecology
Year 2022, First Semester, 16 credits

Lecturers:
Course co-ordinator: Prof. Carol Simon (Room 2044, e-mail: csimon@sun.ac.za)
Prof. Guy Midgley (Room 1027; e-mail: gfmidgley@sun.ac.za)
Dr Heath Beckett (Room 1094; e-mail hbeckett@sun.ac.za)
Ms Katie Watson (Room 4018; e-mail: kwatson@sun.ac.za)
Course assistant: Janette Hutton (Room 1006, e-mail: janette@sun.ac.za)

Aims: This course aims to expose students to the fundamental principles of ecology at various scales of organization, from individuals through ecosystems to the biosphere as a system. Topics covered include life-history strategies, competition, dispersal, predation, mutualism, population dynamics, community assembly, keystone species, diversity patterns and the processes structuring diversity, and elements of systems ecology. The theory will be supported with examples from local terrestrial and aquatic systems, in lectures but also through hands-on exposure during a group field project. The projects will provide students with the chance to get their hands dirty doing their own research. Students will be taught how to conduct scientific research, how to write effective scientific reports and how to analyze ecological data.

Recommended reading:
- Smith, T.M. & Smith, R.L. 2011. Elements of Ecology. 8th Edition. Pearson **(This is the core text for the course)**
- Begon, M. Townsend C. R., & Harper, J. L. 2006. Ecology: from individuals to ecosystems. 4th edition. Blackwell.
- Stiling, P. 2004. Ecology Theories and Applications. Prentice Hall.
- Levinton, Jeffrey S. 2009. Marine biology: function, biodiversity, ecology. New York: Oxford University Press
- Cowling, R.M. (ed.) 1992. The Ecology of Fynbos: Nutrients, Fire and Diversity. Cape Town: Oxford University Press.
- Aspects of the course are based on the current scientific literature. Selected research papers will be on SUNLearn.

Language implementation for this module:

The following language option will be implemented in this BDE module:

- Lectures will be offered in English only.

The materials for learning will be made available as follows:

- All compulsory reading material will be provided in English. Compulsory reading material (excluding published material) will also be provided in Afrikaans unless it is not reasonably practicable to do so.
- Module frameworks/study guides will be available in Afrikaans and English.
- Question papers for tests, examinations and other summative assessments will be available in Afrikaans and English. Students may answer all assessments and submit all written work in either Afrikaans or English.

Lecture programme: This course takes place over a period of 13 weeks. It will follow an **Augmented** format, which means there will be synchronous (real-time) streaming of f2f teaching and learning opportunities with a limited number of students in the venue. Students will attend in-person on a rotational basis. You will be assigned to groups at the start of the semester. Programme material and instructions will be provided on Sunlearn. Lectures will take place in lecture hall 2020 (the Broom) in the Natural Sciences Building during the lecture slots [Mondays (11h00-11h50), Wednesdays (10h00-10h50) and Fridays (08h00-08h50)]. The overall schedule is below.

Lecture	Date	Time	Subject / theme	Lecturer	NB
1	14-Feb	11:00			
2	16-Feb	10:00	**INDIVIDUALS**	**CS**	
3	18-Feb	08:00			
4	21-Feb	11:00			
5	23-Feb	10:00	**INDIVIDUALS**	**CS**	
6	25-Feb	08:00			
7	28-Feb	11:00			
8	02-Mar	10:00	**INDIVIDUALS**	**CS**	
9	04-Mar	08:00			
10	07-Mar	11:00			
11	09-Mar	10:00	**INDIVIDUALS**	**CS**	**PROPOSAL HAND-IN (10-Mar, 16:00)**
12	11-Mar	08:00			**CLASS TEST 1**
13	14-Mar	11:00			
14	16-Mar	10:00	**POPULATIONS**	**HB**	
15	18-Mar	08:00			
	21-Mar				**PUBLIC HOLIDAY**
16	23-Mar	10:00	**POPULATIONS**	**HB**	
17	25-Mar	11:00			Monday timetable
UNIVERSITY RECESS 28.03 – 01.04					
18	04-Apr	11:00			
19	06-Apr	10:00	**POPULATIONS**	**HB**	
20	08-Apr	08:00			CLASS TEST 2
21	11-Apr	11:00			
22	13-Apr	10:00	**COMMUNITIES - diversity**	**KW**	
23	14-Apr	08:00			Friday timetable
	15-Apr				**PUBLIC HOLIDAY**
	18-Apr				**PUBLIC HOLIDAY**
24	19-Apr	11:00			
25	20-Apr	10:00	**COMMUNITIES - assembly**	**KW**	
26	22-Apr	08:00			
27	25-Apr	11:00			
	27-Apr	10:00	**COMMUNITIES - function**	**KW**	**PUBLIC HOLIDAY**
28	29-Apr	08:00			CLASS TEST 3
	02-May	11:00			**PUBLIC HOLIDAY**
29	04-May	10:00	**ECOSYSTEMS**	**GM / HB**	
30	06-May	08:00			
31	09-May	11:00			
32	11-May	10:00	**ECOSYSTEMS**	**GM / HB**	**PROJECT HAND-IN (12-May, 16h00)**

33	13-May	08:00			
34	16-May	11:00	**ECOSYSTEMS**	**GM / HB**	CLASS TEST 4
35	18-May	10:00			
36	20-May	08:00			

Practical programme: There are 12 practical sessions, which will be held on Thursdays (14h00-16h50) in rooms 2020+2025 in the Natural Sciences Building, or in the field. The practical component of the course is built around a group project. Students will be exposed to the process of designing a project, collecting and analysing data, and writing a scientific paper. See the schedule for practical venue.

Date	Subject	Lecturer	Venue
17-Feb	Writing and reading in science / literature searching	CS	2020 / 2025
24-Feb	Project orientation / Proposal preparation	CS/KW/GFM	2020 /2025/1025
03-Mar	Proposal writing / experimental design	GFM/HB	2020/2025
10-Mar	**Proposal hand in (by 16h00)**		1006
17-Mar	**Proposal discussion**	CS/KW/GFM	2020/2025/1025
24-Mar	Data collection / processing		
UNIVERSITY RECESS 28.03 – 01.04			
07-Apr	Data collection / processing		
14-Apr	Friday timetable		
21-Apr	Data analysis guidance. Compulsory prac – it's important that you enter and explore the data beforehand (i.e., do preliminary analyses and graph the data)!	CS/KW/GFM	2020/2025/1025
28-Apr	Project write-up		
05-May	Project write-up		
12-May	**Project hand in (by 16h00)**		1006
19-May	NO PRAC		

Assessment: This course is assessed via **flexible assessment**. There will be 4 **class tests/assignments on the Friday following completion of each lecture block**. **There will NOT be a final A2 test.** Tests will be in-person unless the Covid situation changes. **If you have a clash with these test times, kindly inform the staff before 28 February. After this the tests will not be moved.** The tests cover topics which are discussed in class, during practicals, as well as material in Smith and Smith and on SUNLearn. The practical component of the course is assessed through two written reports - a project proposal and a final project write-up.

Project proposal (15%)
Project write-up (25%)
Class test individuals CS (15%)
Class test populations HB (15%)
Class test communities KW (15%)
Class test ecosystems HB/GFM (15%)

Final mark 100%

In order to pass the module, you need to achieve a final mark of at least 50%.

Deadlines: Reports must be handed-in to Janette in Room 1006 by 16:00 on the day of the deadline. Reports handed in late will have marks deducted at a rate of 5% per day. Submissions handed in a week, or more, late **will not** be marked. In instances where a deadline or practical is missed, an original doctor's certificate is required, within one week. If a practical is missed for medical reasons, the student still needs to complete the practical in their own time.