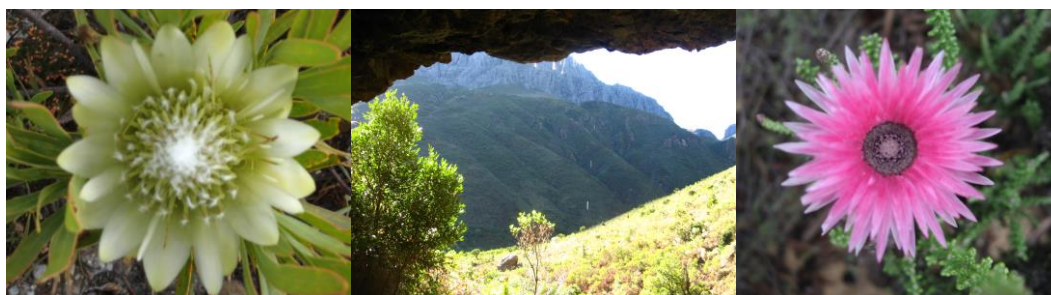

Course 2: Biodiversity: Plants for the People in the Western Cape
Course Co-ordinator: Prof. Nox Makunga

27 June – 1 July 2022



Course Co-ordinator: Prof. Nokwanda (Nox) (E-mail: makunga@sun.ac.za)

I have a broad interest in plant biodiversity and its use by people especially for health purposes and the incredibly rich diversity and beauty of the Cape Flora is inspirational for a medicinal plant scientist. The level of diversity achieved by a limited number of lineages in a very limited area is truly phenomenal, and merits further research and many of these plants are of sociocultural significance. I thus study medicinal plants that are used in the Cape region and other parts of South Africa using holistic approaches that interact plant biotechnology, systems biology and ethnobotany. Many of species are of commercial interest including *Sutherlandia frutescens*, *Aspalathus linearis*, *Sceletium tortuosum*, *Pelargonium sidiodes*.

The aims of my research are thus to not only contribute to the natural products industry but also assist in setting conservation priorities. Much of my research is also aimed at improving the life of people who are reliant on medicinal plants for their health and livelihood generation and so I am also interested in indigenous knowledge and how it can serve society today and in the future.

I am an avid science communicator that often shares via different social media platforms information related to medicinal plants of South Africa.

Profile (Department of Botany and Zoology)

<http://www.sun.ac.za/english/faculty/science/botany-zoology>

Social media

Twitter: @noxthelion; Instagram: @nox_makunga TikTok: @noxmakunga

COURSE DESCRIPTION

During this course, South Africa's incredible biological diversity will be introduced, with special focus on the plants of the Cape Floristic Region (CFR). After a solid theoretical and practical introduction to the diversity and richness of this flora, the focus will shift to the unique mineral nutrition strategies of plants, especially those that are found in nutrient-poor soils in the CFR, from the Legume and Protea families. This course will also focus on the role and responsibility of people in conserving and benefiting from these botanical riches. Indigenous plant use by local people, especially traditional healers, constitutes the next topic of discussion, and will be followed by a visit to traditional herbal medicines shop. The course will close with verbal presentations by students on topics researched during the course of the module.

Course 2: Biodiversity: Plants for the People in the Western Cape

Course Co-ordinator: Prof. Nox Makunga

27 June – 1 July 2022

Overarching programme objectives:

To introduce students to the spectacular botanical diversity of South Africa, and to the challenges around the sustainable utilization of this flora for both commercial and cultural benefit

PRESENTATION

The course combines formal lectures with field excursions to different natural sites within the Cape Town – Stellenbosch area. In addition local plant utilization will be explored through visits to commercial farms with economic plants and indigenous medicinal markets.

EVALUATION

Course evaluation is based a practical PowerPoint seminar (45%) and an essay assignment (50%). Class attendance is compulsory for all classes; 5 % of the total mark of the course is based on class participation and attendance.

COURSE CONTENT

DAY ONE: Conservation of the Cape Floral riches

Morning: Introduction to module & Assignment selection.
Floral diversity in the unique Cape Floristic Region
Lecturers: Frikkie Bekker and Brian du Plessis

Afternoon: Hike to Stellenbosch Mountain
Lecturers: Annerie Senekal, Frikkie Bekker and Brian du Plessis

DAY TWO: Cape Floral Diversity

Morning: Lecture on ecological and conservation considerations in the Cape Flora
Lecturer: Frikkie Bekker and Brian du Plessis

Afternoon: Trip to Betty's Bay
Lecturers: Annerie Senekal, Frikkie Bekker and Brian du Plessis

DAY THREE: Fynbos: Adaptations underground

Morning: Lecture on diverse ecological and physiological strategies of mineral nutrition in the Cape Flora
Lecturer: Stian Griebenow

Afternoon: Visit to Jonkerhoek
Lecturer: Stian Griebenow

DAY FOUR: Medicinal plant use of the Cape Flora

Morning: Indigenous plant use lecture
Lecturer: Prof. Nox Makunga

Afternoon: Bush-doctor hike; visit medicinal plant garden, Franschhoek
Lecturer: Prof. Nox Makunga and Kaylan Reddy

DAY FIVE: Student seminar presentations

Lecturers: All participating lecturers and teaching assistance

RESEARCH ASSIGNMENT

You will receive a list of various Cape plant families / genera that have major ecological and / or pharmaceutical and / or horticultural value. Select one of these families for the research component of this module.

Class participation: 5 marks

Task 1:

Oral assignment: Tell us about your interesting family / genus (45 marks)

Collect information about your chosen plant family / genus during the course of this module. Interesting and relevant information to seek includes, for example:

- the size and distribution of the family / genus,
- morphology and diagnostic characters
- unusual ecological attributes (e.g. pollination, seed dispersal, drought adaptation strategies, etc.)
- medicinal potential and use
- commercial potential and use

Use this information to prepare a 15 minute PowerPoint presentation, which will be presented to the class on Friday

Task 2:

Written assignment: Write an essay on your chosen family / genus (50 marks)

Write a short (max. 3 pages) essay on your chosen interesting family / genus. This essay has to be completed within 1 week after finishing the module, and must be sent to Prof. NP. Makunga r electronically at makunga@sun.ac.za

Families / genera to choose from:

1. *Erica*
2. Proteaceae
3. Restionaceae
4. Fabaceae
5. Iridaceae
6. Crassulaceae
7. Oxalidaceae - *Oxalis*
8. Geraniaceae - *Pelargonium*
9. Asphodelaceae - *Aloe*
10. Lamiaceae
11. Arecaceae
12. Asteraceae – *Helichrysum/Syncarpa* (everlastings)
13. Asteraceae – other
14. Mesembryanthemaceae
15. Rutaceae - *Agathosma*

Plagiarism:

Please note that plagiarism in any form is a serious offence and will result in penalties. All written assignments must be uploaded onto Turnitin via Moodle. Students are also required to sign a plagiarism declaration.