RHODES UNIVERSITY
Where leaders learn

HONOURS

IN ENVIRONMENTAL SCIENCE

AT RHODES

2015

Environment and Society in Africa

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1. Welcome

Welcome to Honours in Environmental Science at Rhodes. In enrolling for an Honours in Environmental Science at Rhodes you have signed up for a stimulating experience. We, the staff of the Department of Environmental Science (DES) and allied departments, are here to support you to make sure that you get the best of what Rhodes has to offer. You and your small group of colleagues in the Honours class have been selected from many applicants. Selection criteria included academic merit, group diversity, and previous experience. In this way, we expect and will encourage you to learn not only from the lecturing staff, research supervisors, piles of library materials, but also from one another. **A solid cooperative relationship and team spirit** will be the cornerstone of the Honours year, within the class, as well as between staff and students. We sincerely hope that you will learn a great deal, but manage to enjoy it along the way.

Should you have any queries or problems regarding any component of the Honours curriculum, please contact the course coordinator, Prof Sheona Shackleton (extn: 7009 or email: s.shackleton@ru.ac.za).

2. What is different about Honours?

Since you have already registered and been accepted for Honours this may seem as a bit of a redundant question. But it is not. The diversity of backgrounds within your group means that each of you have different understandings and expectations of what an Honours will, or will not, entail and what it means in the final market-place.

Honours is not just another year at University. It is very different from your previous undergraduate learning experience in several respects. It is these differences that increase the success rate of employment in the short-term by about three times over someone with only a general degree (BA or BSc). The differences include:

- *A significant emphasis on self-learning*. Standard 45 minutes lectures are the exception rather than the norm. Honours students at Rhodes are expected to source their own materials and to question the traditional dogma as well as the cutting edge, non-conformist views, to derive a critical and balanced understanding of the subject at hand. Here you discover not what we know, but what we do not know. Critical outcomes are orientated towards developing abilities to integrate, reason and apply critical thinking rather than to accumulate knowledge based on course content.
- *A thorough research project*. Each student must undertake a research project that comprises 38.5% of your total Honours mark. Each will be supported by a research supervisor, but at the end of the day, the research must be done by the student. It is this research project that sets the stepping stone to further

postgraduate degrees, all of which require a research dissertation. Most projects are done individually, although group or paired projects are also possible.

- *Continuous evaluation*. The proportion of your final mark for Honours that is contributed by work done during the year is a lot higher than for your undergraduate degree. Thus, exams have a reduced significance.
- *Vacations are for research data collection and analysis*. The research project will require a data collection phase. It is anticipated that this will be concentrated into the normal University vacation periods. You need to plan your year accordingly.
- *You become part of the research, postgrad and departmental family*. Whilst undergraduates are essential to the life of our department, their sheer numbers means it becomes difficult to develop personal working relationships with each of them. At the postgraduate level you will be expected to work hard and long hours, but also to participate whole heartedly in departmental events and social activities which are integral to team-building and maintaining a spirit of fun and enjoyment of what we do. As a member of the postgrad group, you are ***expected to be in the department most of the time*** other than when you are in the field collecting data, or attending discussions and seminars for each of the four theory modules that you will take. As a means of encouraging this, a mark is allocated to your participation and leadership throughout the year, and ***a register is taken at all departmental events***.

3. Course outcomes

The outcomes of each module of the overall course will be communicated by the coordinator of each module. The outcomes for the course as a whole include:

- **Critical Cross-Field Outcomes**

Learners will be able to:

  - identify and solve problems
  - organise and manage themselves
  - collect, analyse, interpret data and information
  - communicate effectively
  - use scientific methods and approaches and appropriate technology and instruments
  - recognise problem solving contexts
  - reflect on and explore effective learning strategies

- **Specific Intended Outcomes**

By the end of the course learners should be able to demonstrate:

  - a critical understanding of a range of environmental management theory, concepts and approaches
  - the ability to apply their understanding of environmental theory, concepts and approaches to evaluate and critique theoretical and practical debates
  - an understanding of the practical application of various environmental management tools

- a critical appreciation of the spatial and temporal complexity of environmental issues
- an appreciation of the role of the inter-disciplinary nature of most environmental issues
- a questioning approach that objectively appraises current dogma and popularist projections
- an ability to conduct self-study and synthesis of relevant information
- an ability to communicate (verbally and in writing) results and understanding related to issues of environmental management

4. Settling in

During the first few days there is a number of settling in issues that need to occur. The course coordinator will guide you regarding specific times and dates. Some are outlined below:

- Each student will be provided with a set of keys for (i) the Honours room and (ii) Main building. A deposit of R100.00 is required. The deposit is refunded at the end of the year when keys are returned.
- Each of you will be allocated desk space in the designated Honours room. This will be your home space. You are ***expected to work here*** when not in the field.
- Students receiving an assistance ship, Rhodes University bursary or any other type of bursary via staff and associates of the department are required to work a maximum of six hours per week within the DES. This usually takes the form of demonstrating during undergraduate practical sessions, marking and field-trips, but may also include *ad hoc* duties such as arranging seminars, data entry, proof-reading documents, research assistance, etc. A roster will be compiled and circulated early in the first term. The departmental Administrator, **Mr Zukile Madlebe** (extn 7002; email z.madlebe@ru.ac.za), coordinates activities to ensure the workload is distributed fairly
- You will be introduced to Mr Zukile Madlebe, who will assist you with claims, booking of venues or vehicles, and other office matters.
- There is a Graphics Unit on campus. Any work done by the unit must be paid for. Therefore, only use the Graphics Unit for special productions and if you (or your research supervisor) have the necessary funds available.
- Within the first week, the group will ***elect two Class Representatives***, who will work with the course coordinator in ensuring that lines of communication are open and that hiccups are avoided, or if they do arise, are dealt with speedily.
- You may join the departmental tea club for R50.00 per month. Even if you do not join the club, ***all staff and postgraduates (including Honours) are expected to attend tea on Fridays at 10h30*** *d*uring term time, unless they are in the field.
- Photocopying using the shared photocopier will be monitored and limited to a reasonable number of pages per Honours student.
- You will be required to ***attend all formal sessions and to write all exams***. To be exempted you will need a Drs Certificate.

- There will be regular compulsory meetings of the class with the coordinator. Times and dates will be arranged with the class.

5. Avoiding pitfalls

Over the years we have observed a number of recurrent pitfalls that if not dealt with, interfere with the development of a solid collaborative and team relationship between Honours students and staff of the DES. The absence of such a supportive relationship may (i) hinder the ability of some students to cope with the pressures of the Honours year, and (ii) mean that expectations on both sides are not met. Consequently, we have listed the key ones below as a means of making you aware of the pitfalls, and thereby increase the likelihood that each of you will be able to avoid them.

5.1 Tackle problems early

Many problems escalate out of proportion because individuals fail to tackle them early on. If you are experiencing problems with respect to any part of the Honours course, assignments or the research project or supervisor please contact the course coordinator as early as possible to discuss potential solutions. If the course coordinator is unavailable when the problem arises (or is the source of the problem), please contact the lecturer responsible for the module you are taking at the time, or your research project supervisor. In this case your course coordinator is also the Head of Department.

5.2 Check your e-mails daily

With several of the course modules being offered in other departments, staff of the DES do not necessarily see Honours students on a daily basis. Yet issues arise at regular intervals, such as requirements for assistance at practicals, attendance of seminars, changes to previously agreed venues or dates, and the like. Therefore, it is imperative that all Honours students ***check their e-mails at least once a day*** (with the obvious exception of when you are in the field collecting data for your project). Preferably check these morning and afternoon. Missing a changed date, venue or deadline because you did not read your e-mail in time will not be seen as a valid reason, provided 24 hours' notice was provided.

5.3 Participation

As a postgraduate student you are expected to participate fully in the affairs of the DES. To this end, we expect all postgraduate students, Honours included, to attend general public seminars or courses arranged or hosted by the DES, allied departments, and your own Honours group, as well as presentations by the undergraduate groups, discussion groups and the like (all of which are important learning opportunities). Specific notice will be provided about each event as it arises. Honours students are frequently called upon to assist with undergraduate field trips and practicals. ***A small proportion, 2.5%, of your final Honours mark is derived from a measure of your participation throughout the year. Whilst not much, it can make***

the difference between a pass or a fail, or between one class of pass and another (e.g. a first). Additionally, staff have agreed not to write letters of reference (for employment or bursaries) for students who persistently fail to attend and participate

5.4 Time management

The large demands on your time, and the less stringent nature of contact hours in the Honours year, mean it is up to each student to manage their own time effectively. Poor management of time will lead to conflicts, sub-standard work, or failure to submit work by agreed due dates. This means that all students must be *on time* for lectures, seminars, debates or meetings that have been scheduled and agreed with the staff member concerned. It also means that students must hand in assignments on the due date. There will be a non-negotiable penalty for late handing in of ***10% per day or part thereof***. Penalties for late arrival or absenteeism from agreed meetings will be imposed according to the severity or recurrence of the problem. Obviously, exceptions can be granted in the case of ill health, if supported by a Doctor's certificate.

Full-time students are expected to undertake the bulk of their research field work during normal university vacations and should plan their year accordingly. Some of the short courses may also be conducted during vacation periods. Therefore, ***do not plan for personal holidays during such periods without first discussing it with the course coordinator and being sure that all your work is on schedule***. Most importantly, do start your field work as early in the year as possible. Students who leave all their field work to the July vacation or later often struggle to find sufficient time for data analysis and write-up.

5.5 Use of journals and the internet

The emphasis on work on the Honours year is on quality, and critical and balanced analysis and evaluation. This requires that students ensure that the source of their materials and references are of acceptable quality. Many Internet sources have not been peer-reviewed, do not reference their sources, and are simply opinion pieces of the author/s, and hence cannot be accepted directly as quality sources. Additionally, even for reputable web-sites, the contents are frequently updated and changed. Therefore, in a couple of years' time someone wanting to cross-reference the information that you cited in your report, may not be able to access the information in the same format as you because it has been updated. Consequently, we expect that *at least* 70% of all citations and references used for any of your written assignments or the research project proposal and write-up will be from journal articles. These may be accessed via the Internet, but must be referenced as a journal article, with date, volume number and pages. The remaining 30% can be divided between other sources such as books, chapters, reports and Internet web sites. For all sources of information emphasis should be on, but not restricted to, recent publications (last five years).

5.6 Referencing

Referencing and Reference Lists require attention to detail. If you fail to provide all the necessary details of a reference in the Reference List, subsequent workers that have read your work may not be able to locate the reference you cite. The process of research requires that the researcher is familiar with the contributions of other people in the same research field. Reading around the topic is the life-blood of research. Therefore, it is imperative that all researchers, which includes Honours students, know how to reference, and are consistent in the manner in which they reference other work, and format a Reference List. All the necessary details must be available for other researchers to be able to find that reference if they so wish. Some basic guidelines and common 'mistakes' are provided in Appendix 1. Marks will be deducted for incorrect referencing or inconsistent formatting of the presentation of each reference in the list. Make sure that the formatting and punctuation of references is consistent throughout the list.

5.7 Writing guides

The Department has a comprehensive set of writing guides (which include referencing). Rhodes graduates will be familiar with these, as they are used at second and third year level. Graduates from elsewhere will need to take some time to familiarise themselves with these guides. The guides will be used when marking your work, and marks will be deducted if it is evident in your work that you have not used them. The intention is that they must become second nature to you.

The Department also has a RuConnected site that is open to all our postgraduates. There are various useful presentation and writing guides on this site for both your proposals and your final reports. PLEASE CONSULT IT.

5.8 Plagiarism

Plagiarism is unacceptable. If one makes use of the ideas or words of another person, be they written or verbal, one must provide the credit to the original source by referencing the other person's work. If you wish to use the precise wording from the source work, you must place it in quotation marks, along with the citation. If you use a figure or table from other work, you must indicate in the caption that it has been taken from the cited source. If any student is found guilty of plagiarism, an appropriate penalty will be incurred (see Appendix 2). A repeat offence will be referred to the University Plagiarism Committee, and will probably result in cancellation of your DP. The onus is on *you* to familiarise yourself with Rhodes University plagiarism policy (www.scifac.ru.ac.za/plag.htm). Ignorance of, or not having read, the policy will not be an acceptable defence if plagiarism is detected in your work.

All written work for all modules and your project must be submitted to turn-it-in and the scores and reports provided.

6. Format of the course

The Honours degree covers four terms (each 5 - 7 weeks duration) of course modules selected from the approved list below, a compulsory short course in statistics, an Honours field trip, one research project, community engagement activities, and participation in various regular and *ad hoc* 'tools' modules, seminars, workshops and talks. Two of the four theory modules must be selected from those offered by Environmental Science staff.

6.1 Field trip

At the start of the Honours year (late January) the whole Honours class will participate in a field trip with available staff and perhaps other postgraduate students. This is an opportunity to get to know one another, discuss possible research projects with staff, as well as to obtain insights into selected environmental issues in the region of where the field trip takes place. We will interact with officials, communities and experts around a variety of topics, but will also collect data and information which will be analysed and written up as a field trip report (3 % of Honours mark). A mark will also be allocated to each student regarding their participation and leadership shown on the field trip and on the diaries you will complete.

6.2 Compulsory course in statistics

Each student is required to take a short course in statistics and use of the Statistica programme. This is required to ensure that each student has the necessary knowledge to analyse the data from their research project. The course is usually one or two sessions per week during the first term.

6.3 Optional modules

Students can select any four from the list in Table 1 that are being offered during your Honours year, subject to the following conditions:

- ***At least two*** modules must be selected from options offered by Environmental Science staff.
- If the remaining two modules are taken from those offered by other departments, no more than one can be taken in the same department.
- The EIA module is limited to 10 participants, each of whom must pay the required fee (R1,300) for the course file, hand-outs and functions (this will be added to your student account). Full-time Environmental Science Honours students will have preference for those places above part-time or joint Honours students. If more than 10 students wish to do the EIA module, final selection will be via a random draw. If more than 10 students are interested in 2015, then there is a possibility to organise a separate special module for Honours students.
- The GIS module can only be selected by those students who have prior knowledge and experience of GIS. Rhodes University students must have completed Geog 302. If you are from another

university you will need to discuss your prior learning with Ms Gillian McGregor of the Geography Department (g.mcgregor@ru.ac.za).

- Students cannot opt to do both EIA and GIS, but only one or the other (or neither).
- ***No more than two optional modules*** can be done simultaneously.

The offering and timing of specific modules changes from year to year depending on staff availability in the host department, sabbatical arrangements and other timetable clashes. Therefore, please check with the course coordinator well in advance. Brief outlines of each course are provided in Appendix 3 to assist you in selecting the course most suited to your interests and career goals. If you require further details for specific modules, please phone or visit the coordinator listed in Table 1.

Table 1. Optional modules likely to be offered in 2015

Module	Host Dept	Module coordinator	e-mail
Biodiversity, non-timber forest products and rural livelihoods	Enviro Science	Prof. Charlie Shackleton	c.shackleton@ru.ac.za
Climate change, human vulnerability & adaptation: A social-ecological systems perspective	Enviro Science	Prof. Sheona Shackleton	s.shackleton@ru.ac.za
Community-based natural resource management	Enviro Science	Prof. James Gambiza	j.gambiza@ru.ac.za
Ecological modelling (NOT AVAILABLE IN 2015)	Enviro Science	Dr James Gambiza	j.gambiza@ru.ac.za
Environmental & Resource Economics (only for students having done Ecos 3)	Economics	Prof. Gavin Fraser	g.fraser@ru.ac.za
Environmental impact assessment	Enviro Science & CES	Dr Kevin Whittington-Jones	k.whittington-jones@cesnet.co.za
Environmental water quality	IWR	Prof. Tally Palmer	t.palmer@ru.ac.za
GIS (only for students with prior experience and knowledge of GIS)	Geography	Ms Gillian McGregor	g.mcgregor@ru.ac.za
Protected Landscapes: Historical perspectives and future directions	Enviro Science	Dr Georgina Cundill	g.cundill@ru.ac.za
Urban ecology & forestry	Enviro Science	Prof Charlie Shackleton	c.shackleton@ru.ac.za
Wetland ecology	Geography	Prof. Fred Ellery	f.ellery@ru.ac.za

In additional to these 'official' modules (for assessment purposes) students with an interest in GIS, but no prior experience, could consider enrolment in a separate independent GIS module which is available with the Geography Dept at students' own costs (this is not part of the Honours course) as an optional extra (it will not count towards assessment and marks). Contact Ms Gillian McGregor of the Geography Department (g.mcgregor@ru.ac.za). It is recommended that students consider participation in this extra module very carefully given the tight time constraints in the Honours year and discuss their interest with the course coordinator.

6.4 Schedule of modules for 2015 (as at time of going to press – could be changes!!!!)

At the time of writing this handbook the following *provisional* schedule for the different modules was available (Table 2). It may be possible (no guarantee) that the schedule could be changed to fit particular student needs, especially if there is interest from a number of students.

Table 2. Provisional schedule of modules likely to be offered in 2015

Term	University dates	Modules
1	16 Feb – 27 March	• Statistics (compulsory: first 2 weeks of term) • Urban Ecology & Forestry
2	13 April – 04 June	• Protected Landscapes: Historical perspectives and future directions • EIA (short course 18th – 22nd May plus follow-up Honours work) • Biodiversity, non-timber forest products and rural livelihoods • GIS (Mon 27 April to Friday 29 May)
3	20 July – 28 August	• CBNRM (short course plus follow-up Honours work) • Environmental & Resource Economics • Wetland Ecology (starting 27 July)
4	07 Sept – 23 Oct	• Environmental Water Quality (around 22 – 24 October) • Climate Change Adaptation

Students must have finalised their selection of optional modules within one week of the start of the Honours year, and notified the Honours coordinator. Students may NOT replace a failed module with another one or swop modules half way through the year.

6.5 Community engagement project

The class as a whole is required to participate in various community engagement activities and produce a report in pairs. This will count 2% of overall marks. The suggestion is to work some of the time with Dr Gladman Thondhlana on an urban greening programme, but your own ideas and initiatives are welcome.

6.6 Schools environmental quiz

In 2008 the Enviros Honours group hosted an Environmental Quiz for local schools. It was received with great acclaim, such that it has become an annual event. Sponsorship has been raised. The Honours class will be required to host this event in 2015. It will constitute 2.5 % of the final Honours mark. A trial run is done with the EIA short course in May, followed by the real event in ***August or September.***

6.7 Other requirements

It is required of all students that they actively participate in a variety of discussion groups, workshops and seminars throughout the year. They may be hosted by the DES or allied departments. Some are on an *ad hoc* basis and notice will be provided as far in advance as possible. These may be out of normal working hours. ***A regular Environmental Science discussion group for Honours students will be held during term time, meeting approximately every 2 - 3 weeks***. Students are expected, on a rotating basis, to provide discussion topics and lead the session. These sessions will also include some methods and tools inputs to assist students in undertaking their research projects. Students will be assessed on participation, critical analysis of and contributions around the issue, and chairing skills.

7. Research project

Each student is required to undertake one research project during the year, which may be done individually or in small groups. This contributes 38.5% of the total Honours mark. Possible supervisors for research topics can be selected from the lecturing staff associated with the course modules (optional or compulsory). If the primary supervisor is not a member of staff of the DES, it is expected that a co-supervisor will be appointed who is from the DES, or the project is discussed with the course coordinator. It is important that you select a research topic that fits your interests and career goals, whilst at the same time fitting the criteria of the DES. Therefore, talk to more than one or all of the staff listed to see what they have on offer. The broad nature of research topics and individual supervisor/s need to be finalised by the ***20th February, at the latest.***

Once you have a research topic you will have to prepare a project proposal. This should be a comprehensive description of precisely what you intend to do, and how you will do it. A set of guideline headings is provided in Appendix 4. A verbal presentation (10 minutes, plus five minutes for questions) of the draft proposal must be made to staff and postgraduates of the DES on ***20th March***. The presentation will account for 2.0 % of the total Honours mark. A revised and final project proposal must be completed by the ***27th March***. Marking criteria are indicated in Appendix 5. The proposal is marked by your supervisor and moderated by the course coordinator.

Data collection, analysis and write-ups of the project will continue throughout the year, including university vacation periods. ***The final dissertation must be submitted by 21st October***. *No extension will be permitted whatsoever*, other than for medical reasons substantiated by a certificate from an accredited medical practitioner. The first draft version of the dissertation ***must*** be submitted to your supervisor/s *no later* than ***1st October*** (preferably mid-September to avoid congestion and therefore a delayed turnaround time). In early ***October (8 - 9th),*** each student will make a verbal presentation (10 minutes, plus five for questions) of the findings of their project, which shall contribute 2.5% of your total

Honours mark. These presentations should be seen as an opportunity to raise and discuss any problem areas before your final write-ups.

Two write-ups are expected. ***The first is a scientific piece of work in the format of a journal paper***. It will be marked by two members of Enviro staff (one of which will be your supervisor), as well as scrutinised by the external examiner. It is the expectation that students shall aim to produce research work of a quality suitable for publication in a peer-reviewed journal. Where work attains such a standard, students will be encouraged, with assistance from their supervisor/s, to submit their work for publication. Therefore, the format and style of your dissertation should follow that of the journal to which you would most likely submit your work. If the research project is submitted for publication after examination by the internal and external examiners, it is anticipated, although not mandatory, that the supervisor/s would be listed as co-authors in recognition of their role in the design of the project, and guidance on analyses and write up. Yet if any student feels that there was little support from their supervisor/s then they are not obligated to list them as a co-author on the publication.

To ensure that the final dissertation is largely the student's own work and own words, the department has a policy that no supervisor can be expected to see more than two drafts of the dissertation. At times a third draft might be viewed by a supervisor *only in exceptional circumstances* where the first draft was of an extremely low standard and required significant major revision.

Please note that very few journals accept colour graphs and figures (although it is increasing). This is because of the high printing costs and that subsequently the article cannot be photocopied other than on a colour photocopier (also expensive). Therefore, do not use colour in your final dissertation.

Your dissertation must be submitted to the ***turn-it-in plagiarism detector programme and a report included in the copy of your dissertation provided to your supervisor.*** Failure to comply with this will result in your dissertation not being marked.

Please note that ***three bound copies*** of the dissertation are required (if two supervisors then four copies), as well as one ***formatted pdf version emailed to Kathy Cassidy and a word version to your supervisor***. Students are also required to send ***an electronic copy of their raw data (and/or data sheets) to their supervisor.*** This is to help the publication process, but also to have the data at hand in case another postgraduate takes forward or repeats the work in the future. ***Your dissertation will not be marked by your supervisor until the raw data are lodged with him/her, i.e. it is part of the hand-in.***

The second component of the research write-up is the production of a popular, or non-scientific, piece for either a magazine, newspaper, newsletter or a policy brief. This can be written in parallel with the

scientific dissertation, but for some projects it requires that the dissertation is more or less completed so that one can gauge what to include in the popular piece. Therefore, the period from 21st - 30th October is available for this after the dissertation has been handed in. The popular piece must be handed in no later than ***30th October***; *no extension will be permitted whatsoever*, other than for medical reasons substantiated by a certificate from an accredited medical practitioner. The length and format of the popular piece will be dictated by the target audience and the nature of the newspaper, magazine, newsletter or policy series selected.

A time line of important dates for the research project process is provided in Appendix 6. A penalty of 10% per day, or part thereof, will be levied against late submissions, except due to medical reasons (if supported by a medical certificate). There is no provision for late submission of the final research dissertation after 21st October, or the popular article by 30th October.

SEE TIMELINE ON PAGE 46 FOR KEY DATES RELATED TO YOUR RESEARCH PROJECT

7.1 Financing of the research project costs

The financing of your research project is negotiated between yourself and your research supervisor/s. If you use your own vehicle for the research project, you may be reimbursed the petrol costs (at a consumption rate of 11.0 km per litre), rather than the university kilometre rate. Students receiving a bursary from the NRF are expected to use such funds to cover all or an agreed proportion of the costs of their research project. (If a university vehicle is used, drivers need to have a university licence and abide by the rules and conditions regarding use of university vehicles, including a ban on the transport of alcohol, or driving under the influence of alcohol. Obviously this latter rule applies to driving of any vehicle, not just university ones).

7.2 Safety and ethics

It is the responsibility of the supervisor/s to ensure that students are familiar with the research methods required by the project. It is up to both the student and supervisor that any risks to health or life associated with the project are well understood and within acceptable limits. Rhodes University has a safety policy for students working in the field to minimise risks of injury and to mobilise appropriate responses rapidly should injury occur (Appendix 7). All postgraduate students must implement the safety guidelines. All students must log the field trips in advance via the safety website.

For projects that require interviews with people please ensure that they are conducted in an ethical manner. The ethics must be discussed with your supervisor, and your proposal approved by the departmental ethics

committee. This is done at the same time as the verbal presentation of the project proposal. Key aspects are:

- permission from appropriate authorities in the study region,
- mechanisms to ensure verbal or written disclosure of all aspects of the project to allow participants to make an informed decision to participate or not,
- confidentiality and future use of the results,
- rights to withhold sensitive or private information,
- no harm to humans or animals,
- your affiliation and funding sources, and
- feedback of results.

Please visit the university website on research ethics for more details.

7.3 Identification of plant specimens

Any student undertaking a project requiring data collection on the plants used or growing in a study area, must collect and press proper voucher specimens of the plants in question and liaise with the curator of Schönland Herbarium in the Albany Museum for assistance in identification (you will be expected to identify your own specimens with assistance and not merely hand them over to someone else to do). Each specimen must be accompanied by a proper herbarium label (Appendix 8). Do not simply use lists of presumed scientific names based on the local vernacular name from your study area. This can result in misidentification. The identification of specimens at the herbarium is free of charge and usually relatively rapid. Therefore, please make use of the service. If you have never collected plant specimens before, ask you supervisor for guidance, or the curator of the herbarium will be willing to help (easier if you all arrange a single time and go as a group).

7.4 Supervisor access

Most staff of the department have an open door policy. Nonetheless, it is unrealistic to expect them to be available at short notice for a prolonged meeting. Thus, if you do need a meeting, it would be advisable to check with your supervisor a few days in advance as to when would be the most suitable time. If, however, at any stage you feel that you are not receiving adequate attention or quality time with your supervisor, please inform the course coordinator or the Head of Department.

Please note that the department has an internal policy of Wednesdays being a dedicated day for writing. Consequently, staff are encouraged to lock their doors and are not available for any queries, however big or small, unless initiated by them. In other words, the open door policy does not apply on Wednesdays and staff are not beholden to answer either telephone calls or e-mails on those days.

8. Examinations

Examinations for first semester courses will be written in June, and for second semester courses in November. Each exam will be of at least three hours duration. Each shall be marked by the staff member/s that delivered the module, and an external examiner from another university or similar agency in South Africa. **NOTE**: No supplementary examinations are available.

The exams are an essential part of the Honours Course and failure to write any of the exams will result in an FSM (fail subminimum result).

Furthermore, a mark of more than 35% must be achieved for each of the main modules in order to pass the Honours year. If this is not achieved an FSM will again apply.

9. Calculation of the final mark

The final mark for your Honours year will be calculated as follows:

- Field trip
  - Participation & leadership in the field trip/diaries 1.0%
  - Field trip report 2.5%
- Statistics test 3.5%
- Optional module 1
  - Assignments during the module
  - Exam 12.5%
- Optional module 2
  - Assignments during the module
  - Exam 12.5%
- Optional module 3
  - Assignments during the module
  - Exam 12.5%
- Optional module 4
  - Assignments during the module
  - Exam 12.5%
- Research project
  - Proposal seminar (20 minutes) 2.0%
  - Written proposal 4.0%
  - Results seminar (20 minutes) 2.5%
  - Dissertation 26.0%
  - Popular article/policy brief 2.0%
- Community engagement
  - Schools environmental quiz 2.5%
  - Other community engagement plus report 2.0%
- General course participation, attendance and leadership 2.0%

10. Financial aid

Financing the Honours year is an expensive exercise, as the overall package includes tuition fees, student living requirements, and the research project costs. We know this is a problem for many students. The DES

works with students to sort out the last, i.e. the project costs. In terms of the first two (tuition and living costs), there is often not a great deal that DES can offer, especially by the time the Honours year starts, as most options and applications for bursaries should have been completed by August-October of the previous year. Thus, much of what is written below is applicable to prospective Honours students rather than you, but not all.

10.1 Formal bursaries

There are a number of formal opportunities for which students can apply:

- Rhodes University Honours Degree Scholarship

  For Rhodes University graduates that completed their degree in the three years and obtained a first class pass in the major subject that they carry through to Honours. A 50% reduction in tuition fees for the Honours year.

- NRF Freestanding Bursaries

  For university graduates of national designated groups that completed their degree in the three years, and obtained a first class pass in the major subject that they carry through to Honours. R12,000.

- Alan Gray Senior Scholarship

  For previously disadvantaged individuals of good academic merit. A community service record is also advantageous. R25,000.

- Graduate Assistant Bursaries

  For graduates of any university undertaking Honours at Rhodes that have good marks, financial need, and good tutorship skills. These are allocated by the DES staff once we know how many the department has received via the university. Recipients are required to work in the DES for up to a maximum of an average of six hours per week during formal term time. ± R6,800.

- Coastal & Environmental Services (CES) Bursary

  CES is a local environmental consultancy agency in Grahamstown that offers an annual bursary to Honours students in Environmental Science with good marks, in financial need and *preferably* (but not mandatory) of designated groups. Recipients are expected to make themselves available to assist on CES projects for parts of the year. R8,000.

- Thicket Forum bursary

  A bursary to students working on aspects of Sub-Tropical Thicket as defined by the committee of the Thicket Forum. Application via Ms Gillian McGregor in the Dept of Geography (g.k.mcgregor@ru.ac.za). R6,000.

- Rhodes Restoration Research Group (R3G) bursaries

  R3G is a research group centred within the Dept of Environmental Science interested in restoration of degraded ecosystems, currently focussing on Sub-Tropical Thicket, riparian areas in the Kouga catchment and coastal forests of Transkei. A number of projects are available annually covering a range of questions relating to restoration. The Working for Water and Working for Woodlands Programmes

will be offering funding for internships via the Gamtoos Irrigation Board. The final budget allocations will only be made by the end of January. Students who would like to make unsolicited written proposals can contact Mike Powell (m.powell@ru.ac.za). Research proposals must focus on thicket or fynbos restoration work. Recipients will be required to work for an average of six hours per week in the dept as per standard Graduate Assistants.

- Society of South African Geographers Honours bursary (in Geography or Environmental Science). The Society tries to make two awards per year. Applications can be sent to Ms. Sandra Brits, Administrative Assistant - Society of South African Geographers, c/o Department of Geography (53), University of Free State, P.O. Box 339, Bloemfontein, 9301, Free State. Alternatively, applications may be faxed to Ms. Brits at 051-4013816 or emailed to britss@ufs.ac.za. R10,000.
- South African Association of Botantists scholarship

  Two offered per year at Honours level for any botanical field in the Sciences or Agricultural Sciences. Closing date is usually mid February. Queries and applications to SAAB Scholarship Committee, PO Box 3268, Mateland 7602; or Prof. Jill Farrant (jill.farrant@uct.ac.za) R10,000. See the South African Association of Botanotis website for details (http//:sabotany.co.za).
- NRF Supervisor Bursaries

  Honours students of designated groups can be allocated these bursaries by staff members that have received one or more such bursaries from the NRF. These will be brought to your attention at the very start of the Honours year once staff know how many they have received from the NRF. Recipients will be required to work for an average of six hours per week in the dept as per standard Graduate Assistants. R12,000.
- There are a number of small bursaries funded by small bequests to the university. These are available, in competition with applicants from other departments. Please visit the Postgraduate Financial Aid office, or visit the website, for further details.

10.2 Financial assistance

- Project specific assistance

  Different members of staff have access to variable funds from a range of sources, including consultancy contracts. At times, when raising such funds, staff build in extra amounts for students, for both project running costs as well as a bursary, or allowable subsistence and travel payments. Please speak to DES staff about funding when you engage them around project topics. However, please also appreciate that many projects do not have such extra funds for personal financial assistance over and above the actual project costs. It is not automatic that such funds are available. Recipients of a 50 % or more bursary under such project arrangements will be required to work for an average of six hours per week in the Dept as per standard Graduate Assistants.
- Rhodes University Study Loans

  There are two types of loans of different value. Financial need and academic merit are criteria that are

taken into account. Please see the Rhodes website for further details.

- Bank loans from commercial banks

  All the major commercial banks offer student loans at interest rates a few percent below the prime lending rate. Please approach them directly for terms and conditions.

Appendix 1: Guidelines on Referencing

Note that for written assignments and the final research dissertation, at least 70% of citations should be from journal articles. The balance, (i.e. 30% or less), can be from books and electronic sources.

1. Citations in the text of the report

- When citing a reference in the text of your assignment or report provide only the name and date. For example:
    - Biodiversity in the study area is high relative to similar environments (Higgins 1998).
- If more than one reference to substantiate a comment, list first in chronological order, then alphabetical order. Separate the references by means of a comma. For example:
    - Previous workers have shown the current levels of harvesting to be unsustainable (Mdaka, 1989, Ambrose & Bechham 1996, Dlamini 1999).
- If an article has more than TWO authors provide the name of only the first author followed by *et al*. (Note: it is in italics, followed by a full stop). For example:
    - Kirsten *et al*. (1999) stated that global warming will increase plant production in savannas.
- If the article has only two authors, provide both names. For example:
    - The river is heavily polluted (Baines & Humperdink 2000, Noggings 2000).
- If more than one article by the same author, provide the author name and each date separated by a comma. For example:
    - Previous workers have shown the current levels of harvesting to be unsustainable (Venter 1997, 2000).
- If more than one article by the same author within the same year, provide the author name and date separated by a comma, with *a*, *b*, etc. appended. For example:
    - Previous workers have shown the current levels of harvesting to be unsustainable (Venter 1998a,b).
- If a verbal reference that you heard at a seminar or in direct conversation with the person, cite it as a personal communication. For example:
    - The pollution levels in the Kowie river are low (Andrews, pers. comm. 2000).

2. Compilation of a Reference List

At the end of the report, you need to provide a Reference List. This is a list of all the references cited in the body of the report. It is not a list of all the references you read irrespective of whether or not you cited them in the text of your report.

- References need to be listed alphabetically, then chronologically.
- All authors need to be included, even if more than two, i.e. do not use *et al*. in the reference list, only in the body of the text.
- Publishers of journals are not required, but publishers of books are.
- Chapters in books need the details of the chapter, as well as details of the book.
- Titles of books and thesis are in italics.
- Titles of journals are in italics. You can abbreviate journal titles according to the international listings, or write them out in full. Either way, be consistent, i.e. do not abbreviate some journal titles, and write others out in full within the same reference list.
- Do not cite any work as “in prep.”. This is because they are not accessible in their current form, there is no guarantee that they will ever be finished (i.e. they may remain as in prep. forever), or the final form may be very different to the interim “in prep.” form due to comments from external reviewers or

the author's own change of mind or interpretation. Therefore, rather cite the work as a personal communication.

- Internet references must provide all the details of the site - not just the address.
- A sample Reference List is provided below illustrating these points:

2.1. Journal articles

Blackmore, A,C., Mentis, M.T. & Scholes, R.J. 1990. The origin and extent of nutrient enriched patches within a nutrient poor savanna in South Africa. *Journal of Biogeography*, 17: 463-470.

Wells, M.P. 1996. The social role of protected areas in the new South Africa. *Environmental Conservation*, 23: 322-331.

2.2. Books

McNeely, J.A. 1988. *Economics and biological diversity*. IUCN, Gland. 236 pp.

Tuxill, J. & Nabhan, G.P. 1998. *Plants and protected areas: a guide to* in situ *management*. Stanley Thornes Publishers, Cheltenham. 248 pp.

2.3. Chapters in books

Dolman, P. 2000. Biodiversity and ethics. In: O'Riordan, T. (ed.). *Environmental Science for Environmental Management*. Prentice Hall, Essex. pp. 119-148.

Hoffman, M.T. 1997. Human impacts on vegetation. In: Cowling, R.M., Richardson, D.M & Pierce, S.M. (Eds). *Vegetation of southern Africa*. Cambridge University Press, Cambridge. pp. 507-534.

2.4. Theses

Dzerefos, C.M. 1996. *Distribution, establishment, growth and utilisation of mistletoes (Loranthaceae) in the Mpumalanga lowveld.* M.Sc. thesis, University of the Witwatersrand, Johannesburg. 169 pp.

Feely, J.M. 1986. *The distribution of Iron Age farming settlement in Transkei: 470 to 1870*. M.A. thesis, University of Natal, Pietermaritzburg. 224 pp.

2.5. Unpublished/internal reports

Bailey, C.L. & Scholes, R.J. 1999. *Progress report on the global change research project*. Unpublished report, no. ENV-P-I 98195, CSIR, Pretoria. 18 pp.

Gandar, M.V. 1994. *An investigation of prices, pricing criteria, and distribution networks for fuelwood in selected areas of South Africa*. Unpublished report, Dept of Mineral & Energy Affairs, Pretoria. 68 pp.

2.6. Internet sources

Cites Secretariat. 2000. What is Cites? Http://www.cites.org/CITES/eng/what-is.shtml.

Rieger, M. 2000. Mark's fruit crops. Http://www.uga.edu/hortcrop/riger/#crops.

2.7. Personal communications

Dlamini, D.T. 2000. Personal communication. Deputy-director, Dept of Land Affairs, Bisho.

Knoetze, B.J. 2000. Personal communication. Warden, Queenstown Nature Reserve, Queenstown.

3. Common mistakes in referencing

- Some references are left out of the Reference List, i.e. they were cited in the report, but are not listed in the Reference List.
- Some references in the Reference List that have never been cited in the report.
- References in the Reference List are not in alphabetical order.
- Inconsistent punctuation in the Reference List. For example, brackets around the date for some references, but not others; full stops between author initials for some references but not others; a comma between volume number and pages for some references, a semi-colon for others. There is no single correct format for punctuation of references. Different journals require different formats. Choose your format and stick with it - be consistent.
- Missing details such as page numbers, dates, volume numbers, author initials, etc.
- Publisher and city of publication of books is not provided.

Appendix 2: Departmental Guides on Plagiarism

REQUIREMENT

All students are required to include a declaration on the front page of all written work submitted for marks to effect that they are aware (i) what plagiarism is, (ii) of the university and departmental plagiarism guides and policy, and (ii) that it is an offense to plagiarise. A template declaration is provided.

CATEGORIES AND PROCEDURES FOR PLAGIARISM CASES

The following is an abridged version of the Rhodes University Plagiarism Policy (2008). Please refer to the full policy for more details.

There are three graded categories of plagiarism – categories A, B and C.

Category A offences

Category A offences constitute first time, minor infringements, and are usually handled by the staff member who detects the offence. In cases where the student is new to the University, and/or if it is apparent that the student has committed such plagiarism because of a lack of understanding of what is required, the student should usually be counselled by the staff member concerned: the problem should be explained, the correct practice should be encouraged, and the student should be warned of the serious consequences of committing plagiarism again. Additionally, if it is appropriate, a mark penalty could be imposed. If a penalty is imposed, the relevant staff member should indicate the amount of the penalty and the reasons for this penalty on the assignment or assessment form.

If a student wishes to challenge the finding and the penalty for a category A offence, the student is entitled to appeal to the Head of Department, who must refer the matter to the Departmental Plagiarism Committee for a hearing. The student should be informed that the Departmental Plagiarism Committee will hear the matter afresh, and is entitled, in the event of finding that plagiarism has been committed, to impose its own penalty, which may be more onerous than that imposed by the lecturer.

Category B offences

Category B offences relate to repeated offences of a minor nature, or to relatively minor offences at a more senior academic level than first year, or to first time, more serious offences, where the offence would not attract a penalty of more than the loss of a DP certificate. If a category B offence is detected, the matter must be referred to the Head of Department or nominee, who must refer the matter to a Departmental Plagiarism Committee for a hearing.

At the beginning of each academic year the Head of Department should identify three members of staff who will be available to sit as members of a Departmental Plagiarism Committee within each department from time-to-time, where category B cases of potential plagiarism are reported.

When a potential category B case is reported, the Head of Department must appoint two of the pool of staff, on a rotational basis, to constitute a Departmental Plagiarism Committee to adjudicate the matter. This will accommodate situations where one of the identified members of staff is the complainant. The staff member who identifies the case may not, under any circumstances, sit in judgment as a member of the panel.

Category C offences

Category C offences concern major, extremely serious infringements by students which the Departmental Plagiarism Committee deems worthy of adjudication by a Disciplinary Committee of the Senate Standing Committee on Plagiarism. At the undergraduate level, category C offences should be limited to major cases that are so serious that they warrant a potential penalty of more than the removal of a DP. Where the Departmental Plagiarism Committee identifies a case that it considers serious enough to constitute a category C case, it must refer the matter to the Head of Department, who is responsible for reporting the matter to the Chair of the Senate Standing Committee on Plagiarism. The Head of Department must include with the correspondence copies of the offending material and the sources from whence the plagiarism is alleged to have occurred (both suitably marked).

THE PROCEDURES TO BE FOLLOWED IN CATEGORY A AND CATEGORY B PLAGIARISM OFFENCES:

A. Preparatory Procedures

Potential case of plagiarism detected, the evidence (suitably marked) must be prepared by the staff member who detected the problem, and the matter discussed with HoD, who decides that the matter is one of category B.

↓

The HoD or nominee must select a Departmental Plagiarism Committee of two members, and to appoint one of these staff members to be Chair. The evidence must be handed to the Chair of the Committee.

↓

The Chair, with the assistance of the secretarial staff, must inform the student, in writing, of the matter, must make copies of the evidence available to the student, and must make arrangements for a hearing.

B. The Hearing

The parties shall convene at the appointed place and time.

↓

The staff member who discovered the problem must be invited to present the evidence.

↓

The student (or his/her representative [student or staff member only]) and the Committee will have the opportunity to put any questions they have to the staff member. Once this is complete, the staff member may be excused.

↓

The student (or his/her representative) must be given an opportunity to make a statement, either acknowledging wrongdoing or denying responsibility, and may present any evidence in support of his or her case. If the student admits to plagiarism, the Committee may proceed immediately to addressing the matter of penalty (see **X** in the right hand block below).

↓

The Committee may ask questions of the student or the representative.

↓

The Committee must adjourn to consider whether plagiarism has been committed or not.

↓ ↓

If Plagiarism has NOT been committed	If Plagiarism HAS been committed
Refer the matter back to the HoD to make arrangements for reassessment of the assignment.	Recall the student and inform the student of the finding. ↓ **X** Give the student an opportunity to make a statement concerning penalty. ↓ The Committee may ask questions of the student. ↓ The Committee should adjourn to discuss and determine penalty.

	↓ The Committee should recall the student and advise the student of the penalty, or inform the student later, if necessary. The student should also be informed that the University Policy allows for a review.

C. After the Hearing

The Chair must (with the assistance of the secretarial staff, where necessary and appropriate):

- Write up a short report of the findings reached at the hearing, and the reasons for the decisions taken, both with regard to plagiarism and penalty, if relevant.
- Ensure that the student receives a copy of this finding, within 5 days of the hearing.
- Make arrangements with the secretarial staff: (a) to have the finding published on student notice boards in the department (with personal details deleted); (b) to have copies of the finding made available to the lecturer, course co-ordinator and HoD; (c) to have the findings and the evidence filed in the Secretary's Office; and (d) record the findings on Protea.

Below is a sample template for plagiarism declaration that must be on the front page of written assignments. Download from RUConnected.

PLAGIARISM DECLARATION

1. I have read and understood the university plagiarism policy, and consequently understand what plagiarism is, and appreciate that it is wrong and if detected may result in penalties.

2. I know that plagiarism means taking and using ideas, writings, words or inventions of another person as if they were my own. I know that plagiarism not only includes verbatim copying, but also the extensive use of another person's ideas without proper acknowledgement (which includes proper use of quotation marks). I know that plagiarism covers this sort of use of material found in text sources and from the Internet.

3. I acknowledge and understand that plagiarism is wrong.

4. I understand that my research must be accurately referenced. I have followed the rules and conventions on referencing, citation and use of quotations as set out in the departmental guide.

5. This assignment is my own work, or my group's own unique group assignment. I acknowledge that copying someone else's assignment, or part of it, is wrong, and that submitting identical work to others constitutes a form of plagiarism.

6. I have not allowed anyone to copy my work, or part of it, in this assignment with the intention of passing it off as their own work.

Signed: _____ Date: _____

Appendix 3: Summary Outlines of Optional Modules

Community-Based Natural Resource Management
Coordinator: Professor James Gambiza (Dr Gladman Thondhlana for 2015)
Department of Environmental Science

Core Outcomes

- Demonstrate a critical understanding of CBNRM, including the key concepts, issues and trends
- Demonstrate interpretive and analytical skills to improve own practice in CBNRM
- Integrate social, institutional, economic, ecological, and historical information into developing an understanding of CBNRM

Theme 1: History and context of CBNRM

Learning Outcomes
- Demonstrate an understanding of the history of CBNRM approaches
- Critically analyse key features of CBNRM in own work contexts
- Identify features of policies and policy-making that impact on CBNRM

Theme 2: Issues associated with CBNRM processes

Learning Outcomes
- Identify and analyse key issues and critical success factors associated with CBNRM processes
- Identify critical success factors associated with own work

Theme 3: Management Frameworks and tools for CBNRM

Learning Outcomes
- Identify and analyse conflict and tensions
- Explore the role of education, communication and capacity building
- Identify and comment critically on management frameworks, institutions and implementing mechanisms in the context of an Eastern Cape CBNRM case study
- Understand the role of indicators and the importance of monitoring
- Predict the sustainability of use of plant or animal populations, using population theory

Outputs

Students will:
- participate in an intensive 5-day course, which will include after hours activities;
- write a test;
- submit one essay, and
- write one exam paper in November.

Some pertinent readings

Child, B. 2004. *Biodiversity, rural development and the bottom line: parks in transition.* Earthscan, London. 267 p.

Fabricius, C. and Koch, E. 2004. *Rights, resources & rural development: community-based natural resource management in Southern Africa*. Earthscan, London. 288 p.

Suich, H. and Child, B. 2009. *Evolution & innovation in wildlife conservation: parks and game ranches to transfrontier conservation areas*. Earthscan, London. 462 p.

Environmental Modelling
Coordinator: Professor James Gambiza
Dept of Environmental Science
NOT AVAILABLE IN 2015

Introduction

Environmental problems are systems problems that are complex and non-linear (Holling 1993). The complexity results from the interaction of many biophysical and socio-economic factors that vary both temporally and spatially in a non-linear manner. Furthermore, environmental problems are caused by slow changes reflecting decade to century long transformations of ecosystems and landscapes by humans (Holling 1993). Modelling can improve our understanding of these complex systems by highlighting the key drivers of these systems and by indicating gaps in our understanding.

The course on environmental modelling will introduce the skills necessary in simplifying these complex systems in order to enable managers to make informed decisions. This module will be covered through hands-on simulation exercises, tutorials and discussion groups. Note that this course does **NOT** require mathematical skills. The course will cover the three themes outlined below.

Themes

1. Simulation modelling

- introduction to systems dynamics
- introduction to commonly used software (Stella, Simile, Madonna and Excel)
- model construction – conceptualisation, structure and formalization
- model evaluation

2. Mental Models

- introduction to mental models
- review of case studies on mental models

3. Population projection matrices

- Leslie and Lefkovitch matrices
- model evaluation

4. Case studies

The use of models in tackling environmental problems and in natural resource management will be examined through case studies. We will examine models at different spatial scales as indicated below.

- global models (e.g. Global Unified Model of the Biosphere (GUMBO))
- landscape models (e.g. Forested Land-Oriented Envisioning System (FLORES))
- local level models

Core outcomes

- develop an understanding of modelling
- learn modelling by doing
- integrate information from biophysical and socio-economic disciplines to model complex systems

Outputs

Students will:

- produce a model of an environmental problem
- write one essay
- write one examination paper in November

Some pertinent readings

Boumans, R., Costanza, R., Farley, J., Wilson, M.A., Portela, R., Rotmans, J., Villa, F. & Grasso, M. 2003. Modelling the dynamics of the integrated earth system and the value of global ecosystem services using the GUMBO model. *Ecological Economics*, 41: 529-560.

Caswell, H. 2001. *Matrix population models: construction, analysis, and interpretation*. Sinauer Associates, Sunderland.

Foote, A. L., Krogman, N.T., Grundy, I.M., Nemarundwe, N., Campbell, B.M, Gambiza, J. and Gibbs, L. 2003. Ilala palm (*Hyphaene petersiana*) use in southern Zimbabwe: social and ecological factors influencing sustainability. *Forests, Trees and Livelihoods*. 13: 275-296.

Holling, C.S. 1993. Investing in research for sustainability. *Ecological Applications*, 3: 552-555.

Jorgensen, S.E. & Bendoricchio, G. 2001. *Fundamentals of Ecological Modelling*. Elsevier.

Kim, D.H. 1995. *System Thinking Tools*. Pegasus Communications, Cambridge, MA.

Morecroft, J.D.W. & Sterman, J.D. 1994. *Modelling for Learning Organisations*. Productivity Press, Portland.

Rykiel, E.J. 1996. Testing ecological models: the meaning of validation. *Ecological Modelling*, 90: 229-244.

Starfield, A.M. & Bleloch, A.L. 1991. *Building Models for Conservation and Wildlife Management*. Macmillan Publishing Company, Edina, MN.

Sterman, J.D. 2000. *Business Dynamics: Systems Thinking and Modelling for a Complex World*. McGraw-Hill, New York.

Vanclay, J.K. & Skovsgaard, J.P. 1997. Evaluating forest growth models. *Ecological Modelling*, 98: 1-12.

Wetland Ecology
Coordinator: Professor Fred Ellery
Department of Geography

Introduction

The course is centred on understanding wetlands and how they work and why they collapse. A key focus is on developing competence in wetland assessment, but to do this properly requires a good grasp of why wetlands exist, how they change naturally over time and how human activities affect them. The course develops people's capacity to see wetlands in a landscape context and analyse context of wetland formation and degradation. We start with an introduction to wetlands and how they work, develop competence in the field of wetland assessment, and then analyse case studies of wetland management to contextualise understanding and develop analytical skills.

Topic	**Readings**
INTRODUCTION	
1. Wetland origins and dynamics	Ellery *et al*. (2009) Tooth *et al*. (2002a,b, 2009)
2. Hydrology	Mitsch & Gosselink (2000) Keddy (2000) Masemola (2010)
3. Water quality and biogeochemistry	Mitsch & Gosselink (2000) Barnes *et al.* (2002) McCarthy *et al.* (1993) McCarthy & Ellery (1994)
4. Systems ecology overview	Diederichs & Ellery (2000) Ellery *et al.* (1993) Ellery *et al.* (2000) McCarthy & Ellery (1998) Mitsch & Gosselink (2000) Rogers (1997)
TOOLS FOR WETLAND ASSESSMENT	
5. Wetland definition, delineation and zonation	DWAF (2005) Kotze *et al.* (1994)
6. Wetland ecosystem services assessment	Kotze & Breen (1994) Kotze *et al.* (2009a)
7. Wetland health assessment	Macfarlane *et al.* (2009)
8. Practical assessment of Ngciyo Wetland	Practical assignment
CASE STUDIES	
9. Human impacts – a life of surprises	Ellery *et al.* (2002) Kotze *et al.* (2009b) McCarthy *et al*. (2009) Tooth *et al*. (2009) McCarthy *et al*. (2007)
10. Rehabilitation and management effectiveness	Kotze *et al.* (2009b, c)

Structure of the course

The course is run over 3 weeks. There is an introductory week of reading and seminars, followed by a week-long intensive course where students are exposed to tools for wetland assessment. The third week presents a second set of seminars in which case studies will be analysed. There will be a field trip during the week when Tools for Wetland Assessment is undertaken, in which candidates will be exposed to a wide range of topics in the field and will be expected to produce individual assessments of the extent, ecosystem services and health of the wetland we will study. Should students wish, alternative project assignments can be done on a wetland close to home or on one that is of particular interest. Such arrangements need to be made with the course coordinator.

References

Barnes, K., Ellery, W. & Kindness, A. 2002. A preliminary analysis of water chemistry of the Mkuze Wetland System, KwaZulu-Natal: A mass balance approach. *Water SA* 28:1-12.

Diederichs, N.J. & Ellery, W.N. 2000. An analysis of plant species distributions on the floodplain of the Okavango River, Namibia, with respect to impacts of possible water abstraction. *African Journal of Aquatic Science* 26:121-129.

DWAF (2005). A practical field procedure for identification and delineation of wetlands and riparian areas. Government Printer, Pretoria.

Ellery, W.N., Ellery, K. & McCarthy, T.S. 1993. Plant distribution in islands of the Okavango Delta, Botswana: determinants and feedback interactions. *African Journal of Ecology* 31:118-134.

Ellery, W.N., McCarthy, T.S. & Dangerfield, J.M. 2000. Floristic Diversity in the Okavango Delta, Botswana, as an endogenous product of biological activity. In: Gopal and Junk (eds.). Biodiversity in wetlands: assessment, function and conservation, Volume 1. pp. 195-226.

Ellery, W.N., Dahlberg, A.C,. Strydom, R., Neal, M.J. & Jackson, J. 2002. Diversion of water flow from a floodplain wetland stream: an analysis of geomorphological setting and hydrological and ecological consequences. *Journal of Environmental Management* 68:51-71.

Ellery, W.N., Kotze, D.C., McCarthy, T.S., Tooth, S., Grenfell, M., Grundling, P-L., Beckedahl, H. & Ramsay, L. 2008. The Origin and Evolution of Wetlands. WRC Report, TT 334/09.

Keddy PA. 2000. Wetland ecology principles and conservation. Cambridge University Press, Cambridge.

Kotze, D.C. & Breen, C.M. 1994. Agricultural Land-use Impacts on Wetland Functional Values. WRC Report No 501 March 1994.

Kotze DC, Hughes JC, Breen CM & Klug JR 1994. The development of a wetland soils classification system for KwaZulu-Natal. WRC Report No 501 April 1994.

Kotze, D. C., Marneweck, G.C., Batchelor, A.L., Lindley, D.S. **&** Collins, N.B. 2009a. WET-EcoServices: A technique for rapidly assessing ecosystem services supplied by wetlands. WRC Report, TT 339/09.

Kotze, D.C., Ellery, W.N., Rountree, M., Grenfell, M.C., Marneweck, G.C., Nxele, S.I. & Batchelor, A.L. 2009b. WET-RehabPlan: Guidelines for planning wetland rehabilitation in South Africa. WRC Report, TT 336/09.

Kotze, D.C., Breen, C.M., Nxele, S.I. & Kareko, J. 2009c. The impact of natural resource management programmes on wetlands in South Africa. WRC Report, TT 343/09.

Macfarlane, D., Kotze, D.C., Ellery, W.N., Walters, D., Goge, M., Goodman, P. & Koopman, V. 2008. WET-Health: A tool for assessing wetland health in South Africa. WRC Report, TT 340/09.

Masemola ME. 2010. An investigation of the hydrological dynamics of Ngciyo Wetland, Kenton-on-Sea: Understanding salinity in coastal wetlands. Honours project, Department of Environmental Science, Rhodes University.

McCarthy, T.S., Ellery, W.N. & Ellery, K. 1993. Vegetation-induced, subsurface precipitation of carbonate as an aggradational process in the permanent swamps of the Okavango (delta) fan, Botswana. *Chemical Geology* 107:111-131.

McCarthy, T.S. & Ellery, W.N. 1994. The effect of vegetation on soil and ground water chemistry and hydrology of islands in the seasonal swamps of the Okavango Fan, Botswana. *Journal of Hydrology* 154:169-193.

McCarthy, T.S. & Ellery, W.N. 1998. The Okavango Delta. *Trans.Roy.S.Afr*.53:157-182.

McCarthy TS, Tooth S, Kotze DC, Collins NB, Wandrag G and Pike T 2009. The role of geomorphology in evaluating remediation options for floodplain wetlands: The case of Ramsar-listed Seekoeivlei, eastern South Africa. *Wetlands Ecology and Management* DOI 10.1007/s11273-009-9153-7.

Mitsch, W.J. & Gosselink, J.G. 1993. Wetlands, 2nd Edition. Van Nostrand Rheinhold, New York.

Rogers, K.H. 1997. Freshwater wetlands. In Cowling RM, Richardson DM and Pierce SM (eds.). Vegetation of southern Africa. Cambridge University Press, Cambridge.

Tooth S, McCarthy TS, Hancox PJ, Brandt D, Buckley K, Nortje E and McQuade S. 2002a. The geomorphology of the Nyl River and Floodplain in the semi-arid Northern Province, South Africa. *SA Geographical Journal* 84:226-237.

Tooth S, McCarthy TS, Brandt D, Hancox PJ and Morris R. 2002b. Geological controls on the formation of alluvial meanders and floodplain wetlands: the example of the Klip River, Eastern Free State, South Africa. *Earth Surface Processes and Landforms* 27:797-815.

Biodiversity, Non-Timber Forest Products (NTFPs) and Rural Livelihoods

Coordinator: Professor Charlie Shackleton

Department of Environmental Science

Overview

Rural communities throughout the developing world make extensive use of the biological resources around them for food, energy, shelter, medicine, tools and fibre. They do so at both the household level to meet basic needs, as well as for sale at local, regional and urban markets as a means of income generation. For high value resources there is frequently competition with external agencies with capital seeking to harvest the resource for large-scale profit. It is these rural areas of the developing world that also support the majority of the world's biodiversity. In some instances home and commercial use of resources from these natural and semi-natural lands purportedly threatens the conservation of biodiversity. In other instances, external agencies argue in favour of commercialisation of local resources as an incentive for the conservation of the valuable resource and hence the habitat as a whole. This module will lead students to examine this contradiction through readings and presentations around six themes:

- The role of biological resources in rural livelihoods
- The value of resources used to local households and regional economies
- Commercialisation as an incentive for resource conservation
- Conditions required for sustainable use
- NTFPs as safety nets
- NTFPs and poverty alleviation

Case-studies, examples and view-points will be drawn from the international literature, but with constant reference to its relevance in sub-Saharan Africa. Topics will be covered via weekly tutorials and discussion groups, based on analysis of the literature from self-reading. Students will be required to produce two assignments for evaluation, of which at least one must be a substantial essay. The second may be a verbal presentation, a debate, or a mini research project report. The nature of these will be discussed at the start of the course.

Urban Ecology and Forestry
Coordinator: Professor Charlie Shackleton
Department of Environmental Science

Overview

The well-known benefits of trees and areas of natural biodiversity within urban landscapes come largely from research in the field of urban forestry. This is usually viewed as a highly interdisciplinary field (Konijnendijk *et al*. 2006), with most, although not all, of the research emanating from the temperate countries of Europe and North America (e.g. Konijnendijk *et al*. 2005, Kusar 2007). Seemingly, urban forestry research is not yet established on the agenda of research institutions in South Africa (Shackleton 2006). Although it is clear that the planting of trees in urban areas is widely practiced in South Africa, it is not supported by a systematic conceptual framework or based on research to optimize approaches and returns and to provide the basis for advocacy and lobbying for better environmental quality in South African cities and towns. The fact that the much publicized presidential Urban Renewal Programme does not mention urban forestry and green space planning in its list of deliverables, is indicative of the poor state of urban forestry and sustainable cities research and advocacy in South Africa.

Paralleling this is the growing international discipline of urban ecology, which is an ideal integrative analytical framework for urban forestry within urban systems as a whole. Green spaces (whether they are for agriculture, forestry or recreation) are simply part of the whole. Urban ecology is well founded in a systems approach, and consequently recognizes the challenges of theory and practice at different spatial and temporal scales, something that has not yet filtered in mainstream urban forestry and agriculture debates.

This course will examine the state of urban agriculture and/or forestry in South and southern Africa, within the framework of urban ecology and the context of initiatives in other developing and developed countries. It will consider the role these activities play in urban quality of life, income generation, poverty alleviation and sustainability, via debating answers to the following guiding questions:

- What are urban ecosystems, and how are they characterised?
- What is urban ecology and how useful is it to contextualise urban forestry?
- What are the benefits (social, ecological, economic) of urban forestry?
- What are the constraints to urban forestry in a developing context?
- How do the benefits and constraints differ under private or public tenure?
- What is the role of urban agriculture/forestry in poverty mitigation?

In the last week participants will be expected to consider possible policy recommendations through synthesis of all of the above.

Case-studies, examples and view-points will be drawn from the international literature, but with constant reference to its relevance in sub-Saharan Africa. Topics will be covered via weekly discussion groups, based on analysis of the literature from self-reading. A number of set readings will be identified each week that all participants will read and discuss. Other readings sourced by the students themselves will be divided between the group, and each student will present summaries and critiques of their readings each week. Case-studies and methods are a critical dimension of the learning, rather than just summary papers and reviews. Field trips may be arranged on an opportunistic basis.

Climate change, human vulnerability & adaptation: A social-ecological systems perspective

Professor Sheona Shackleton
Department of Environmental Science

INTRODUCTION

"We can adapt to climate change and limit the harm. Or we can fail to adapt and risk much more severe consequences. How we respond to this challenge will shape the future in important ways" (Leary et al. 2007).

Why do we need to adapt? Recognising increasing vulnerability especially amongst the marginalised

Climate change is the biggest environmental challenge of our time. The Intergovernmental Panel on Climate Change's latest report states the climate change is already having discernable impacts. Moreover, predictions indicate no matter how much action is taken now to reduce emissions (mitigate), current momentum will result in inevitable climate change. These changes will disproportionally affect poor rural communities, especially those in developing countries. People living in dryland regions, such as Southern Africa, who have a high degree of dependence on climate sensitive natural resource sectors are particularly susceptible. It is these people who have the least capacity and capability to respond to new risks and intensified climate variability, and yet historically are the least responsible for contributing to global warming. The predicted impacts will amplify risks amongst the most vulnerable members of society; those with limited assets and who are barely able to cope with current climate hazards and other insidious shocks such as HIV/AIDS, let alone future threats associated with global climate change. The inevitability of change means that policies and strategies need to be put in place to protect these vulnerable people. The communities and individuals most at risk are those that are rural, remote and marginalised with low levels of human and economic development, weak institutions that receive limited services and government support, and that already suffer from high levels of vulnerability and poverty. *It is on this sector of society that we will focus our attention during this course. Without support these communities will face increasingly heightened states of vulnerability with, as yet, unknown consequences*.

How can we to adapt? Building adaptive capacity and supporting sustainable response to climate change

We will consider and discuss ways to strengthen livelihoods and household and community resilience to climate change and other interacting stressors through technologies, improved ecosystem management, structural change (e.g. in tenure), development strategies, asset building, incentives (including mitigation measures such as REDD++), knowledge sharing and institutional change in both the natural resource sector as well as alternative non-farm sectors, thereby improving capacity and capability to adapt to climate change. Understanding the conditions and contexts under which the prospects for successful adaptation are improved and enhanced is critical for advancing adaptation policy and action. *It is this integrated thinking that forms the basic framework for this course, with understanding how to reduce vulnerability and facilitate adaptation forming the central component.*

Some of the questions we try to answer in this course

- *What is the nature of poor people's vulnerability and what creates and maintains it?* Answering this question will require consideration of issues of social justice, structural and institutional change, and environmental change. How do people respond to risk and what enables or, alternatively, constrains them from responding effectively? Insights into this issue will derive from consideration of local

capacities, knowledge and practices relating to how people coped in the past with climate hazards and other forms of risk. It would also require an understanding of the policy and institutional landscape.

- *What is needed to build capacity to understand, respond, cope and adapt to new shocks, threats, stresses and risk, in particular climate risk?* This will involve reading and thinking about how to create enabling conditions from local action to policy processes to strengthen the ability of communities to respond to risk and to adapt to climate change.
- *What contributes to adaptive capacity in communities and households? How can this be fostered? How can vulnerability and risk be reduced or mitigated?* This will involve understanding how people respond to stresses and how they learn from one another and how local agency evolves, and where external processes can support this.
- *How will climate change manifest in different sectors and what does this mean for rural livelihoods?* This will involve you learning about the impacts of climate change in particular sectors that interest you and what is needed to ensure adaptation.

COURSE THEMES

- Why be concerned about climate change and vulnerability?
- Understanding human vulnerability – definitions, causes and consequences.
- Methodologies for assessing human vulnerability.
- Threats of climate change for poor natural resource dependent communities: vulnerability and livelihoods.
- Understanding responses to climate change: coping and adaptation theory and practice.
- Global to local policy related to climate change adaptation.
- Case studies.
- Climate change adaptation research.

OUTCOMES

At the end of the course you will be able to:

- define and critically reflect on key concepts related to climate change such as risk, vulnerability, adaptation, coping, transformation, etc.;
- appreciate the potential impacts of climate change, interacting with other stressors, on vulnerable societies and the complexities inherent in dealing with these impacts;
- assess different approaches to adaptation and recognise what is needed to build resilience amongst vulnerable communities;
- develop a research proposal to undertake research on vulnerability and adaptation; and
- apply your learning to thinking about how to support adaptation in the Southern African and African context.

COURSE APPROACH

- Five week part-time course.
- Readings and weekly tutorials to discuss these.
- Group and self-learning exercises to complement tutorials.
- Selected lectures as necessary.

ASSESSMENT

- Verbal presentation of themes for discussion.
- Three written assignments – one opinion piece, one practical report and one annotated conceptual model for a research programme.
- Take home 24 hour exam.

Introduction to Environmental Impact Assessment
Coordinator: Dr Kevin Whittington-Jones
Coastal & Environmental Services

Introduction

This module incorporates a professional short course on Environmental Impact Assessment (EIA) offered jointly by Rhodes University and Coastal Environmental Services. The course will be intensive, with lectures and tutorials running from 8.30am to 5pm, with additional individual tasks set for the evening. The short course is followed by a series of three tutorial sessions that will encourage participants to engage with key aspects on EIA at a more advanced level.

The primary objective of this course is to meet a need to increase capacity and understanding of environmental management, and more specifically the environmental impact assessment process. Local case studies will be used to bring important points across, and presenters in the short course will mainly be Eastern Cape experts in their respective fields. In this course, we will specifically focus on and clearly explain the implementation of Section 24 of the National Environmental Management Act (NEMA).

Course content

The course will introduce the field of environmental management by focusing on the procedures for Environmental Impact Assessment (EIA) and Integrated Environmental Management (IEM). Emphasis is therefore placed on the study of human impacts on the environment, and how to evaluate the importance of these impacts and regulate their effects. On completion of the course, participants should understand and be able to answer the following:

- What is an environmental impact assessment?
- How does one undertake an environmental impact assessment?
- What are the different stages through which an EIA goes?
- What is the current status of EIA in South Africa?
- What are the challenges facing EIA in Africa?
- What is an ecological impact assessment?
- What is integrated environmental management?
- What is public scoping and public involvement?
- How does one undertake a public involvement programme?
- What is social impact assessment?
- What is strategic environmental assessment?
- What principles should be observed when making environmental decisions?

Protected Landscapes: Historical perspectives and future directions

Coordinator: Dr Georgina Cundill
Department of Environmental Science

This is a course work module that focuses on lessons from South Africa and abroad, and that includes a one-week internship at a co-managed protected area in the Eastern Cape. The course aims to build students' appreciation for the (often controversial) role of protected landscapes in society. The course work component will consist of the following core themes: i) The current and historical role of formal protected areas in society, including conservation value, who bears the costs, and who receives the benefits. ii) Alternative models for managing protected landscapes, including biosphere reserves, ecosystem stewardship, and adaptive co-management. iii) Land rights and protected areas in South Africa and abroad, reflecting on lessons from South Africa, Canada and Australia.

The course consists of three weeks of course work, with eight face-to-face sessions in that time. The internship will consist of students shadowing the Senior Community Outreach Officer on the nature reserve, interviewing reserve staff and observing community meetings and stakeholder forums. The teaching style will be one primarily of guided self-learning.

During the course, students will be supported to achieve the following learning outcomes:

1. Critically reflect on the appropriateness of different models of protected area management in different contexts;
2. Articulate a nuanced appreciation for the social complexities of protected area management in a South African context;
3. Evaluate interactions between reserve staff and land claimants in a real-world setting;
4. Make recommendations to improve shared decision making to both reserve management and communities.

Assessment

Students will receive formative feedback on each learning outcome, prior to the submission of their final report (Table 1). Formative assessment tasks will consist of a class presentation on a chosen topic (20 % of final mark), and an internship diary (20 % of final mark) that is submitted prior to the final report. Students will use feedback on these minor assignments to produce a final report (60 % of final mark) that brings together both the theory from class and the practical experience from their time on the reserve. The purpose of the final report will be to evaluate the reserve's interactions with land claimants and make recommendations for improvements.

Table 1: Learning outcomes and associated assessment in this module

Learning outcomes	Assessment
Critically reflect on the appropriateness of different models of protected area management in different contexts;	In-class presentation, final report

Articulate a nuanced appreciation for the social complexities of protected area management in a South African context;	In-class presentation, final report
Evaluate interactions between reserve staff and land claimants in a real-world setting;	Internship diary, final report
Make recommendations to improve shared decision making to both reserve management and communities.	Internship diary, final report

Workplan for theory component

Themes	Topics/contact sessions	Reading
Theme 1: The (changing) role of protected areas in society	Historical perspectives; conservation value; who bears the costs; who receives the benefits	Brockington et al 2008; Curruthers 1998; Ghimire & Pimbert 1997
Theme 2: Models for protected area management	Nature reserves; biosphere reserves; ecosystem stewardship; adaptive co-management; and others	Armitage et al 2009; Borrini-Feyerabend et al 2004; Chapin et al. 2009; Fabricius et al 2007
Theme 3: Land rights and protected areas in South Africa	Legal framework; experiences throughout South Africa; current situation and future directions	Cundill et al. 2013

Some key references

Armitage, D., Plummer, R., Berkes, F., Arthur, R., Charles, A., Davidson-Hunt, I., Diduck, A., Doubleday, N., Johnson, D., Marschke, M., McConney, P., Pinkerton, E. and L. Wollenberg. 2009. Adaptive co-management for social-ecological complexity. *Frontiers in Ecology and the Environment*. 7(2): 95-102.

Brockington, D., Duffy, R., Igoe, J., 2008. *Nature Unbound: Conservation, Capitalism and the Future of Protected Areas*. Earthscan, London.

Borrini-Feyerabend, G. *et al*. 2004. *Indigenous and local communities and protected areas: Towards equity and enhanced conservation.* WCPA, IUCN Switzerland.

Curruthers, J. 1989. Creating a national park: 1910 to 1926. *Journal of Southern African Studies* 15: 188–216.

Chapin, F., Kofinas, G. and Folke, C. 2009. *Principles of Ecosystem Stewardship: Resilience-Based Natural Resource Management in a Changing World*. Springer, London.

Cundill, G., Thondhlana, G., Sisitka, L., Shackleton, S. and Blore, M. 2013. Land claims and the pursuit of co-management on four protected areas in South Africa. *Land Use Policy*. 53: 171 - 178.

Fabricius, C., Folke, C., Cundill, G. and Schultz, L. 2007. Powerless spectators, coping actors and adaptive co-managers: a synthesis of the role of communities in ecosystem management. *Ecology and Society* 12: 29.[online] URL: http://www.ecologyandsociety.org/vol12/iss1/art29

Ghimire, B. and Pimbert, M. 1997. *Social change and conservation*. Earthscan, London.

Kepe, T. 2008. Land claims and comanagement of protected areas in South Africa: Exploring the challenges. *Journal of Environmental Management* 41: 311–321.

Kepe, T., Wynberg, R., Ellis, W. 2005. Land reform and biodiversity conservation inSouth Africa: complementary or in conflict? *International Journal of Biodiversity Science and Management* 1: 3–16.

Mabunda, D., Pienaar, D.J., Verhoef, J. 2003. The Kruger National Park: a centuryof management and research. In: du Toit, J., Rogers, K.H., Biggs, H.C. (Eds.), *The Kruger Experience: Ecology and Management of Savanna Heterogeneity*. Island Press, Washington, DC, pp. 3–21.

Environmental & Resource Economics
Coordinator: Prof. Gavin Fraser
Department of Economics & Economics History

Overview (from the Departmental website & Hons brochure)

The application of economics principles to the valuation of environmental services and degradation; the Environmental Kuznets Curve; Global Warming; natural resources valuation issues; economic sustainability; the development of Environmental Economics and of Ecological Economics

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Environmental Water Quality
Coordinator: Professor Tally Palmer, Dr Neil Griffin
Institute for Water Research, Unilever Centre for Environmental Water Quality

More than one approach is needed to understand the complex interactions resulting from the pollution of aquatic ecosystems. In addition there is the complexity of managing water quality. This course takes account of complex social ecological systems and the way in which people engage with the environment. The environmental water quality (EWQ) concept involves the combined use of water physico-chemistry, biological monitoring and ecotoxicity information to assess the health of freshwater resources and to manage for sustainable freshwater resource protection and use in South Africa. This course covers: 1) an overview of water policy and management in South Africa; methods for interpreting chemical monitoring information; 2) undertaking and using bio-monitoring and eco-toxicological assessments; and 3) how to integrate these in management decision using activity systems analyses. The course is presented within the context of the main environmental water quality management tool in South Africa, the ecological Reserve.

Assessment
Coursework (60%): Course assignments: seminar, essay, ecotoxicology practical.
Examination (40%): 3 hour examination in November.

Appendix 4: Guideline Format for the Research Proposal

The project proposal is a comprehensive document outlining what it is you intend to do and how. It is well worth the effort to ensure you have a good project proposal, which is in effect your plan for the rest of the year. Generally, a comprehensive proposal will be 12 - 20 pages long (1.5. line spacing).

Title page

- Title of project
- Student name
- Contact details
- Supervisor
- Date

Table of Contents

1. ***Introduction*** (5 - 7 pages)

2. ***Objective/s & key question/s*** (½ - 1 page)

3. ***Study area*** (2 – 5 pages)

4. ***Methods*** (4 – 5 pages)
- Field/laboratory methods
- Data analysis
- Assumptions
- Ethical considerations and standards

5. Time scheduling (½ page)

6. Budget (½ pages)

7. ***References*** (highly variable depending on the topic, but probably 15 – 25; at least 70% from recent journals)

Appendix 5: Marking Criteria for Research Project Deliverables

Honours Proposal Seminar

Notes: **1**. A significant weighting is given to presentation, structure and questions, because the written proposal will also be marked in term of objectives, methods, analysis, etc.). **2**. **A *negative marking system* of 5 % or 10 % will be applied in respect to students reading the *bulk* of their presentation**

STUDENT'S NAME:	**EXAMINER:**	Mark Allocation
INTRODUCTION, OBJECTIVES & KEY QUESTIONS Title of project is clear. The project should be introduced in a logical and interesting manner, essentially explaining why the project needs to be done. Reference to other work is mandatory, and the hypothesis/es to be tested relative to that work. The overall rationale for the work should be clear and logical, and lead into a clear objective and set of key questions or hypotheses.		15
STUDY AREA/S Pertinent details of the Study Area or laboratory setup must be provided to allow the audience to evaluate whether or not it was suitable for the proposed work, or that it was atypical in some way.		5
METHODOLOGY • **Data collection** (sample size is adequate; variables measured and tools/approach used match the key question to be answered; project is not overboard in terms of number of treatments) • **Ethical considerations** presented • **Data analysis** (evidence of appropriate thought to how the data will be analysed) • **Assumptions and possible pitfalls** (all assumptions underlying the project approach have been identified and a contingency plan in place should they be revealed to be invalid) • **Timing of activities** (is the schedule of project activities compatible with the requirements of the project) • **Budget** (is the budget realistic; is the student aware of the costs of research)		35
PRESENTATION • **Language** (use of technically and grammatically correct English; not garbled or rushed, or stunted with 'ums' 'ers' etc.; not peppered with slang) • **Projection of voice & eye contact** (student does not mumble into the overhead or notes, looks up frequently, speaks loudly enough, and projects voice) • **Fluidity** (the presentation is fluid without interrupting stops and starts; it is not simply read from the overhead or slide) • **Use of visual aids** (suitable use of visual aids to support the understanding of the project by the audience. Could include overheads, slides, Power point slides, pieces of novel equipment, specimens, etc. Not too many, not too few) • **Nature of the visual aids** (suitable in terms of use of colour, legible font size, appropriate spacing, headings, amount of information/text on each one, etc.) • **Creativity** (evidence of lateral thinking, doing things differently) • **Knowledge of literature** (is the student aware of, and has drawn upon, the most recent, and relevant literature) • **Structure of talk** (is the talk well structured, follows a logical sequence and is balanced between the different components) • **Conclusion/finishing off** (does the talk end off well, or just comes to an abrupt or hanging halt) • **Timing** (is the talk significantly under or over the allotted time)		30
QUESTIONS The student could defend his/her approach, backed up with reference to other published research or preliminary data. Could elaborate confidently & concisely when requested.		15
	TOTAL	**100**

Honours Final Seminar

Notes: **1.** A significant weighting is given to presentation, structure and questions, because the written proposal will also be marked in term of objectives, methods, analysis, etc.). **2**. **A *negative marking system* of 5 % or 10 % will be applied in respect to students reading the *bulk* of their presentation**

STUDENT:	**EXAMINER:**	Mark allocation
INTRODUCTION, OBJECTIVE & KEY QUESTIONS Title of project was clear. The project was introduced in a logical and interesting manner, essentially explaining why the project needed to be done. Reference to other work is mandatory, and the hypothesis/es to be tested relative to that work if necessary. A summary of the structure of the talk to follow is provided The student provided a concise statement of what the project set out to address and the specific questions that were to be answered to meet the overall objective		10
STUDY AREA - in the interests of time ***DO NOT*** include a study area description in your presentation		0
METHODOLOGY • **Data collection** (sample size was adequate; variables measured and tools/approach used matched the key questions; project was not overboard re number of treatments or samples) • **Data analysis** (data were subjected to appropriate analytical techniques) • **Assumptions and possible pitfalls** (assumptions were identified and considered)		10
RESULTS & CONCLUSIONS • **Format of results** (the presentation of the results were clear and easy to understand through use of figures and tables; there was not too much information crammed into individual figures or tables; the key findings were highlighted; statistically significant results were highlighted) • **Conclusions** (the student distilled a set of logical conclusions from the study, supported by the data they collected) • **Knowledge of literature** (the student was aware of, and drew upon the most recent and relevant literature, s/he made comparison of key findings to other studies)		40
PRESENTATION • **Structure of talk** (the talk was well structured, followed a logical sequence and was balanced between the different components (e.g. did not spend 10 minutes on introduction and only three minutes on results and conclusions) • **Language** (used technically and grammatically correct English; not garbled or rushed, nor stunted with 'ums' 'ers' etc.; not peppered with slang) • **Projection of voice & eye contact** (student did not mumble into the overhead or notes, looked up frequently, spoke loudly enough, and projected voice) • **Fluidity** (the presentation was fluid without interrupting stops and starts; it was not simply read from the overhead or slide) • **Use of visual aids** (suitable use of visual aids to support the understanding of the project by the audience. Included overheads or slides, or Powerpoint slides or pieces of novel equipment, specimens, etc. Not too many, not too few) • **Nature of the visual aids** (suitable in terms of use of colour, legible font size, appropriate spacing, headings, amount of information/text on each one, etc.) • **Creativity**: evidence of lateral thinking, doing things differently • **Conclusion/finishing off** (the talk ended off well, did not just come to an abrupt halt) • **Timing** (the talk was not significantly under or over the allotted time)		25
QUESTIONS The student was able to defend his/her approach, results and conclusions, backed up with reference to other research if necessary. They could elaborate confidently and concisely when requested. Did not repeatedly misunderstand questions, nor ramble on for ages in response to a single question; did not contradict themselves between or within answers.		15
	TOTAL	**100**

Honours Proposal (Written)

STUDENT NAME:	**EXAMINER:**	Mark allocation
INTRODUCTION, OBJECTIVE & KEY QUESTIONS Title of project is clear, unambiguous and not too long. The project should be introduced in a logical and interesting manner, explaining why the project needs to be done. Contextualisation should include a world perspective of the issue, followed by an African or developing nation perspective and finally South Africa and the particular study region. There should be evidence of a *critical* review/analysis of previous work making a logical lead into the hypotheses to be tested which then underpin the objectives and questions for the study. Reference to other work is mandatory, and should be mainly recent and relevant journal articles. The proposal should have a concise statement of what the project is addressing/hypothesis and the specific questions that will be answered to address the overall objective.		25
STUDY AREA/S Pertinent details of the Study Area are provided to allow the reader to evaluate whether or not it is suitable for the proposed work, or that it is atypical in some way. What details are relevant depends upon the nature of the project, but could include location (latitude & longitude; altitude; proximity to regional centres or features of influence), environmental data (abiotic & biotic), social data (population and hh sizes, gender distribution, employment status institutions, language) and economic (mean incomes, GDP).		10
METHODS • **Data collection** (sample size is adequate; variables measured and tools/approach used match the key question to be answered; units of measurements are clear; project is not overboard in terms of number of treatments or sample sites, ethical considerations of the work are clear and addressed). • **Data analyses** (full details of proposed analyses are provided, and they match the format of the proposed raw data). • **Assumptions & possible pitfalls** (relevant assumptions underlying the project approach have been identified and a contingency plan in place should they be revealed to be invalid).		40
TIMING & BUDGET • **Timing of activities & budget** (schedule of project activities is clear, & is compatible with the requirements of the project, seasonality, other Hons related activities. The budget realistic, all items included, calculations & totals correct).		5
ETHICS The ethical implications of the project are presented and addressed		5
REFERENCE LIST *Full details* for each reference are provided, as per examples in Honours brochure. Refs are in alphabetical order. All refs cited in the text are in the list and vice versa. Most (>70%) are from recent journal articles. No inconsistencies in style or punctuation from one reference to the next. Follows format of Hons brochure guidelines.		10
PRESENTATION & STYLE • **Language** (use of technically and grammatically correct English; wording should be clear, unambiguous and without colloquialisms; abbreviations/acronyms are defined upon 1st presentation; no repetition). • **Accuracy** (no typographical errors, limited grammatical errors, no inconsistencies in styles, punctuation, hyphenations, etc., it is clear it has been proof-read). • **Layout & length** (the proposal should be neatly presented, headings clear and in logical sequence, tables and figures do not spill over from one page to another, spacing not irregular nor cramped up, Table of contents is correct, proposal not too long, nor too parsimonious; all relevant details are provided, layout & details follow the guidelines in the Hons brochure).		5
	TOTAL	**100**

Honours Research Project Final Report

(WRITTEN AS A JOURNAL PAPER **)**

	Allocation
ABSTRACT, INTRODUCTION, OBJECTIVES & KEY QUESTIONS Title of project is clear, unambiguous and not too long. The abstract/s is concise and covers all the main points of the paper. Within each paper, the project should be introduced in a logical and interesting manner, explaining why the project needed to be done. Contextualisation should include a world perspective of the issue, followed by an African or developing nation perspective and finally South Africa and the particular study region. Reference to other work is mandatory, and should be from mainly recent and relevant journal articles. Each paper of the report should have a concise statement of what the project aimed to address and the key question or hypotheses. The key questions must be precise, with no ambiguities within or between questions. The objective/questions should follow on in logical fashion from the introduction.	10
STUDY AREA/S Pertinent details of the Study Area or laboratory setup must be provided to allow the reader to evaluate whether or not it was suitable for the proposed work, or that it was atypical in some way. What details are relevant depends upon the nature of the project, but could include location (latitude & longitude; altitude; proximity to regional centres or features of influence), environmental data (abiotic & biotic), social data (population and hh sizes, gender distribution, employment status institutions, language) and economic (mean incomes, GDP).	5
METHODS Details of the field and analytical methods are concise and clear, such that anybody else could repeat the study in exactly the same way. Units are supplied. Assumptions or short-coming are mentioned. Sample size was appropriate.	10
RESULTS Results are clear, and follow a logical flow. No repetition between tables and figures. No errors in tables or figures (e.g. adding of totals, units clear, etc.). Key results are highlighted and supported by relevant statistical analyses. Did not overemphasise small details or statistically non-significant results at the expense of key findings.	25
DISCUSSION & CONCLUSIONS The discussion highlights and discusses the main findings of the work, and compares them to other relevant literature. Reasons for differences or similarities are clearly thought out. An analytical and critical approach is readily apparent, and lines of argument or conceptual models are logical and supported by own data or reference to other work.	20
REFERENCE LIST *Full details* for each reference are provided, in the format for the target journal. All refs cited in the text are in the list and vice versa. Formatting and punctuation in the list is consistent and error free. 70% of references are journal papers; the majority of refs are <5 years old.	5
PRESENTATION & STYLE • **Language** (style, grammar and syntax are correct; use of technically and grammatically correct English; wording should be clear, unambiguous and without colloquialisms; abbreviations/ acronyms are defined upon 1st presentation; no repetition). • **Accuracy** (no typographical errors, limited grammatical errors, no inconsistencies in styles, punctuation, hyphenations, etc.; it is clear it has been proof-read). • **Length** (it is not too long, nor too parsimonious; all relevant details are provided). • **Layout** (it is neatly presented, headings clear and in logical sequence, tables and figures do not spill over from one page to another, spacing not irregular nor cramped up). Conforms to standard international convention. • **Structure and flow** (internal flow is good, and structure is easy to follow, both within and between sections)	10
OVERALL EFFORT Assessment of overall effort, dedication, approach to problems, independence, keeping to schedule, acceptance of advice, etc. *THROUGHOUT* the project, not just the final write-up	15

Honours Popular Piece

Marking criteria for popular article based on year-long project (media piece, policy brief, info brief, brochure)

ITEM	MARK COLLECTION
STORYLINE/ TITLE, AUTHOR, LOCATION, DATE The author/s of the articles is/are provided and the location of the item being reported is clearly stated. The title of article is clear, catchy and appropriate for the type of article chosen.	5
BACKGROUND Relevant background to the story is given so that the reader is able to immediately get a sense of the newsworthiness and relevance of the item.	10
THE BODY OF THE STORY The key argument that is being made is clearly articulated and its relevance indicated ensuring that the reader's attention is caught. Short paragraphs are normal in an article like this. Data should be easily accessible and concise to a non-scientific audience.	22
TAKE HOME MESSAGE The take-home message for the reader is clearly articulated	5
APPEARANCE The article is catchy to the eye - photos, boxes, quotes – and easy to read	8
TOTAL	50

Appendix 6: Time-line of Key Deadlines for the Research Project 2014

20th February	Safety details form returned to departmental Administrator (see App. 7)
20th February	Topic and supervisor must have been finalised (preferably sooner)
20th March	Present proposal seminar
27th March	Submit final project proposal to supervisor and course coordinator
1st April – 12th April	First field work period
1st June – 27th June	Exams and field work
27th June – 19th July	Second field work period
12th August	2-page progress report to course coordinator
1st October	***Latest*** date for first written draft to supervisor
8-9th October	Seminar to present results
12th October	Second written draft (*if necessary*) due to supervisor
21st October	Submission of final dissertation to course coordinator (*no extensions will be granted for any reason*)
30st October	Submission of popular article to course coordinator (*no extensions will be granted for any reason*)

Appendix 7: Environmental Science Safety Policy and Procedures for Field Researchers

1. Full details of medical aid, next of kin, contact numbers, ID number, etc. must be filed in the Secretary's office within a week of registering in the department (See below).

2. No student can undertake fieldwork alone. There must always be two people present, preferably three. It is highly recommended that at least one person be male.

3. The research supervisor must be notified in advance of the dates of departure and return, the PRECISE locality of where you will be staying and working, and who will be your companions/assistants.

4. Students must take a cell phone with them and phone in to their supervisor or other agreed staff member or contact at least once per day.

5. Mace spray canisters are available for those that wish to take them. They need to be signed out with the Senior Technical Officer.

6. If undertaking fieldwork in a rural or remote area, First Aid kits must be taken on all field trips.

7. Carry ID and medical aid details.

8. Where possible, researchers must give the owners of their accommodation their contact number, and also a contact number for their next kin. Researchers should inform the owner of their approximate time of return each day, and give instructions to try and make contact if they do not return.

9. Students must not give lifts to ANYONE not associated with the project. This is for both personal safety and insurance reasons. If you encounter someone that has broken down, drive on and report it at the next local police station.

10. When in transit do not stop your vehicle in remote places. If the road is obstructed by rocks, tyres, poles or holes, reverse immediately, or drive through. Do not get out to remove the obstruction.

11. Drive with the vehicle doors locked.

12. If co-workers, translators, or local community members suggest that a particular area may be unsafe, heed the warning, do not ignore it. Avoid doing fieldwork over weekends, during public holidays, or times of celebrations, when there are many strangers in rural areas. Be extra alert if it is essential tat you do have to work over such periods.

13. Do not carelessly display valuable items such as cameras, laptop computers, equipment, jewellery, etc.

14. When in doubt about any safety issues students/researchers must contact the research supervisor/project leader immediately to discuss the issue and to make a plan

15. At the start of each year, training will be offered to all post graduates in the use of the departmental First Aid Kits. Where possible, basic self-defence and safety advice will be given.

DEPARTMENT OF ENVIRONMENTAL SCIENCE

POSTGRADUATE STUDENT PERSONAL DETAILS

SURNAME: _____ FIRST NAME: _____

IDENTITY NUMBER: _____ DATE OF BIRTH: _____

STUDENT NUMBER: _____ CELLPHONE NUMBER: _____

NAME OF RESEARCH PROJECT SUPERVISOR: _____

RESIDENTIAL ADDRESS _____
IN GRAHAMSTOWN: _____

POSTAL ADDRESS _____
OUT OF TERM TIME _____

DO YOU HAVE A VEHICLE? _____

IF, YES: MAKE: _____ COLOUR: _____ REG. NO: _____

MEDICAL AID DETAILS:
NAME OF SCHEME: _____
MEDICAL AID NUMBER: _____
TEL. NO. OF HEAD OFFICE: _____
NAME OF PRIMARY CONTRIBUTOR: _____

BLOOD GROUP: _____

ALLERGIES: _____

DETAILS OF NEXT OF KIN:
NAME: _____
CELL PHONE: _____ HOME NUMBER: _____
WORK NUMBER: _____
PHYSICAL ADDRESS: _____
_____

DETAILS OF CLOSEST FRIEND IN GRAHAMSTOWN:
NAME: _____
CELL PHONE: _____ HOME NUMBER:_____
PHYSICAL ADDRESS: _____
_____

Appendix 8: Plant Specimen Labels for the Schonland Herbarium

SELAMR SCHONLAND HERBARIUM (GRA)	
Plant name	
Locality	
Grid ref:	**Altitude (metres/feet)**
Habitat description	
Plant description	
Collector:	**Coll. No.:**
Date:	**Det.:**