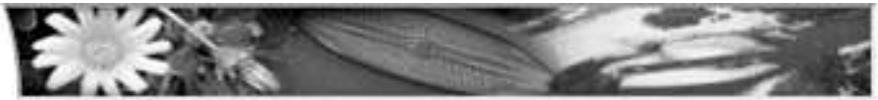
GENERAL INFORMATION FOR NMMU **BOTANY** STUDENTS

2010



Department of Botany

Table of Contents

Welcome to the Department of Botany. We hope that you will have a good year with us and that you will achieve your academic goals.

This booklet contains the information you will need to organise your botanical studies for the year. It also contains vital information pertaining to deadlines, policies, safety and academic support. It is in your interest to work through most of this document.

1. Objectives of the Botany Department

The Department of Botany is committed to guide you in the acquisition of scientific skills and insights. We strive for excellence in academic achievement and purposeful research.

We aim to assist you to develop:

- An understanding of concepts and principles as well as acquired knowledge in science - particularly Botany;
- The ability to use scientific knowledge and skills to solve problems in innovative ways, using appropriate principles, tools, techniques, methodology and logical reasoning;
- Skills used to investigate phenomena related to Botany and science and to understand the changing and contested nature of knowledge in science;
- The ability to use oral and written modes of communication through the effective preparation, organisation and presentation of research;
- The ability to use science and technology effectively, critically and safely, while showing responsibility to the environment and the health of others;
- An understanding of the world through integration of knowledge and skills;
- The ability to transfer knowledge across contexts;
- The ability to work effectively in a team, collaborating to develop commitment, respect, shared responsibility, interpersonal relationships and managerial skills in order to achieve a set purpose.

2. Staff

At University, you are a student and not a pupil. The academic staff are not your adversaries. This means that you are a partner in your own education and not a reluctant bystander. The success of your studies depends on **your contribution** and not on the authoritarian discipline of the lecturers. Remember that the lecturers need your respect, cooperation and participation as much as you need theirs. Mutual consideration between students and lecturers will result in effective education. Try to be considerate of the lecturers and other students. The whole system will work better that way.

The Botany staff who will interact with you are:

Prof E E Campbell

Head of Department
Associate Professor
Herbarium Curator
Office: 12 01 07
Telephone: 504 2397
E-mail: eileen.campbell@nmmu.ac.za
Subjects taught: ecology, systematics and phycology
Research interests: phycology, restoration ecology

Ms A Packareysammy

Departmental Secretary
Office: 12 01 07
Telephone: 504 2397
E-mail: aziza.packareysammy@nmmu.ac.za

Prof J B Adams

Professor
Office: 12 01 03
Telephone: 504 2429
E-mail: janine.adams@nmmu.ac.za
Subjects taught: ecology and stress physiology
Research interests: estuarine ecology and management

Dr D R du Preez

Director of the School of Environmental Sciences
Director of the Unit for Integrated Environmental and Coastal Management
Senior Lecturer
Office: 12 0G 21
Telephone: 504 2721
E-mail: derek.dupreez@nmmu.ac.za
Subjects taught: cytology, physiology and phycology, GIS
Research interests: algal physiology, ecophysiology and mariculture

Dr P T Gama

Senior Lecturer
Office: 12 01 05
Telephone: 504 2779
E-mail: phumelele.gama@nmmu.ac.za
Subjects taught: anatomy, morphology, ecophysiology and phycology
Research interests: phytoplankton ecophysiology

Ms A Rajkaran

Contract Lecturer
Office: 12 01 18
Telephone: 504 2648
E-mail: anusha.rajkaran@nmmu.ac.za
Subjects taught: ecology, taxonomy
Research interests: mangrove ecology, population modelling

Mr A C Smith

Technician - Practicals
Office: 12 0G 08
Telephone: 504 2196
E-mail: andrew.smith@nmmu.ac.za

Prof R M Cowling

Non-lecturing Research Professor
Office: 12 01 14
Research interests: plant diversity and conservation ecology

3. Undergraduate studies

Dates:	**Last date for registration:**
Term 1: 1 February to 19 March	5 March
Term 2: 23 March to 20 May	30 March
Term 3: 19 July to 3 September	2 August
Term 4: 6 September to 29 October	10 September

Autumn Recess: 2 – 11 April
Winter Recess: 12 June – 18 July
Spring Recess: 24 September – 3 October
Summer Recess starts: 27 November

Exams (terms 1 & 2): 24 May to 11 June
Exams (terms 3 & 4): 3 to 26 November

Public Holidays

Fri	1 January	New Year's Day
Sun	21 March	Human Rights Day
Mon	22 March	Public Holiday
Fri	2 April	Good Friday
Mon	5 April	Family Day
Mon	26 April	Public Holiday
Tue	27 April	Freedom Day
Sat	1 May	Workers Day
Wed	16 June	Youth Day
Mon	9 August	Women's Day
Fri	24 September	Heritage Day
Thu	16 December	Day of Reconciliation
Sat	25 December	Christmas Day
Sun	26 December	Day of Goodwill
Mon	27 December	Public Holiday

3.1 First-year modules

BOT110 – Plant cell biology

Content: Plant cytology, genetics, biotechnology and cell metabolism.
Lecturer: Dr D R du Preez
Lectures (42): 1 February – 18 March
Practicals (1+6):

3 February (Beach Prac)
10 February
17 February
24 February
3 March
10 March
17 March

Last day for registration: 6 March
Examination period: 24 May to 11 June
Exam hours: 1½
Credits: 7

BOT120 - Plant structure

Content: Plant tissues, anatomy and morphology.
Lecturer: Dr P T Gama
Lectures (42): 23 March to 20 May
No lectures on 2-11 April (Autumn Recess);
26,27 April (*in lieu of* Freedom Day)
Practicals (6):

31 March
14 April
21 April
28 April
5 May
12 May

Last day for registration: 3 April
Examination period: 24 May to 11 June
Exam hours: 1½
Credits: 8

BOT130 - Plant evolution and systematics

Content: Evolution and an introduction to plant systematics, including life histories.
Lecturer: Prof E E Campbell
Lectures (42): 19 July – 2 September
No lectures on 9 August (Women's Day)
Practicals (7):

- 21 July (2xlecture)
- 28 July
- 4 August
- 11 August
- 18 August
- 25 August
- 1 September

Last day for registration: 3 August
Examination period: 3 to 26 November
Exam hours: 1½
Credits: 7

BOT140 – Plant ecology and environmental botany

Content: Ecological principles; toxicology; ethnobotany and environmental management
Lecturer: Prof J B Adams
Lectures (42): 6 September – 29 October
No lectures on 24 September – 3 October (Spring Recess)
Practicals (6):

- 8 September
- 15 September
- 22 September
- 6 October
- 13 October
- 20 October

Examination period: 3 to 26 November
Exam hours: 1½
Credits: 8

3.2 Second-year modules

BOT210 – Plant and algal systematics

Content: Plant and algal systematics, taxonomic methods, botanical nomenclature and herbarium practice.
Lecturer: Prof E E Campbell
Lectures (42): 1 February – 17 March
Practicals (9):

9 February (am & pm)
16 February (pm)
23 February (am & pm)
2 March (pm)
9 March (am & pm)
16 March (pm)

Recommended prior learning: BOT130 (or equivalent)
Last day for registration: 6 March
Examination period: 24 May to 11 June
Exam hours: 2
Credits: 8

BOT220 - Plant ecology

Content: Ecological methods, plant population and community ecology.
Lecturer: Ms T Riddin
Lectures (42): 23 March to 19 May
No lectures on 2-11 April (Autumn Recess);
26,27 April (*in lieu of* Freedom Day)
Practicals (9):

30 March (pm)
13 April (am & pm)
20 April (pm)
4 May (am & pm)
11 May (pm)
18 May (am & pm)

Recommended prior learning: BOT140 (or equivalent)
Last day for registration: 3 April
Examination period: 24 May to 11 June
Exam hours: 2
Credits: 8

BOT230 – Marine botany

Content: Micro- and macroalgal ecology, physiology and the marine environment.
Lecturer: Dr P T Gama
Lectures (40): 19 July – 1 September
No lectures on 9 August (Women's Day)
Practicals (9):

20 July (pm)
27 July (am & pm)
3 August (pm)
10 August (am & pm)
17 August (pm)
24 August (am & pm)

Last day for registration: 3 August
Examination period: 3 to 26 November
Exam hours: 2
Credits: 8

BOT240 – Economic botany and plant biotechnology

Content: Germination physiology, tissue culture, plant propagation, plant growth substances, horticulture and agriculture.
Lecturers: Ms A Rajkaran
Lectures (42): 9 September – 5 November
No lectures on 24 September – 4 October (Spring Recess)
Practicals (9):

7 September (am & pm)
14 September (pm)
21 September (am & pm)
5 October (pm)
12 October (am & pm)
19 October (pm)

Last day for registration: 11 September
Examination period: 3 to 26 November
Exam hours: 2
Credits: 8

BOT250 - Project

Content: Anatomical, morphological and taxonomic study of selected plants and algae.

Students will conduct a research project comprising an anatomical, morphological and taxonomic study of selected plant material. The details of the project will be discussed in the first practical of the first term.

Lecturer: Prof E E Campbell
Recommended prior learning: BOT130 (or equivalent). Concurrent attendance of BOT210 is recommended.
Examination period: Projects will be assessed during the second semester and marks will be available with the November examination marks.
Credits: 8
Practicals (4):

2 February (pm)
23 March (am & pm)
31 August (pm)

3.3 Third-year modules

BOT310 – Applied marine botany

Content: Applied phycology, mariculture and biological management of economically useful marine systems.
Lecturer: Ms A Rajkaran
Lectures (35): 1 February – 18 March
Practicals (12):

11 February
18 February
25 February
4 March
11 March
18 March

Last day for registration: 6 March
Examination period: 24 May to 11 June
Exam hours: 3
Credits: 12

BOT320 - Plant physiology

Content: Production physiology: photosynthesis, nitrogen and sulphur metabolism and plant nutrition.
Lecturer: Dr D R du Preez
Lectures (35): 23 March to 20 May
No lectures on 2-11 April (Autumn Recess);
26,27 April (*in lieu of* Freedom Day)
Practicals (12):
25 March
1 April
15 April
22 April
29 April
6 May
Last day for registration: 3 April
Examination period: 24 May to 11 June
Exam hours: 3
Credits: 12

BOT330 – Plant ecophysiology

Content: Stress physiology: including water, light and biotic interactions.
Lecturers: Dr P T Gama & Ms T Riddin
Lectures (34): 19 July – 2 September
No lectures on 9 August (Women's Day)
Practicals (12):
22 July
29 July
5 August
12 August
19 August
26 August
Recommended prior learning: BOT140 (or equivalent)
Last day for registration: 3 August
Examination period: 3 to 26 November
Exam hours: 3
Credits: 12

BOT340 – Plant ecology and environmental management

Content: Numerical ecology, South African biomes and vegetation types, Environmental Impact Assessments, Integrated Environmental Management and Environmental Management Systems.
Lecturer: Prof E E Campbell
Lectures (35): 6 September – 29 October
No lectures on 24 September – 3 October (Spring Recess)
Practicals (12):

9 September
16 September
23 September
14 October
21 October
28 October

Recommended prior learning: BOT140 (or equivalent)
Last day for registration: 11 September
Examination period: 3 to 26 November
Exam hours: 3
Credits: 12

BOT350 - Project

Content: Research project approved by the Department.

Students will conduct a research project on a topic of their choice approved by the academic staff. Students must consult with staff members on a suitable topic. This choice will be made early in the first term (**4 February**). A detailed research proposal must be submitted to the Head of Department via the supervisor by **26 March** for approval. A draft of the project must be submitted to the supervisor on **2 September** for comment. The finalised project is to be completed and two copies are to be handed in by **12:00** on **21 September**. **TWO** copies must be submitted: one copy to the supervisor and the other to the head of department. An ownership declaration must be submitted with the document. If you wish to keep a copy for yourself then a third copy must be made. Students are required to present a talk on the results of their project at the annual symposium to be held on **Thursday, 7 October**. Please do not plan any other activities for this day. The talks will be 10 minutes long, with 5 minutes allocated for questions. The written submission will count 70% and the symposium talk will count 30% of the BOT350 mark.

See Section 7 for recommendations on how to conduct, record and present scientific research.
Coordinator: Prof E E Campbell
Prerequisite: Approval of a research proposal.
Practicals (6):

4 February	Project choices
13 May	Statistics
2 September	Draft submission day
7 October	Minisymposium

Examination period: Marks will be available with the November examination marks.
Credits: 12

3.4 Prescribed books

The prescribed text for first-year modules is: Mauseth, J.D. 2009. *Botany. An Introduction to Plant Biology.* Fourth edition, Jones and Bartlett Publishers, Sudbury. 624+43 pp.

This text will be used extensively during lectures and practicals. Please ensure that you have a copy by the first lecture.

For senior-level modules, the lecturers will inform you of recommended books at the beginning of each module.

3.5 Language

Lectures are presented in English. Students whose home language is not English are requested to ask the lecturer to clarify the content should they not understand.

3.6 Photographs

Each student will be photographed during the first practical. If you were unable to attend the first practical of the year, please see your lecturer.

3.7 Consultation

Lecturers are available for consultation after completion of lectures and during practicals. Lecturers will also be available for consultation at other times by appointment. Students are requested not to contact lecturers at their homes unless an emergency arises.

3.8 Practicals

Practical session attendance is compulsory. The whole period allocated to practicals will be used. Do not plan any other activities during this period. The lecturer/s for each module will explain how the practical mark will be determined for that module. Only illness is considered a valid reason for absence from practicals. Absence from a practical without submitting a medical certificate will result in a mark of 0% awarded for that practical.

3.9 Class attendance

Undergraduate students must commence attending lectures in all modules from the very first day that lectures start, even if they have not registered. An undergraduate student who does not attend lectures from the first day may be refused permission to register for those modules at a later stage. The Head of the Department will have full discretion to bar from classes any student who does not adhere to the requirements to attend lectures from the first day. Attendance, however, does not imply examination admission. Students must be registered for a module and fees must be paid for that module before you may write the examination or obtain a mark.

The onus is solely on the student to check that they are registered and to check the rules and requirements of each module for which they are registered.

Attendance of classes presented at the Nelson Mandela Metropolitan University is compulsory. A student must attend 90% of the lectures in each module to obtain a DP (duly performed) certificate. Only illness is considered a valid reason for being absent from classes. Absence from more than two double lectures without submitting a medical certificate will result in loss of a DP certificate (see 3.14).

It is unreasonable to expect a lecturer to repeat work if you have not attended a class. Announcements of test dates and assignment schedules are communicated at class. Failure to attend class is not an excuse for missing tests or deadlines.

3.10 Tests

The lecturer in consultation with the class will set test dates during each module. Each lecturer will disclose the composition of the test mark at the beginning of the module.

3.11 Absence from tests or exams

Only illness is considered to be a valid reason for being absent from tests or exams. Exemption from tests or the granting of an aegrotat (special test or exam) is dependent on submission of a medical certificate. Please make sure that you have a blank NMMU medical certificate in your possession so that if you have to visit a doctor you do not have to make a second visit to have the form completed. If practicals are missed due to illness, the mark for that practical will not count towards the class mark. A mark of 0% will be recorded for practicals where no exemption is granted.

Leave of absence for sport is granted only for approved South African University activities and for participation at first class provincial and national levels. Such exemption is dependent on **prior acceptance** by the head of department of written documentary evidence submitted well in advance. Exemption for other extra-curricular activities may also be considered, dependent on similar submission being made to the head of department. Submissions after the event will not be considered.

A **special examination** may be granted to students who, by reason of illness or other special circumstances, have been unable to sit or complete an examination.

3.12 Copying and plagiarism

It is a serious offence to pass another student's work off as your own. At no stage is copied work acceptable as a submission for any assignment or practical, and students who copy the work of others run the risk of disciplinary action. A declaration of ownership of the text and ideas will be required for all assignments. Please refer to Section 6 for further information on copyright.

3.13 Mark allocation

The final mark for each module will be calculated as the average of the class and exam marks. The lecturer/s for each module will determine the composition of the class mark for that module. A pass mark is 50% or higher. Marks will be posted on the Botany Department notice board on the first floor where they will appear against your student number.

A minimum class mark of 40% is required for examination entry into any Botany module at all year levels. However, experience has shown that it is difficult to pass the module if your class mark is below 50%. It is

important to work consistently throughout the module to reduce stress at exam time.

The subminimum for exam marks is also 40%.

3.14 Duly Performed (DP) certificates

Students who have failed to obtain a DP will be notified by the publication of their student numbers on the Botany Department notice board on the first floor. Students will lose their DP certificates if they fail to attend more than two double lectures per module without a medical certificate. The DP lists will be published by the last day of lectures before the exam.

3.15 Supplementary examinations

A supplementary examination:

- will be granted if the student has completed the original examination but failed the module.
- will be granted if the final module mark is between, and including **45 and 49**%.
- will be granted if the student requires only two term modules in order to obtain the degree.
- will **not** be granted for special examinations.
- will be written at a time and venue set by the examinations office.
- mark will stand even if it is lower than the examination mark.

If a student fails to attend the supplementary examination for **any** reason (including illness), the examination mark will be awarded.

The final mark after a supplementary examination may not exceed 50%.

3.16 Safety, Health and Environment instructions for undergraduate laboratories.

In order to ensure that you get the most from your courses it is important to be fully aware of the hazards and potential dangers in your specific field of study.

The NMMU has decided to make the university a safe and enjoyable environment in which to work and study, while not posing a health risk to staff or students. Steps have already been taken to achieve these goals, one of the most important being the education of students in safe

laboratory practice. As part of your induction into the department we are committed to informing you of appropriate actions to be taken to ensure your safety.

Please read the following laboratory rules carefully, then **sign the declaration page provided in the back of this booklet, and hand it in the lecturer at the commencement of the first practical**. Bear in mind that these rules are not comprehensive but are there to guide you in basic safe laboratory procedures. When using chemicals or participating in activities not mentioned in this document, consult the lab technicians, demonstrators or appropriate documentation to determine the correct procedures to follow.

Remember, **you have the responsibility for ensuring your safety!**

Please report anything you may consider unsafe to the Botany SHE representative: **Mr Chan Visagie. His office is 12 01 18 and his email address is chan.visagie@nmmu.ac.za.**

FIRE

In the event that the general alarm is sounded follow the evacuation routes established for the section (they are on the notice board outside the secretary's office):

- Switch off all flames and electrical appliances, and close all gas cylinders
- Evacuate the room. Walk! Do not run.
- Close the door(s) and windows leading to the fire if possible.
- Sound the alarm (if it has not already gone off automatically) and inform Campus Control (x2482 or hash) as soon as possible.
- Vacate the building using the fire escape stairways. NEVER use the lifts.
- Meet at the main Biology Building (12) car park.
- Roll-call will be taken in the car park.

FIRST AIDERS

Campus Health Services are situated below (basement) the Embizweni building (which is adjacent to the Main Building).

There are notices in the Department informing you of the closest trained First Aider.

GENERAL SAFETY REGULATIONS AND PROCEDURES

Dress

- Lab coats (knee-length) are required in laboratories when using chemicals, biohazards or radioisotopes.
- Open shoes, such as sandals (which cover less than 80% of the foot), are prohibited in the lab. You may not walk bare foot anywhere in the department.
- Leave behind protective clothing (e.g. lab coats, gloves) when leaving the laboratory to eat or drink refreshments.
- Long hair must be tied back or otherwise restrained when working with chemicals, biohazards, radioisotopes, or moving machinery.

Physical hazards

- Smoking, eating, drinking, and storage of food, beverages or tobacco is not permitted in laboratories.
- Work places must be kept clean and free of unwanted chemicals, biological specimens, bags and equipment not in use.
- Exits and passageways must be kept clear at all times.
- Familiarize yourself with the location and operation of safety and emergency facilities such as the fire extinguishers, a first aid kit, telephone, emergency wash facilities, fire alarm pull stations and emergency exits.
- Access to emergency equipment (eyewashes, safety showers and fire extinguishers) must not be blocked.
- Wash your hands before leaving the laboratory.
- Walk, do not run, in the lab.
- Sharp objects (syringe needles, broken glass, blades, Pasteur pipettes and cover slips.) should be kept in a container while not in use. After use the container should be labelled before disposal.
- Perform a safety check at the end of each experiment - make sure that gas, water, electricity, vacuum lines, air and heaters have been turned off and decontaminate any equipment or work areas that may have been in contact with hazardous materials.
- Sitting on workbenches is not permitted.

Chemical hazards

- Reagent bottles, empty or full, should not be left on the floor.
- Never pipette hazardous chemicals by mouth.
- Work only with materials when you know their flammability, reactivity, toxicity, safe handling, storage and emergency procedures. There is a file with MSDS (Material Safety Data Sheet) in the postgraduate laboratory.
- All procedures involving the liberation of volatile materials or aerosols of a toxic or flammable nature must be done in a operating (switched on) fume hood.
- Materials contaminated with biohazardous agents should be autoclaved.
- If you have spilled any chemical, it is your responsibility to ensure that it is cleaned (either by yourself, or, if highly toxic, under supervision of the SHE rep). Do not walk away from a spill – that is equivalent to a hit-and-run accident.

3.17 Study methods

Objectives, study materials and learning outcomes will be provided to students during each module. Students will be expected to do supplementary reading. Students should study the relevant section thoroughly **before** it is covered in class. Useful class discussions are only possible if students have prepared in advance. The success of your studies is dependent on the effort you put into your work. The lecturer is a facilitator in this process.

Emphasis is placed on understanding and insight. However, aspects of the work must be memorised so that discussion on the topic is possible. An example of this is terminology unique to Botany. This type of learning must be complete before the lecturer and class can have fruitful discussions.

In order to complete your studies successfully, you will have to manage your time well. Familiarise yourself with the requirements at the beginning of the module, and if you are uncertain about them, consult the lecturer or head of department. Take careful note of the dates set for assignments and tasks. DO NOT FALL BEHIND. It is very difficult to catch up once you are behind.

Remember that you learn a lot during class. DO NOT SKIP CLASSES. Attendance is entirely to **your** benefit.

Do your own work. You are responsible for learning as much as you can. Submitting someone else's work under your name is a serious offence and disciplinary action will be taken in such cases. Copying other students' work is plagiarism and is illegal. But most importantly, you will not learn anything if you do not do the work yourself.

3.18 Computers

The Department cannot provide undergraduate students with computer facilities within the Department. This is because of the large number of students relative to the number of departmental computers. Botany Postgraduate students also use these computers intensively. Should you need to use a computer in the Botany Department, please approach a member of staff to make arrangements to do so. Computers for undergraduate use are available in the basement of Buildings 6 (ABSA lab) and 13 (Aberdaire lab).

3.19 Bursaries

Information on undergraduate student bursaries may be obtained from the Financial Aid Office on the ground floor of the main building opposite the cashier.

3.20 Admission requirements

Second-year modules: At least 22 Botany credits at first-year level are recommended.

Third-year modules: At least 32 Botany credits at second-year level are recommended.

Honours: A BSc with at least 60% for Botany as major is usually required. Applications are subject to a selection process as space may be limited.

3.21 Botany BSc Outcomes

Graduates of the programme will:

B1. Demonstrate an understanding of concepts, principles and acquired knowledge in science – particular Botany – through independent thinking and critical evaluation.
B2. Use scientific knowledge to design and test hypotheses and skills to solve problems in innovative ways, using appropriate principles, tools, techniques and logical reasoning.
B3. Develop skills to investigate phenomena related to Botany and demonstrate an understanding of the changing and contested nature of knowledge in science.
B4. Work effectively in a team, collaborating to develop commitment, respect, shared responsibility, interpersonal relationships and managerial skills, to achieve a set purpose.
B5. Use oral and written modes of communication effectively in English, through the preparation, organisation and presentation of research.
B6. Use science and technology effectively, critically and safely, while showing responsibility to the environment and the health of others.
B7. Demonstrate an understanding of the world through the ability to transfer knowledge across contexts and integrate knowledge and skills.

Graduates of the programme will be aware of:

B8. A variety of thinking and learning skills.
B9. Being the consciousness of society in environmental issues.
B10. Contextualising environmental issues in a cultural and social framework
B11. The career opportunities available in the many fields that make up the discipline of Botany and their application in the community.
B12. Entrepreneurial opportunities through exposure to examples of the application of botanical knowledge.

3.22 Time-table and venues

Time	Monday	Tuesday	Wednesday	Thursday	Friday
07:45-08:20 **08:30-09:05**	***BOT1xx*** Lecture (04.0G.03)			***BOT1xx*** Lecture (04.0G.03)	
09:15-09:50 **10:00-10:35**	***BOT3xx*** Lecture (12.01.09)	***BOT2xx*** Lecture (12.01.09)	***BOT2xx*** Lecture (12.01.09)	***BOT3xx*** Lecture (12.01.09)	
10:45-11:20 **11:30-12:05**		***BOT2xx*** ½ Practical (12.01.12)	***BOT1xx*** Lecture (13.02.69)	***BOT3xx*** Practical (12.01.12)	
12:15-12:50			***BOT3xx*** Lecture (12.01.09)		
13:00-13:35					
13:45-14:00				***BOT3xx*** Practical (12.01.12)	
14:00-14:20			***BOT1xx*** Practical (12.01.12 & 12.01.21)		
14:30-15:05		***BOT2xx*** Practical (12.01.12)			
15:15-15:50 **16:00-16:35**	***BOT2xx*** Lecture (12.01.09)				
16:45-17:20					

5. Departmental Equipment

All departmental equipment was motivated for and obtained through a lengthy process of negotiation based on supplementary funding and proof of use and maintenance. The University is increasingly expecting departments to pay for such equipment internally. This means that replacement of equipment is becoming increasingly difficult. Please take care of all departmental equipment and report maintenance required as soon as you notice a problem. The insurance policy of the University excludes insurance payments where no forced entry occurred. All items of equipment are to be locked away for safekeeping at all times.

The department has resources and equipment that are for use in research and teaching. Please report all faulty equipment or equipment in need of maintenance (e.g. toner low) to the Head of Department as soon as possible.

Equipment and requests for Technical assistance may be booked for you by your supervisor.

Major resource facilities include the following:

5.1 Laboratories

Laboratory space is assigned to postgraduate students or reserved for undergraduate practicals. Should you wish to use postgrad or practical lab space other than that assigned to you, please approach the Head of Department in this regard. All laboratories are shared resources: please keep your own and communal areas clean and tidy. All items left on open shelves must be labelled with your name, date and content.

5.2 Glasshouse

The glasshouse is used for germination, growing and experimentation with plants where the only controlled feature is water regime. Irrigation is controlled on the benches in the western wing and on the germination bench in the eastern wing. Other benches in the eastern wing are hand watered. Students wishing to use space in the glasshouse should register their project with Mr Smith and clearly label their experimental area and contents.

5.3 Cold rooms

Cold rooms are used for **temporary** storage of samples and long-term storage of chemicals that require cold storage. All items must be clearly labelled with the owners name, date and content.

5.4 Growth cabinets

Growth cabinets may be booked and used after consultation with Mr Gouws. The name of the experimenter and the duration and nature of the experiment should be clearly displayed on the outside of the door.

5.5 Computers

The Department provides postgraduate students with computer facilities within the Department. Priority for use of these computers is for practicals as required by teaching staff, followed by the Honours students, and then other postgrads. Undergraduate students may use the computers if available. Postgrads must please ask undergrads to finish up their work and vacate the computer room if a computer is needed.

Printers available for students are a high-speed LaserJet, another LaserJet and a high-resolution A3 colour printer in the GIS lab. An A4 colour printer is available in the herbarium. Log sheets are to be filled in for **ALL** these computers so that your research grant can be debited with the cost of your printing. If you do not have a research grant, you should pay the secretary for your printing.

5.6 GIS lab

The GIS lab contains several computers, printers and a plotter. These computers have priority of use for GIS. One of these computers has a DVD writer. You may use these computers for other uses provided they are not needed for their priority tasks.

5.7 Image analyser

The Image Analysis system is available for use on a booking basis. You may book for TWO hours a day; where possible after 12h00 (this time is flexible and can be negotiated with the Head of Department).

5.8 Maps

The map room contains a collection of topocadastral maps, orthophotos and aerial photographs. Some of these maps are Departmental, while

others are Institutional or Private. Maps may be signed out for use from Prof Campbell.

5.9 Technical Assistance

Technicians will assist students where needed if approached by the supervisor. Technicians have been instructed to only undertake tasks that have been logged in this manner. No verbal requests will be entertained.

6. Copyright

It is a serious offence to pass another people's work off as your own. At no stage is copied material (including from the Internet) acceptable as a submission for any assignment, practical, project or thesis. Students who copy the work of others run the risk of disciplinary action. Please read through the following set of frequently asked questions and answers. During 2010 all major work submitted must be accompanied by a declaration of ownership.

What is protected under the Copyright Act?

Literary (whether in written, printed or digital form), musical and artistic works, cinematograph films, sound recordings, broadcasts, programme-carrying signals, computer programs and published editions.

May I freely use material from a book that is out of print?

Out of print does not mean out of copyright. Copyright of the content lasts for 50 years after the death of the author. Copyright of a published edition lasts for 50 years from the date of publication.

How much text may I quote verbatim, fully acknowledging the source, without applying for copyright permission?

There is no set rule. You should not quote more than you need to quote to make your point, and you must always acknowledge the source and the author. A rule of thumb, which has no statutory force, is that if you intend to quote more than a total of 300-400 words from anyone source you have to apply for copyright permission.

May I use a figure, diagram or photograph from an existing publication without applying for copyright permission?

There is no copyright of ideas or of information, but there is copyright in the way they are expressed. Therefore, you have two options. You can either apply for copyright permission, or you can change the figure or diagram, imbuing it with some creative effort of your own, and then acknowledge the derivation. It is legally acceptable to present the same information in an original, value-added manner, as long as it substantially differs from the genuine artistic work. A photograph cannot be so altered, and permission is always required.

Can I use material (text or graphics) from journals, magazines and newspapers without applying for copyright?

There is no copyright of news of the day that is simply an item of press information. You must apply for permission, however, if you use any other material (text or graphics) from a journal, magazine or newspaper. This particularly applies to cases where an article has been researched, analyses a situation or expresses an opinion. In other words, you would not need to apply for permission if you quoted from an article about a local building that has burnt down. However, you would need to apply for permission if you quoted from an article that analysed the psychology behind arson attacks.

May I use a cartoon from an existing publication and replace the words in the bubbles without applying for copyright permission?

No.

May I use material from another source in supplementary material (transparencies, slide shows, question banks, and so on) developed to accompany a book, without applying for copyright permission?

No.

To whom should you apply for copyright permission?

According to standard author contracts worldwide, the author is responsible for copyright. Application should be made to the author for permission to use his/her work.

Who is responsible for paying copyright permission fees?

In accordance with standard author contracts worldwide, the author who has used copyrighted material is responsible for paying copyright permission fees. Van Schaik Publishers can pay the fees as an advance against royalties.

To whom must I apply for copyright permission?

In most instances, the publisher of the material is the holder of copyright. In instances where the publisher does not hold copyright, the publisher will refer you to the copyright holder.

Where can I get help with tracing publishers' addresses and contact details?

The Internet is a valuable resource. The Publishers' Association of South Africa (PASA) lists contact details for most South African publishers on its website www.publishsa.co.za. Furthermore, many international publishers are listed by country at www.lights.com/publisher.

ACKNOWLEDGEMENT

These questions and answers are based on a document developed by Monica Seeber of DALRO, and they have been adapted with her assistance.

Reference

Copyright Act, No 98 of 1978 as amended. (Copies obtainable from The Government Printer, Private Bag X84, Pretoria, 0001.)

7. Guidelines on research and scientific writing

7.1 Written presentations

An important part of the work of a scientist is to write reports on experimental or other studies undertaken. The report should be started while the work is in progress, so that the process can be accurately recorded.

Scientific recording

Record everything pertaining to the work in a single notebook.

Top each days work with the date.

Record the results in legible, understandable format. It is easy to forget what happened.

Enter units of each measurement.

Do not discard "unusual" results. Unexpected or erratic results do not always show that the experiment "didn't work" or that the researcher made an "experimental error". Rather take extra notes about the circumstances surrounding "unusual" results.

Enter the records onto a computer, checking each against the notebook. Remember that each transcription can result in errors.

Do not dismantle equipment until the first draft of the report is written. You may need to include some extra information.

Format of reports

Learn to write in a style compatible with your professional field: e.g. geographers report in a different style to botanists.

The preamble to the report itself should contain:

Title

The title should be concise, specific and reflect clearly what the report is about. It should be followed by keywords that are not in the title but that may be used in information-retrieval systems.

Name of author/s

If submitted for publication, the author's address should also be supplied. If not, provide the date (the publisher will date the published report).

Purpose of the report

Include the purpose of the report, e.g. Submitted as partial fulfilment of the requirements for Botany 3 at the University of Port Elizabeth. Include the name of the supervisor.

The body of the report should contain:

Abstract

This should be a concise statement of:

what was done

the main features of the results

the conclusion or inference drawn

Statements of what is included or discussed should be **present tense**.

Statements of what you did or thought should be **past tense**.

For example: This report describes the interaction between ... and discusses the options...

But: It was found that ... and the results supported the recommendation that...

Introduction

This outlines the historical and theoretical background obtained from the literature and will enable the reader to relate the contents of the

report to what is already known or has been done previously. This part of the introduction should be **present tense**, but historical statements are made in the **past tense**, and speculation should be **future tense**. An example: A specialisation found only within some Australian genera is the presence of a cyathium. This inflorescence has also been referred to as a harem (Dobson, 1976).

The introduction should end with the aim of the study: The purpose of this study was to determine whether...

Methods and materials

This section should contain a clear and exact statement of the material, apparatus and procedures that were used (past tense). Do not provide the instructions for the method (imperative mood) but convert them into a statement (indicative mood) as a report on the methods that were used (e.g. you fill the jar and then cap it ... versus the filled jar was capped...). If a published method is used, you only need to provide the reference to it. If it was modified, you must provide the details of the modification and the reference to the original method.

Results

Only one form should be used for each set of data: graph or table or equation. Raw data should never be presented but may be included in an Appendix. Summarise the data into as few graphs as possible.

Lead the reader through the results, **describing** the graphs or tables in words, including statistical certainties or uncertainties. Do not interpret; this belongs in the next section. Each figure, plate or table **must** be referred to in the text; e.g. "The site was on a steep slope (Plate 1.)". Do not begin the results with a figure, table or plate. Numbers less than nine are written in words unless followed by units: e.g. "There were five quadrats…" but "The quadrats were 3 m^2…"

Begin the results with the text placing the figure, table or plate being referred to on the nearest available page following its referral.

Discussion

This section should assess the results, the theoretical background and other people's opinion in the light of the purpose of the exercise.

Compare your results with published information. Interpret the results in the light of the aim given in the introduction. Errors, omissions and "unexpected" results should be fully explained.

Write only what is absolutely necessary and follow a logical sequence.

Do not just rephrase the results and avoid repetition.

Conclusion (not essential)

The discussion may end with a statement of conclusion. If the conclusion summarises the inferences of the results in the light of the aim, it may be placed under a separate heading.

Acknowledgements

This is a paragraph thanking those who contributed.

References

Failure to distinguish borrowed material from a student's own contribution is called plagiarism. It is a serious offence that may result in the stripping of the student's degree. This should not be confused with referring to the work of others, which is essential, but must be correctly referenced.

Make sure that:

all references used in the text appear in the reference list.

all references in the list were referred to in the text.

Appendix

Raw data, detailed statistics, large tables and more specialised data may be placed in appendices.

Writing style

Write clearly and concisely. Long sentences become unclear. Guard against vagueness or ambiguity. There is nothing as irritating as verbosity

Take care with grammar, syntax and spelling. Read the report through carefully before submission.

Graphs and diagrams have visual impact and make understanding trends easier. Do not confuse them by cluttering them with too much data. Do not include too much detail. Put minor details in the Appendix.

The discussion and conclusions should match the aims. Make sure that you can convince the reader that the conclusions are significant.

The report must be neat and legible.

Make sure you understand the meaning of each and every word! If not you will be caught out!

Use verbs instead of abstract nouns:

Not: The separation of A from B was effected by...

Rather: A was separated from B by ...

Not: Isolation of the tertiary compound was accomplished by...

Rather: The tertiary compound was isolated by...

Break up clusters of modifiers:

"gamma radiation scintillation detector crystal"

"silica gel coated glass fibre optics spectrophotometry"

Follow conventions when using scientific names:

In Botany the rules of nomenclature are well defined: follow them!

Avoid "etc." like the plague! It indicates that you don't know.

Avoid using “thus” and “therefore”. They are seldom used correctly.

Watch the use of the following confusing words:

which & that

since & because

while & although

between & among

<u>Statistics</u>

State the hypothesis tested.

State the statistic, degrees of freedom (d.f.) and probability: $t = 2.456$, $d.f. = 21$, $p < 0.05$.

Give the same number of decimals that you recorded: if you measured length accurately to cm do not report mm accuracy. A record of 3 cm indicates that accuracy was to the nearest cm while 3.0 cm indicates accuracy to the nearest mm. State the limitations of the method.

Use simple notation that is easily understood: 47 rather than 4.7×10^{1}; but 0.3×10^{9} rather than 300 000 000. Try to standardise.

Try to use the standard powers rather than intermediate ones. This means that you can use the standard prefixes: kilo- mega- giga- ... but be practical: it is better to report 3 g than 0.003 kg. A zero must always precede the decimal: 0.3 never .3.

Always report the units! In complex units only one solidus (/) may be used per set. If there are more use $^{-1}$: e.g. irradiance in $\mu mol\ m^{-2}\ s^{-1}$. Note the absence of the ".". That would read "µmoles times by per

metre times by per second". This is how it is calculated but it reads poorly.

Tables

Make sure that all tables are referred to in the text.

It is wasteful to tabulate a few figures or values.

The table is **headed** by a descriptive title that should explain what the table contains without the need to refer to the text except for minor details.

Aim at visual impact of trends.

Align all figures and symbols. Keep all decimal points under each other. Put the units in the heading or line labels. Column headings should be centred over the data.

Additional comment can be provided with an * or superscript symbol.

Place the table as soon after the first reference to it as is practically possible.

Do not represent data as both table and graph.

Figures

All illustrations (graphs, maps and line drawings) are figures. Photographs are usually referred to as plates and are numbered independently.

Locate figures as soon after the first reference to it as is practically possible.

Each figure must have a descriptive caption complete enough to eliminate the need to refer to the text. The caption is given **below** the figure.

Photographs that indicate the size of something must have a suitable scale bar or object.

Don't forget the key (legend) on graphs, diagrams or maps. All maps must have a scale and north arrow.

Related data should be on the same graph.

Interpolation (joining the dots with a line) is only legitimate when the variables are continuous. Never plot continuous and discrete variables in the same graph.

The x-axis must be independent and the y-axis dependent (depth is an exception for visual impact).

Don't draw arrowheads on the ends of axes.

Don't draw guidelines when plotting points.

Further suggestions are given in four extracts from SABONET NEWS entitled: "How to write articles for publication" in the herbarium.

7.2 Oral presentations

Time allocation

Speakers are allowed between 10 and 20 minutes for their presentation. After that, there are usually 5 minutes of questions. Marks will be deducted for presentations that are too long or too short. Practice until the talk takes up the allotted time.

Session chairpersons are expected to be extremely strict with time allocation. The session chairperson usually stands up when there is 1 minute left. They generally do not allow any questions after the allocated time is up.

Preparation

What do you want to achieve?

Who will be there?

How interested will they be?

What is the size of the venue?

Planning

What is my conclusion going to be?

What are the main points I want to make?

Does the conclusion depend on each point? If not discard it.

Structure

Introduction

Write out and memorise your opening sentence (for confidence and impact).

Follow up with a concise statement of the central message.

List the main points you will be covering.

Notes

Use cards or sheets if a podium is available. Number them!!! Write in large letters so that you can see them easily.

Appearance

Wear simple clothes in a strong colour. Dress as formally as the most formal of your audience. The first impression of your talk is what you look like.

Voice

Breathe deeply to get good voice resonance.

Project your voice to the back of the room - speak to the back row.

Speak at half the pace of normal conversation.

Vary your tone - don't be monotonous.

Body language

Smile or try to look friendly. Believe that the audience is interested (make sure you are!).

Look directly at as many people as possible, not just straight ahead.

Refer to your notes as little as possible.

Never look at the floor, the back wall or the ceiling.

Prepare in front of a mirror or video camera, or ask your friends to point out your mannerisms such as fidgeting with a pencil, rising up on your toes, clasping your hands, pacing.

Visual aids

People remember 11% of what they hear

40% of what they see

65% of what they see and hear

You may choose from flip charts, posters, black boards, projector slides, overhead transparencies, videos, films, and computer visuals.

Allow enough time for the audience to absorb the material. Allow about 2 minutes per slide.

The rule is: ONE IDEA - ONE SLIDE

Use a maximum of 6 lines per slide.

Check the legibility of each slide before the time.

You will be assessed on how you answer and well as ask questions. If you don't know the answer, do not stand and "umm." Acknowledge

that you do not know the answer and possibly speculate on what the answer might be. After all, you are talking about work you did. You should be familiar with the subject.

Adapted from Anon., 1993. Manual on scientific writing. TAFE publications, Collingwood. 103 pp.

7.3 Powerpoint presentations

Do not host the entire script of your presentation in your PowerPoint slides. Use your slides to highlight the essence of your presentation.

Do not use the default screen background in your PowerPoint slides. If you do, you may end up with a presentation that looks just like everyone else's. Try to show your audience that you have some imagination when building a set of PowerPoint slides.

Carefully choose the colours you use. Some colour combinations are hard to read. Colours have different wavelengths and your eyes must adjust. If you mix long and short wavelength colours on the same slide, at best your slide will be unreadable; at worst you will give your audience a terrific headache! Use a dark blue background with red writing to see an example of poor colour combination.

Use fonts (type faces) that are large enough to see from the back of the room. The major reason for using small fonts in presentations is to fit a great deal of information onto the one slide. Rather than making the font smaller, look at putting less information onto each slide. Then if you end up with too any slides, you are probably trying to put the script of your presentation in your slides!

Make sure that the font you choose is easily readable. 𝔖𝔒𝔐𝔈 𝔉𝔒𝔑𝔗𝔖 𝔄ℜ𝔈 𝔙𝔈ℜ𝔜 𝔇𝔦𝔉𝔉𝔦𝔠𝔘𝔏𝔗 𝔗𝔒 ℜ𝔈𝔄𝔇.

Allow plenty of "white space" (or whatever colour you are using as a background). This should happen automatically if you follow all of the rules above.

Give all of your slides a consistent look throughout the presentation. Under no circumstances should you change the colour scheme within a presentation, it will really annoy your audience. This means that if you're importing slides from another presentation, you will have to change the imported slide's colour scheme to match that of the new presentation.

Do not use too many special effects to cover up lack of content in a presentation. PowerPoint has a huge toolbox of effects to brighten

up your presentation and they can be effective if properly used but in most cases should be avoided.

If you really need to make an impact with your presentation but feel that you do not have the expertise to do it justice, seriously consider taking your outline and text to a graphic artist and have them build the presentation for you.

Do not use PowerPoint as your word processor. PowerPoint has some word processing capabilities, but that is not its main function. If you are processing words, then use a good word processor like Microsoft Word.

Run the spell checker (even if it does not recognise generic names)! You can add words that are not in MSWord's dictionary but make sure that they ARE spelt correctly before doing so.

8. ICT Usage

NMMU ICT resources are to be used for *bona fide* academic and administrative work, with the understanding that limited personal use is acceptable (e.g. personal correspondence) so long as this use does not:

- directly or indirectly interfere with the University's computing resources.
- disrupt services to other users or deprive them of resources.
- result in any additional costs to the University.
- interfere with the user's employment obligations to the University.

Every User is responsible for taking reasonable steps to protect the ICT resources of the NMMU

All users must apply the university copyright policy and Copyright Acts of the government. It should be specifically noted that Software Piracy is a criminal offence.

The use of NMMU ICT systems must be consistent with all contractual obligations of the University, including limitations defined in software and other licensing agreements.

NMMU ICT resources may not be used for private income-generating or profit making or non-NMMU commercial activities unless specifically authorised by the University.

NMMU ICT resources may not be used in any way that may embarrass or bring discredit to the University.

NMMU ICT resources may not be used for any unlawful activity, such as the creation or transmission of material which is offensive, obscene, defamatory, damaging or fraudulent.

The use of NMMU ICT resources for gaming is prohibited.

No person shall by deliberate, reckless, or unlawful act cause disruption to services, degrade the performance of an information system, or jeopardise the integrity of data networks, computing equipment, systems programs, or other stored information.

Every user has the responsibility to keep their passwords confidential.

No person may access, or attempt to access, or tamper in any way with another user's data without proper authorisation.

Users are further subject to any specific rules or end user agreements entered into with faculties or departments in which they operate.

Users indemnify NMMU against any loss or damage that may result from improper use of the university's ICT infrastructure.

Abuse of NMMU electronic systems and facilities may lead to a withdrawal of electronic communication privileges or disciplinary steps against offenders.

The receiving, storing, downloading, possessing, distributing, accessing or creating of illegal content (as defined above), by any user, will be subject to an investigation and disciplinary action.

All users at NMMU are bound by applicable laws in South Africa and the NMMU will fully co-operate with authorities to provide required information if any User is suspected of illegal activities or cybercrime.

The University may take reasonable steps to enforce its ICT policies through administrative and technical controls including filters, monitoring mechanisms and automated tools.

8.1 Responsibilities

It is the responsibility of every user to become familiar with the policies, procedures and guidelines of the NMMU.

The institution's ICT Services department is responsible for:

- Cross functional ICT services and resources.
- Sustaining users' awareness of this and other Institutional polices related to the use of the Institution's electronic facilities.

- Provide users with guidelines for the proper use of the Institution's electronic facilities.

The institution's management is responsible for taking any necessary action against users who fail and/or refuse to abide by this policy.

The Head of Department reserves the right to amend or supplement any or all of the above rules, regulations and information at her discretion. Such changes will be communicated to you. Please feel free to contact the Head of Department should you experience any difficulties or problems.

Prof Eileen E Campbell
HEAD OF DEPARTMENT

ACKNOWLEDGEMENT

I, _____ (name),

_____ (student number),

hereby acknowledge that I have read and fully understand the general laboratory rules as laid out before me. I realise that by reading and signing this document I am making my laboratory a safer place to work for me and my fellow students. My failure to comply with these rules constitutes negligence on my side and endangers my life and that of my fellow students.

Signature

_____

Date

_____