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Science and
Agriculture

Agricultural Management

Agricultural Sciences

Chemical and Physical Sciences
Community Resource Management |
Consumer Studies

Dietetics and Human Nutrition
Environment and Development

Food Security

Land-Information Management

Life and Biological Sciences
Mathematical and Computational Sciences
Protected-Area Management

Rural Resource Management

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FACULTY OF SCIENCE
| 5
AGRICULTURE

PIETERMARITZBURG

HANDBOOK FOR 2003

Qualifications in:
Agricultural Management
_ Agricultural Sciences
_ Chemical and Physical Sciences
Community Resource Management
Consumer Studies
Dietetics and Human Nutrition
Environment and Development
Food Security
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Protected-Area Management
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Computer Science

Computer Science
Mathematics (SFP)
Mathematics

Biometry

Science & Agriculture

Lecturers
Sheng Bau BSc(Hons)(China) MSc PhD(Otago, NZ)
Rosanne Els BScHons MSc (Natal)

J Paddy G Ewer BSc MSc (UCT) MSc (Sussex)
PhD (NUST Zimbabwe)

Kathryn J Koch BScHons MSc (Natal)

M Ferd Mahlaba BSc (Fort Hare) BSc (Hons) (UDW)
MSc (Claremont Graduate University (USA))

Henry G Mwambi BSc MSc PhD (Nairobi)
Principal C Ndlovu BSc (Zimbabwe) MSc PhD (Penn State)
Sanjay Ranjeeth BScHons (Natal) UHDE (UDW)

Junior Lecturers
Norman H Buller BComHons (Natal)

Mitchell C Hughes BComHons (Natal)

Senior Tutors
J Lesley Warren BEd(Hons) (London)

Tutors

Anita L Campbell BScHons HDE (Natal)
Thabile P Gumede BComHons (Natal)
Maddy C Hughes BSc(Hons) (Reading)
Xolani (Zini) Jonono BSc HDE (Rhodes)
Shaun Ramroop BScHons (Natal)

Aslam Safla BScHons (Natal)

Ayesha Vanker BScHons (Natal)

Honorary Professors

Trevor D Crossman " BAHons (Natal) MCom
PhD (Witwatersrand) MCSSA.

Honorary Senior Lecturers
Costas Zaverdinos BSc(Hons) (Witwatersrand) PhD (Natal)

Mathematics

Computer Science

Applied Mathematics
Applied Mathematics

Mathematics (SFP)
Statistics
Statistics

Information Systems

Information Systems

Information Systems

Mathematics (SFP)

Mathematics
Information Systems

Information Systems

Mathematics (SFP)
Statistics
Computer Science

Statistics

Information Systems

Mathematics

School of Molecular & Cellular Biosciences

Head of School
Professor Annabel Fossey

Professors
Clive Dennison "Â°Â°? Â°Â® BScAgric MScAgric PhD (Natal) Biochemistry

Associate Professors
Theresa H T Coetzer BSc(Hons) MSc (Stell) PhD (Natal) Biochemistry
Annabel Fossey "? Â°Â° BSc(Hons) MSc DSc (Pret) Genetics

Senior Lecturers
Trevor R Anderson BScAgric MScAgric PhD (Natal) _ Science Education/Biochemistry

Edith Elliott Â°Â° BScHons MSc PhD (Natal) Biochemistry/Biomolecular Technology
J P Dean Goldring BSc (Dundee) DPhil (Zimbabwe) Biochemistry
Andrew Mitchell BScHons MSc(Natal) PhD (Maryland) Molecular Phylogenetics
Lecturers

Mervyn Beukes BSc(Hons)(UWC) PhD (Natal) Molecular, Microbial Genetics
Carolyn Hancock BScAgric MScAgric (Natal) Population & Quantitative Genetics
Michael S Meusel MSc PhD (Frankfurt/Main) Molecular Genetics

Science Foundation Programme

Manager of unit
Joan IA Houston BSc (Pret) STD (Cape Town)

Senior Lecturers

Colleen T Downs BScHons PhD (Natal) Biology & Zoology
Lecturers

Alice J N Bosa-Barlow BScAgric(Hons) (Makerere University)

PhD (Unitra) Â° Biology
Sharon J Grussendorff BScHons MSc HDE (Natal) Physics
M Ferd Mahlaba BSc (Fort Hare) BSc (Hons) (UDW) :

MSc (Claremont Graduate University (USA) Mathematics

Sally AA Spankie BSc(Hons) (Edin) PhD (Heriot-Watt) LIOH ˜ Chemistry

Science & Agriculture xi
Senior Tutors
Muvhango R Rasalanavho BSc (Venda) HED (Unisa) Chemistry
AndrÃ© van der Hoven BScAgric MSc (Natal) PhD (Iowa) Chemistry
J Lesley Warren BEd(Hons) (London) Mathematics
Ronald A Webber BScHons HDipEd (Witwatersrand) Physics
Tutors :
Sheelagh Halstead BSc (Natal) HDE (Natal) Physics
Xolani (Zini) Jonono BSc HDE (Rhodes) Mathematics
Nicola F Kirby BSc(Hons) MSc (Natal) Biology
Beverley J McGladdery BScHons HDE (Natal) Physics
Zimbili Mkhize BScHons (Natal) Chemistry
Biology

Janice Y White BSc(Hons) (Natal)

Special Counsellors

Shelley A Barnsley BA BAHons MA (Natal) Registered Counselling Psychologist
Martin Liebenberg BSocSc BSocScHons MSocSc (Natal) Registered Counselling

Psychologist

HD=Head of Discipline, PD=Programme Director, CR=Chair, DR=Director,

MR=Manager

# INFORMATION FOR STUDENTS

## Location

The Faculty of Science and Agriculture comprises the six Schools of: Agricultural Sciences and Agribusiness; Applied Environmental Sciences; Botany and Zoology; Chemical and Physical Sciences; Mathematics, Statistics and Information Technology; and Molecular and Cellular Biosciences.

The disciplines of Agriculture, Agribusiness and Life Sciences are housed in the Rabie Saunders Building and John Bews Complex on the Life Sciences Campus, which is about 1 km from the main campus in Pietermaritzburg. Field work for teaching and research is conducted at the Research Station, Ukulinga, a farm of 300 hectares on the outskirts of the city as well as at several other venues, including the Electron Microscope Unit, Controlled Environment Research Unit, private farms and conservation areas.

The disciplines of Computational, Mathematical and Natural Sciences are housed on the main campus in the Chemistry Complex and the Main Science Building. Several well equipped laboratories serve the practical requirements of these disciplines together with Glass-blowing and Mechanical Instrument workshops.

## Degrees and Diplomas Offered

The Faculty offers a wide range of under- and postgraduate degrees and diplomas in programmes ranging from Agribusiness to Information Technology, from Resource Ecology to Commercial Forestry, from Chemical Technology to Plant Molecular Biosciences, as well as Botany, Crop Science, Horticultural Science, Mathematics, Physics and Zoology, among others. The under- and postgraduate degrees and diplomas offered in these disciplines and areas of specialisation are described in the Rules for Qualifications section of this Handbook. The Rules and Syllabi sections, contain the details of each programme and qualification offered in the Faculty of Science and Agriculture.

In designing a degree curriculum the most important points to note are:

(1) each programme has a specified combination of modules and there is a limitation on the distribution of modules in any semester;

(2) some modules have pre- or corequisite requirements. The details of these are contained under Syllabi below (the meanings of these terms are given under Definitions in the Rules);

(3) by careful consideration of the combination of modules offered in each programme, a candidate may bias the training towards a single area (this

applies mainly to students studying for the Bachelor of Science degree, as other qualifications have specified curricula); and

(4) all combinations of modules are subject to the constraints of the time-table.

## Semester System

The Faculty follows the semester system of teaching. Modules are given in either the first semester, with a final examination in June, or in the second semester, with a final examination in November. The modules of the Science Foundation Programme (SFP) are given as year courses with assessment throughout the year and examinations in November. Only a limited number of specialist modules are offered during the winter vacation period.

## Credit System

Every module for a qualification has a credit rating. Credit ratings are given under Syllabi. Unless specially exempted candidates obtain the credit points indicated for a module by passing the assessments for that module with an average mark of not less than 50%.

## Entrance Requirements for Degrees

### 1. Standard requirements

All candidates must produce evidence to the satisfaction of the Senate that they have either obtained a matriculation certificate or a certificate of exemption from the matriculation examination. Foreign applicants who do not have a pass in a prescribed second language may qualify through a â\200\230certificate of foreign conditional exemption. Specific requirements for certai
n
programmes are detailed under each Curriculum.

### 2. Alternative entry route

Matriculated applicants for the programmes in the Faculty who do not meet the specified Faculty entrance requirements may be admitted by the Dean provided they avail themselves of one or more Foundation Courses which are offered through the Science Foundation Programme (SFP) (ie. Biology 010, Chemistry 010, Mathematics 010, and Physics 010). These additional courses carry no credit points in the Agricultural programmes and consequently the minimum duration of the degree may be increased by one year. For candidates registering for programmes in Science these modules contribute to credits for some qualifications.

## Agricultural Engineering Degrees

The Faculty of Engineeringâ\200\231s School of Bioresources Engineering and Environmental Hydrology, in association with the disciplines of Agriculture, offer a degree in Agricultural Engineering. The curriculum extends over four

years of study of which the first is spent in either Durban or Pietermaritzburg, the next two in the Faculty of Engineering in Durban, and the final year in the Faculty of Science and Agriculture in Pietermaritzburg. Interested candidates are referred to the Faculty of Engineering Handbook where full particulars are given, or to the School of Bioresources Engineering and Environmental Hydrology which is also housed in the Rabie Saunders Building.

## Postgraduate Study

A candidate may be admitted to postgraduate study in any of the areas of specialisation in the Faculty of Science and Agriculture, provided that the candidate holds an acceptable primary degree, and provided also that the standard of proficiency previously attained in the intended area is sufficiently high.

## Extra Curricula Activities

Although the Faculty encourages participation of students in all university activities, the holding of office in certain student organisations and committees can be extremely time consuming and may be incompatible with full-time study in certain disciplines. Students should only accept such positions or responsibilities after consultation with their Programme Directors.

## Careers

Among careers open to graduates of the Faculty are positions in commercial and industrial organisations, government departments, research institutes and the teaching profession. Students wishing to follow research careers should complete at least an Honours degree, and preferably a Masters degree.

## Intending Teachers

The Head of the School of Education, Training and Development in the Faculty of Human Sciences should be contacted for information regarding subject choices in the BSc degree for careers in the Teaching Profession.

## Scholarships and Bursaries

Various general and specific scholarships and bursaries are available to students of the University of Natal. For details, the Financial Aid office of the University may be contacted. The following bursaries are reserved for students in the Faculty of Science and Agriculture:

SA 4 Science & Agriculture

| TITLE | AVAILABILITY | VALUE] | APPLY TO | BY |
|---|---|---|---|---|
| Roy Muller Memorial Bursaries | For 2nd-, 3rd- or 4th-year students in Agriculture majoring in Biometry, or in Science majoring in Statistics, BScHons in Statistics or Biometry, in Pietermaritzburg | _\|No fixed \|value | }Head of Natal, Private Bag X01, Scottsville 3209 | 31 March |
| S ACyanamid Postgraduate Bursary | {First year postgraduate students in Agriculture, taking into account relevance to rural development of the project and financial need of applicant | R2500 | Head of Discipline for transmission to the Dean | 30 November |

Prizes & Medals

The following prizes and medals are awarded to students in the disciplines of the Faculty of Science and Agriculture:

| | | | | |
|---|---|---|---|---|
| Dietetics in Southern Africa: Award for Dietetics: Best Dietetic Intern Community Nutrition module mark | | | | |
| TITLE . | AVAILABILITY | VALUE | NOMINATED BY | |
| Agricultural Economics Association of South Africa (AEASA) Conference Prize | Best student in all Agricultural Economics and/or Agribusiness modules. Annual AEASA {Economics | Free Registration for \|Agricultural | Head of | |
| Association for Human Nutrition | Post Graduate Diploma in Dietetics & | R200 | Head of Dietetics & | |

Community taking approach and participation
Nutrition into account
GI Bateman Outstanding student in Book prize Head of
Memorial Prize Mathematics at level 3 or Honours Mathematics
Adolf Bayer Prize {Best level 3 Plant Ecology student [Book prize. Head of Botany
HI Behrmann Final year BScAgric, BAgricMgt |Book Prize Head of
Book Prize (Hons) or BCom(Hons) candidate Agricultural
with the best performance in Economics
Agricultural Economics 790/791 or
Agribusiness 790.
Chris Bornman Best student in Plant Physiology at |Book Prize Head of Botany

Zoology

Prize level 3

J P Boulle Best overall student in Animal Book Prize Head of Animal and
Animal Breeding Science 751 (Animal Breeding) Poultry Science
Book Prize

FWI Bridgman BSoc Sci (Comm. Resources): Trophy Board of the
Memorial Floating |most outstanding second year Faculty

Trophy student :

FWI Bridgman BSocSci (Comm. Resources): most|Book prize & {Board of the
Memorial Prize outstanding second year student _|{certificate Faculty

LR Caney Prize in |Best dissection in Zoology Book prize

Head of Zoology

{Biometry major student |

(b) Best student in level 2 Statistics

Compass Food Best Postgraduate Dietetic Intern |R200 Board of the
Services Award in Food Service Faculty
D H Davies Outstanding student in Geography |Book Prize Head of Geography
Prize at level 3
De Beersâ\200\231 Medal Best student in Physics in level 3 Medal and Head of Physics
R1000
Environment and Leadership award Book Prize Director, Centre for
Development . Environment and
Development
Environment arid Most improved student Book Prize Director, Centre for
Development â\200\231 Environment and

Development
Fedics Food Services |Final year BScDietetics student R500 Head of Dietetics &
Prize who obtains the highest average Human Nutrition
mark for the Food Service
Management modules
Food Systems Africa |Best first year Dietetics student |R1000 Head of Dietetics &
Award Human Nutrition
Geography Prize Best overall level 3 student in Book Prize Head of Geography
Geography
Geography Prize Best student in Honours Book prize Staff of Geography
Grassland Society of {Student with best average mark for |Medal Head of Grassland
Southern Africa seminar and research project at Science
Medal level 7
Kathleen Gordon- _ | Best student in Plant Systematics at}Book prize Head of Botany
Gray Prize level 3
Greytown Parish Horticultural Science: best overall {Book prize Head of
Lionel Ashfield Prize}practically oriented student in third Horticultural
or fourth year Science
Kwazulu-Natal Best student in R150 Head of Animal and
Poultry Institute Poultry Science 210 Poultry Science
Book Prize :
Merck Prize Best student in Chemistry at level |Medal and Head of Chemistry
3 R1000
Nestle Book Prize |BScDietetics: best final year R200 Board of the
student ; Faculty
Old Mutual Finance |Student with the best combined |R1000 Unit Head of
Prize average mark in Agricultural Trusts Agricultural
Economics 220 and 270. Economics
Outspan International} Best final year student in Floating Trophy }Head of
Floating Trophy Horticultural Science and cash award {Horticultural
Science
J A Pentz Best farm planning student in Bronze medal _| Board of the
Memorial Medal Agricultural Production Faculty
G V Quicke Best Biochemistry student at level |Book prize Head of
Book Prize 7 Biochemistry
A A Rayner (a) Best BScAgric candidate in Approx. cost of |Head of Biometry
Book prize Biometry 210, 222 who is not a good textbook

SA 6 Science & Agriculture
Ross Laboratories Prize | Most improved Postgraduate Dietetic Intern in Therapeutic a Nutrition | R400 | Board of the Faculty
Roussel Floating Trophy | Top second year student | BScDietetics Human Nutrition | Trophy | Head of Dietetics & Nutrition
S A Genetics Society: Hofmeyr – Van Schaik Medal | Best fourth year student in Genetics | Medal | Head of Genetics
SAICS Award for Excellence in Science | Best MSc thesis in Computer Science | Citation plus cash award | {South African Institute of Computer Science
SA Plant Breeders Association | {Best final year student in Plant Breeding | R250 | Board of the Faculty
SA Society for Animal Science prize | Best final year student in Animal Science | }R1000 | Head of Animal and Poultry Science
SA Society for Crop Production medal | BScAgric: best final year student in Crop Science | {Bronze Medal | {Board of the Faculty
SASOL Medal 2 | Best student in Chemistry at level | }Medal and R750] | Head of Chemistry
SASOL Medal 3 | Best student in Chemistry at level | Medal and R1000 | Head of Chemistry
SASOL Medal | Best student in Chemistry Honours continuing with a research degree in Chemistry | {Medal and R1500 : | Head of Chemistry
Soil Society of SA Silver Medal | Best Soil Science student at level 7 | Silver Medal | Head of Soil Science
A R Saunders medal (Farmers' Weekly) | Agriculture: dux student | {Medal | Board of the Faculty
J D Scott book prize | Most outstanding student taking the final year of the BScAgric : â\200\230degree in Grassland Science | Approx.R100 | {Board of the Faculty

Director, School of

Umgeni Water Best overall student in Masters Medal

Medal programme in Environment and Environment and
Development Development

Umgeni Water Prize |Best student in Chemical Book prize . Head of Chemistry
â\200\230Technology at level 3

Frank Warren Medal {Outstanding student in Chemistry |Bronze medal |Head of Chemistry
at level 3 or Honours

Peggy Warren Prize |Best student at level | Chemistry |Book prize Head of Chemistry

who did not do Physical Science at

School

# RULES FOR QUALIFICATIONS, DEGREES, DIPLOMAS AND CERTIFICATES

Note: 1. Students are advised that as a result of directives from the Council for Higher Education (CHE) and the South African Qualifications Authority (SAQA), established in terms of Act 58 of 1995, not all qualifications or programmes may be on offer. Students are advised to contact. Programme Directors if they are in doubt as to the availability of any particular course of study.

2. Inclusion of any programme, course of study or module in this Handbook does not imply that the Faculty of Science and Agriculture is compelled to offer it. .

3. For Rules concerning qualifications in Bio-Resources Engineering, see the Faculty of Engineering Handbook.

4. Students required to do Chemistry or Chemical Technology at level 2 in any programme must achieve a minimum mark of 55% for both CHEM131 and 132.

## Definitions

The terms used in this section and those in the section on Syllabi (content of modules), of this Handbook have the following meanings:

Module: any separate course of study for which credits may be obtained. Modules shall be designated as being at level 0, usually taken in an access programme at the University, level 1 (or 100), level 2 (or 200), level 3 (or 300), level 7 (or 700) or level 8 (or 800), the last normally taken during postgraduate studies, depending on the complexity of the material.

(1) Capstone module: a module which is designed to simultaneously assess the learner’s mastery of the skills and knowledge referred to in the learning outcomes of the programme. It specifically requires an assessment of the learner’s integration of the learning outcomes.

(2) Core module:a module, specific to the learning outcomes of the programme. Without these modules, the programme would not have an identity and the qualification from the programme could not be awarded.

(3) Elective module: these are free-choice modules in the programme, but may also be chosen to provide certain skills referred to in the learning outcomes of the programme.

(4) Foundational module: a module upon which further knowledge is built, eg Physics, Mathematics and Chemistry would be foundational for say, an Engineering or Agriculture programme. Chemistry 131 and 132 would also be foundational for a Chemistry programme (these are also referred to as fundamental modules).

Credit: the value assigned to ten (10) notional hours ulsee ih) of learning and assessment.

Credit-weighted average (CWA): the average mark per credit for several modules taken in combination and is calculated as the sum of the products of the mark and credit value for each module divided by the total number of credits summed over all modules.

Duly performed certificate: due performance (DP) of the work of a module shall be assessed by the instructor on the basis of attendance, assignments and tests. Such assessment may be qualitative (amount of work done) or quantitative or both. Individual modules have a prescribed minimum, which allows entry into the examination for that module. This is usually 40% for all modules in the Faculty of Science and Agriculture.

In exceptional circumstances, this may be 'extended' on application to and approval by the Dean, in which case the quantitative assessment is carried from one year to the next provided the original class mark is greater than 50%.

Examination: comprises all the prescribed assessments for a module including tests, assignments and the final examination.

Named qualification: a programme with a predefined purpose consisting of modules in a defined area of specialisation which leads to a certificate, diploma or degree.

Notional study hours (NSH): the learning time that it is conceived it would take an average undergraduate learner to meet the defined outcomes for the module entering with the correct level of assumed knowledge and skills (for post-graduate students higher levels of output are expected and the credit value associated with modules and qualifications at this level is only a guide).

Programme: a purposeful and structured set of learning experiences in a substantial area of specialization leading to one or more qualifications.

Rules of combination (structure of degree): rules governing the arrangement of foundation, core, capstone and elective modules, pre- and corequisites etc. which prescribe the different learning pathways available to a student on a programme leading to a qualification.

Senior years: applies to the years of study for undergraduate students who are in their second, third or fourth year of study as defined below.

Subject: related material presented over several modules at one or more levels of study.

Year of study: the level at which students are registered academically.

(1) Foundation year: applies to students who are registered for the Facultyâ\200\231s Foundation Programme;

(2) First year of study: applies to students who have not yet completed modules totalling 64 credits at level 1;

(3) Second year of study: applies to students who have completed modules totalling at least 64 credits, who have or who are registered for at least one module at a level higher than level 1, and who have not registered for modules which, if passed, will lead to the completion of a degree;

(4) Third year of study; 1) applies to students registered for a three-year programme who are registered for modules which, if passed, will lead to the completion of the qualification; and 2) to students registered for a four-year programme who have earned at least 50% of the credits for the qualification; and

(5) Fourth year of study: applies to students registered for a four-year programme who are registered for modules which, if passed, will lead to the completion of the qualification.

General Rules

SARI Qualifications.
The following degrees are conferred and diplomas and certificates awarded:

1. In Science:

Preparatory Certificate in Mathematics and Science PrepCertMathSc
Bachelor of Science BSc
Bachelor of Science Honours : ; BScHons
Master of Science MSc
Master of Science (Biological Systematics) MSc(BiolSys)
Doctor of Philosophy PhD

Doctor of Science DSc

2. In Agricultural Sciences:

Undergraduate Diploma in Sports Turf Management
Bachelor of Agriculture

Bachelor of Science in Agriculture

Bachelor of Science in Agriculture Honours

Master of Science in Agriculture

Master of Science in Agriculture

(Agricultural & Environmental Instrumentation)
Doctor of Philosophy

Doctor of Science in Agriculture

3. In Agricultural Management:

Bachelor of Agricultural Management
Bachelor of Agricultural Management Honours
Master of Agricultural Management

Doctor of Philosophy

4. In Rural Resource Management:

Bachelor of Agriculture (Rural Resource Management)
Advanced Postgraduate Diploma in Rural Resource Management
Master of Agriculture

Doctor of Philosophy

5. In Dietetics and Human Nutrition:

Bachelor of Science in Dietetics

Bachelor of Science in Human Nutrition
Postgraduate Diploma in Community Nutrition
Postgraduate Diploma in Dietetics

Master of Science in Dietetics

Master of Science in Human Nutrition

Doctor of Philosophy

6. In Community Resources:

Bachelor of Science in Consumer Studies Honours
Master of Science in Consuimer Studies
Doctor of Philosophy

7. In Food Security:

Postgraduate Diploma in Food Security
Advanced Postgraduate Diploma in Food Security
Master of Agriculture

Doctor of Philosophy

8. In Environment and Development:

Advanced Postgraduate Certificate in Environment and Development

Advanced Postgraduate Diploma in Environment and Development
Master of Environment and Development :
Doctor of Philosophy

Science & Agriculture

UGDipSportsTurfMgt
BAgric

BScAgric
BScAgricHons
MScAgric

MScAgric(AgricEnvinst)
PhD
DScAgric

BAgricMegt
BAgricMgtHons
MAgricMgt
PhD

BAgric(RRM)
AdvPGDipRRM
MAgric(RRM)
PhD

BScDiet
BScHumNut
PGDipCommunNut
PGDipDiet
MScDiet
MScHumNut

PhD

BScConsumStudHons
MScConsumStud
PhD

PGDipFoodSecur
AdvPGDipFoodSecur
MAgric(FoodSecur)
PhD

AdvPGCertEnvDev
AdvPGDipEnvDev
MEnvDev

PhD

SAR2 Applicability of common rules.

(1) The Common Rules of the University shall be of effect where applicable.
(2) All candidates for degrees, diplomas and certificates offered in this Faculty are subject to the rules contained in this section of the Handbook. Any exceptions, other than those specified below, require the approval of the Senate.

SAR3 Entrance.

(1) Unless specified otherwise, candidates shall be eligible to register for undergraduate qualifications provided they have previously obtained passes of at least E (40%) at the higher grade (or C (60%) at the standard grade) in Mathematics, and a pass of at least E (40%) at the higher grade (or C (60%) at standard grade) in one of Physical Science, Biology or Agricultural Science in the Senior Certificate or equivalent examination.

(2) A candidate who has not met the requirements set out above may, in certain circumstances, be registered in the Science Foundation Programme (SFP) and shall be required to obtain credits at level 0 in addition to the numbers of credits specified for the qualification sought; this will result in the duration of the programme being extended by one year.

(3) The Senate may refuse to register a candidate for any postgraduate qualification if the standard of proficiency previously attained by the candidate in the relevant area is, in its opinion, not sufficiently high.

SAR4 Completion of a module.
A module is completed by passing the examination (see Definitions) prescribed for that module with a minimum mark of 50%.

SARS Module credits.

A candidate shall, on: meeting all pre- and corequisite requirements (see SAR9) and on passing the examination prescribed for a module, receive the credits listed for that module under its syllabus.

SAR6 Duration and structure of the curriculum.

The curriculum for a qualification shall extend over the period specified in the Rules, and candidates must obtain at least the prescribed number of credits and complete the specified combinations of modules to complete the qualification. :

SAR7 Maximum number of credits registered.

Unless otherwise specified, or with the permission of the Dean, a candidate shall not register for modules totalling more than:

(1) 64 credits per semester in the first two semesters of registration.

(2) 72 credits per semester subsequent to the first two semesters of registration.

SAR8 Choice of programme.

On first registering in the senior years of an undergraduate programme or for a postgraduate qualification, candidates must nominate the intended subject or area of specialisation. Should candidates wish at any time to change the nominated programme, they may do so only with the permission of the Dean.

SAR9 Prerequisite and corequisite modules.

(1) A prerequisite module is a module in which a student has met all the requirements for the granting of a supplementary examination or such higher mark as may be prescribed by the Board of the Faculty, before admission to the module for which it is a prerequisite.

(2) A corequisite module is a module in which the examination must be written prior to or in the same semester as the module for which it is prescribed as a corequisite.

No candidate shall be permitted to register for any module unless the prerequisite requirements have been met, and the candidate is in a position to comply with the corequisite requirements for that module. All pre- and corequisite modules must be completed (see SAR4) before the credits for a module may be accepted for the qualification concerned.

Note: The pre- and corequisite requirements for each module are listed with its syllabu
s. If
module A is a prerequisite (or corequisite) for module B, and module B is a prerequisit
e (or

corequisite) for module C, then module A is automatically a prerequisite (or corequisit
e) for
module C.

SAR10 Practical work or project work. ;

Candidates may be required, for specific modules, to spend such periods during vacations as may be determined by the Board of the Faculty in carrying out practical work under the guidance of an appointed supervisor.

SAR11 Exemption from modules completed towards another qualification.

(1) Candidates may, subject to the approval of the Senate, and in terms of Rule R19 or R20, receive exemption from a maximum of 50% of the credits towards a qualification for modules completed either at another recognised institution of higher education or towards another qualification of the University, and shall be required to attend as a registered student of the University for at least four semesters.

(2) Candidates who have obtained credit for modules completed at another recognised institution of higher education prior to having obtained a matriculation exemption or equivalent access requirement for entrance into the University, shall not obtain credit for such modules towards a qualification of the University.

SAR12 Permission to enter for any examination. .

Candidates shall not be allowed to present themselves for final examination in any module unless the prescribed minimum standard (usually at least 40%) in the class work of such module, as approved by the Board of the Faculty, has been attained (see also the definition of Duly performed certificate).

SAR13 Oral examination.

Candidates for examination in any module may be required to present

themselves for oral examination in addition to such written and practical examinations as may be prescribed for that module.

SAR14 Supplementary examinations.

(1) With the exception of level-0, Honours and Masters modules or where otherwise specified, a candidate who has failed any module with a mark that is not less than 40% shall â\200\230be permitted to write a supplementary examination in such module. :

(2) A candidate who fails in any module other than those provided for in paragraph (1) above, shall not be admitted to a supplementary examination except by permission of the Board of the Faculty under such conditions as may be approved by the Senate from time to time.

(3) A candidate who fails to write a supplementary or special examination during the examination session specified for that examination shall forfeit the right to such examination.

(4) If the failed module, for which a Duly Performed Certificate has been granted, is the outstanding module to complete a qualification, the candidate may be granted a supplementary examination by the Board of the Faculty.

SAR15 Medium of instruction.
The medium of instruction shall be English.

SAR16 Distinction.

Certificates and diplomas may be awarded with distinction. Undergraduate degrees may be conferred summa cum laude, or cum laude, or with a distinction in the major subject or area of specialization. Honours and Masters degrees may be conferred cum laude. All awards of distinction are subject to criteria approved by the Senate.

SARI17 Progression and Exclusion.

(1) Candidates may not (a) proceed to any level-2 module until they have obtained at least 64 credits for modules at level 1; and (b) proceed to any level-3 module until they have obtained at least 128 credits, including at least 32 credits at level 2.

(2) Undergraduate candidates who fail to maintain the minimum rate of progress shown in.the table below or who, at the end of any semester, are not able to propose a future curriculum acceptable to the Board of the Faculty which will allow them to achieve this minimum rate of progress, may be refused readmission to the Faculty.

Number of semesters of | Minimum number of credits | Minimum number of credits

full-time study completed Normal curriculum Extended curricula including Science Foundation Programme
96
(at least 72 at level 0)
128
(at least 24 at level 2)
6 192 224
(at least 48 at level 2 or 3) __ (at least 24 at level 2)
7 240 272
(at least 96 at levels 2 and 3, (at least 48 at level 2 or 3) including at least 16 at level 3)
8 288 320
(at least 160 at levels (at least 96 at levels 2 and 3, 2 and 3) including at least 16 at level 3)
9 336 352
(at least 48 at level 3) (at least 160 at levels 2 and 3)
10 384 392
(3-year qualification complete) (at least 48 at level 3)
(at least 96 at level 3)
512
ear qualification complete)

Note: 1. If refused readmission to the Faculty, candidates may apply, on the prescribed form, to be readmitted. Readmission will be granted in special circumstances and additional targets or conditions may be specified.

2. Periods of study in other faculties or at other universities may be taken into account when calculating the number of semesters completed.

3. Students in the SFP programme must achieve, by the end of the first semester, all of the following: 1) at least 40% for each of two level-0 modules; 2) at least 35% for MATHO10, and 3) an average of 40% for all level-0 modules. .

4. Part-time students may be permitted an additional two semesters to complete a qualification.

(3) Except with permission of the Dean, any candidate who (i) fails the level-O0 module in Mathematics (MATH010); or (ii) fails any other level-0 modules worth a total of more than 24 credits within two consecutive semesters; or (iii) fails to attend at least 90% of the timeabled SFP

counselling workshops, will be refused readmission to the Faculty; candidates are not permitted to repeat level-0 modules.

(4) Notwithstanding the above provisions, Rule R8 is of effect.

(5) On the recommendation of the Board of the Faculty postgraduate

candidates who do not perform satisfactorily may not be permitted to continue.

SAR18 Completion of Masters degrees.

1) Unless. specified otherwise, all Masters degrees (in any area of specialisation), by course work, or dissertation, shall be conferred if the candidate has obtained a mark of at least 50% in each of the modules, including a research project, specified for the programme.

(2) In the case of a Masters by course work the research-project module shall be worth at least one-quarter and the course-work modules at least half of the credits specified for the programme. No component may be repeated, but where a candidate has obtained a credit-weighted average final mark of at least 50% for all of the modules that make up the curriculum and has failed credit-bearing course-work modules totalling no more than 16 credits, with marks of at least 40% in each such module, such failures may be condoned without affecting the final mark referred to above, and such students will be exempted with credit for each failed module.

(3) In the case of a Masters by dissertation the research project shall be worth at least three-quarters and the course-work modules at most one-quarter of the credits specified for the programme.

(4) Any corequisite or prerequisite modules, specified to meet deficiencies in the candidateâ\200\231s prior training, will not be included in the calculation referre d
to above nor impact the award of distinction.

Degree of Bachelor of Science

SP1 Applicability of other rules.
Rules SARI to SARI7 for the Faculty of Science and Agriculture shall be of effect, where applicable, for the degree of Bachelor of Science.

SP2 Structure of the degree.

In order to complete the degree, a candidate shall obtain not less than 384 credits and qualify in at least one major subject from list (a) below (see SP3). At least 352 credits, at levels 1 to 3, shall be in subjects chosen from list (a) or other subjects, (see (b) below), for which the following minimum credits apply: 200 for modules at levels 1 and 2 (including 96 at level 2) and 128 for modules at level 3

SA 16 Science & Agriculture

(a) Major subjects (b) Other subjects

Applied Mathematics Academic Communication Studies
Biochemistry :

Botany Any module in a subject offered in the
Business Information Systems Faculty of Science & Agriculture, for which
Chemistry the prerequisites have been met and is
Computer Science approved by the Dean.

Economics

Entomology

Ethnobotany

Genetics

Geography

Grassland Science

Hydrology

Mathematics

Microbiology j

Physics S
Plant Molecular Biology

Plant Pathology

Psychology

Soil Science

Statistics

Zoology

Note: 1. Candidates are warned that not all possible combinations of modules at level 3 to make up the required credits beyond those for the major subject may be accepted by the Senate.

2. Modules in subjects outside the Faculty, other than those listed above, up to the value of 32 credits, as approved by the Dean, may be included in the curriculum for the degree. :

3. Credit cannot be obtained for more than one module the contents of which are substantially the same or broadly overlapping, such as:

AGRI210 and CSCI103
AGRI210 and BISS111
BCHM380 and BCHM313 and/or 320
BISS111 and CSCI131
CHEM131 and/or 132 and CHEMI21 and/or 122
CSCI103 and BISS111
CSCI103 and CSCI131
CSCI141 and BISS221
EDEL713 and EDEL714
PEC1101 and PEC1301
PEC1202 and PEC1402

PEC1301 and PEC1101
ENTO202 and ENTO204
GEOG322 and GEOG326
HYDR311 and HYDR310
MATHI10 and MATHIII, 112 or 113
MATHI1I1 and MATHI12 or 113

MATHI12 and MATHI1I3
MATHI120 and MATHI21
MATH122 and MATHI120 or 121
MICR310 and MICR316
PHYSII1 and PHYS121
PHYS112 and PHYS122
SSCI212 and SSCI217
STATII0 and BMET210
STATIO! and STAT1I10 or BMET210
STATI12 and STATIOI and/or 110 or BMET210

Note: Students may obtain credit for BISSI 11 (or CSCI103) and CSCI/31, provided the former is passed before CSC1131.

4. Exemption without credit is automatically given if the material for one required module is broadly contained in another:

A pass in CSCII03 gives exemption without credit for AGRI210
A pass in CSCI131 gives exemption without credit for AGRI210
A pass in CSCI131 gives exemption without credit for CSCI103
A pass in ENTO202 gives exemption without credit for ENTO204
A pass in MATHI10 gives exemption without credit for MATH111
A pass in MATH120 gives exemption without credit for MATH122
A pass in PHYS111 gives exemption without credit for PHYS121
A pass in PHYS121 gives exemption without credit for PHYS122
A pass in STATI10 gives exemption without credit for STAT101

SP3 Rules of combination for major subjects (structure of degree).

The following rules of combination for major subjects apply (see also SP2)(numbers in parentheses refer to credits):

1. Applied Mathematics: MATH110 (16), 120 (16); 213 (8), 215 (8), 224 (8), 232 (8), 242 (8), 255 (8); 353 (16), 361 (16), 371 (16), (MATH322 (16) or 330 (16) or STAT322 (16)).

2. Biochemistry: BIOS101 (16), 102 (16); CSCI103 (8); CHEM131 (16), 132 (16); MATHI11 (8), 122 (8); PHYS 111 (16); AGRI210 (1), 220 (1); BCHM213 (16), 232 (16C), 242 (16C); CHEM221 (16), BCHM313 (16), 322 (16), 325 (8), 326 (8), 328 (8); GENE327 (8).

3. Botany: (BIORII8 (8) or EART122 (8)); BIOSIO1 (16), 102 (16); CHEM131 (16); CSCI103 (8); MATHI11 (8), 122 (8); (PHYS121 (16) or PHYS111 (16)). AGRI210 (1), 220 (1); BMET210 (16); BOTY201 (8), 202 (8), 203 (8), 204 (8); EBOT202 (8); ECOL211 (8); ETHI202 (8). BOTY301 (16); BIOS302 (8), 306 (8); ECOL311 (8); PMBP301 (8), 302 (8), 304 (8).

4. Business Information Systems: BISS111 (16), 121 (16); ECON110 (16), 120 (16); MATH110 (16), 120 (16); STAT110 (16), 120 (16). BISS213 (16), 221 (16); 32 credits from ECON211 (8), 212 (8), 213 (8), 221 (8), 223 (8); BISS311 (16), 312 (16), 321 (16), 322 (16).

5. Chemistry: CHEM131 (16), 132 (16); MATH110 (16), 120 (16) (MATHII1 (8), 122 (8); STATIOI (8) & CSCI103 (8) may replace MATHI110, 120); PHYS111 (16) (or PHYS121 with a mark of 60% or above), 112 (16). CHEM212 (16), 221(16), 231(16). CHEM311(16), 312 (16), 321 (16), 322 (16). CTEC212 strongly recommended but not compulsory.

6. Computer Science: CSCI131 (16), 141 (16); MATH110 (16), 120 (16), CSCI215 (16), 223 (16), 224 (16); MATH211 (8), (MATH215 (8) or STAT210 (16)). CSCI313 (16), 315 (16), 323 (16), 325 (16).

7. Economics: ((PEC1102 (16), 1202 (16)) or (PEC1301 (16), 1402 (16)) each with a mark of at least 60%; PEC2111 (8), (PEC2121 (8) or 2131 (8)), 2212 (8), 2232 (8); any four of PEC3101 (16), 3202 (16), 3301 (16), 3401 (16), 3502 (16), 3602 (16).

8. Entomology: (BIORI18 (8) or EART122 (8)); BIOS101 (16), 102 (16); CHEM131 (16); CSCI103 (8); MATHI11 (8), 122 (8); (PHYS121 (16) or PHYS111 (16)). AGRI210 (1), 220 (1); BIOS202 (8); BMET210 (16); ECOL211 (8); ENTO202 (16); ETHI202 (8); ZOOL201 (16). AGPS308 (16); BIOS304 (8); 16C from (BIOS302 (8), 306 (8), ECOL302 (8)), ECOL311 (8); ENTO301 (8); ZOOL301 (8).

9. Ethnobotany: (BIORI18 (8) or EART122 (8)); BIOS101 (16), 102 (16); CHEM131 (16); CSCI103 (8); MATH111 (8), 122 (8); (PHYS121 (16) or PHYS111 (16)). AGRI210 (1), 220 (1); BMET210 (16); BOTY201 (8), 202 (8), 203 (8), 204 (8); EBOT202 (8); ECOL211 (8); ETHI202 (8). BIOS302 (8); BOTY301 (16); EBOT301 (16); ECOL311 (8); PMBP301 (8), 302 (8).

10. Genetics: BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI 103 (8); MATH111 (8), 122 (8); PHYS121 (16)); BMET210 (16); GENE213 (16), 222 (16), 226 (8), 230 (8); 319 (8), 325 (8), 327 (8), 332 (8), 342 (8), 360 (8); 16C from AGPS306 (16); GENE322 (8), 328 (8), 350 (16).

11. Geography: CHEM131(16); PHYS121 (16); BIOS101 (16); CSCI103 (8); MATH111 (8), 122 (8); GEOG113 (8), 114 (8), 122 (8), 124 (8); 24C from level 1 selected in consultation with the programme director and approved by the Dean. AGRI220 (1); GEOG222 (8); 24C from (ECOL201 (8), GEOG213 (8), 216 (8), 217 (16)). GEOG322 (16). 48C from GEOG311 (16), 316 (16), 319 (16), 325 (16), 329 (16).

12. Geology To gain acceptance to second year Geology modules on the Durban campus, students must have the required number of first year credits to enter second year and must have passed the following modules:

BIOR118 (8), EART122 (8), 124 (8), GEOG114 (8) with an average of 60% for EART122, 124.

Major only offered on the Durban campus.

13. Grassland Science: BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); MATHI111 (8), 122 (8); PHYS121 (16); CSCI103 (8); 24C from-level 1 selected in consultation with the Programme Director and: approved by the

Dean. AGRI210 (1), 220 (1); BMET210 (16), ECOL211 (8), ECOL212 (8) GRAS211 (8), 226 (8), 228 (8), ECOL201 (8); SSCI217 (16). GRAS312 (24), 343 (8); ECOL311 (8). â\200\230

14. Hydrology: BIOS101 (16), CHEM131 (16), CSCI103 (8); GEOG122 (8), 124 (8); MATHI11 (8), 122 (8); PHYS121 (16) or equivalent modules acceptable to the Dean. AGRI210 (1), 220 (1); HYDR210 (16), 220 (16). HYDR310 (16), 312 (8), 320 (16), 321 (8), 322 (8).

15. Mathematics: MATHI1 10 (16), 120 (16); 211 (8), 213 (8), 222 (8), 224 (8); 310 (16), 340 (16) at least two of MATH322 (16), 330 (16), 353 (16).

16. Microbiology: BIOS101 (16); BIOS102 (16); CHEM131 (16), 132 (16); CSCI103 (8), MATHI11 (8), 122 (8); PHYS121 (16), 24C at level 1, selected in consultation with the programme director and approved by the Dean. AGRI210 (1), 220 (1); (BCHM213 (16) or CHEM221 (16)); (BCHM24?2 (16) or CHEM212 (16)); BACT220 (8), 222 (8); GENE226 (8); PPTH222 (8); MYCO211 (8); MICR320 (16), 350 (16), 360(16); VIRO320 (16).

17. Physics: MATH110 (16), 120 (16); PHYS111 (16) (or PHYS121 with a mark of 60% or above), 112 (16); PHYS211 (16), 212 (16); PHYS311 (16), 312 (16), 321 (16), 322 (16). CPHY211 strongly recommended.

18. Plant Molecular Biology: (BIORI18 (8) or EART122 (8)); BIOS101 (16), 102 (16); CHEM131 (16); CSCI103 (8); MATH111 (8), 122 (8); (PHYS121 (16) or PHYS111 (16)). AGRI210 (1), 220 (1); BMET210 (16); BOTY201 (8), 202 (8), 203 (8), 204 (8); EBOT202 (8); ECOL211 (8); ETHI202 (8). BOTY301 (16); ECOL311 (8); PMBP301 (8), 302 (8), 304 (8), 306 (8), 308 (8).

19. Plant Pathology: BIOS101 (16); BIOS102 (16); CHEM131 (16), 132 (16); CSCI103 (8); MATHI11 (8) 122 (8); PHYS121 (16), 24C at level 1, selected in consultation with the programme director and approved by the Dean; AGRI210 (1), 220 (1); MYCO211 (8); PPTH222 (8). MICR310 (16); PPTH3 10 (8), 320 (8), 330 (16); VIRO320 (16).

20. Psychology: PPG1102 (16), 1202 (16); 2011 (16), 32C from PPG2032 (16), 2041 (16), 208M (16), 209M (16), 2061 (16); PPG3012 (16); 48C from PPG3021 (16), 3031 (16), 3041 (16), 3052 (16), 3062 (16).

21. Soil Science: BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103 (8); MATHI111 (8), 122 (8); PHYS121 (16), 24C at level 1, selected in consultation with the programme director and approved by the Dean. AGRI210 (1), 220 (1); SSCI217 (16), 230 (16). AGPS301 (16); SSCI320 (16), 351 (8), 352 (8), 371 (8), 372 (8).

22. Statistics: MATH110 (16), 120 (16). MATH213 (8), 224 (8); STAT210 (16), 220 (16). BMET314 (8), 316 (8); STAT311 (16), 322 (16), 325 (16).

23. Zoology: (BIORI18 (8) or EART122 (8)); BIOSI01 (16), 102 (16); CHEM131 (16); CSCI103 (8); MATH111 (8), 122 (8); (PHYS121 (16) or PHYSI11 (16)). AGRI210 (1), 220 (1); BIOS202 (8); BMET210 (16); ECOL211 (8); ETHI202 (8); ZOOL201 (16), 206 (16). BIOS304 (8), 306 (8); 8C from (BIOS302 (8), ECOL302 (8)); ECOL311 (8); ZOOL301 (8), 302 (16), 303 (8).

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SP4 Transferability of credits from another institution.

A candidate may not include among the 128 credits at level 3 prescribed in terms of Rule SP2, credits for modules in a subject passed at equivalent level towards the requirements of a qualification obtained in another faculty or university.

Degree of Bachelor of Science with Specified Curricula

SQ] Applicability of other rules.

Rules SARI to SARI7 for the Faculty of Science and Agriculture shall be of effect, where applicable, or the degrees of Bachelor of Seer with Specified Curricula.

SQ2 Structure of the degree.

In order to complete the degree, a candidate shall obtain not less than 384 credits and shall complete the modules as prescribed for the degree. Except with the approval of the Senate, the following minimum credits apply: 96 for modules at level 3, 224 for modules at levels 2 and 3, and 200 for modules at levels 1 and 2. !
SQ3 Rules of combination (structure of degree).

Candidates will elect to undertake one of the programmes for which the rules of combination follow (numbers in parentheses refer to credits):

1. Applied Environmental Sciences (386C)

Required: BIOR118 (8); (BIOR130 (8) or EART124 (8)); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103 (8); EART122 (8); MATHI111 (8), 122 (8); PHYS121 (16), 122 (8). AGRI210 (1), 220 (1); PLAIAG2 (16); AMET210 (16); GEOG114 (8), 222 (8); GRAS211 (8); HYDR210 (16); MICR212 (8); SSCI217 (16), 230 (16). BMET210 (16); ESCI390 (16); GEOG322 (16); HYDR322 (8); MICR310 (16); SSCI351 (8), 371 (8), 372 (8).

Electives: 40C at levels 2 or 3 from AMET211 (8); BCHM213 (16); BMET222 (16); BOTY201 (8); CHEM212 (16), 221 (16), 231 (16); CTEC212 (16); AGPS303 (8); EBOT301 (16); FORT311 (16); GRAS226 (8); HYDR310 (16) or modules selected in consultation with the Programme Director and approved by the Dean.

2. Biomolecular Technology (385C)

Required: BIOS101 (16); CSCI103 (8); CHEM131 (16), 132 (16); MATH111 (8), 122 (8); PHYSI21 (16), 122 (8); STATI01 (8). AGRI220 (1); BACT220 (8), 222 (8); BCHM213 (16), 232 (16); CHEM212 (16), 221 (16); GENE213 (16), 226 (8); MYCO211 (8). BCHM313 (16), 320 (8), 325 (8), 326 (8), 360 (8), 370 (8); GENE325 (8); 327 (8); 334 (8), 360 (8); MICR350 (16), 360 (16); PMBP301 (8).

Electives: 24C at level 1 selected in consultation with the Programme Director and approved by the Dean.

3. Chemical Technology (384C)

Required: CHEM131 (16), 132 (16); MATH110 (16), 120 (16) (MATH111 (8), 122 (8); STATIO1 (8) & CSCI103 (8) may replace MATH110, 120); PHYS111 (16), 112 (16). CHEM212 (16), 221 (16), 231 (16); CTEC212 (16). CHEM311 (16), 312 (16), 321 (16), 322 (16); CTEC311 (16), 312 (16), 321 (16), 322 (16).

Electives: at least 32C at level 1 and at least 64C at level 2 selected in consultation with Programme Director and approved by the Dean.

4. Computational Physics (384C)

Required: MATH110 (16), 120 (16); CSCI131 (16), 141 (16); PHYSI11 (16), 112 (16); CPHY211 (16), 212 (16); PHYS211 (16), 212 (16); CPHY311 (8), 312 (8), 321 (8), 322 (8); PHYS311 (16), 312 (16), 321 (16), 322 (16).
Electives: 32C at level 1 but consistent with electives chosen at levels 2 and 3; MATH213 (8), 224 (8) or 16C of Mathematics at level 2 and 48C chosen freely at level 2 but consistent with electives chosen at level 3; 32C of Computer Science, Mathematics or Statistics at level 3 selected in consultation with Programme Director and approved by the Dean.

5. Ecological Sciences (386C)

Required: (BIOR118 (8) or EART122 (8)); BIOS101 (16), 102 (16); CHEM131 (16); CSCI103 (8); GEOG113 (8), 114 (8), 122 (8); MATHI111 (8), 122 (8); (PHYS121 (16) or PHYSI11 (16)). AGRI220 (1); BMET210 (16); ECOL201 (8), 211 (8), 212 (8); ETHI202 (8); GEQG222 (8); GRAS211 (8), 226 (8); SSCI217 (16). ECOL311 (8); GEOG322 (16); GRAS343 (8).

Electives: Up to. 8C selected in consultation with the relevant Programme Director and approved by the Dean.

Note: Students wishing to continue to BScHons in Ecology and Conservation Biology, Resource Ecology or Wildlife Science must ensure that they take the appropriate elective modules, specified below:

(a) Ecology and Conservation Biology Stream: BIOS202 (8); BOTY201 (8), 203 (8); ENTO204 (8); ZOOL201 (16); 8C from (BOTY202 (8), 204 (8), GRAS228 (8)); ZOOL206 (16). BIOS302 (8), 304 (8), 306 (8), ECOL302 (8), 312 (8); ZOOL301 (8), 302 (16).

(b) Resource Ecology Stream: AMET210 (16), 211 (8); BOTY201 (8); GRAS228 (8); HYDR210 (16); SSCI230 (16). ECOL302 (8), 312 (8); GEOG329 (16); GRAS312 (24).

(c) Wildlife Science Stream: AGEC210 (16); BOTY204 (8); GENE213 (16); GRAS228 (8); ZOOL206 (16). GENE350 (16); GRAS312 (24); SOCI380 (16); WILD301 (8); (ZOOL301 (8) or 303 (8)).

6. Geographical Sciences (386C)

(a) Environmental Management & Development Stream

Required: BIOR118 (8), 130 (8); EART122 (8); GEOG113 (8), 114 (8), 122 (8), 124 (8); PSO1101 (16); RRMG112 (16); STATI01 (8); CSCI103 (8). AGRI220 (1); CRMS230 (16): ETHI202 (8); ECOL201 (8); GEOG213

(8), 216 (8), 217 (16), 222.(8). GEOG322 (16); PSO3801 (16); 48C from GEOG311 (16), 316 (16), 319 (16), 325 (16), 329 (16); PSO3301 (16). Electives: 24C at level 1 from CRMS120 (8), 130 (8); PEC1I011 (16); PPG1102 (16); PPH1202 (16), and other modules at level 1 including a language; 56C at level 2 selected in consultation with the –Programme Director and approved by the Dean. 32C at level 3 selected in consultation with the Programme Director and approved by the Dean.

(b) Natural Environment Stream : â\200\230

Required: BIOR1I18 (8), 130 (8); CHEM131 (16); EART122 (8); GEOG113 (8), 114 (8), 122 (8), 124 (8); MATHI111 (8), 122 (8); PHYS121 (16); STAT101 (8); CSCI103 (8). AGRI220 (1); AMET210 (16), 211 (8); ECOL201 (8); GEOG213 (8), 216 (8), 217 (16), 222 (8). GEOG322 (16); PSO3801 (8); 48C from GEOG311 (16), 316 (16), 319 (16), 325 (16), 329 (16).

Electives: 16C at level 1 from BIOS102 (8); EART124 (8); RRMG112 (16); CRMS120 (8), 130 (8); 56C at level 2 from BIOS202 (8); ETHI202 (8); GRAS211 (8); HYDR210 (16), 220 (8); SSCI217 (16), 230 (16); 48C at level 3 from modules selected in consultation with the Programme Director and approved by the Dean.

7. Industrial Bioprocessing Technology (384C)

Required: BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); (PHYS111 (16) or PHYS121 (16)); (MATH110 (16) or (MATHI111 (8); CSCI103 (8))); (PHYS112 (16) or PHYS122 (8) and 8C at level 1); (MATH120 (16) or MATH122 (8); STAT101 (8)). BACT220 (8), 222 (8), BCHM213 (16), 232 (16); CHEM212 (16), 221 (16); CTEC212 (16); GENE213 (16), 226 (16); MYCO211 (8). BCHM380 (16); CHEM331 (8); CTEC312 (16), 321 (16); GENE327 (8); MICR310 (16), 320 (16), 350 (16), 360 (16).

8. Information Technology (384C)

Required: BISS121 (16), CSCI131 (16), 141 (16); MATH110 (16), 120 (16), BISS213 (16). CSCI215 (16), 223 (16) 224(16); MATH211 (8), (MATH215 (8) or STAT210 (16)). BISS311 (16), 312 (16), 321 (16), 322 (16); CSCI313 (16), 315 (16), 323 (16), 325 (16).

Electives: 96C in accordance with rule SQ2.

9. Mathematical Sciences (384C)

(a) Applied Mathematics Stream

Required: CSCI131 (16), 141 (16); MATH110 (16), 120 (16); STAT110 (16), 120 (16); (CSCI223 (16) or STAT220 (16); MATH211 (8), 213 (8), 215 (8), 222 (8), 224 (8), 232 (8), 242 (8), 255 (8); STAT210 (16). MATH353 (16), 361 (16), 371 (16).

Electives: 32C at level 1; at least 32C at level 2; at least 16C at level 3 from (MATH322 (16), 330 (16) or STAT322 (16)); up to 64C at level 3 from BMET314 (8), 316 (8); CSCI313 (16), 315 –(16), 323 (16), 325 (16); MATH310 (16), 340 (16); STAT311 (16), 325 (16).

(6) Computer Science Stream

Required: CSCI131 (16), 141 (16); MATH110 (16), 120 (16); STAT110 (16), 120 (16). CSCI215 (16), 223 (16), 224 (16); MATH211 (8), 213 (8), 215 (8), 224 (8), 232 (8), 242. (8); (MATH222 (8) or STAT220 (16)); STAT210 (16). CSCI313 (16), 315 (16), 323 (16), 325 (16).

Electives: 32C at level 1; up to 8C at level 2 from MATH222 (8); STAT220 (16). 64C at level 3 from BMET314 (8), BMET316 (8), MATH332 (16), 330 (16), 340 (16), 353 (16), 361 (16), 371 (16); STAT311 (16), 322 (16), 325 (16).

(c) Mathematics Stream

Required: CSCI131 (16), 141 (16); MATH110 (16), 120 (16); STAT110 (16), 120 (16). MATH211 (8), 213 (8), 215 (8), 222 (8), 224 (8), 232 (8), 242 (8); STAT210 (16). MATH310 (16), 340 (16).

Electives: 32â\202¬ at level 1; at least 56C at level 2 from CSCI215 (16), 223 (16); MATH255 (8); STAT220 (16); at least 32C at level 3 from MATH322 (16), 330 (16), 353 (16); up to 64C at level 3 from BMET314 (8), 316 (8); CSCI3 13 (16), 315 (16), 323 (16), 325 (16); MATH361 (16); STAT311 (16), STAT322 (16), 325 (16).

(d) Statistics Stream

Required: CSCI131 (16), 141 (16); MATH110 (16), 120 (16); STAT110 (16), 120 (16). MATH211 (8), 213 (8), 215 (8), 224 (8), 232 (8), 242 (8); STAT210 (16), 220 (16). BMET314 (8), 316 (8); STAT311 (16), 322 (16), 8251 (6) sae

Electives: 32C at level 1; at least 48C at level 2 from CSCI215 (16), 223 (16); MATH222 (8), 255 (8); 64C at level 3 from CSCI313 (16), 315 (16), 323 (16), 325 (16); MATH310 (16), 322 (16), 330 (16), 340 (16), 353 (16), 361 (16), 371 (16).

10. Microbiology (Environmental) (386C)

Required: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); EART122 (8); MATHI11 (8), 122 (8); PHYS121 (16), 122 (8). AGRI210 (1), 220 (1); BACT220 (8), 222 (8); BCHM213 (16), 232 (16), 325 (8); MYCO211 (8), GEOG222 (8); PPTH222 (8). MICR310 (16), 320 (16), 350 (16); VIRO320 (16).

Electives: 112C selected in consultation with the Programme Director and approved by the Dean. :

11. Microbiology (Industrial) (386C)

Required: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); EART122 (8); MATHI11 (8) 122 (8); PHYS121 (16), 122 (8). AGRI210 (1), 220 (1); BACT220 (8), 222 (8); BCHM213 (16), 232 (16); MYCO211 (8), PPTH222 (8). MICR320 (16), 350 (16), 360 (16); VIRO320 (16).

Electives: 128C from CHEM212 (16), 221 (16) and modules selected in consultation with the Programme Director and approved by the Dean.

12. Operations Research (384)

Required: MATH110 (16), 120 (16), 213 (8), 215 (8), 255 (8), 224 (8), 232 (8), 242 (8); 322 (16), 353 (16), 361 (16), 371 (16). STAT110 (16), 120 (16), 210 (16), 220 (16); 311 (16), 322 (16), 325 (16). BMET314 (8), 316 (8). Electives: 112C in accordance with Rule SQ2, selected in consultation with the Programme Director and approved by the Dean.

Degree of Bachelor of Science Honours

SHI Eligibility.

No candidate may be admitted to any module for the degree of SE of Science Honours until he or she has:

(1) a Bachelor of Science of the University or a graduate of another recognized university who has been admitted to the status thereof: or

(2) a person who has been admitted by permission of the Senate in terms of Rule R33 as a candidate for the degree.

SH2 Applicability of other rules. :

Rules SAR] to SARI7 for the Faculty of Science and Agriculture and Common Rules R24(2), R25 and R26 shall be of effect, where applicable, for the degree of Bachelor of Science Honours.

SH3 Structure of the degree.

In order to complete the degree, a candidate shall obtain not less than 128 credits, at least 112 of which shall be at level 7, and shall complete the modules as prescribed for the degree.

SH4 Subject of study.

(1) A candidate for the degree shall pursue a programme of advanced study in a subject approved by the Senate.

(2) Except with the permission of the Senate, the subject of an Honours programme shall be one in which the candidate has completed, during the BSc curriculum, all prerequisite modules for entry to that Honours programme.

SHS5 Rules of combination (structure of degree).

Candidates will elect to undertake one of the programmes for which the rules of combination follow (numbers in parentheses refer to credits):

1. Applied Environmental Sciences (128C)

Prerequisites: Completion of a major in Applied Environmental Sciences (see SQ3) or relevant undergraduate degree approved by the Dean.

Required: ESCI790 (64).

Electives: 64C from modules selected in consultation with EXO BENING Director and approved by the Dean.

2. Applied Mathematics (128C)

Prerequisites: Completion of a major in Applied Mathematics with a credit-weighted average of 65% in the third level Applied Mathematics modules (see SP3) or with permission of the Head of School.

Required: AMAT715 (16), 725 (16), 731 (16).

Electives: 80C from AMAT735 (8), 740 (16), 745 (16), 751 (8), 755 (16), 760 (16), 765 (16), 775 (16) or other modules selected in consultation with Programme Director and approved by the Dean.

3. Biochemistry (128C)

Prerequisites: Completion of a major in Biochemistry (see SP3).

Required: BCHM720 (64), 725 (24), 727 (32).

Electives: 8C from SCED701 (8) or other modules selected in consultation with the Programme Director and approved by the Dean.

4. Biometry (128C) 3

Prerequisites: Completion of a major in Statistics with a credit-weighted average of 65% in the. third level Statistics and Biometry courses (see SP3); or a Bachelor of Science in Agriculture degree (see Ag3) with the modules: MATH110 (16), 120 (16). BMET210 (16), 222 (16); MATH213 (8); STAT210 (16), BMET314 (8), 316 (8) and with a credit-weighted average of 65% in those modules, or with the permission of the Head of School.

Required: STAT720 (16), 730 (16), 740 (16), 750 (8), 770 (16), 780 (16), 790 (24).

Electives: 16C from-STAT710 (16), 722 (16), 760 (16), 792 (16) or other modules selected in consultation with the Programme Director and approved by the Dean.

5, Biomolecular Technology (128C)

Prerequisites: Completion of the BSc(Biomolecular Technology) including applicable elective modules (see SQ3).

Required: MCBS707 oe 709 (8), 711 (16), 722 (8); (BCHM720 (64) or GENE702 (64)).

6. Botany (128C)

Prerequisites: Completion of a major in Botany (see SP3).

Required: BIOS701 (16), 702 (8), 704 (8), 705 (8); BOT Y703 (8), 790 (64).
Electives: 16C from BIOS703 (8), BOTY701 (8), 702 (8); PMPB701 (8) or other modules selected in consultation with Programme Director and approved by the Dean.

7. Chemistry (128C)

Prerequisites: Completion of a major in Chemistry (see SP3).

Required: CHEM711 (32), 712 (32), 791 (32), 792 (32).

8. Chemical Technology (128C)

Prerequisites: Completion of the BSc(Chemical Technology) including applicable elective modules (see SQ3) or an equivalent qualification as

approved by the Dean.

Required: CTEC711 (16), 722 (24), 731 (24), 741(8), 742 (8), 762 (8), 790 (40).

9. Cognitive Science (128C)

Prerequisites: Completion of a major in Psychology (see SP3) or with a relevant major approved by the Dean.

Required: PCG7101 (32), 7201 (32), 7202 (32), 7202 (32).

10. Computer Science (128C)

Prerequisites: Completion of a major in Computer Science (see SP3), with a credit weighted average of 65% in third year Computer Science modules, or with permission of the Head of School. ’

Required: CSCI790 (32).

Electives: 80C from CSCI 710 (16), 720 (16), 730 (16), 740 (16), 770 (16);

16C from AMAT 745 (16), CSCI782 (16), BISS750 (16), BISS312 (16) or other relevant modules to comprise a programme, selected in consultation with the Programme Director and approved by the Dean.

11. Ecology and Conservation Biology (128C) ie 3

Prerequisites: Completion of the BSc(Ecological Sciences) including applicable elective modules (see SQ3). i

Required: BIOS701 (16), 705 (8); ECOL701 (8), 790 (64), 795 (8).

Electives: 24C from BIOS703 (8); ECOL702 (8), 703 (8), 704 (8); ZOOL701 (8) or other modules selected in consultation with Programme Director and approved by the Dean.

12. Economics (128)

Consult the Head of the School of Business.

13. Entomology (128C)

Prerequisites: Completion of a major in Entomology (see SP3).

Required: BIOS701 (16), 702 (8), (304 (8) or 703 (8)); ENTO701 (16), 790 (64).

Electives: 16C from BIOS705 (8); (ECOL302 (8) or 701(8)) or other modules selected in consultation with Programme Director and approved by the Dean.

14. Environmental Microbiology (128C).

Prerequisites: Completion of a major in Microbiology (see SQ3).

Required: MICR714 (64), 716 (16), 718 (16).

Electives: 32C with at least 16C at level 7 from AMET211 (8); GENE327 (8); GEOG222 (8); 322 (16), 326 (8); HYDR322 (8); SSCI710 (8), 760 (8) or other modules selected in consultation with Programme Director and approved by the Dean.

15. Ethnobotany (128C)

Prerequisites: Completion of a major in Ethnobotany (see SP3).

Required: BIOS701 (16), 702 (8); EBOT701 (16), 702 (8), 790 (64).

Electives: 16C from BOTY703 (8), PMBP701 (8); ELAW814 (4), or other modules selected in consultation with Programme Director and approved by

the Dean.

16. Genetics (128C)

Prerequisites: Completion of a major in Genetics (see SP3).

Required: GENE702 (64); MCBS707 (32), 709 (8).

Electives: 24C selected in consultation with Programme Director and approved by the Dean.

17. Geography (128C)

Prerequisites: Completion of a major in Geography (see SP3).

Required: GEOG790 (64).

Electives: 64C from GEOG702 (16), 712 (16), 721 (16), 723 (16), 724 (16), 725 (16), 726 (16), 731 (16), 735 (16) (modules offered subject to staff availability and sufficient student registrations).

18. Grassland Science (128C)

Prerequisites: Completion of a major in Grassland Science (see SP3).

Required: AGPS710 (16); GRAS728 (8), 753 (24), 791 (8), 793 (64).
Electives: 8C at level 3 or 7 selected in consultation with Programme Director and approved by the Dean.

19. Hydrology (128C)

Prerequisites: Completion of a major in Hydrology (see SP3).

Required: BMET210 (16). HYDR710 (16), 720 (16), 725 (16), 790 (32), 795 (32).

20. Industrial Bioprocessing Technology (128C)

Prerequisites: Completion of the BSc (Industrial Bioprocessing Technology) or appropriate BSc (see SP3 and SQ3).

Required: CTEC711 (16), 732 (8), 741 (8), 742 (8), 762 (8); MICR715 (40), 716 (16), 718 (16), 720 (8).

21. Industrial Microbiology (128C).

Prerequisites: Completion of a major in Microbiology (see SQ3).

Required: MICR714 (64), 716 (16), 718 (16), 720 (8).

Electives: 24C with at least 8C at level 7 from BCHM325 (8), 360 (8), 370 (8); BOTY702 (8); CTEC212 (16); GENE327 (8), or other modules selected in consultation with Programme Director and approved by the Dean.

22. Information Technology (128C)

Prerequisites: Completion of the BSc (Information Technology), including applicable elective modules (see SQ3), with a credit weighted average of 65% in third year Information Technology modules, or with permission of the Head of School.

Required: CSCI740 (16), 770 (16), 790 (32), BISS750 (16).

Electives: 48C from AMAT745 (16), CSCI720 (16), 730 (16), 782 (16) or other relevant modules to comprise a programme selected in consultation with the Programme Director and approved by the Dean.

23. Mathematics (128C)

Prerequisites: Completion of a major in Mathematics with a credit-weighted average of 65% in the third level Mathematics modules (see SP3), or with permission of the Head of School.

Required: MATH710 (16), 751 (16), 760 (16), 771 (16), 790 (16).

Electives: 48C from MATH720 (16), 730 (16), 740 (16), 752 (16), 772 (16), 780 (8) or modules from Statistics, Applied Mathematics and Computer

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Science selected in consultation with Programme Director and approved by the Dean.

24. Operations Research (128)

Prerequisites: Completion of a major in Operations Research with a credit-weighted average of 65% in the third level Operations Research modules (see SQ3), or with permission of the Head of School.

Required: AMAT731 (16) 780 (16), 782 (16); STAT710 (16), 720 (16).
Electives: 48C from AMAT715 (16), 725 (16), 735 (8), 755 (16), 765 (16). STAT722 (16), 730 (16), 740 (16), 750 (8), 760 (16), 770 (16), 780 (16), 792 (8).

25. Physics (128C)

Prerequisites: Completion of a major in Physics (see.SP3).

Required: PHYS711 (32), 742 (16), 721 (16), 752 (32), 731 (16), 732 (16).
26. Plant Molecular Biology and Physiology (128C)

Prerequisites: Completion of a major in Plant Molecular Biology (see SP3).
Required: BIOS701 (16), 702 (8); BOTY703 (8); PMBP701 (8), 702 (8), 790 (64).

Electives: 16C from BOTY701 (8), 702 (8) or other modules selected in consultation with Programme Director and approved by the.Dean.

27. Plant Pathology (128C)

Prerequisites: Completion of a major in Plant Pathology (see SP3).

Required: (PPTH711 (8), 712 (8)), and/or (PPTH721 (8), 722 (8)), PPTH730 (16), 740 (8), 780 (64), 795 (8).

Electives: up to 16C selected in consultation with Programme Director and approved by the Dean. .

28. Psychology (128)
â\200\231 Prerequisites: Completion of a major in Psychology (see SP3).

Required: PPG7111 (32), 7122 (32), 7211 (32), 701Y (32).

29. Resource Ecology (128C) :

Prerequisites: Completion of the BSc(Ecological Sciences) including applicable elective modules (see SQ3). ;

Required: ECOL732 (8), 753 (8), 763 (8), 791 (64), 795 (8); GRAS728 (8).
Electives: 24C at levels 3 and 7 with at least 16C at level 7 selected in consultation with Programme Director and approved by the Dean.

30. Soil Science (128C)

Prerequisites: Completion of a major in Soil Science (see SP3).

Required: SSCI710 (8); 760 (8), 770 (8), 780 (8), 790 (64), 792 (16).

Electives: 16C at level 3 or 7 selected in consultation with Programme Director and approved by the Dean.

31. Statistics (128C) Ã©

Prerequisites: Completion of a major in Statistics with a credit-weighted average of 65% in the third level Statistics and Biometry modules (see SP3),

or with permission of the Head of School.

Required: STAT710 (16), 720 (16), 740 (16), 750 (8), 790 (24).

Electives: 48C from STAT722 (16), 730 (16), 760 (16), 770 (16), 780 (16), 792 (8) or other modules selected in consultation with Programme Director and approved by the Dean.

32. Wildlife Science (128C)

Prerequisites: Completion of the BSc(Ecological Sciences) including applicable elective modules (see SQ3) with a credit-weighted average of 60% for the required modules of the Wildlife Science stream.

Required: Required (BMET222 (16) or STAT213 (8)); GRAS728 (8), 753 (24); WILD790 (64), 791 (8).

Electives: up to 16C selected in consultation with the Programme Director and approved by the Dean.

33. Zoology (128C)

Prerequisites: Completion of a major in Zoology (see SP3).

Required: BIOS701 (16), 702 (8), (304 (8) or 703 (8)), 705 (8); ZOOL790 (64).

Electives: 16C at level 7 from BIOS706 (8); ECOL702 (8), 703 (8); ZOOL702 (8) or other modules at levels 3 or 7, selected in consultation with Programme Director and approved by the Dean.

SH6 Additional requirements.

The Senate may require a candidate for the degree to complete one or more modules in any prescribed area of specialisation in addition to the modules prescribed for the Honours programme concerned.

SH7 Duration of study.

Except with the permission of the Senate, candidates for the degree shall be â\200\231 required to present themselves for all parts of the final examination within two semesters after registration, except that part-time students shall be required to so present themselves within four semesters after registration.

SH8 Repeating the qualification.

Except with the permission of the Senate, no candidates for the degree in any subject may present themselves for the final examination in that area of specialisation more than once.

SH9 Completion of the degree.

The degree of Bachelor of Science Honours shall be conferred if the candidate has obtained a credit-weighted average mark of at least 50% in the modules that make up the curriculum for the applicable programme and has obtained a mark of at least 50% in each of the modules specified for the programme, which shall include a research project worth at least 16 credits. Where a candidate has failed modules totalling not more than 32 credits, with marks of at least 40% in each such module, such failures may be condoned without affecting the average mark referred to above, and such students will be exempted with credit for each failed module.

SA 30 Science & Agriculture

Degree of Master of Science.

SM1 Eligibility.

The following candidates shall be eligible to register for the degree of Master of Science:

(1) any Bachelor of Science Honours of the University, or a graduate of another recognized university who has been admitted to the status thereof; or
(2) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the degree.

SM? Applicability of other rules.

Rules SARI to SAR18 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect, where applicable, for the degree of Master of Science.

SMS3 Supervision. ;

A candidate for the degree shall undertake advanced study, or research, or both, under the guidance of a supervisor or supervisors appointed by the Senate.

SM4 Subject of study.
The subject of study and/or research proposed for the eee shall be approved by the Senate.

SMS Additional requirements.
The Senate may require candidates for the degree to take modules in any prescribed subject in addition to those which are prescribed for the degree.

SM6 Duration of study.

Candidates shall not be permitted to proceed to the final examination for the degree before the end of the first semester following that in which they are first registered for the degree.

SM7 Requirements.

(1) The examination shall consist of a dissertation showing acquaintance with the methods of research, or of such a dissertation together with one or more written papers or projects, or of two or more written papers. or projects, provided that there shall be a research component of at least 75% of the overall degree (128 credits), as the Senate may prescribe.

(2) No component may be repeated nor may any supplementary examination be granted. â\200\230

SM8 Re-examination.

Except with the permission of the Senate candidates for the degree may not present themselves for examination in any subject more than once. The Board of the Faculty, on the recommendation of the examiners, may permit a dissertation to be referred to the candidate for revision or extension and subsequent re-examination.

SM9 Notice of submission.

At least three months before the dissertation is to be presented for examination, candidates shall give notice thereof, in writing, to the Dean. In the event of the candidate failing to submit the dissertation within six months the notice will lapse, and a further notice shall be submitted.

SM10 Declaration.

Every dissertation submitted for the degree must be accompanied by a declaration to the satisfaction of the Senate stating that it has not been submitted for a degree at any other university.

SM11 Number of copies.

Five copies of every dissertation shall be submitted. In special cases the Senate may, in respect of material other than the text, allow some relaxation of the rule regarding submission of five copies.

Note: Students who wish to specialise in Analytical, Environmental & Industrial Chemistry, must adhere to the following curriculum:
CTEC751(8), CTEC782 (16), CTEC811 (24), CTEC821 (8), CTEC831 (8), CTEC822 (16), CTEC862 (16), CTEC890 (96).

Degree of Master of Science
(Biological Systematics)

SMb!i Eligibility.

The following candidates shall be eligible to register for the Master of Science (Biological Systematics):

(1) any holder of a relevant Honours or four-year Bachelors degree of the University, or a graduate of another recognized university who has been admitted to the status thereof; or

(2) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the degree.

Note: The relevance of the qualifications offered shall be determined by the Board of the Faculty. ; ;

SMb2 Applicability of other rules.

Rules SARI to SARI8, SM3 to SMI11 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect, where applicable, for the Master of Science (Biological Systematics).

SMb3 Curriculum.
In order to complete the degree a candidate shall complete the following

modules (128C)(numbers in parentheses refer to credits): -
BSYS801 (32), 803 (32), 890 (64).

SA 32 Science & Agriculture
â\200\231 Qualifications in Environment and Development

SE1 Eligibility.

The following candidates shall be eligible to register for the Advanced Postgraduate Certificate in Environment and Development, the Advanced Postgraduate Diploma in Environment and Development and the degree of Master of Environment and Development (each offered in three streams):

(1) any holder of a relevant Honours or four-year Bachelors degree of the University, or a graduate of another recognized university who has been admitted to the status thereof; or

(2) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the qualification.

Note: The relevance of the qualifications offered shall be determined by the Board of the Faculty.

SE2 Applicability of other rules.
Rules SARI to SAR18, SM3 to SM5 and SM8 to SMI11 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect, where applicable, for these qualifications.

SE3 Examination.

(1) For the Advanced Postgraduate Certificate the examination shall consist of two or more written papers and projects; for the Advanced Postgraduate Diploma the examination shall consist of that for the applicable Advanced Postgraduate Certificate and successful completion of an internship served at an appropriate organization; for the Masters degree the examination shall consist of that for the applicable Advanced Postgraduate Certificate and successful completion of components (of combined weight equal to that for the Certificate) showing acquaintance with the methods of research, comprising one or more modules and a research report (mini-dissertation, normally of 20 000 â\200\224 30.000 words).

(2) The pass mark for the Advanced Postgraduate Certificate shall be a final mark of 50%; marks of at least 50% shall be obtained for all components (including the integrative examination) separately, provided that where a candidate has failed credit-bearing modules totalling no more than 16 credits, with marks of at least 40% in each such module, such failures may be condoned without affecting the final mark referred to above, and such students will be exempted with credit for each failed module.

(3) The pass mark for the internship component ok the Advanced Postgraduate Diploma shall be a mark of 50%.

(4) The pass mark for the research components of the Masters degree shall be a final mark of 50%; marks of at least 50% shall be obtained for all components separately.

(5) No component may be repeated nor may any supplementary examination be granted should a component be failed.

SE4 Rules of combination (structure of degree).

Candidates will elect to undertake one of the programmes for which the rules of combination follow (numbers in parentheses refer to credits):

(1) Environmental Management Stream

1. Advanced Postgraduate Certificate (72C)

Prerequisite: EDEL202 (4), 204 (4) or equivalent modules.

Required: EDEL702 (4), 704 (4), 805 (16), 807 (16); integrative written examination.

Electives: 16C from EDEL706 (4), 708 (4), 710 (4), 712 (4), (713 (4) or 714 (4)), 716 (4), 718 (4); ELAW814 (4), or any other 4C level 7 or level 8 module approved by the Dean; 16C from EDEL851 (16), 863 (16), 867 (16), 869 (16) or any other 16C level 8 module approved by the Dean.

Note: In determining the final mark, the credit-weighted average of all course-work modules shall be weighted equally with the mark obtained for the integrative examination.

2. Advanced Postgraduate Diploma (136C)

Required: As prescribed for the Advanced Postgraduate Certificate (72C) with a final mark of at least 50%; EDEL880 (64).

3. Masters Degree (144C) _

Required: As prescribed for the Advanced Postgraduate Certificate (72C) with a final mark of at least 60%; EDEL812 (4), 814 (4), 890 (64).

(2) Land-Information Management Stream

1. Advanced Postgraduate Certificate (72C)

Prerequisite: EDEL202 (4), 204 (4) or equivalent modules.

Required: EDEL702 (4); 704 (4), 816 (4); LIMT702 (4), 704 (4), 802 (8), 804 (8), 806 (4), 808 (8), 810 (8), 812 (4), 814 (4); integrative written examination.

Electives: 8C from EDEL708 (4), 710 (4), 712 (4); ELAW814 (4) or any other level 7 or level 8 module(s) approved by the Dean.

Note: In determining the final mark, the credit-weighted average of all course-work modules shall be weighted equally with the mark obtained for the integrative examination.

2. Advanced Postgraduate Diploma (136C)

Required: As prescribed for the Advanced Postgraduate Certificate (72C) with a final mark of at least 50%; LIMT880 (64).

3. Masters Degree (144C)

Required: As prescribed for the Advanced Postgraduate Certificate (72C) with a final mark of at least 60%; EDEL812 (4), 814 (4); LIMT890 (64).

(3) Protected-Area Management Stream

1. Advanced Postgraduate Certificate (72C)

Prerequisite: EDEL202 (4), 204 (4) or equivalent modules.

Required: EDEL702 (4), 704 (4); ELAW812 (8); PAMT804 (16); PMD8012 (8); PPD803M (16); integrative written examination.

Electives: 16C at level 7 or 8, selected in consultation with the Programme Director and approved by the Dean.

Note: Jn determining the final mark, the credit weighted average of all course-work modules shall be weighted equally with the mark obtained for the integrative examination.

2. Advanced Postgraduate Diploma (136C)

Required: As prescribed for the Advanced Postgraduate Certificate (72C) with a final mark of at least 50%; PAMT880 (64).

3. Masters Degree (144C)

Required: As prescribed for the Advanced Postgraduate Certificate (72C) with a final mark of at least 60%; EDEL812 (4), 814 (4); PAMT890 (64).

SES Duration.

(1) Candidates shall be registered for at least one semester before award of the Advanced Postgraduate Certificate.

(2) Except with the permission of the Board of the Faculty, candidates for the Advanced Postgraduate Diploma shall be required to present themselves for all parts of the final examination within two semesters after first registering in the programme, except that part-time students shall be required to present themselves within four semesters.

(3) Except with the permission of the Board of the Faculty, candidates for the Masters degree shall be required to present themselves for all parts of the final examination within three semesters after first registering in the programme, except that part-time students shall be required to present themselves within five semesters.

Degree of Bachelor of Science in Agriculture

Ag! Applicability of other rules.

Rules SARI to SARI7 for the Faculty of Science and Agriculture shall be of effect, where applicable, for the degree of Bachelor of Science in Agriculture.

Ag2 Structure of the degree.

In order to complete the degree of Bachelor of Science in Agriculture a candidate shall obtain not less than 512 credits and shall complete the modules as prescribed for the qualification. Except with the approval of the Senate, the following minimum credits apply: 96 for modules at level 7, 224 for modules at levels 3 and 7, and 224 for modules at levels 2 and 3.

Ag3 Admission to senior years.

(1) A minimum of 80 credits from the first-year curriculum is required for entry into the senior years.

(2) Candidates who are repeating the first year may register for modules totalling up to 144 credits, including all uncompleted modules from the first year curriculum and candidates re-admitted in terms of Rule SAR17 shall be permitted to register only for the uncompleted modules of the first year curriculum.

(3) AGRI210 (1), 220 (1) are compulsory, skills-based, modules in which students are required to obtain a certified level of proficiency in order to qualify for any qualification in Agriculture. Candidates who have passed CSCI103 (8) or BISS111 (16) are exempt from having to pass AGRI210 (1).
(4) In addition to the provisions of Rules R8(3) and SARI7, a candidate (including one who transfers from another faculty or university, or changes options in this: Faculty) who does not pass all modules normally prescribed for the chosen programme in the first-year curriculum for that programme within two years of such transfer or change shall be refused readmission to the Faculty. Candidates may not proceed to any level 7 module until they have obtained at least 128 appropriate credits at levels 2 and 3 including at least 64 credits at level 3.

Ag4 Rules of combination (structure of degree).
Candidates will elect to undertake one of the programmes for which the rules of combination follow (numbers in parentheses refer to credits):

Note: Students are warned that the choice of elective modules and their levels is governed by Rule {rullnk;Ag2} above.

1. AGRIBUSINESS

(a) Animal Science Stream (513C)

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103 (8); MATH111 (8), 122 (8); PHYS121 (16), 122 (8); AGRI220 (1).

Core modules: AGEC210 (16), 220 (16), 270 (16), 370 (16), 380 (16), 730 (8), 740 (16). ANSI201 (16), 202 (16), 203 (8), 304 (8), 332 (16), 344 (16), 362 (16); BMET210 (16).

Capstone modules: AGBU790 (40); ANSI780 (32).

Elective modules: 40C at level 2; 56C at level 3 and 7 selected in consultation with the Programme Director and approved by the Dean.

(b) Crop Science Stream (513C)

Foundational modules: BIOR118 (8), 130 (8); BIOSI01 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103 (8); MATHI111 (8), 122 (8); PHYS121 (16), 122 (8); AGRI220 (1).

Core modules: AGEC210 (16), 220 (16), 270 (16), 370 (16), 380 (16), 730 (8), 740 (16); AGPS200 (16), 301 (16), 304 (8), 305 (16), 307 (16), 308 (16), 701 (8), 711 (8); BMET210 (16).

Capstone modules: AGBU790 (40).

Elective modules: 48C at level 2; 56C at level 3; and 16C at level 7 selected in consultation with the Programme Director and approved by the Dean.

(c) Food Processing Stream (513C)

Foundational modules: BIOS101 (16); BISS111 (16), 121 (16); CHEM 131 (16), 132 (16); MATH111 (8), 122 (8); FSCI120 (16); PMN110B Ge AGRI220 (1); AGPS210 (8).

Core modules: AGEC210 (16), 220 (16), 270 (16), 370 (16), 380 (16), 730 (8), 740 (16); CRMS220 (16); FPRO311 (24), 320 (32), 711 (32), 720 (32); FSCI210 (16); BMET210 (16).

Capstone modules: AGBU790 (40).

Elective modules: 32C at level 2; 32C at level 3 and 7 selected in consultation with THE Programme Director and approved by the Dean. –

(d) Horticultural Science Stream (513C)

Foundational modules: BIORI18 (8), 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103 (8); MATHI11 (8), 122 (8); PHYS121 (16), 122 (8); AGRI220 (1).

Core modules: AGEC210 (16), 220 (16), 270 (16), 370 (16), 380 (16), 730 (8), 740 (16); AGPS200 (16), 301 (16), 304 (8), 307 (16), 308 (16), 701 (8), 720 (8), 721 (8), 723 (8), 724 (8), 725 (8), 726 (8); BMET210 (16).

Capstone modules: AGBU790 (40).

Elective modules: 48C at level 2; 48C at levels 3 and 7 selected in consultation with the Programme Director and approved by the Dean.

(e) Wildlife Science Stream (513C) :

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CSCI1103 (8); CHEM131 (16), 132 (16); MATH111 (8), 122 (8); PHYS121 (16); (PHYS122 (8) or GEOG122 (8)); AGRI220 (1); GEOG222 (8); PSO3801 (16).

Core modules: AGEC210 (16), 220 (16), 270 (16), 370 (16), 380 (16), 730 (8), 740 (16); BOTY204 (8); ECOL201 (8), 301 (16); GEOG326 (8); GRAS211 (8), 226 (8), 343 (8), 312 (24), 728 (8), 753 (24); ZOOL206 (16), 303 (8); WILD301 (8); BMET210 (16).

Capstone modules: AGBU790 (40).

Elective modules: 48C with at least 8C at level 3 selected in consultation with the Programme Director and approved by the Dean.

2. AGRICULTURAL ECONOMICS (513C)

Foundational modules: PAC100Y (32); BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); BISS111 (16), 121 (16); PEC1101 (16), 1202 (16); MATH111 (8), 122 (8); AGRI220 (1); ANSI202 (16); BMET210 (16).

Core modules: AGEC220 (16), 270 (16), 370 (16), 380 (16), 730 (8), 740 (16); AGPS305 (16); BMET314 (8), 316 (8); PEC2111 (8), 2212 (8), 16C from (PEC2121 (8), 2131 (8), 2232 (8)), 3301 (16), 3401 (16), 32C from (PEC3202 (16), 3502 (16), 3602 (16)); STAT213 (8).

Capstone modules: AGEC790 (40).

Elective modules: 24C at level 3; 32C at level 7 selected in consultation with the Programme Director and approved by the Dean.

3, AGRICULTURAL PRODUCTION (513C) |
Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CCSI103 (8); CHEM131 (16), 132 (16); MATHI11 (8), 122 (8) PHYS121

(16), 122 (8); AGPS200 (16), 301 (16), 304 (8), 305 (16), 308 (16); AGRI120 (1); AGEC210 (16); BCHM232 (16); BMET210 (16); BOTY301 (16); GENE213 (16); MICR212 (8); SSCI217 (16), 320 (16).

Core modules: AGEC220 (16), 270 (16), 370 (16); AGEN216 (8); AGPS303 (8), 711 (8), 710 (16); SSCI230 (16).

Capstone modules: AGPS790 (32), AGPS701 (8).

Elective modules: 48C from AGPS307 (16), 713 (16), 720 (8), 721 (8), 723 (16), 726 (8) in accordance with Ag2 and Ag3; selected in consultation with the Programme Director and approved by the Dean.

4. ANIMAL & POULTRY SCIENCE (513C)
Foundational modules: BIOR118 (8) 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103 (8); MATHI11 (8), 122 (8); PHYS121 (16), 122 (8). AGRI210 (1), AGRI220 (1); AGEC210 (16); BCHM213 (16), 232 (16); BMET210 (16), 222 (16); GENE213 (16).

Core modules: ANSI201 (16), 202 (16), 203 (8), 204 (8), 304 (8), 332 (16), 344 (16), 362 (16), 370 (16), 701 (8), 702 (8), 703 (16), 741 (16); GENE350 (16).

Capstone modules: ANSI780 (32), 790 (32).

Elective modules: 16C from AGEC220 (16); AGEN216 (8); AGPS200 (16); GENE230 (8); GRAS211 (8); MICRO210 (16); and 24 C from AGPS303 (8), 305 (16), 710 (16); BCHM328 (8), 380 (16), or modules selected in consultation with the Programme Director and approved by the Dean.

5. BIOCHEMISTRY (516C)

Foundational modules: BIOR118 (8); BIOS101 (16); CHEM131 (16), 132 (16); CSCI103 (8); MATHI11 (8), 122 (8); PHYS121 (16), 122 (8). AGRI210 (1), 220 (1).:

Core modules: ANSI204 (8); BCHM213 (16), 232 (16), 313 (16), 320 (8), 325 (8), 326 (8), 328 (8), 340 (8), 725 (24); BMET210 (16); CHEM212 (16), 221 (16); GENE213 (16), 327 (8); MICR212 (8).

Capstone modules: BCHM790 (64);

Elective modules: 32C at level 1; 16C at level 2; 64C from ANSI362 (16); BOTY301 (16); GENE350 (16); MICR350 (16); 40C at level 7 from BCHM727 (32); PHILI202 (8); SCED701 (8) selected in consultation with the Programme Director and approved by the Dean.

6. CROP SCIENCE (513C)

(a) Standard Stream

Foundational modules: BIOR118 (8), 130 (8); BIOS1I01 (16), 102 (16); CSCI103 (8); CHEM131 (16), 132 (16); MATHI11 (8), 122 (8); PHYS121 (16), 122 (8); AGPS200 (16), 301 (16), 304 (8), 305 (16), 306 (16), 307 (16) 308 (16), 320 (16), AGEC210 (16); AGRI220 (1); AMET210 (16);

BCHM232 (16); BMET210 (16), 222 (16); BOTY301 (16); GENE213 (16); MICR212 (8); SSCI212 (8), 320 (16).

Core modules: AGPS710 (16), 711 (8) 712 (16), 713 (16); BMET701 (8).
Capstone modules: AGPS701 (8), 790 (32), 791 (8).

Elective modules: 8C from AGPS300 (8), 720 (8), 721 (8), 723 (8), 724 (8), 726 (8); AGEG216 (8); SSCI230 (16); STMA342 (8) or other modules, in accordance with Ag2 and Ag3, selected in consultation with the Programme Director and approved by the Dean.

(b) Management Stream

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CSCI103 (8); CHEM131 (16), 132 (16); MATH111 (8), 122 (8); PHYS121 (16), 122 (8); AGPS200 (16), 301 (16), 304 (8), 305 (16), 306 (16), 307 (16), 308 (16); AGRI220 (1); AGEC210 (16); AMET210 (16); BCHM232 (16); BMET210 (16); BOTY301 (16); GENE213 (16); MICR212 (8); SSCI212 (8), 320 (16).

Core modules: AGEC220 (16); AGPS710 (16), 711 (8), 713 (16).

Capstone modules: AGPS701 (8), 790 (32), 791 (8).

Elective modules:48C from AGEC270 (16), 370 (16); AGEN216 (8); AGPS300 (8), 303 (8), 320 (16), 712 (16), 720 (8), 721 (8), 723 (8) 724 (8) 726 (8); BMET222 (16); SSCI230 (16) or other modules, in accordance with Ag2 and Ag3, selected in consultation with the Programme Director and approved by the Dean.

7. CULTIVATED PASTURES (514C)

(a) Standard Stream

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSC1I103 (8); MATH111 (8), 122 (8); PHYS121 (16), PHYS122 (8); AGPS200 (16), 301 (16), 305 (16); AGEC210 (16); AGRI210 (1), 220 (1); AMET210 (16); BCHM232 (16); BMET210 (16); BOTY301 (16); GENE213 (16); SSCI212 (8). 3

Core modules: ANSI202 (16), 304 (8), 370 (16), 741 (16); AGEC220 (16), 270 (16); AGPS303 (8), 710 (16); GRAS211 (8), 226 (8), 312 (24); SSCI320 (16).

Capstone modules: AGPS790 (32), 701 (8).

Elective modules: 24C at level 3 and level 7 selected in consultation with Programme Director and approved by the Dean.

(b) Management Stream
Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16);

CHEM131 (16), 132 (16); CSCI103 (8); MATHI11 (8), 122 (8); PHYS121 (16), PHYS122 (8); AGPS200 (16), 301 (16), 305 (16); AGEC210 (16); AGRI210 (1), 220 (1); AMET210 (16); BCHM232 (16); BMET210 (16), 222 (16); BOTY301 (16); GENE213 (16); SSCI212 (8).

Core modules: ANSI304 (8), 370 (16), 741 (16); AGEC220 (16); AGPS303 (8), 710 (16); GRAS211 (8), 226 (8), 312 (24); SSCI320 (16).

Capstone modules: AGPS701 (8), 790 (32).

Elective modules: 40C (at least 8C at level 7) from AGPS308 (8); ANSI202 (16); MICR212 (8); PPTH242 (8); SSCI230 (16).

8. FORESTRY (513C)

(a) Commercial Forestry Stream

Foundational modules: BIOR118 (8), 128 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103 (8); EART122 (8); MATH111 (8), 122 (8), PHYS121 (16); AGRI220 (1); BCHM213 (16); BIOS202 (8); BMET210 16); SSCI217 (16), 320 (16).

Core modules: AGEC210 (16), 270 (16), 370 (16), 730 (8); AGPS200 (16), 303 (8), 307 (16); AGEN216 (8); BOTY201 (8), 301 (16); FORT311 (16), 321 (16), 350 (16), 711 (16), 712 (8), 720 (16); HYDR210 (16); PLAIAG2 (16).

Capstone modules: FORT790 (32).

Elective modules: 8C at level 2 and 32C at level 7 selected in consultation with the Programme Director and approved by the Dean.

(b) Community Forestry Stream

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103(8); EART122 (8); MATHI11 (8), 122 (8); PHYS121 (16); AGRI220 (1); BCHM213 (16); BIOS202 (8); BMET210 (16); SSCI217 (16), 320 (16).

Core modules: AGEC210 (16), 270 (16), 370 (16), 730 (8); AGPS200 (16), 303 (8), 307 (16); AGEN216 (8); BOTY201 (8), 301 (16); FORT311 (16) 321 (16), 350 (16), 730 (16), 740 (16); HYDR210 (16); PLAIAG2 (16).
Capstone modules: FORT790 (32).

Elective modules: 8C at level 2 and 32C at level 7 selected in consultation with the Programme Director and approved by the Dean.

9. GENETICS (514C)

(a) Standard Stream

Foundational modules: BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI 103 (8); MATH111 (8), 122 (8); PHYS121 (16), 122 (8).

Core modules: BMET210 (16); GENE213 (16), 226 (8), 230 (8), 222 (16); 319 (8), 325 (8), 327 (8), 342 (8), 24 C from AGPS306 (16); GENE322 (8), 328 (8), 350 (16), 360 (8); MCBS707 (32).

Capstone modules: GENE702 (64); MCBS709 (8).

Elective modules: Credits selected at the different levels as prescribed for the degree from the disciplines of animal science, genetics, entomology, wildlife science, zoology and related disciplines in consultation with the Programme Director and approved by the Dean.

(b) Animal Genetics Stream

Foundational modules: BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI 103 (8); MATH111 (8), 122 (8); PHYS121 (16), 122 (8).

Core modules: BMET210 (16); GENE213 (16), 222 (16), 226 (8), 230 (8); GENE319 (8), 325 (8), 327 (8), 332 (8), 342 (8),-322 (8) or 328 (8) or 360 (8), 350 (16), 732 (8); MCBS707 (32).

Capstone modules: GENE702 (64); MCBS709 (8).

Elective modules: Credits selected at the different levels as prescribed for the degree from the disciplines of Agricultural Plant Sciences, Botany, Genetics and related disciplines in consultation with the Programme Director and approved by the Dean.

(c) Plant Genetics Stream

Foundational modules: BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI 103 (8); MATH111 (8), 122 (8); PHYS121 (16), .122 (8).

Core modules: AGPS306 (16); BMET210 (16); GENE213 (16), 226 (8), 230 (8), 222 (16); 319 (8), 325 (8), 327 (8), 342 (8), 322 (8), 332 (8) or 328 (8); 732 (8); MCBS707 (32).

Capstone modules: GENE702 (64); MCBS709 (8).

Elective modules: Credits selected at the different levels as prescribed for the degree from microbial, molecular and cellular disciplines in consultation with the Programme Director and approved by the Dean.

10. GRASSLAND SCIENCE (514C)

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103 (8); EART122 (8); MATHI11 (8), 122 (8); PHYS121 (16); AGRI210 (1), 220 (1); BCHM213 (16); BMET210 (16), .222 (16); ETHI202 (8); (GENE213 (16) or AMET210 (16)); SSCI217 (16), 230 (16).

Core modules: AGPS320 (16), 710 (16); ANSI 344 (16) ECOL201 (8), 211 (8), 212 (8), 311 (8); GRAS211 (8), 226 (8), 228 (8), 343 (8), 728 (8).
Capstone modules: GRAS3 12 (24), 753 (24), 791 (8), 793 (64). .

Elective modules: 48C in accordance with rules AG2 and AG3.

11. HORTICULTURAL SCIENCE (513C)

(a) Standard Stream

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CSCI103 (8); CHEM131 (16), 132 (16); MATH111 (8), 122 (8); PHYS121 (16), 122 (8); AGPS200 (16), 300 (8), 301 (16), 304 (8), 305 (16), 306 (16), 307. (16), 308 (16), 320 (16); AGRI220 (1); AGEC210 (16); AMET210 (16); BCHM232 (16); BMET210 (16), 222 (16); BOTY301 (16); GENE213 (16); MICR212 (8); SSCI212 (8), 320 (16).

Core modules: AGPS720 (8), 721 (8), 723 (8), 724 (8), 725 (8), 726 (8), 728 (8).

Capstone modules: AGPS701 (8), 790(32), 791 (8).

Elective modules: 8C from AGEC220 (16), 270 (16); AGEN216 (8); AGPS710 (16), 711 (8), 712 (16), 713 (16), 760 (8); BMET701 (8); SSCI230 (16) or other modules, in accordance with Ag2 and Ag3, selected in consultation with the Programme Director and approved by the Dean.

(b) Management Stream

Foundational modules: BIOR118 (8), 130 (8); BIOSIO1 (16), 102 (16); CSCI103 (8); CHEM131 (16), 132 (16); MATHI11 (8), 122 (8); PHYS121 (16), 122 (8); AGPS200 (16), 300 (8), 301 (16), 304 (8), 305 (16), 307 (16), 308 (16); AGRI220 (1); AGEC210 (16); AMET210 (16); BCHM232(16); BMET210 (16); BOTY301 (16); GENE213 (16); MICR212 (8); SSCI212 (8), 320 (16).

Core modules: AGEC220 (16); AGPS720 (8), 721 (8), 723 (8), 724 (8),725 (8), 726 (16), 728 (8).

Capstone modules: AGPS701 (8), 790 (32), 791 (8).

Elective modules:40C from AGEC270 (16) 370 (16); AGEN216 (8); AGPS303 (8), 306 (16), 710 (16), 711 (8), 712 (16), 713 (16), 760 (8); BMET222 (16); SSCI230 (16) or other modules, in accordance with Ag2 and Ag3, selected in consultation with the Programme Director and approved by the Dean.

12. MICROBIOLOGY (514C)

(a) Environmental Microbiology Stream (514C)

Foundational modules: BIOR118 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); EART122 (8); MATHI111 (8), 122( 8); PHYS121 (16), 122 (8), CSCI103 (8); AGRI210 (1), 220 (1); BACT220 (8), 222 (8); BCHM213 – (16), 232 (16); BMET210 (16); GENE226 (8); GEOG222 (8); HYDR210 (16); MYCO211 (8); SSCI217 (16); 271 (8), 372 (8); VIRO320 (16).

Core modules: MICRO3 10 (16), 350 (16), 716 (16), 718 (16).

Capstone modules: MICR714 (64).

Elective modules: 24C from AMET211 (8); BMET314 (8); BOT Y201 (8), 202 (8), 204 (8); CHEM212 (16), 221 (16); EDEL706 (4), 712 (4), GEOG322 (16), 326 (8), 329 (16); HYDR322 (8); SSCI710 (8), 760 (8) or other modules selected in consultation with Programme Director and approved by the Dean in accordance with Rule Ag2 and Ag3.

(b) Industrial Microbiology Stream (514)

Foundational modules: BIOR118 (8); BIOSI01 (16), 102 (16); CHEM131 (16), 132 (16); CSCI103(8); EART122 (8); MATHI11 (8), 122 (8); PHYS121 (16), 122 (8); AGRI210 (1), 220 (1); BACT220 (8), 222 (8); BCHM213 (16), 232 (16), 325 (8), 360 (8), 370 (8), 380 (16); BMET210 (16), 222(16); CTEC212 (16); GENE213 (16), 226 (8), 334 (8); MYCO211 (8); VIRO320 (16).

Core modules: GENE327 (8); MICR320 (16), 350 (16), 360 (16), 716 (16), 718 (16), 720 (8).

Capstone modules: MICR714 (64).

Elective modules: 8C at level 3 and 24C at level 7 from BCHM326 (8); BOTY202 (8), 204 (8), 702 (8); GENE325 (8) or other modules selected in consultation with the Programme Director and approved by the Dean.

13. PLANT BREEDING

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CSCI103 (8); CHEM131 (16), 132 (16); MATH111 (8), 122 (8); PHYS121 (16), 122 (8); AGEC210 (16); AGPS200 (16), 300 (8), 301 (16), 304 (8), 305 (16), 306 (16), 307 (16), 308 (16); AGRI220 (1); AMET210 (16); BCHM232 (16); BMET210 (16), 222 (16); BOTY301 (16); GENE213 (16), 230 (8), 332 (8); MICR212 (8); SSCI212 (8), 320(16).

Core modules: AGPS711 (8), 721 (8), 730 (16); BMET701 (8); GENE732 (8); PPTH330 (16).

Capstone modules: AGPS701 (8), 790 (32).

Elective modules: 8C from AGPS710 (16), 712 (16), 713 (16) 720 (8), 723 (8), 724 (8), 726 (8) or other modules, in accordance with Ag2 and Ag3, selected in consultation with the Programme Director and approved by the Dean.

14. PLANT PATHOLOGY (514C)

(a) Standard Stream

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); EART122 (8); MATH111 (8), 122 (8); PHYS121 (16); CSC1103 (8). AGPS200 (16), 301 (16), 304 (8), 305 (16), 306 (16); AGPS308 (16); AGRI210 (1), 220 (1); AGEC210 (16); AMET210 (16); BCHM232 (16); BMET210 (16), 222 (16); BOTY301 (16); GENE213 (16); MICR212 (8); MICR316 (8); PPTH242 (8), 310 (8), 330 (16); SSCI212 (8), 320 (16). :

Core modules: AGPS711 (8), 713 (16); (PPTH711 (8), 712 (8)) or (721 (8), 722 (8)), 730 (16), 740 (8). ;

Capstone modules: AGPS701 (8), 790 (32). :

Elective modules: 8C selected in consultation with Programme Director and approved by the Dean in accordance with Rule Ag2 and Ag3.

(b) Crop Science Stream

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), BIOS102 (16); CHEM131 (16), 132 (16); EART122 (8); MATH111 (8), 122 (8); PHYS121 (16); CSCI103 (8); AGPS200 (16), 304 (8), 305 (16), 306 (16), 307 (16); 308 (16), AGRI210 (1), 220 (1); AGEC210 (16); AMET210 (16); BCHM232 (16); BMET210 (16), 222 (16); BOTY301 (16); GENE213 (16); MICR210 (16); MICR316 (8); PPTH242 (8), 310 (8), 330 (16); SSCI212 (8), 320 (16).

Core modules: ((PPTH711 (8), 712 (8)) or (721 (8), 722 (8)), 730 (16), 740 (8).

Capstone modules: AGPS701 (8), 790 (32).

Elective modules: 24C from AGPS301 (16), 320(8), 720(8),-721(8), 723(8), 724(8), 725(8), 726(8); selected in consultation with programme Director and approved by the Dean and approved by the Dean in accordance with Rule Ag2 and Ag3.

(c) Horticulture Stream :

Foundational modules: BIOR118 (8), 130 (8); BIOSI01 (16), 102 (16); CHEM131 (16), 132 (16); EART122 (8); MATH111 (8), 122 (8); PHYS121 (16); CSCI103 (8); AGPS200 (16), 305 (16), 306 (16), 307 (16); 308 (16); AGRI210 (1), 220 (1); AGEC210 (16); AMET210 (16); BCHM232 (16); BMET210 (16), 222 (16); BOTY301 (16); GENE213 (16), 230 (8), 332 (8); MICR212 (8); PPTH242 (8), 330 (16); SSCI212 (8), 320 (16).

Core modules; AGPS730 (16); GENE732 (8); PPTH310 (8), 320 (8), ((PPTH711 (8), 712 (8)) or (721 (8), 722 (8)), 730 (16), 740 (8).

Capstone modules: AGPS701 (8), 790 (32).

Elective modules: None.

(da) Plant Breeding Stream

Foundational modules: BIOR118 (8), 130 (8); BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); EART122 (8); MATH111 (8), 122Â°(8); PHYS121 (16); CSCI103 (8). AGPS200 (16), 304 (8), 305 (16), 306 (16), 307 (16); 308 (16); AGRI210 (1), 220 (1); BCHM232 (16); BMET210 (16), 222 (16); BOTY301 (16); GENE213 (16); MICR210 (16); 316 (8) MYCO211 (8); PPTH242 (8), 310 (8), SSCI217 (16).

Core modules: PPTH330 (16), (PPTH711 (8), 712 (8)) or (721 (8), 722 (8)), 730 (16), 740 (8); VIRO320 (16).

Capstone modules: AGPS701 (8), 790 (32).

Elective modules: 40C from AGEC210 (16); AGPS301 (16), 710 (16), 711 (8), 712 (16), 720 (8), 721 (8), 723 (8), 724 (8), 725 (8), 730 (16), 726 (8), 760 (8); AMET210 (16); PPTH740 (8); SSCI320 (16) selected in consultation with Programme Director and approved by the Dean in accordance with Rule Ag2 and Ag3.

15. POULTRY SCIENCE

Note: Not on offer as an undergraduate programme at the present time. Postgraduate studies are offered through the School of Agricultural Sciences and Agribusiness (see Animal & Poultry Science above).

16. SOIL SCIENCE (514C)

Foundational modules: BIOR118 (8); (BIOR130 (8) or EART124 (8)); BIOS101 (16), BIOS102 (16); CHEM131 (16), 132 (16); CSCI103 (8); EART122 (8); MATHI111 (8), 122 (8); PHYS121 (16); AGPS200 (16); AGRI210 (1), 220 (1); BMET210 (16).

Core modules: AGPS301 (16); SSCI217 (16), 230 (16), 320 (16), 351 (8), 352 (8), 371 (8), 372 (8), 710 (8), 760 (8), 770 (8), 780 (8).

Capstone modules: SSC1790 (64), 792 (16).

Elective modules: 144C from AGEC210 (16); AGPS308 (8), 303 (8), 304 (8), 305 (16), 306 (16), 307 (8), 320 (16); AMET210 (16), 211 (8); ANSI214 (16); BCHM213 (16), 232-(16); BMET222 (16); CHEM212 (16), 221 (16), 231 (16); CTEC212 (16); FORT311 (16), 320 (16); GEOG1 14 (8), 222 (8), 329 (16); GRAS211 (8), 226 (8), 324 (16), 343 (8); HYDR210 (16), 310 (16); MICR212 (8), 310 (16), or other modules selected in consultation with Programme Director and approved by the Dean.

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Ag5 Exemption from modules.

(1) Candidates holding the matriculation certificate or its equivalent and a diploma in Agriculture, recognised by the Senate for this purpose, may be exempted by the Senate from such modules as the Board may recommend.

(2) Credits in modules passed in the University Diploma in Rural Resource Management may be transferable to other programmes in Agriculture leading to degrees as the Board of the Faculty may recommend.

Bachelor of Science in Agriculture Honours

AgH1 Eligibility.

Candidates shall be eligible to register for the degree of Bachelor of Science in Agriculture Honours, provided they have previously:

(1) satisfied the requirements for the degree of Bachelor of Science in Agriculture, or been admitted to the status thereof; or

(2) been admitted by permission of the Senate in terms of Common Rule R33.

AgH2 Applicability of other rules.

Rules SARI to SARI7 and SH3 to SH11 for the Faculty of Science and Agriculture shall be of effect, where applicable, for the degree of Bachelor of Science in Agriculture Honours.

Rules of combination (structure of degree).
Candidates will pursue a curriculum of at least 128C, including modules at level 7 & 8, with at least 64C at level 8, selected in consultation with the Programme Director and approved by the Dean.

Degree of Master of Science in Agriculture

AgM1 Eligibility.
The following candidates shall be eligible to register for the degree of Master of Science in Agriculture:

(1) any Bachelor of Science in Agriculture and/or Bachelor of Science in Agriculture Honours of the University, or a graduate of another recognized university who has been admitted to the status thereof; or
(2) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the degree.

AgM2 Applicability of other rules.

Rules SARI to SAR18, SM3 to SMI1 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect, where applicable, for the Master of Science in Agriculture.

Degree of Master of Science in Agriculture
(Agricultural and Environmental Instrumentation)

AgMal! Eligibility.
The following candidates shall be eligible to register for the Master of Science in Agriculture (Agricultural and Environmental Instrumentation):

(1) any holder of a relevant Honours or four-year Bachelors degree of the University, or a graduate of another recognized university who has been admitted to the status thereof; or
(2) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the degree.

Note: The relevance of the qualifications offered shall be determined by the Board of the Faculty.

AgMaz2 Applicability of other rules.

Rules SARI to SAR18, SM3 to SMI11 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect, where applicable, for the Master of Science in Agriculture (Agricultural and Environmental Instrumentation).

AgMa3 Curriculum.

In order to complete the degree a candidate shall complete the following modules prescribed below (128C)(numbers in parentheses refer to credits):
AMETS869 (64) and 64C from AMET861 (8), 862 (8), 863 (8), 864 (8), 865 (8), 866 (8), 867 (8), 868 (8) or other modules selected in consultation with Programme Director and approved by the Dean.

Degree of Bachelor of Agricultural Management

AgMbI! Applicability of other rules.

Rules SAR1 to SARI7 for the Faculty of Science and Meniculune shall, be of effect where applicable, for the degree of Bachelor of Agricultural Management.

AgMbz2 Structure of the degree.
â\200\231 In order to complete the degree a candidate shall obtain not less than 385 credits and shall complete the modules as prescribed in Rule AgMb3.

AgMb3 Curriculum.

The curriculum shall consist of the following modules (385C)(numbers in parentheses refer to credits):

Foundational modules: PAC100Y (32); BIOR118 (8), 130 (8); BIOS101 (16); MATH113 (16), STATI12 (16); PEC1101 (16), 1202 (16); AGEN216 (8); PLAIAG2 (16); AGRI220 (1); ANSI202 (16); CSCI103 (8); GRAS211 (8); SSCI217 (16).

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Core modules: AGEC220 (16), 270 (16), 370 (16); AGPS301 (16), 303 (8), 305 (16); PMN2301 (16), (PBF2302 (16) or PHM2302 (16) or PMR2302 (16)); and another 16C at level 2 from either Commerce or Agricultural Science modules, selected in consultation with the Programme Pisesi and approved by the Dean.

Capstone modules: AGEC370 (16).

Electives: 48C at level 3 selected in consultation with the Programme Director and approved by the Dean.

AgMb4 Practical Work.

Before accumulating the credits for AGPS303 towards the degree, candidates must have completed two months' practical work on an approved farm or Agribusiness project.

Degree of Bachelor of Agricultural Management Honours

AgMh1 Eligibility.

The following candidates shall be eligible to register for the degree of Bachelor of Agricultural Management Honours:

(1) a Bachelor of Agricultural Management of the University or a graduate of another recognized university who has been admitted to the status thereof; or
(2) a person who has been admitted by permission of the Senate in terms of Rule R33 as a candidate for the degree.

AgMh2 Applicability of other rules.

Rules SARI to SAR17 and SH2 to SH9 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect, where applicable, for the degree of Bachelor of Agricultural Management Honours.

AgMh3 Curriculum.

The curriculum shall consist of one of the following combinations of modules (128C)(numbers in parentheses refer to credits):

(a) Commerce Stream

Prerequisites: see AgMh1; AGRI220 (1).

Core modules: AGEC380 (16), 730 (8), 740 (16); 24C from level 7 in the disciplines in the School of Business selected in consultation with the Programme Director and approved by the Dean.

Capstone modules: AGEC790 (40).

Elective modules: 24C at level 7 selected in consultation with the Programme Director and approved by the Dean.

(b) Production Stream

Prerequisites: see AgMh1; AGRI220 (1).

Core modules: AGEC380 (16), 730 (8), 740 (16).

Capstone modules: AGEC791 (32); (AGPS790 (32) or ANSI790 (32)).

Elective modules: 24C at level 7 selected in consultation with the Programme Director and approved by the Dean.

AgMhÃ©4 Duration.
Candidates for the degree shall be required to successfully complete all sections of the final examination over two consecutive semesters.

AgMhS Supplementary examination.

Notwithstanding Rule SH9, a candidate who has failed any module with a mark that is not less than 40% shall be permitted to write a supplementary examination in such a module and failure of such a module shall not be condoned.

Degree of Master of Agricultural Management

AgMm! Eligibility.

The following candidates shall be eligible to register for the degree of Master of Agricultural Management:

(1) a Bachelor of Agricultural Management Honours of the University or a graduate of another recognised university who has been admitted to the status thereof; or :

(2) a person who has been admitted by permission of the Senate in terms of Rule R33 as a candidate for the degree.

AgMm2 Applicability of other rules.
Rules SARI to SARI8 and SM3 to SMI11 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect, where applicable, for the degree of Master of Agricultural Management. In addition to the above, candidates may also be required to complete AGRI210 (1) and 220 (1).

University Diploma in Rural Resource Management

University Diploma in Sports Turf Management

AgRI Entrance. ;

The following candidates shall be eligible to register for the University Diploma in Rural Resource Management and the University Diploma in Sports Turf Management, provided that they have a matriculation exemption, and:

(1) have previously obtained a pass of at least an E (40%) in Mathematics at the higher grade (or C (60%) at the standard grade) and a pass of at least an F (33%) at the higher grade (or E (40%) at the standard grade) in a Natural Science or Biology in the matriculation or equivalent examination; or

(2) have obtained the Preparatory Certificate in Mathematics and Science of the University.

Note: Candidates may be subject to selection.

AgR2 Applicability of other rules.

Rules SARI to SARI7 for the Faculty of Science and Agriculture shall, where applicable, be of effect for the University Diploma in Rural Resource Management and University Diploma in Sports Turf Management.

AgR3 Duration and structure of curriculum.

The curriculum for the diploma shall extend over not less than four semesters. Candidates shall obtain not less than 258 credits and complete the modules prescribed in Rule AgR4.

AgR4 Curriculum.

The modules prescribed shall be as set out below (258C)(numbers in parentheses refer to credits):

(a) University Diploma-in Rural Resource Management (258C)

Note: Students who first registered for the diploma before 2000 should refer to the 1999 Handbook of the Faculty of Science and Agriculture (Volume 2):

Core modules: AGRI210 (1), 220 (1); RRMG111 (16), 112 (16), 212 (16); CRMS120 (8), 130 (8).

Capstone modules: RRMG222 (16).

Elective modules: 80C at level 1 and 96C at level 2 from a maximum of THREE of the following streams:

1. Small Business Management: CRMS220 (16), 230 (16); AGEC210 (16); 220 (16);

2. Nutrition and Health: NUTR114 (16), 241 (16), 250 (16);

3. Crops, Horticulture and Forestry: AGPS200 (16), 210 (8); BIOR118 (8), 130 (8); BIOS101 (16); CHEM131 (16); SSCI217 (16); PPTH242 (8);

4. Range and Animals: BIOR118 (8), 130 (8); (MATH111 (8) OR 113 (16)), 122 (8); ANSI201 (16), 202 (16); BMET210 (16); GRAS211 (8), 226 (8);

5. Water and Soil Management: BIOR118 (8), 130 (8); (HYDR210 (16) & (MATHI111 (8) or 113 (16)), 122 (8); HYDR220 (16); SSCI217 (16);

6. Regional Planning and GIS: BIOR118 (8), 130 (8); GEOG113 (8), 114 (8), 122 (8), 124 (8), 216 (8), 217 (16), 222 (8). (Note: for this option GEOG222 is compulsory).

(b) University Diploma in Sports Turf Management (258C)

Foundational modules: BIOS101 (16), 102 (16); CHEM131 (16), 132 (16); MATHI111 (8), 122 (8); AGRI210 (1), 220 (1); PBSIBAB (16); PBSIBMB (16); AGEN216 (8); SSCI217 (16); AGPS200 (16); MICR212 (8); AGPS308 (16); STMA241 (8).

Core modules: PBS1HR2 (16); PBS1BL2 (16); PBS2HR1 (16).

Capstone modules: STMA242 (8).

Elective modules: 16C from BCHM232 (16); SSCI230 (16); AGPS304 (8) selected in consultation with Programme Director and approved by the Dean.

AgRS5 Exclusion.

(1) Candidates first registered for the diploma before 1997 who have not

completed all the requirements of the diploma within five years may be refused readmission.

(2) Candidates registered after 1996 who have not completed all the requirements of the diploma within four years may be refused readmission.

Degree of Bachelor of Agriculture

AgB1 Entrance.

Diplomates who have obtained a credit-weighted average of 60% in the final year of the University Diploma in Rural Resource Management or the University Diploma in. Sports Turf Management shall be eligible to register for the Bachelor of Agriculture (Rural Resource Management) or Bachelor of Agriculture (Sports Turf Management) respectively.

AgB2 Applicability of other rules.

Rules SAR1 to SARI7 for the Faculty of Science and Agriculture shall, where applicable, be of effect for the degree of Bachelor of Agriculture (Rural Resource Management) or Bachelor of Agriculture (Sports Turf Management).

AgB3 Structure of the degree.

In order to complete the degree a candidate shall obtain not less than 384 credits (including those obtained for the relevant University Diploma) and shall complete the modules as prescribed for the degree in Rule AgB5. Except with the approval of the Senate, the following minimum credits apply: 96 for modules at level 3, 224 for modules at levels 2 and 3.

AgB4 Duration of curriculum.

To qualify for the degree candidates shall be registered for a minimum of two semesters after completion of the appropriate University Diploma or for 6 semesters after initial registration.

AgBS5 Curriculum.

The modules prescribed for the degree are listed below (128C)(numbers in parentheses refer to credits):

(a) Rural Resource Management

Note: Students who first registered before 2000 should refer to the 1999 Handbook of the Faculty of Science and Agriculture (Volume 2).

Prerequisites: see AgR4 and AgB1.

Core modules: RRMG311 (16), 312 (16).

Capstone modules: RRMG350 (32).

Electives: 64C at level 3 from a maximum of THREE of the following streams:

1. Small Business Management CRMS310 (16), 330 (16), 340 (16), 350 (8), 360 (8).

2. Nutrition and Health NUTR322 (8), 343 (16); CRMS350 (8).

3. Crops, Horticulture and Forestry AGPS301 (16), 308 (16), 303 (8), 305 (16), 306 (16), 307 (16); FORT311 (16), 321 (16).

4. Range and Animals GRAS312 (24).

5. Water and Soil Management AGPS301 (16); HYDRO312 (16), 322 (16).
6. â\200\230Regional Planing and GIS GEOG311 (16), 316 (16), 322 (16), 326 (8) (Note: for this option GEOG326 (8) is compulsory).

(b) Sports Turf Management

Prerequisites: see AgB1.

Core modules: AGPS301 (16), 308 (16), 305 (16); SSCI320 (16), 351 (16); STMA342 (16).

Capstone modules: STMA340 (16), 344 (8).

Elective modules: 16C from BOTY301 (16); BMET210 (16) and other modules selected in consultation with the Programme Director and aproved by the Dean.

AgB6 Exclusion.

Candidates who have not completed all the requirements for the qualification within four semesters after first registering for the qualification may be refused readmission.

Postgraduate Diploma in Rural Resource Management

AgRp! Eligibility.

The following candidates will be eligible to ester for the Postgraduate Diploma in Rural Resource Management:

(1) Bachelor of Agriculture (Rural Resource Management) of the University who has obtained a credit-weighted average of at least 60% in the final year of study for that qualification, or a graduate of another recognised University who has been admitted to the status thereof; or

(2) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the diploma.

AgRp2 Applicability of other rules.
Rules SAR1 to SAR18 for the Faculty of Science and Agriculture shall be of effect for the Post Graduate Diploma in Rural Resource Management.

AgRp3 Structure of the diploma.

In order to complete the diploma, a candidate shall obtain not less than 128 credits, and shall complete all modules prescribed in Rule AgRp4 over two successive semesters. Candidates studying part-time must complete the diploma within four semesters.

AgRp4 Curriculum.

The modules prescribed for the diploma are listed below (128C)(numbers in parentheses refer to credits):

Core modules: RRMG700 (16), 711 (16), 712 (16).

Capstone modules: RRMG720 (64).

Elective modules: 16C. at levels 3 or 7 from the Faculty of Science and Agriculture or the Faculty of Human and Management Sciences selected in consultation with the Programme Director and the approved by the Dean of the Faculty of Science and Agriculture.

Degree of Master of Agriculture

AgRml! Eligibility.

The following candidates shall be eligible to register for

a) the Degree of Master of Agriculture (Rural Resource Management):
(1) any holder of the Postgraduate Diploma in Rural Resource Management of the University, or a diplomate or graduate of another recognised University who has been admitted to the status thereof; or

(2) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the degree.

b) the Degree of Master of Agriculture (Food Security):

(1) any holder of the Postgraduate Diploma in Food Security or a relevant Honours or four-year Bachelors degree of the University or a graduate of another recognised university admitted to the status thereof; or

(2) a candidate who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the degree.

AgRm2 Applicability of other rules.

Rules SARI to SARI8 and SM3 to SM11 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect for the degree of Master of Agriculture.

AgRm3 Curriculum.

In order to complete the degree a candidate shall complete the modules prescribed below (128C)(numbers in parentheses refer to credits):

(a) For the Degree of Master of Agriculture (Rural Resource Management):
Capstone modules: RRMG820 (96).

Core modules: RRMG811 (32) or 812 (32).

(b) For the Degree of Master of Agriculture (Food Security):

Core modules: FDSC700 (16), 840 (16), 860 (16).

Capstone modules: FDSC811 (64).

Elective modules: 16c at levels 7 or 8 selected in consultation with the Programme Director and approved by the Dean.

Degree of Bachelor of Science in Human Nutrition

AgN! Applicability of other rules.

Rules SARI to SARI7 for the Faculty of Science and Agriculture shall, where applicable, be of effect for the Bachelor of Science in Human Nutrition.

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AgNz2 Structure of the qualification.
In order to complete the degree a candidate shall obtain not less than 390 credits and shall complete the modules as prescribed in Rule AgN3.

AgN3 Curriculum.

The modules prescribed for the degree are listed below (390C) (numbers in parentheses refer to credits):

Foundational modules: AGRI210 (1), 220 (1); BIOS101 (16); CHEM 131 (16), 132 (16).

Core modules: BCHM213 (16), 232 (16); DIET237 (16), 310 (4); FSCI120 (16); FSMT318 (16); HPHY112 (8), 252 (16), 254 (16); MICR210 (16); NUTR114 (16), 118 (16), 214 (16), 342 (16), 343 (16), 350 (16); STAT101 (8); PZU1011 (16).

Elective modules: 32C from PSO1101 (16) or RRMG!111. (16); (GEOG124 (8) & CRMS120 (8)) or PSO1202 (16); (PSO2211 (16) & PPG2032 (16)) or (CRMS310 (16) & 330 (16)); 48C at level 3 selected in consultation with Programme Director and approved by the Dean.

Postgraduate Diploma in Community Nutrition.

AgNcl Eligibility.
The following candidates shall be eligible to register for the Postgraduate Diploma in Community Nutrition:

(1) Bachelor of Science in Human Nutrition of the University or a graduate of any other recognised university who has been admitted to the status thereof; or

(2) a person admitted by permission of the Senate under Common Rule R33 .to register for the diploma.

AgNc2 Applicability of other rules.

Rules SAR1 to SAR18 for the Faculty of Science and Agriculture shall, where applicable, be of effect for the Postgraduate Diploma in Community Nutrition.

AgNc3 Structure of the qualification.

In order to complete the diploma, a candidate shall obtain not less than 132 credits and shall complete all modules prescribed in Rule AgNc4 over two successive semesters. Candidates studying part-time must complete the diploma within four semesters.

AgNc4 Curriculum.

The modules described for the diploma are listed below (132C)(numbers in parentheses refer to credits):

Core modules: PPD701M (32).

Capstone modules: NUTR710 (32), 730 (8), 740 (24).

Elective modules: 32C from (NUTR343 (16) & 720 (16)) or (CRMS310 (16) & 710 (16)).

Degree of Bachelor of Science in Dietetics

AgDbi Applicability of other rules.

Rules SARI to SARI7 for the Faculty of Science and Agriculture shall, where applicable, be of effect for the degree of Bachelor of Science in Dietetics.

AgDb2 Structure of the degree. Â°
In order to complete the degree a candidate shall obtain not less than 390 credits and shall complete the modules as prescribed in Rule AgDb3.

AgDb3 Curriculum.

The modules prescribed for the degree are listed below (390C)(numbers in parentheses refer to credits):

Foundational modules: AGRI210 (1), 220 (1); BIOS101 (16); CHEM131 (16), 132 (16); PHYS121 (16), 122 (8).

Core modules: BCHM213 (16), 232 (16); DIET237 (16), 310 (4), 330 (24), 340 (24), 351 (8); FSCI120 (16), 210 (16); FSMT318 (16), 332 (16); HPHY 112 (8), 252 (16),-254 (16); MICR210 (16); NUTRI 14 (16), 118 (16), 214 (16), 342 (16), 343 (16); STAT101 (8).

Note: Candidates for the degree shall register, in the second year of study, in terms o f
Section 61(1)(1)(iv A) of the Medical, Dental and Supplementary Health Service Professions Act (Act 56 of 1974), with the Health Professions Council of South Africa. Candidatesâ\200\231 attention is drawn to implementation of the Statutory Compulsory Community Service for a one-year period upon completion of the BSc Dietetics and
- Postgraduate Diploma in Dietetics in order to register with the Health Professions Council of South Africa.
Applicable to South African Citizens only.

Postgraduate Diploma in Dietetics

AgP1 Eligibility.

The following candidates shall be eligible to register for the Postgraduate Diploma in Dietetics:

(1) a Bachelor of Science in Dietetics of the University or a graduate of another recognised university who has been admitted to status thereof; or

(2) a person admitted by permission of the Senate under Common Rule R33 to register for the diploma.

Note: Candidates shall submit a certificate of registration with the Health Professions Council of South Africa when applying for admission into the Postgraduate Diploma in Dietetics. Candidates shall produce proof of completion of one week of training in each of Food Service Management and Therapeutic Nutrition.

Candidates shall produce a certificate of completed hepatitis immunisations.

AgP2 Applicability of other rules.

Rules SARI to SAR18 and SH2 to SH9 for the Faculty of Science and Agriculture shall, where applicable, be of effect for the Postgraduate Diploma in Dietetics.

AgP3 Curriculum.

To qualify for the diploma, candidates shall complete a programme of training of eleven months duration at accredited institutions and community placements in KwaZulu/Natal recognised by the University and complete the modules listed below (128C)(numbers in parentheses refer to credits): Capstone modules: DIET710 (48); FSMT710 (24); NUTR710 (32), 740 (24).

AgP4 Repeating of failed modules.

A candidate who has attained a mark of at least 40% for all but two modules and marks in excess of 50% for the remaining modules shall be permitted to repeat these modules (each module once only) which must be completed within the following two semesters. In the case of field placement, this is contingent on there being a position for such a placement.

AgPS5 Exclusion.

Candidates who:

(1) have failed to achieve a subminimum of 40% in any one of the practical modules or field placements, or have failed to achieve a subminimum of 40% in any of the final or supplementary examinations; or

(2) have obtained less than 50% on repeating a practical olule or final examination; or

(3) have failed more than two written, practical or field placement modules shall be excluded.

Degree of Bachelor of Science in Consumer Studies Honours

AgChl Eligibility.

The following candidates shall be eligible to register for the degree of Bachelor of Science in Consumer Studies Honours provided they have:

(1) previously satisfied the requirements for a relevant degree in the University or been admitted to the status thereof; or

(2) been admitted by permission of the Senate in terms 3 Common Rule R33 as a candidate for the degree.

AgCh2 Applicability of other rules.

Rules SARI to SARI7 and SH2 to SH9 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect, where applicable, for the degrees of Bachelor of Science in Consumer Studies Honours.

AgCh3 Curriculum.

In order to complete the qualifications a candidate shall complete the modules as prescribed below (128C)(numbers in parentheses refer to credits): Core modules: CRMS720 (8).

Capstone modules: CRMS730 (24).

Elective modules: 96C. from CRMS740 (32), 741 (32), 744 (32), 745 (32), 750 (32); FPRO711 (32), 720 (32); FSMT710 (32); NUTR710 (32), 720 (32) or other modules at level 7 selected in consultation with Programme Director and approved by the Dean.

AgCh4 Supplementary examination.

Notwithstanding Rule SH9, a candidate who has failed any module with a mark that is not less than 40% but who has obtained a Ccredit-weighted average mark of at least 50% for the degree shall be permitted to write a supplementary examination in such a module and failure of such a module shall not be condoned.

Degree of Master of Science in Consumer Studies

AgCMiI Eligibility. Â©

The following candidates shall be eligible to register for the degree of Master of Science in Consumer Studies:

(1) a Bachelor of Science in Consumer Studies Honours, of the University or a graduate of another recognised university who has been admitted to status thereof; or

(2) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the degree.

AgCM2 Applicability of other rules.

Rules SARI to SARI8 and SM3 to SMI1 for the Faculty of Science and Agriculture, and Common Rule R30(3) shall be of effect, where applicable, for the degree of Master of Science in Consumer Studies. In addition to the above candidates may also be required to complete AGRI210 (1) and 220 (1).

Degree of Master of Science in Dietetics

Degree of Master of Science in Human Nutrition

AgDM1 Eligibility.

The following candidates shall be eligible to register for the degrees of Master of Science in Dietetics or Human Nutrition:

(1) a Bachelor of Science in Dietetics or Human Nutrition of the University, with a credit weighted average of at least 60% in the final year of undergraduate study and a Postgraduate Diploma in Dietetics or Community Nutrition of the University with a minimum of 65% in NUTR740;

(2) a graduate of another recognised university who has been admitted to ˜ status equivalent to (1) above;

or

(3) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the degree.

AgDMz Applicability of other rules.

Rules SAR1 to SAR18 and SM3 to SM11 for the Faculty of Science and Agriculture and Common Rule R30(3) shall be of effect, where applicable, for the degrees of Master of Science in Dietetics or Human Nutrition. In addition to the above, candidates may also be required to complete AGRI210 (1) and 220 (1).

AgDMS3 Curriculum

In order to complete the degree a candidate shall complete the following modules (128C) (numbers in parentheses refer to credits) FDSC840 (16) or another 16 credit, level 8, research methods course selected in consultation with the Programme Director and approved by the Dean. DIET820 (112) or NUTR 820 (112).

Postgraduate Diploma in Food Security

AgF1 Eligibility.

The following candidates shall be eligible to register for the Postgraduate Diploma in Food Security:

(1) any holder of a relevant Bachelors Degree of the University or a graduate of another recognised university admitted to the status thereof; or

(2) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the diploma.

Note: The relevance of the qualifications offered shall be determined by the Board of the Faculty.

AgF2 Applicability of other rules.

Rules SARI to SAR18 and SH2 to SH9 for the Faculty of Science and Agriculture shall, where applicable, be of effect for the Bese rad uate Diploma in Food Security.

AgF3 Curriculum. ;

In order to complete the diploma a candidate shall obtain at least 128 credits and complete the modules prescribed below (numbers in parentheses refer to credits):

Core modules: EDEL702 (4), (EDEL812 (4) or CMRS720 (8)); FDSC700 (16); POLS703 (32); and 16C from (FDSC720 (8), 724 (8), 730 (8)).
Capstone modules: FDSC701 (40) or 711 (40).

Elective modules: 12 or 16 or 32C from any modules in the Faculty of Science and Agriculture selected in consultation with Programme Director and approved by the Dean.

Advanced Postgraduate Diploma in Food Security

AgFal Eligibility.

The following candidates shall be eligible to register for the Advanced Postgraduate Diploma in Food Security:

(1) any holder of the Postgraduate Diploma in Food Security or a relevant Honours or four-year Bachelors degree of the University or a graduate of a recognised university admitted to the status thereof; or

(2) a person who has been admitted by permission of the Senate in terms of Rule R33 as a candidate for the diploma.

AgFa2 Applicability of other rules.

Rules SARI to SAR18 and SM4 to SM7, SM9 and SM11 for the Faculty of Science and Agriculture and Common Rule R30(3) shall, where applicable, be of effect for the Advanced Postgraduate Diploma in Food Security.

AgFa3 Curriculum.

In order to complete the diploma a candidate shall complete the modules as prescribed below (128C)(numbers in parentheses refer to credits):

Core modules: FDSC700 (16), 840 (16), 860 (16).

Capstone modules: FDSC801 (64).

Elective modules: 16C at levels 7 or 8 selected in consultation with Programme Director and approved by the Dean.

Degree of Doctor of Philosophy

SD1 Eligibility.

The following candidates shall be eligible to register for the degree of Doctor of Philosophy in the Faculty:

(1) any Masters graduate in areas of specialisation in the Faculty of Science and Agriculture of the University, or a graduate of another university who has been admitted to the status thereof;

(2) any graduate with an Honours Degree or Bachelor of Science in Agriculture, in areas of specialisation, in the Faculty of Science and Agriculture of the University, or a graduate of another recognized university who has been admitted to the status thereof, and whom the Senate has exempted from the Master’s examination; or

(3) a person who has been admitted by permission of the Senate in terms of Common Rule R33 as a candidate for the degree.

SD2 Area of study. Ã©

A candidate for the degree shall be required to pursue an approved course of special study or research under the guidance of a supervisor or supervisors appointed by the Senate.

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SD3 Additional requirements.
The Senate may require candidates for the degree to take modules in any prescribed subject in addition to those which are prescribed for the degree.

SD4 Applicability of other rules.

A candidate for the degree shall further comply with Common Rules D1 to D14 inclusive, provided that the number of copies of the thesis, referred to in Rule D9, shall be six.

Degree of Doctor of Science
(see Degree of Doctor of Science in Agriculture)

Degree of Doctor of Science in Agriculture

SS1 Eligibility.
The following candidates shall be eligible to register for the degree:
(1) Doctor of Science:

(1) any Bachelor of Science Honours of the University of not less than ten yearsâ\200\231 standing; or
(2) a graduate of another recognised university who has been admitted to the status thereof.
(2) Doctor of Science in Agriculture:
(1) a Doctor of Philosophy in the disciplines of Aercuiire of the University of at least two years' standing or a graduate of another recognised university who has been admitted to the status thereof;
(2) a Master of Science in Agriculture of the University of at least four years' standing or a graduate of any other recognised university who has been admitted to the status thereof; or
(3) a Bachelor of Science in Agriculture or a Bachelor of Science in Agriculture Honours of the University of not less than ten years' standing or a graduate of another recognised university who has been admitted to the status thereof,

SS2 Applicability of other rules.

Rules SARI] to SAR18 for the Faculty of Science and Agriculture, the Common Rules for the degree of Doctor of Philosophy in all Faculties, D2,

D3, D7 to D9, D11, D13 and D14 shall also be of effect for the degrees of Doctor of Science and Doctor of Science in Agriculture where applicable.

SS3 Application.

An intending candidate for the degree shall first submit in writing, for the approval of the Board of the Faculty, a statement of the subject and scope of the work to be presented for the degree and evidence of their relevant academic qualifications and published research.

SS4 Composition of the thesis.

(1) A candidate for the degree shall be required to present six bound copies of a thesis or published work which shall be a record of original and independent research carried out by the candidate on some subject falling within the recognised disciplines of Agriculture or Science, represented in the Faculty of Science and Agriculture.

(2) A thesis may include or consist wholly of copies of publications by the candidate (whether of single or multiple authorship), in which case it should contain a commentary relating the publications to the field of research covered by the thesis. –

(3) Candidates may also submit any relevant books of which they are author or co-author, with a statement of which of these, if any, they desire to be examined.

SS5 Standard.

No thesis or published work shall be accepted which is not a work of distinction in its field and a substantial contribution to the advancement of learning.

SS6 Recognition of the University.

A thesis accepted by the University and subsequently published as a monograph, shall bear the inscription: â\200\234Thesis approved for the degree of Doctor of Science of the University of Natalâ\200\235 or â\200\234Thesis approved for t he
degree of Doctor of Science in Agriculture of the University of Natalâ\200\231..

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(1)
(2)

INTRODUCTION TO SYLLABI –
(CONTENT OF MODULES)

as a result of restructuring, not all modules in this syllabus section will be on offer every year; and

timetable limitations may severely restrict the combination of disciplines for majors and elective modules.

General

The name of each module is followed, in parentheses, by a computer code of seven symbols. This comprises one letter to identify the centre (P = Pietermaritzburg), two letters identifying the discipline or area of specialization, one numeral to indicate the moduleâ\200\231s level, two letters to describe the module, and one symbol to indicate when the course is normally taught and examined (1 = first semester, 2 = second semester, B = both semesters, M = either semester, Y = year long, W = the module is run during the Winter vacation).

In the parentheses after the computer code, the approximate number of notional study hours (NSH) allocated to lectures (L), tutorials (T), practicals & field trips (P), seminars (S), own (self) study, resource-based learning & assignments (H), revision (R), internships & field placements (F), Assessment (A), the weeksâ\200\231 duration (W), and the credit points (C) applicable to the module are given (NSH is the approximate number of hours that it is expected that the average student will need to complete the components of the module. Note that the notional nature of the notional study hours on which credits are based is likely to be intensified for research degrees, where the time spent on research can be very idiosyncratic, depending on the individual concerned. Students should understand that the credits (and therefore notional study hours) indicated here are likely to be the minimum required for research degrees).

Foundation Courses

These courses are intended for candidates whose performance in the matriculation or equivalent examination is not of a sufficiently high standard to allow them admission to level-1 courses, but who have been admitted to a special programme leading to completion of the BSc in not less than four years, under the provisions of Rule SA2(2).

These are year-long courses which focus particularly on the development of thinking, communication and practical skills within the context of a specific discipline.

Details of individual Foundation Courses are to be found under the following subject headings: Biology, Chemistry, Mathematics and Physics.

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SYLLABI

* (CONTENT OF MODULES)

Academic Communication Studies

Offered in the Faculty of Human & Management Sciences (Pietermaritzburg)

ACCS101 - Academic Communication Studies 101

(PALI011) ; (OL-60T-OP-0S-94H-OR-0F-6A-13W-16C)
Aim: To introduce students to the kinds of language, learning and teaching at universit
y.
Content: Introduction to key concepts in communication including an understanding of discourse and small group communication. It makes explicit the demands and conventions used for successful academic communication.

Practicals: Six tutorials are held a week and students work in small groups.

Assessment: Class Mark, 33% Examination (Paper | and Paper 2), 67%

ACCS102 - Academic Communication Studies 102

(PAL1022) (OL-60T-OP-0S-94H-OR-OF-6A-13W-16C)
Prerequisite: To have completed ACCS101 is advisable.

Aim: To develop a wider understanding of factors which influence the outcome of communication and in the process, leading to a deeper understanding of academic communication.

Content: Introduction to key concepts of communicative competence including an understanding of language and power. Students develop their communicative competence by working in peer groups on a small research project which learners design, conduct, writ
e up
and present. ;

Assessment: Class Mark, 33% Examination (Paper | and Paper 2), 67%

Accounting

Offered in the Faculty of Human & Management Sciences (Pietermaritzburg)

ACCN100 - Accounting 100 â\200\230

(PACI00Y) (59L-39T-OP-0S-214H-OR-OF-8A-26W-32C)
Aim: To equip learners to compile financial statements for different business entities.
Content: The nature and function of accounting; fundamental concept; use of accounting information; structure, concepts and conventions of financial statements; the accountin
g
equation; double entry system; Sole proprietor; partnership and company accounting; preparation of financial statements: income statement, balance sheet and cash flow statements; Value added tax; Hire-purchase transactions; year end adjusting entries and subsequent reversing entries; full absorption costing; short term decision-making; marg
inal
costing.

Assessment: 3 tests, 33% 1 exam. 67%

Agribusiness

Offered in the School of Agricultural Sciences and Agribusiness

AGBU790 - Research Project & Seminars

(PAATABY) (OL-OT-OP-20S-380H-OR-0F-0A-26W-40C)
Corequisite: AGEC740 and (AGPS701or ANSI780 or FPRO720 or GRAS753).

Aim: To equip students with the ability and confidence to: (a) Critically review literature, prepare their own written papers, and to formally present and defend their work, and (b) to integrate theory and techniques covered in earlier modules by identifying a relevant research problem, developing models to test hypotheses, collecting and analysing data, interpreting results, making recommendations and preparing a comprehensive research report.

Content: This module integrates topics covered in earlier modules.

Practicals: None.

Assessment: Presentation of 2 papers (50%), research report (50%).

Year-long Module.

AGBU810 - Masters by Research

(PAA8RMM) (20L-59T-0P- PSS OT ROR ost Wel280)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.
Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None.

Assessment: To be determined by the SS

Year-long Module.

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AGBU910 - Doctor of Philosophy

(PAA9PHM) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Agricultural Economics

Offered in the School of Agricultural Sciences and Agribusiness

AGEC210 - Introduction to Agricultural Economics
(PAE2IA1) (29L-0T-39P-0S-66H-20R-0F- 6A-13W- 16C)

Aim: (a) To understand the basic economic principles of production, market demand and supply and how these principles can assist farm decision-makers in making improved decisions, and (b) to learn basic accounting principles to develop a sound farm record-keeping system.

Content: Market demand for agricultural products. Market supply of agricultural products. Price movements. The firm (farm) as a decision-making unit. Production functi ons
of the farm business. Determining the optimum level of production. Farm costs of production. Agricultural input substitution. Decisions on the choice of agricultural pr oducts.

Practicals: Elementary farm accounting.

Assessment: Exam (67%), 2 class tests (33%).

Offered in Semester 1.

AGEC220 - Farm Management

(PAE2MF 1) (39L-0T-39P-0S-57H-20R-0F-5A-13W-16C)
Corequisite: AGEC210 or -ECONI 10, 120.

Aim: To understand the economic and management principles which guide the practice of managing farms. i

Content: Farm management - Aetnitions planning environment, managerial functions and management by objectives. Key economic principles and planning concepts. Farm information systems, data analysis and budgeting. Organisation of capital. Farm machine ry
management. Land economics. Labour management.

Practicals: Application of economic principles to farming, analysis of farm records, budgeting, capital use and machinery and labour management decisions.

Assessment: Exam (67%), 2 class tests (33%).

Offered in Semester 1.

AGEC240 - Applied Farm Financial Management

(PAE2FF2) (20L-0T-39P-0S- 8H-10R-0F-3A-13W- -8C)
Prerequisite: AGEC220 (Bioresources Engineering students are exempt).

Aim: To learn and apply the principles and tools of finance to managerial problems in agriculture.

Content: Farm financial management objectives. Information flows in farm financial management. Financial leverage, farm firm growth and liquidity. Risk management in agriculture. Impact of time and risk on managerial decisions. Farm land values. Estate duty
and the farmer.

Practicals: Risk analysis, information flows, farm firm growth model, capital budgeting and
discounted cash flow problems.

Assessment: Exam (67%), | class test (33%).

Offered in Semester 2.

AGEC270 - Beribusiness) Finance & Marketing

(PAE2AM2) (39L-0T-39P-0S-57H-20R-OF-5A-13W-16C)
Corequisite: AGEC220 or PMN2301.

Aim: (a) To apply finance principles to solve managerial problems in agriculture, and (b) to study food marketing principles, and to craft and implement strategy in food and agricultural firms.

Content: Financial management objectives and information flows. Financial leverage, farm firm growth and liquidity. Risk management. Impact of time and risk on managerial decisions. Farm land values. Estate duty. Food marketing margins and marketing efficiency. Agricultural and food business strategy. Marketing alternatives.

Practicals: Risk analysis, information flows, farm firm growth model, capital budgeting and discounted cash flow problems, and agribusiness case studies.

Assessment: Exam (67%), 2 class tests (33%).
Offered in Semester 2.

AGEC370 – Production Economics & Price Analysis

(PAE3EP2) (39L-0T-39P-0S-57H-20R-OF-5SA-13W-16C)
Corequisite: AGEC270 or 16C in level 200 Economics modules.

Aim: To apply principles of production economics in making enterprise choices, to quantify demand and supply relations in agriculture, and to assess the economic effects of policies that distort markets.

Content: Empirical farm-level production functions. Cost minimising and profit maximising criteria. Linear programming. Farm planning under risk. Market demand and supply functions in agriculture. Relationships between price, income and cross-price elasticities.
Import tariffs and export subsidies. Econometric and non-econametric price analysis.
Practicals: Application of production and cost functions to agriculture. Farm planning with linear programming. Regression analysis of demand functions.

Assessment: Exam (67%), 2 class tests (33%).

Offered in Semester 2.

AGEC380 – Agricultural Development

(PAE3AD1) (39L-0T-8P-0S-88H-20R-0F-5A-13W-16C)
Corequisite: AGEC220 or 32C in level 200 Economics modules.

Aim: (a) To identify constraints which limit agricultural and economic growth in less-developed regions, and (b) to analyse policies that will alleviate these binding constraints.
Content: Characteristics of developing regions. Role of agriculture in economic development. Theories of economic and agricultural growth. Adoption of technology.
Impact of property rights (land tenure), credit, risk and information on technology adoption.
Demand for children.

Practicals: None.

Assessment: Exam (67%), 2 class tests (33%).

Offered in Semester 1.

AGEC381 – Agricultural Development Policy : :
(PAE3DP1) (20L-0T-8P-0S-38H-10R-OF-4A-7W-8C)
Corequisite: Registration for the post-graduate diploma in Food Security, AGEC220.

Aim: To analyse policies affecting agricultural and economic growth in less-developed regions. :

Content: Adoption of technology. Impact of property rights (land tenure), credit, risk and information on technology adoption. Demand for children. :

Practicals: None.

Assessment: Exam (67%), 1 class test (33%).

Offered in Semester 1.

AGEC730 – Applied Linear Programming :

(PAE7OR1) (20L–0T–39P–0S–12H–5R–OF–4A–13W–8C)
Prerequisite: AGEC370 or (MATHI10, 120).

Aim: (a) To identify and formulate a farm problem as a linear programming problem, and (b)
to show the practical use of linear programming in a variety of problem situations, lar gely
drawing on agricultural examples.

Content: Capital (cash) flow. Forage planning. Feeding problems where cost is minimised and profit maximised. Incorporation of negative-sloped product demand. Risk analysis. Integer programming.

Practicals: Using the computer to solve linear programming problems in farm planning and feed ration formulation, transport and processing, subsistence farming and agricultural policy.

Assessment: Exam (60%), pracs (10%), a project (16.4%) & 2 class tests (13.6%).

Offered in Semester 1.

AGEC740 - Agricultural Policy Analysis

(PAE7PA2) (39L-0T-OP-0S-97H-20R-0F-4A-13W-16C)
Prerequisite: AGEC 370:

Aim: To provide insight into the application of economic theory to a wide range of policy issues in South African agriculture. This module contributes towards an understanding of the macro-economic situation facing South African agriculture.

Content: Resource market policies. Demand for resources. Agricultural land. Agricultural risk and crop insurance. Private versus collective choice. Recreation, pollution and conservation. Product market. policies. Demand and marketing policies. Trade. Policy Analysis Matrix.

Practicals: None.

Assessment: Exam (67%), 2-class tests (33%).

Offered in Semester 2.

AGEC790 - Research Project & Seminars

(PAE7PRY) j (OL-OT-0P-20S-380H-OR-0F-0A-26W-40C)
Prerequisite: For students majoring in Agricultural Economics or BAgricMgtHons (Commerce Stream).

Aim: To equip students with the ability and confidence to: (a) Critically review literature, prepare written papers, and to formally present and defend their work, and (b) to integrate theory and techniques covered in earlier modules by identifying a relevant research problem, developing models to test hypotheses, collecting and analysing data, interpreting results, making recommendations and preparing a comprehensive research report.

Content: This module integrates topics covered in earlier modules.

Practicals: None.

Assessment: Presentation of 2 papers (50%), research report (50%).

Year-long Module.

AGEC791 - Management Research Project & Seminar

(PAE7RPY) (OL-0T-OP-20S-300H-0R-OF-0A-26W-32C)
Prerequisite: This course is available only to BAgricMgtHons students (Production Stream).

Aim: To equip students with the ability and confidence to: (a) Critically review literature, prepare their own written paper and to formally present and defend their work, and (b) to integrate theory and techniques covered in earlier modules by identifying a relevant research problem, developing models to test hypotheses, collecting and analysing data, interpreting results, making recommendations and preparing a comprehensive research report.

Content: This module integrates topics covered in earlier modules.

Practicals: None. :

Assessment: Presentation of 1 paper (33%), research report (67%).

Year-long Module.

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AGEC801 - Advanced Farm & Agribusiness Management ;

(PAE8FM1) (OL-20T-OP-0S-30H-27R-OF-3A-13W-8C)
Prerequisite: Registration for a Masters degree.

Aim: To provide the learner with a thorough insight into the most important issues faci ng
farm and agribusiness managers. This module focuses on micro-economic, macro-economic and strategy issues. :

Content: Farm labour, machinery and land economics. Economies of farm size. Efficiency concepts. Risk sources in farming and managerial responses to risk. Inflation and farm financial stress. Information economics. Competitive strategy and competitive advantage in
diversified and non-diversified firms. Global strategies. Strategy implementation. Agribusiness case studies. 5

Practicals: None.
Assessment: Exam (70%), 1 agribusiness case study presentation (30%).
Offered in Semester 1.

AGEC802 - Advanced Agricultural Price Analysis

(PAE8PA1) (20L-0T-OP-0S-30H-27R-0F-3A-13W-8C)
Prerequisite: Registration for a Masters. degree.

Aim: To provide insight into the application and analysis of price theÃ©ry in product a nd
resource markets with specific reference to South African Agriculture. This module focu ses
on macro-economic issues.

Content: Economics of free markets (Hayek, Buchanan, Coase). Water markets. Supply and tisk. Demand for resources. Agriculture and the State.

Practicals: None.
Assessment: Exam (100%).
Offered in Semester 1.

AGEC803 - Applied Econometrics :

(PAE8EC1) (OL-39T-OP-0S-82H-36R-OF-3A-13W-16C)
Prerequisite: Registration for a Masters degree.

Aim: To enable students to apply econometric models and techniques to a wide range of empirical problems in the fields of economic policy, price analysis, marketing, and agribusiness management. ,

Content: Multicollinearity, autocorrelation and specification bias in linear regression models.
Dummy variables and tests of linear restrictions. Lag and autoregressive models. Input-Output models. Stochastic dominance. Simultaneous-equation
models. Cointegration. Principal components. Linear discriminant, logit and probit mode ls.
Practicals; Computer applications to econometric data. ;

Assessment: Exam (70%), project (30% ).

Offered in Semester 1.

AGEC810 - Masters by Research

(PAE8RM1) (20L-59T-OP-6S-1096H-90R-0F-9A-26W-128C)
Prerequisite: Acceptance into the Masters programme. â\200\230

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

AGEC910 - Doctor of Philosophy

(PAE9PH1) (0L-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None. i

Assessment: Examination of thesis (100%).

Year-long Module.

Agricultural Engineering

Offered in the School of Bioresources Engineering & Environmental Hydrology

AGEN27216 - Agricultural Mechanisation

(PNA2MA1) (20L-7T-7P-0S-30H-12R-0F-4A-13W-8C)
Aim: To provide students with knowledge of the principles of operation and management o f
agricultural machines and their application.

Content: Farm Power: spark ignition and compression ignition internal combustion engine s;
power transmission; tractors, traction and tractor operation. Agricultural Machinery: implements and machines; principles of operation, adjustments and use. Farm Power and Machinery Management: power, machinery performance; cost analysis; mechanisation planning and equipment selection.

Practicals: Engines, Fuel injection, Power train, Ploughing, Implements and Planning.
Assessment: 2 tests (20%), pracs/research project (10%), 1 tutorial (5%), exam (65%).
Offered in Semester 1.

AGEN225 - Soil & Water Conservation Systems

(PNA2SC2) (39L-10T-18P-0S-68H-20R-0F-5A-13W-16C)
Aim: To provide students with an understanding of the principles of soil and water conservation and their application.

Content: Conservation Principles and Processes: Water flow, erosion, land degradation a nd
rehabilitation. Surveying and Positioning Systems: Tachiometry, contours, GPS systems. Design of Soil and Water Conservation Systems: Agricultural field layout, reclamation of a degraded area.

Practicals: Survey and field trip for assessing erosion prevention devices and degraded land
areas.

Assessment: Exam (70%), 2 tests & design project(s) (30%).

Offered in Semester 2. .

Agricultural Law

ALAW110 - Agricultural Law i
(PLAIAG2) (39L-27T-OP-0S-60H-26R-0F-3A-13W-16C)
Aim: A special course covering the law with which farmers and agricultural officers should
be acquainted, is provided by the Faculty of Law.

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Content: The course: (i) highlights the inadequacies of the old law (The Water Act No 54 of
1956) and discusses the implications and fundamental changes ushered in by the new law
(National Water Act 36 of 1998); (ii) discusses and analyses The Labour Relations Act 1995
and dispute resolution; (iii) deals with the objectives of income tax, kinds of taxes and the
most favoured tax treatment of farming operations; (iv) defines and discusses an insurance
contract and an insurable interest. It distinguishes between an indemnity and non-indemnity
insurance contract; (v) distinguishes between real and personal rights, movable and
immovable property, ownership of river beds and seashore, acquisition of ownership,
traditio, \and registration and prescription; (vi) defines and discusses the essentials of a
contract; offer and acceptance; intention to create obligations; certainty, lawfulness and
impossibility of performance; formalities; voidable contracts and termination of a contract.
Practicals: None.

Assessment: Tests (40%), exams (60%).

Offered in Semester 2.

Agricultural Plant Sciences

Offered in the School of Agricultural Sciences and Agribusiness

Offered in the disciplines of AGRICULTURAL PRODUCTION, CROP SCIENCE,
HORTICULTURAL SCIENCE, PLANT BREEDING AND SPORTS TURF MANAGEMENT –
see Rules Ag4 and AgR4

AGPS200 – Introduction to Plant Production

(PSA2IP2) (39L-0T-43P-0S-60H-14R-0F-4A-13W-16C)
Prerequisite: Students are expected to have a basic knowledge of general biology.

Aim: To provide knowledge of the principles of agricultural plant production locally and
globally.

Content: Origins of agriculture, crop establishment from seed and vegetative mmsterial crop
classification, plant nutrition, plant morphology and development, carbon and nitrogen
metabolism, principles of plant breeding, agricultural development.

Practicals: Once a week on topical subject. Practicals may include field trips.

Assessment: 2 tests (25%), laboratory reports (25%), 1 exam (50%).

Offered in Semester 2.

AGPS210 – Sustainable Community Agriculture

(PSA2SA1) -(9L-0T-4P-0S-45.5H-20R-0F-1.5A-13W-8C)
Corequisite: FPRO310.

Aim: To introduce students to plant production, including effects of environment, cropping
practices, and their effects on the environment. Sustainable agriculture is discussed such that
students will be able to do elementary problem-solving regarding plant production.

Content: Principles of agroecology.

Practicals: Field trip.

Assessment: 1 exam (50%), | assignment (50%).

Offered in Semester I.

AGPS300 - Plant Propagation & Nursery Management

(PSA3PN2) . (18L-0T-14P-0S-28H-16R-OF-4A-13W-8C)
Aim: To familiarise students with plant propagation techniques and the management of re tail
and wholesale nurseries.

Content: General aspects of propagation, seed propagation, vegetative propagation inclu ding
cuttings, budding, grafting, layering, specialised stems and roots, micropropagation an d the
selection and management of clones. Also included will be the design and management of nurseries, ranging from wholesale to retail, general to specialist.

Practicals: Demonstration of theoretical concepts, field trips.

Assessment: 2 tests (16%), prac assessment (17%), 2 h exam (67%).

Offered in Semester 2.

AGPS301 - Irrigation Design & Management

(PSA3DM1) (36L-6T-45.5P-0S-44H-24R-OF-4.5A-13W-16C)
Aim: To teach students the principles of irrigation design and management. â\200\230
Content: Criteria for selection of land and water for irrigation; availability of soil water to
plants; measurement of soil water; water uptake by plants; crop water requirements and response to water stress; design of flood, sprinkler and micro irrigation systems; pump s and
flow of water in pipes and channels; techniques of scheduling irrigation; negative impa cts of
irrigation on soil and water resources.

Practicals: Field excursions to irrigation schemes; application of theory to designing an
irrigation scheme with associated management recommendations; tutorial exercises on irrigation.

Assessment: 2 theory tests (7%), irrigation design report (35%), tutorials (8%), 1 3 h exam
(50%).

Offered in Semester 1.

AGPS303 - Resource Assessment

(PSA3RA1) (18L-0T-18P-0S-30H-10R-OF-4A-13W-8C)
Aim: To provide students with the necessary skills to assess the potential of natural, human,
and financial resources pertaining to a farm.

Content: Techniques of assessment, mapping and siiaPshic of topography, climate soils, water, vegetation, land use, management and financial resources.

Practicals: Air photo interpretation, mapping and resource data interpretation.

Assessment: 2 theory tests (24%), prac exercises (9%), 1 exam (67%).

Offered in Semester 1.

AGPS304 - Greenhouse Management

(PSA3MG2) : (18L-0T-18P-0S-30H-10R-OF-4A-13W-8C)
Aim: To provide students with an understanding of the influence of environmental conditions on development and growth of crops and the optimisation of these conditions

in a
controlled environment.

Content: The influence of environment on plant growth and development, greenhouse structures and covering materials, artificial lighting and daylength control, climate control
including ventilation, heating, cooling and humidity control, irrigation and growing systems,
with special emphasis on hydroponic production.

Practicals: Practicals include excursions to commercial eT and the opportunity to grow plants in controlled environments.

Assessment: 2 tests (16%), prac assessment (17%), 2 h exam (67%).

Offered in Semester 2.

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AGPS305 - Field Crop Management
(PSA3CM1) (39L-0T-43P-0S-60H-14R-OF-4A-13W-16C)

Aim: To provide students with knowledge of management practices favored in the production of field crops.

Content: Soil fertilization and liming, tillage and residue management, mulching, crop improvement techniques, weed and pest control, ley-cropping, forage preservation and grain storage.

Practicals: Research project with field trips.
Assessment: 2 tests (25%), research project (15%), prac evaluations (10%), 1 exam (50%).
Offered in Semester 1.

AGPS306 - Principles of Plant Breeding

(PSA3PB2) (36L-3T-33P-0S-53H-30R-OF-5A-13W-16C)
Prerequisite: A pass in GENE213.

Aim: To provide students with an understanding of the fundamental principles of and practical skills in classical plant breeding.

Content: Sexual and asexual modes of reproduction in plants; quantitative or polygene inheritance and its measurement; fertility-regulating mechanisms; breeding self-pollinated, cross-pollinated and clonally propogated plants; breeding hybrids; utilization of polyploidy and induced mutations in plant breeding.

Practicals: Conducting hand-pollinations of selected plant species, data collection and statistical analysis, and selections from segregating populations.

Assessment: 2 tests (16%), 1 mini-seminar presented in both written & verbal form (6%), prac report (11%), 1 3 h exam (67%).

Offered in Semester 2.

AGPS307 - Orchard Management ,
(PSA30M1) (39L-0T-43P-0S-60H-14R-OF-4A-13W-16C)
Aim: To provide students with skills and experience in managing intensively produced orchard crops.

Content: Climate and climate modification, modification of the plant environment, managing orchard soils and the orchard floor, plant factors in the orchard, plant manipulation, crop protection, harvesting and postharvest handling.

Practicals: Field trips to commercial orchards, as well as at the University Research farm.
Assessment: 2 theory tests (25%), prac assessment (25%), 3 h exam (50%).

Offered in Semester 1.

AGPS308 - Crop Protection : s
(PSA3CP2) (39L-0T-36P-0S-60H-20R-0F-5A-13W-16C)
Prerequisite: BIOS101and BOTY 102 or ZOOL102. :

Aim: To introduce students to the principles of integrated control of crop pests, diseases and weeds.

Content: The principles of integrated pest control, ecological interaction, methods of managing and use of threshold level of pests, diseases and weeds; pesticide formulation

;
sprayer calibration and nozzle function. Safe handling and storage of pesticides.

Practicals: Pest and disease recognition in the field, weed identification, scouting fo
r pests,
disease and weed assessment, field evaluation of herbicides and phytotoxicity, calibrat
ion of
applicators. Disease control project. Field visits.

Assessment: 2 tests (17%), practicals & projects (16%), 3 h exam (67%).

Offered in Semester 2.

AGPS320 - Agricultural Plant Physiology

(PSA3PH2) (48L-0T-36P-0S-42H-30R-0F-4A-13W-16C)
Prerequisite: CHEMI11

Corequisite: BCHM231, BOTY 301

Aim: To develop skills required for analysis of mechanisms controlling and coordinating plant growth and development.

Content: Physiological processes, related to plant mineral nutrition, correlative plant growth
and development, fruit growth and development pre- and post harvest.

Practicals: To demonstrate the above mentioned processes.

Assessment: 2 tests (10%), 1 essay (20%), prac assignments (20%), 1 exam (50%).

Offered in Semester 2.

AGPS701 - Principles of Agricultural Research

(PSA7RP1) (18L-6T-9P-0S-34H-10R-OF-3A-13W-8C)
Aim: To acquire the skills to plan and implement agricultural research and the appropriate
communication skills for these tasks.

Content: The presentation of technical information and communication skills. The development, organization and financing of agricultural research; research philosophy and
policy. Research methods with emphasis on the scientific method and particular reference to
economic plant improvement. Field plot, glasshouse and controlled environment techniques.
Practicals: Critical reviews (oral and written) of published scientific papers; conduct of field
and pot experiments; visits to research establishments.

Assessment: 1 theory test (10%), 2 oral & written criticisms (20%), 1 project proposal (20%), 1 2 h exam (50%).

Offered in Semester 1.

AGPS710 - Forage Production & Utilisation

(PSA7FU2) (38L-0T-39P-0S-62H-20R-0F-1A-13W-16C)
Aim: To equip students with an understanding of the principles of selection, growth, management and utilization of cultivated forages.

Content: Accumulation and utilization of energy reserves, nitrogen fixation, soil amelioration and fertilization, and uses of forage crops for animal production systems.
Practicals: Demonstrations, visits, exercises and assignments designed to enhance the understanding of the lectures.

Assessment: 2 tests (17%), prac exercises (16%), 1 exam (67%).

Offered in Semester 2.

AGPS711 - Field Crop Production

(PSA7CP1) (21L-OT-15P-0S-30.5H-10R-OF-3.5A-13W-8C)
Aim: Students will acquire an understanding of crop-environment interaction and its management to sustain crop production.

Content: A study of the management and production of selected field crops drawn from th

e
categories of sugar, cereal, oil and protein, and fibre crops. The impact of environmen
tal
variables, particularly stress on crop production, and the management of these variable
s to
sustain productivity. The harvesting, grading and storage of crop products.

Practicals: | mini project/poster presentation. Visits to research stations and crop pr
oducers.
Assessment: 2 theory tests (10%), 1 project (40%), | final 2 h exam (50%).

Offered in Semester 1.

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AGPS712 - Advanced Seed Technology

(PSA7ST2) (36L-0T-37P-0S-65H-15R-OF-7A-13W-16C)
Prerequisite: AGPS200 or coordinators permission.

Aim: To provide skills and experience in seed science and technology.

Content: Physiology, biochemistry and molecular biology of orthodox and recalcitrant se eds
in relation to seed production, development, germination, conditioning, storage and marketing.

Practicals: A project pertinent to the objectives of the course will be undertaken by s tudents
as individuals or groups. One trip to a seed related institution. One field trip to a f arming
community.

Assessment: 2 theory tests (16%), | project (24%), 1 exam (60%).
Offered in Semester 2.

AGPS713 - Field Crop Production Self Study
(PSA7CS1) (43.5L-0T-26P-0S-66H-20R-0F-4.5A-13W-16C)

Aim: Students will through acquisition of an understanding of the basis of crop growth and
development be able to improve crop productivity.

Content: A detailed study of the agronomy, crop physiology, nutrition, growth and development in relation to environmental factors of selected field crops. Crop improvem ent.
Harvesting, storage and grading of crop products.

Practicals: A mini-project, visits to research stations, plant breeding enterprises and cropping areas.

Assessment: | project (11%), 2 theory tests (11%), 1 field trip report (11%), 1 3 h exa m
(67%).

Offered in Semester 1.

AGPS720 - Tropical & Subtropical Fruit Production

(PSA7TF2) (18L-0T-35P-0S-15H-8R-0F-4A-13W-8C)
Aim: To develop proficiency in managing a wide variety of tropical and subtropical crop s.
Content: Subtropical and tropical crops; avocado, banana, mango, papaya and macadamia. Their origin, distribution, classification, cultivars and rootstocks, fruit and tree mo rphology,
the phenological cycle and techniques of manipulation, orchard design and canopy architecture. The principles of integrated pest and disease management, and the causes and
symptoms of physiological disorders will be studied. Maturity indexing techniques and preparation for harvest will be learnt.

Practicals: Mlustration of theoretical concepts and at least two field trips.

Assessment: 2 tests (30%), 1 exam (50%), self study assignments (20%).

Offered in Semester 2.

AGPS721 - Vegetable Crop Production

(PSA7VP1) (18L-0T-14P-0S-28H-16R-OF-4A-13W-8C)

Aim: To understand growth and development of vegetable crops as well as to apply the obtained knowledge to understand and design management practices.

Content: Principles and advanced techniques of management of different root, bulb, leaf and
fruit vegetable crops.

Practicals: Growth and development of different vegetable la project on managing a vegetable plot, field trips.

Assessment: | test (5%), prac evaluations (10%), study assignments (35%), 1 exam (50%).

Offered in Semester 1.

AGPS723 - Citrus Management

(PSA7CM1) (18L-0T-34.5P-0S- 1 5H-8R-OF-4.5A-13W-8C)
Aim: To enable the student to be proficient in managing citrus as a crop.

Content: The origin and distribution of citrus, classification, rootstocks and cultivars. An understanding of fruit and. tree morphology together with the phenological cycle and management techniques for tree and crop manipulation. Knowledge of integrated pest and disease management, physiological disorders, fruit maturity indexing and preparation for harvest.

Practicals: I\lustration of theoretical concepts and at least two field trips.

Assessment: 2 tests (30%), 1 exam (50%), self study assignments (20%).

Offered in Semester 1.

AGPS724 - Post Harvest Technology

(PSA7HT2) : (18L-OT-35P-0S-15H-8R-OF-4A-13W-8C)
Aim: To enable the student to be proficient in postharvest management of horticultural crops.
Content: Physiological attributes of the major groups of Horticultural products, with reference to preharvest physiology, temperature, water loss and humidity and storage atmosphere. Also included will be packhouse design and technologies, fruit coatings, packaging, physiological and pathological disorders, effects and requirements of phytosanitary regulations, product processing for added value and storage life and quality and food safety management systems.

Practicals: M\lustration of theoretical concepts and at least two field trips.

Assessment: 2 tests (30%), 1 exam (50%), self study assignments (20%).

Offered in Semester 2.

AGPS725 - Deciduous Fruit Crop Production

(PSA7DF1) ˜ (18L-0T-14P-0S-28H-16R-OF-4A-13W-8C)
Aim: To understand the basis of growth and development of deciduous fruit crops as well as their management practices.

Content: Principles of cultivation of small fruit, pome and stone fruit and nut crops, advances in deciduous fruit production.

Practicals: Establishing and managing deciduous fruit crops, field trips.

Assessment: 1 test (10%), prac evaluations (15%), self study assignments (25%), | exam (50%).

Offered in Semester 1.

AGPS726 - Floriculture

(PSA7FF2) (18L-OT-14P-0S-28H-16R-OF-4A-13W-8C)
Aim: To provide students with an understanding of growth, development and management of floricultural crops. :

Content: Production, management, growth manipulation and marketing of: cut flowers, cut foliage, pot plants, bulbs and bedding plants.

Practicals: Excursions to commercial farms, plant identification and a project.

Assessment: 2 tests (16%), prac assessment (17%), 2 h exam (67%).

Offered in Semester 2.

AGPS728 – Landscaping & Ornamental Plants
(PSA7LO2) (18L–OT–14P–0S–28H–16R–OF–4A–13W–8C)
Aim: To introduce students to basic concepts of landscape design and plant selection.

Content: Key concepts of landscape design, plant selection, indigenous alternatives, al
ien
invaders.

Practicals: Demonstration of theoretical concepts, design project, plant identification
,
field trips.

Assessment: 2 tests (16%), prac assessment (17%), 2 h exam ey

Offered in Semester 2.

AGPS730 - Advanced Plant Breeding

(PSA7PB2) (36L-OT-27P-0S-62H-30R-OF-5A-13W-16C)
Prerequisite: Passes in GENE332, 732; BMET210, 222.

Corequisite: BMET701.

Aim: To expose students to advanced concepts in applied plant breeding.

Content: Students will critically analyze and vigorously debate advanced topics in plan
t
breeding eg interpreting genotype x environment interactions; genetics of host x parasi
te
interactions; gene action in plant breeding; marker assisted selection for quantitative
traits;
ideotype breeding: and alternative approaches to plant breeding such as somatic cell
hybridization and cell selection.

Practicals: Analysis and discussion of applied problems in plant breeding. A mini-liter
ature
review on a selected topic which will be presented in both written and verbal form.
Assessment: 2 theory tests (20%), | mini-seminar (10%), 1 presentation (3%), 1 3 h exam
(67%).

Offered in Semester 2.

AGPS790 - Project & Seminar

(PSA7RPY) (10L-0T-OP-30S-280H-OR-OF-0A-26W-32C)
Prerequisite: Entry into fourth year.

Aim: To develop written and verbal communication skills; critical and creative thinking
;
information retrieval, evaluation, comprehension and review skills.

Content: Undertake and present, in both written and verbal form, a literature review on
an
approved topic and an appropriate research project.

Practicals: Survey of relevant literature. A research project including design and
management, record and analyze data, and a written report. For the verbal presentations
of
the seminar and project students are expected to make use of modern presentation media.

Assessment: Written & verbal presentations of seminar & research project are assessed b
y
internal & external examiners. Students may be required to go on a experiential field t
rip.
Seminar (40%), project (60%).

Year-long Module.

AGPS791 - Observation & Analysis of Agro-Industries

(PSA70A2) (OL-10T-60P-0S-10H-OR-OF-0A-2W-8C)
Corequisite: AGPS701 or 790.

Aim: To introduce students to a variety of agro- enaueiee and integrate theoretical knowledge within the operations within a diverse commercial sector.

Content: Visit agro-industries, including farms, companies, processing plants and research institutions during vacation periods to observe and evaluate production as well as value adding, marketing and distribution of products related to plant based agricultural industries.
Practicals: Site visits to several agricultural enterprises.

Assessment: Written report (100%).

Offered in Semester 2.

## Agricultural Production
Offered in the School of Agricultural Sciences and Agribusiness

FOR UNDERGRADUATE PROGRAMME IN AGRICULTURAL PRODUCTION - See Rules
AgÂ¢ and AgR4 and Agricultural Plant Sciences

### APRO810 - Masters by Research

(PAP8RMM) (OL-OT-OP-0S-1280H-OR-OF-0A-0W-128C)
Prerequisite: Acceptance into Masters programme.

Corequisite: To be specified by the discipline.

Aim: To undertake supervised research.

Content: To be determined Wy the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

### APRO910 - Doctor of Philosophy

(PAP9PHM) (OL-0T-OP-0S-1280H-0R-OF-0A-0W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

## Agriculture (general modules)

Offered in the School of Applied Environmental Sciences

### AGRI210 - Computer Literacy Skills

(PAG2CL1) (8L-0T-OP-0S-2H-OR-OF-0A-13W-1C)
Aim: This module is designed to provide second year agriculture, science and environmen tal
science students with skills to independently use a computer. This crash-course is held within the first four weeks of the first semester.

Content: Word processing, spreadsheets, E-mail, Internet. The student should be able to generate a practical report or summaries of their lecture notes; type data into a sprea dsheet;
graphical display of data; data compression, data handling. Send and receive E-mail and attachments; use the Internet and software to locate information.

Practicals: Use of a computer.
Assessment: Practical assignment & 1 comprehension exercise.
Offered in Semester 1.

AGRI220 - Information Retrieval Skills

(PAG2IR1) (3L-0T-5P-0S-2H-OR-OF-0A-13W-1C)
Aim: To provide skills in retrieving information from university libraries.

Content: Orientation in terms of worldwide organization of information, focusing on the local library level. 2.Sources of information eg books, journals, CDROMs, online databases
etc. 3.Tools to access information sources in different formats and instruction on OPAC,
abstracting and indexing tools, online databases. 4.Steps: topic formulation; reference selection and recording, including the function of the review paper and Science Citation
Index; document acquisition.

Practicals: None.

Assessment: 4 assignments to demonstrate reasonable proficiency in the use of library resources.

Offered in Semester 1.

Agrometeorology

Offered in the School of Applied Environmental Sciences

AMET210 - Agrometeorology & Environmental Biophysics

(PAM2AE1) (36L-5T-40P-0S-50H-24R-OF-5A-13W-16C)
Corequisite: At least one module in Mathematics and one in Physics at first year level.

Aim: Provision of concepts and applications in applied environmental, agricultural and ecophysiological sciences.

Content: The atmosphere, greenhouse effect. Climate change. Earthâ\200\231 s radiation balance.
Leaf environment. Hazards and climate modifications: Frost. Glasshouse climate. Windbreaks. Irrigation. Temperature and photosynthesis. Animal climate. Crop growth physics: Modelling crop growth. Meteorology: rain processes. Weather systems. Remote sensing.

Practicals: Meteorology site. Temperature techniques. Reflectivity, radiation profiles in
crops; humidity; rainfall, class-A pan evaporation. Leaf resistance and water potential.
Assessment: Four quizzes, 2 tests (15%), 6 prac reports (18%), 3 h exam ORO)

Offered in Semester 1.

AMET211 - Environmental Instruments:Life/Earth Sciences

(PAM2IL2) (9L-OT-54P-0S-GH-13R-OF-4A-13W-8C)
Prerequisite: Completion of first year Science or Agriculture.

Aim: To provide students taking agriculture and SneLOnTe aay science options with the skills to set up an automatic weather station.

Content: Datalogging measurement and control techniques using the automatic weather station system. Specialized data techniques for model evaluation. Theory and use of the following systems and sensors: automatic weather station (AWS) sensors and their use for
measurement and control. Internet techniques, information retrieval and storage, scientific

graphics display.

Practicals: Identifying, checking electronic components. Use of an automatic weather station.

Assessment: 8 prac reports (24%), | h test (16%), 3 h prac exam (60%).

Offered in Semester 2.

AMETS10 - Masters by Research

(PAM8RMM) : (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

AMETS861 - Automatic Weather Station Technologies 1

(PAM8AWY) (20L-5T-18P-0S-27H-7R-OF-3A-26W-8C)
Prerequisite: Any Science or Agriculture degree or acceptance under R33.

Aim: To provide postgraduate students with the skills to set up an automatic weather station.
Included here is the. checking of the electronic components and an understanding of the sensors used. :

Content: Datalogging measurement and control techniques. Data processing and presentation. Specialized data techniques for model evaluation. Theory and use of the automatic weather station (AWS) sensors and their use for measurement and control. Internet techniques, information retrieval and storage, scientific graphics display.
Practicals: Field use of equipment.

Assessment: | h test (20%), 1 prac report (20%), 1 2 h exam (60%).

Year-long Module.

AMET$802 - Digital Data Treatment & Representation

(PAM8DDY) (20L-5T-18P-0S-27H-7R-OF-3A-26W-8C)
Prerequisite: Any Science or Agriculture degree or acceptance under R33.

Aim: This module (postgraduate certificate course) is designed to provide students with the skills necessary to process and exchange, present, store, retrieve, display and publish data and information.

Content: Data presentation and information. Data exchange. Internet techniques. Data retrieval and information storage. Desk-top publishing. Display of scientific graphics. Speed reading and report writing.

Practicals: Assignments based on generated and other data sets.
Assessment: | h test (20%), 1 prac report (20%), 1 2 h exam (60%).
Year-long Module.

AMETS863 - AWS Measurement & Control Technologies

(PAMB8ACY) (20L-5T-18P-0S-27H-7R-0F-3A-26W-8C)
Prerequisite: Any Science or Agriculture degree or acceptance under R33.

Aim: This module (postgraduate certificate course) is designed to provide students with the

theory necessary to understand the use of automatic weather station sensors for the measurement and control of various microclimates.

Content: Theory and use of the following systems and sensors: automatic weather station (AWS) sensors and their use for measurement and control, for example, of frost protecti on,
reference evaporation, glasshouse microclimate.

Practicals: Field use of equipment.

Assessment: \ h test (20%), 1 prac report (20%), 1 2 h exam (60%).

Year-long Module.

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AMETS864 - AWS Measurement & Montrol Technologies

(PAM8WCM) (20L-5T-18P-0S-27H-7R-OF-3A-26W-8C)
Prerequisite: Any Science or Agriculture degree or acceptance under R33.

Aim: This module (postgraduate certificate course) is to provide students with the theo
ry
necessary to understand the following AWS systems and measurement systems,

Content: Theory and use of the following systems and sensors: automatic weather station (AWS) sensors and their use for measurement and control, for example, of disease forecasting, fire-danger warning; leaf wetness measurements, radio telemeters, infrared thermometry, AWS sensors, time-domain reflectometry.

Practicals: Field use of equipment and sensors.

Assessment: | h test (20%), 1 prac report (20%), 1 2 h exam (60%).

Year-long Module.

AMETS865 - Heat Pulse Measurement in Plants & Soils

(PAM8HPM) (20L-5T-18P-0S-27H-7R-OF-3A-26W-8C)
Prerequisite: Any Science or Agriculture degree or acceptance under R33

Aim: This module (postgraduate certificate course) is to provide students with the theo
ry
necessary to understand the following heat pulse technologies for useâ\200\230in soils and plants.
Content: Heat pulse technologies for the measurement of sap flow in trees and other non
-
woody stems and the measurement of the thermal properties of porous materials.

Practicals: Field use of equipment and sensors.

Assessment: | h test (20%), 1 prac report (20%), 1 2 h exam (60%).

Year-long Module.

AMETS866 - Modelling Exchanges in the SPAC System 1

(PAM8MSM) (20L-5T-18P-0S-27H-7R-OF-3A-26W-8C)
Prerequisite: Any Science or Agriculture degree or acceptance under R33.

Aim: This module (postgraduate certificate course) is to provide students with the theo
ry
necessary to understand the principles of modelling energy and water flow in the SPAC.

Content: Principles of modelling: CERES and SWB models; modelling using finite differences; application of models; specialized data techniques for model evaluation.
Practicals: Field use of equipment and sensors. i

Assessment: | h test (20%), 1 prac report (20%), 1 2 h exam (60%).

Year-long Module.

AMETS67 - Environmental Temperature & Radiation

(PAMB8ETY) (20L-5ST-18P-0S-27H-7R-OF-3A-26W-8C)
Prerequisite: Any Science or Agriculture degree or acceptance under R33.

Aim: This module (postgraduate certificate course) is to provide students with the theo
ry
necessary to understand the principles of temperature measurement and calibration of radiation instrumentation.

Content: Principles of temperature measurement using resistance thermometers,

thermocouples and thermistors. Soil temperature and soil heat flux measurement. Net radiation and canopy interception measurement. Calibration of radiation instrumentation .

Applications.

Practicals: Field use of equipment and sensors.

Assessment: 1 h test (20%), 1 prac report (20%), 1 2 h exam (60%).

Year-long Module.

AMETS68 - Advanced Micrometeorological Techniques

(PAM8MTY) (20L-5T-18P-0S-27H-7R-OF-3A-26W-8C)
Prerequisite: Any Science or Agriculture degree or acceptance under R33.

Aim: This module (postgraduate certificate course) is to provide students with the theo ry
necessary to understand the principles of humidity control and humidity sensor calibrat ion
and techniques for turbulence measurement.

Content: Humidity control and humidity sensor calibration using a standard dewpoint generator. Measurement of evaporation using Bowen ratio, eddy correlation and empirical techniques. Techniques for turbulence measurement. Applications.

Practicals: Field use of equipment-and sensors.
Assessment: | h test (20%), 1 prac report (20%), 1 2 h exam (60%).
Year-long Module.

AMETS869 - Agric/Environment Instrumentation Research

(PAM8ARM) (OL-OT-390P-0S-250H-O0R-OF-0A-26W-64C)
Prerequisite: Acceptance into the Agricultural and Environmental Instrumentation postgraduate progamme.

Aim: To allow distance students to undertake a research project at their place of employment.

Content: Research on a topic agreed upon by the supervisor, the student and the employe r(s).
Practicals: This forms the basis of the research project.

Assessment: Project report (100%).

Year-long Module.

AMET910 - Doctor of Philosophy

(PAM9PHM) (OL-OT-0P-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Animal Science & Poultry Science

Offered in the School of Agricultural Sciences and Agribusiness

ANSI201 - Pig & Poultry Production

(PAS2PP1) (38L-0T-39P-0S-39H-40R-0F-4A-13W-16C)
Aim: To enable students to solve problems encountered in pig and poultry production.
Content: Applied anatomy and physiology of male and female fowl. Environmental control of ovulation in hens. Management of pullet, broiler, broiler breeder and pig production

systems. Economic factors influencing management decisions in broiler, egg and pork production. Pig and poultry welfare.

Practicals: Anatomy of a chicken, visit different pig and poultry production systems.

Assessment: Essays (12.5%), development of spreadsheets (12.5%), oral & written presentations (7.5%), participation in debate on animal welfare issues (5%), formal tes ts
(5%), impromptu assessments (7.5%), 3 h exam (50%).

Offered in Semester 1.

ANSI202 - Livestock Production

(PAS2LP2) (38L-0T-39P-0S-39H-40R-0F-4A-13W-16C)
Aim: Students should develop a holistic approach towards the production of beef, sheep, goats and dairy and be capable of identifying and solving production problems associate d
with these systems.

Content: Beef, sheep, goats and dairy production systems.

Practicals: Visit various beef, sheep, goat and dairy farms.

Assessment: Animal Science majors: Impromptu tests (20%), formal test (5%), essays and/ or
projects (15%), breed project (10%), 3 h exam (50%). Non Animal Science majors: Impromptu tests (25%), formal test (5%), essays and/or projects (20%), 3 h exam (S0%).
Offered in Semester 2.

ANSI203 - Introduction to Feed Formulation

(PAS2IF2) (9L-9T-18P-0S-30H-1 1R-OF-3A-13W-8C)
Aim: To introduce students to the principles of feed formulation and encourage an aptit ude
in economic feeding of animals.

Content: The principles of feed formulation, introduction to Winfeed feed formulation, formulation of least cost rations.

Practicals: Formulation of feeds.

Assessment: Problem-solving exercises (35%), oral debates & presentations (10%), formal test (5%), formal exam (50%).

Offered in Semester 2.

ANSI204 - Muscles & Meat

(PAS2MM2) (18L-0T-18P-0S-30H-1 LR-OF-3A-13W-8C)
Aim: To encourage students to develop an understanding of muscle physiology and meat quality.

Content: The physiology of muscle contraction. The effect of Ronacuviy on muscle development. The conversion of muscle to meat. Meat quality. Slaughter techniques and t he
consequences for meat quality and animal welfare. Consumer chains.

Practicals: Muscle physiology and meat quality. :

Assessment: Referenced essays (5%), case studies (5%), problem-solving exercises (10%), impromptu assessments (10%), poster presentation (10%), formal tests (10%), 3 h exam (50%).

Offered in Semester 2.

ANSI304 - Animal Feeds

(PAS3AF2) (18L-0T-18P-0S-30H-11R-OF-3A-13W-8C)
Aim: Students should develop an understanding of feed attributes and match type of feed

to
type of animals and/or production.

Content: Nutritive and anti-quality attributes of grains and grain byproducts, roots , tubers
and other concentrates. Nutritive and anti-quality attributes of protein-rich grains an d â\200\234oilseed
cakes. Non-conventional protein sources. Roughage and systems of harvesting. Feed additives. Vitamins and minerals in ruminants. Feed processing.

Practicals: Feed ingredients, analysis of ingredients, visit feed mill.

Assessment: Essays (20%), report on feed mill procedures (5%), formal tests (25%), 3 h exam (50%).
Offered in Semester 2.

_ ANSI332 - Animal Growth & Development

(PAS3AD2) (38L-0T-39P-0S-46H-32R-OF-5A-13W-16C)
Aim: Students should analyze the relationships between body size and composition over time as a means of predicting the consequences of internal and external stimuli on growth and development of domestic and non-domestic animals.

Content: Basic growth terminology, Analysis of growth curves, Scaling and allometry, Growth modelling, Endocrinology of growth, Manipulation of growth.

Practicals: Allometric measurements and analyses.

Assessment: Formal test (2.5%), impromptu assessments (15%), design & construction of growth model (5%), hormone model (7.5%), project/posters/oral presentations (10%), Essays (10%), 3 h exam (50%).

Offered in Semester 2.

ANSI344 - Digestive Physiology & Herbivore Nutrition

(PAS3DP1) (38L-0T-39P-0S-54H-24R-0F-5A-13W-16C)
Aim: Students should evaluate the digestive, absorptive and metabolic processes in animals and how these influence the nutritive value of feeds and the nutrient requirements of animals. :

Content: Functional anatomy and physiology of the digestive tract; nutrient absorption; Ruminal micro- organisms, digestive and synthetic processes in the rumen, Methods of determining digestibility and protein quality for different animals; The metabolizable protein system; The use of metabolizable energy system for rationing livestock; Mineral and vitamin nutrition.

Practicals: Different digestive systems, determination of rumen digestibilities, case studies.
Assessment: Essays (20%), report on feed evaluation (5%), formal tests (25%), 3 h exam (50%).

Offered in Semester 1.

ANSI362 - Animal Health

(PAS3AH1) (38L-0T-39P-0S-38H-40R-0F-5A-13W-16C)
Aim: To enable students to appreciate the complexities of maintaining the health and welfare of animals in an environmentally and economically sustainable manner.

Content: Disease causation. Recognising health and disease in animals Animal defences against disease. Immunology and vaccination. Hygiene and medical prophylaxis. Biosecurity. Epidemiology. Public health and zoonoses. Animal disease legislation. Animal disease control strategies and programmes. Treatment of diseases.

Practicals; Practising animal husbandry skills related to health care and disease control. Clinical examination of live animals. Post mortem examinations. Biological sampling techniques.

Assessment: Written assignment (30%), oral & poster presentations (5%), formal tests (15%), 3 h exam (50%).

Offered in Semester 1.

ANSI370 - Applied Reproductive Physiology

(PAS3RP2) 7 (38L-OT-39P-0S-54H-24R-0F-5A-13W-16C)
Aim: Students integrate animal physiology and endocrinology with nutritional, behaviour al,
health and environmental factors by implementing strategies for improving reproductive efficiency. :

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Content: Reproductive cycles. Control of ovulation. Follicular development. Sexual behaviour. Oestrus detection. Superovulation. Artificial insemination. Seasonal breeding. Improving and evaluating reproductive efficiency. Reproduction technology and bioethics.

Practicals: Superovulation and in vitro culture techniques. Ultrasonography. Artificial Insemination Course.

Assessment: Essays (10%), oral presentations (15%), formal tests (20%), project (5%), 3 h
exam (50%).
Offered in Semester 2.

ANSI701 - Applied Animal Nutrition

(PAS7AN1) (9L-9T-18P-0S-30H-11R-OF-3A-13W-8C)
Prerequisite: ANSI 203.

Aim: Students should integrate their nutritional theory into solving more advanced nutritional problems using simulation models.

Content: Nutrient requirements of poultry, pigs, beef and dairy. Solving nutritional pr oblems
using broiler and pig simulation models. Advanced feed formulation theory and practice. Practicals; Using simulation models, feed formulations.

Assessment: Assignments (35%), oral presentations (10%), formal test (5%), formal exam (50%).

Offered in Semester 1.

ANSI702 - Applied Environmental Physiology

(PAS7EP2) (18L-0T-18P-0S-30H-11R-OF-3A-13W-8C)
Prerequisite: ANSI332.

Aim: Students should analyze the relationship between an animal and its environment and the implications on production and housing design.

Content: Heat exchange, Non-evaporative heat loss, evaporative heat loss, Heat rooducig e
Temperature regulation in warm and cold environments, Responses to thermal stress, Implications for poultry and pig housing, and rearing beef or dairy cattle, Methods of alleviating heat stress.

Practicals: Use simulation models to measure the responses to various environmental factors. Farm visits.

Assessment: Formal test (5%), impromptu assessments (25%), essays, posters & oral presentations (20%), 3 h exam (50%).

Offered in Semester 2.

ANSI703 - Companion Animal Nutrition : :
(PAS7CA1) (38L-OT-39P-0S-39H-39R-OF-5A-13W-16C)
Aim: To familiarise students with the pet food industry and to integrate nutritional pr inciples
with the peculiarities of various companion animal requirements.

Content: Unique nutrient requirements and feeding management of cats, dogs and horses. Feeding for activity, reproduction, health and longevity. Preparation of food and its e ffect on
nutrient quality. Regulation, marketing and labelling of pet food. Dynamics of the pet food
industry in South Africa.

Practicals: Determine nutrient requirements of various species, marketing and labelling of pet food.

Assessment: Problem-solving based tests (10%), essays (5%), case studies (25%), oral & written presentations (10%), 3 h exam (50%).

Offered in Semester 1.

ANSI741 - Quantitative Nutrition

(PAS7QN1) (38L-0T-39P-0S-39H-39R-OF-SA-13W-16C)
Aim: The optimisation of feeding strategies for farm animals requires the integration of biological and economic factors, these being associated with the animal, the feed and the environment.

Content: Theories of prediction of voluntary food intake. Amino acid responses in broilers and laying hens. Effective energy system for determining requirements of animals for energy. Determining optimum economic feeding systems for growing and reproducing animals.

Practicals: Feed fommulacen projects.

Assessment: Problem-solving based tests (20%), essays (10%), spreadsheets for simulating a feed intake mode (15%), oral & presentation of reports (5%), 3 h exam (50%).

Offered in Semester 1.

ANSI780 - Business Skills in Animal Production

(PAS7CMY) (38L-0T-38P-0S-200H-40R-0F-4A-26W-32C)
Aim: Students should be able to apply skills learned in related modules to tackle real life situations, such as problem solving, project planning and entrepreneurship.

Content: Operations research. Agribusiness economics. Decision making theories. Systems analysis. Entrepreneurship.

Practicals: Develop a business plan for a particular animal production enterprise. Learn to use software package Project 98 for planning projects. Operational research exercise to identify problems and solutions for a farm or business enterprise.

Assessment: Spreadsheets (30%), oral & written presentation of report (15%), business plan (40%), 3 h exam (15%).

Year-long Module.

ANSI790 - Research Project & Seminars

(PAS7PRY) : (SL-10T-OP-5S-300H-OR-OF-0A-26W-32C)
Aim: This is a capstone module with a heavy focus on integrated assessment of the exit-level outcomes specified for the programme in Animal and Poultry Science. This involves information and data management, analysis and communication, self-evaluating reflection and personal organisation.

Content: Seminar/review paper writing. Literature search. Presentation skills. Topical discussions with industrial players. Formulate and present a project proposal. Conduct an experiment, analyze results and present as scientific paper. Interviews on career awareness.

Practicals: 2 months practical experience (requirement of degree).
Assessment: Oral & written presentation of review (50%), scientific paper (50%).
Year-long Module.

ANSI810 - Advanced Topics in Animal & Poultry Science

(PAS8ATY) (OL-25T-0P-25S-270H-OR-OF-0A-26W-32C)
Aim: To test a range of skills simultaneously, with particular emphasis on problem solving, presentation and group learning skills, and experimental design. Solutions to these problems should be creative, effective and ethical. The module also provides for reflective self-evaluation, and assessment of personal organisation and time-management.

Content: Reviewing a scientific paper. Presentation skills. Modeling of animal systems. Testing hypotheses: experimental design and evaluation.

Practicals: None.

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Assessment: Laboratory techniques (25%), series of presentations (25%), problem-solving exercises (25%), experimental design & evaluation (25%).

Year-long Module.

ANSI830 - Masters by Research
(PAS8RM1) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

ANSI890 - Management Project & Seminar

(PAS8MPY) (10L-10T-OP-10S-290H-OR-OF-0A-26W-32C)
Aim: This module is offered to students on the Agricultural Management programme. Students identify factors influencing the profitability of selected animal enterprises, using principles of management and economics. The emphasis is on information and data management, analysis and communication, self-evaluating reflection and personal organisation.

Content: A literature search. Seminar/review paper writing. Presentation skills. Enterprise planning.

Practicals: None.

Assessment: Oral & written presentation of a review paper (50%), report on the enterprise plan/evaluation (50%).

Year-long Module.

ANSI910 - Doctor of Philosophy

(PAS9PH1) (OL-0T-OP-0S-1280H-O0R-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Applied Mathematics

Offered in the Schqol of Mathematics, Statistics & Information Technology

AMAT715 – System Dynamics

(PMA7DSM) (30L–0T–OP–0S–113H–14R–OF–3A–13W–16C)
Prerequisite: MATH350. ;

Aim: To acquire knowledge of the underlying mathematical theory needed to analyse dynamic systems; To acquire computational and investigative skills for analysing dynamic systems and designing controls.

Content: Control Theory, nonlinear dynamical systems, nonlinear control systems, Lyapunov stability and control system design.

Practicals: None.

Assessment: Project (30%),1 3 h exam (70%).

Offered in Semester | or 2.

AMAT725 - Simulation & Cellular Automata

(PMA7CAM) : : (30L-0T-OP-0S-113H-14R-OF-3A-13W-16C)
Prerequisite: Maturity in computational skills equivalent to those of a graduate in an engineering or mathematical sciences discipline.

Aim: To acquire skills in simulation and programming cellular automata. To acquire skil ls in
modelling and investigating spatially explicit processes.

Content: Simulation modelling. Programming tools for cellular automata. Applications to traffic engineering, interacting random walkers, chemotaxis, ant colony activity, preda tor-
prey ecosystems and other special topics.

Practicals: None.

Assessment: Project (50%), 1 3 h exam (50%).

Offered in Semester I or 2. .

AMAT731 - Project

(PMA7PRY) (OL-0T-OP-4S-156H-OR-OF-0A-26W-16C)
Prerequisite: BSc â\200\234degree with a major in one of Applied Mathematics, Statistic s or
Mathematics. ,

Aim: To acquire experience and skills in the problem-solving process from problem formulation

through to policy formulation.

Content: A substantial problem will be tackled in collaboration with a client.
Practicals: None.

Assessment: Project (100%).

Year-long Module.

AMAT735 - Mathematical Bioeconomics

(PMA7BEM) (18L-OT-OP-0S-52H-7R-0F-3A-13W-8C)
Prerequisite: Graduate of any discipline in the mathematical sciences.

Aim: To acquire knowledge of some of the principles and mathematical techniques used in managing renewable resources.

Content: Population models, harvesting, economics of harvesting, capital theory and resource management, policy and strategy formulation. :

Practicals: None.
Assessment: Project (30%), 1 3 h exam (70%).
Offered in Semester I or 2.

AMAT740 - Financial Mathematics :

(PMA7FMM) ; (30L-0T-OP-0S-113H-14R-0F-3A-13W-16C)
Prerequisite: MATH213, 224.

Aim: To acquire knowledge of Markowitz mean variance portfolio theory and its implementation.

Content: Mean variance portfolio theory; Efficient portfolios; Efficient Frontier, Single and multiple index models. International diversification; Capital asset pricing models; Arbitrage pricing model; Efficient markets; Evaluation of portfolio performance.

Practicals: None.
Assessment: 2 projects (50%), 3 h exam (50%)
Offered in Semester | or 2.

AMAT745 - Algorithms & Complexity

(PMA7GAM) (30L-0T-OP-0S-1 13H-14R-OF-3A-13W-16C)
Prerequisite: MATH211, MATH215 and a degree in a mathematical science.

Aim: Advanced understanding of and facility in the correctness and complexity of algorithms.

Content: Basic algorithmic analysis techniques; Algorithmic strategies; Graph Algorithm s;
Complexity classes, P and NP; A miscellany of advanced topics.

Practicals: None.

Assessment: Test & assignments (30%), 1 3 h exam (70%).

Offered in Semester 1 or 2.

AMAT751 - Recent Topics I

(PMA7TRM) (18L-0T-OP-0S-52H-7R-0F-3A-13W-8C)
Prerequisite: BSc degree with a major in Applied Mathematics.

Aim: To acquire knowledge of and skills in a recent topic in Applied Mathematics.

Content: Will vary according to the most recent developments in Applied Mathematics.
Practicals: None.

Assessment: Project (30%), 1 3 h exam (70%).

Offered in Semester | or 2.

AMAT755 - Applied Optimal Control Theory ;
(PMA70CM) .(30L-OT-OP-0S-113H-14R-OF-3A-13W-16C)
Prerequisite: MATH350 and programming skills.

Aim: To acquire knowledge of modern optimal control theory and the analytical and numerical techniques required to solve optimal control problems. ˜ .

Content: Necessary conditions for optimal control problems, linear quadratic problems, neighbouring extremals, numerical methods.

Practicals: None.

Assessment: Project (30%), 1 3 h exam (70%).

Offered in Semester 1 or 2.

AMAT760 - Recent Topics 2

(PMA7RTM) (30L-0T-OP-0S-113H-14R-OF-3A-13W-16C)
Prerequisite: A B.Sc degree with a major in Applied Mathematics.

Aim: To acquire knowledge of and skills in a recent topic in Applied Mathematics

Content: Will vary according to the most recent developments in Applied Mathematics
Practicals: None.

Assessment: Project (30%),1 3 h exam (70%).

Offered in Semester | or 2.

AMAT765 - Advanced Optimisation

(PMA70AM) (30L-0T-0P-0S- II13H- 14R-OF-3A-13W-16C)
Prerequisite: MATH360 and programming skills.

Corequisite: MATH370

Aim: To acquire further knowledge of advanced techniques in optimisation.

Content: Advanced topics in linear programming, mixed integer programming and nonlinear programming.

Practicals: None.

Assessment: Project (30%), 1 3 h exam (70%).

Offered in Semester I or 2.

AMAT775 - Methods for Partial Differential Equation

(PMA7NMM) 4 (30L-0T-OP-0S-113H-14R-0F-3A-13W-16C)
Prerequisite: MATH251, MATH253 and any third year course of at least 16C in the mathematical sciences.

Aim: To acquire knowledge of skills in the mathematical techniques used to solve partia
l
differential equations.

Content: Fundamentals. Parabolic, elliptic and hyperbolic equations.

Practicals: None.

Assessment: Project (30%), t 3 h exam (70%).

Offered in Semester I. or 2.

AMAT780 - Optimisation

(PMA7OPM) (27L-27T-OP-0S-74H-27R-0F-5A-13W-16C)
Prerequisite: A pass in MATH371.

Aim: To acquire knowledge of the theory underpinning the algorithms used to solve nonlinear programming problems; to master NLP computational algorithms.

Content: Unconstrained optimisation: one variable; several variables. Constrained optimisation: Lagrange multipliers; Kuhn-Tucker conditions; numerical algorithms.
Practicals: None.

Assessment: 2 1.5 h tests (33%), 3 h exam (67%).

Offered in Semester | or 2.

AMAT782 - Case Studies in Operations Research
(PMA7ORM) (27L-27T-10P-0S-64H-27R-0F-5A-13W-16C)
Prerequisite: A pass in MATH361.

Aim: To acquire exposure to applications of Operations Research (OR) in practice. To improve skills in solving real OR problems.

Content: A number of applications of OR will be studied. The selection will be from problems in industry, business, agriculture and public policy-making.

Practicals: Computer-based case studies.

Assessment: Projects (50%), 3 h exam (50%).

Offered in Semester I or 2.

AMAT810 - Masters by Research
(PMA8RMM) ; (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.
Content: To be determined by the discipline and is dependent on the project for the deg ree.

Practicals: To be determined by the discipline and is dependent on the project for the degree.

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Assessment: To be determined by the discipline.
Year-long Module.

AMAT910 - Doctor of Philosophy

(PMA9PH1) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Bacteriology

Offered in the School of Applied Environmental Sciences

BACT220 - Bacterial Structure, Function & Ecology

(PMI2BE1) (18L-0T-36P-0S-15H-6R-OF-5A-13W-8C)
Prerequisite: CHEM111,112; BIOS101; (BOTY 102 or ZOOL102).

Aim: To provide a strong foundation in the field of bacteriology.

Content: Classic and moder classification of bacteria. Gross and ultrastructural features of
bacterial cells and relations between structure and function. Introduction to microbial ecology and habitat-specific species. Role of bacteria in food chains, -webs, trophic levels
and energy pyramids. Basic aspects of environmental microbiology. Discussion on selected
groups of bacteria. Genetic transfer mechanisms in bacteria.

Practicals: Handling bacteria; aseptic technique, cultural practices, â\200\230staining procedures,

microscopy.

Assessment: 2 class tests (14%), 1 exam (66%), performance in prac classes & quality of prac reports (20%). :

Offered in Semester 1.

BACT222 - Bacterial Physiology, Nutrition & Metabolism

(PMI2BP2) (18L-0T-36P-0S-15H-6R-OF-5A-13W-8C)
Corequisite: BACT220.

Aim: To provide a strong foundation in bacteriology.

Content: Physiology, nutrition and metabolism of species of bacteria significant to man;
pathogens, biodeteriogens, symbionts, bioremediation agents â\200\224_ and industrial microorganisms. Microbiological aspects of immunology. Physiological-nutritional groups among the bacteria. Aerobic vs anaerobic â\200\230respiratory mechanisms and fermentations. Metabolic pathways of industrial importance. Adaptations of

microorganisms to unusual environments.

Practicals: Techniques to identify prokaryotes; maintenance of pure cultures. Experimen
ts
in environmental microbiology.

Assessment: 2 tests (14%), 1 exam (66%), prac quizzes (5%), mini tests & reports (5%), literature review (written oral presentation) (10%).

Offered in Semester 2.

Biochemistry

Offered in the School of Molecular & Cellular Biosciences

BCHM213 - Introduction to Biochemistry

(PBC2SF1) - (36L-9T-40P-0S-45H-24R-0F-6A-13W-16C)
Prerequisite: CHEM111, 112; BIOS101 (Biochemistry majors must pass CHEM211, 212).
Aim: Understand language of Biochemistry: structures of proteins, carbohydrates, nucleic acids.

Content: Properties of water; pH, buffers; amino-acids, proteins-structure, stereochemistry, ionic props, bonds; immune system, immunoglobulinsâ\200\224defence from infection, antibodies in research. Enzymes, enzyme kinetics; carbohydrates - structures, detection, biological importance, â\200\230introducing a metabolic pathway. Structure of DNA, RNA; DNA replication, protein synthesis; intro to recombinant DNA technology.

Practicals: Spectrophotometry, pH & buffers, applicable calculations and molecular model building.

Assessment: Assignments (50%), 3 h exam (50%).

Offered in Semester 1.

BCHM232 - Comparative Cell Biology & Metabolism

(PBC2CC2) (36L-22T-22P-0S-56H-19R-OF-5A-13W-16C)
Prerequisite: BIOS101; CHEM111, 112.

Aim: To introduce students to the fundamentals of cell biology including: cell compartmentalization, biomembranes, metabolism, and the integration and regulation of metabolic pathways in cells and tissues.

Content: Classification and function of lipids; function and properties of biological membranes; subcellular organelles. The principles, concepts, and bioenergetics of metabolism. Carbohydrate, lipid and amino acid metabolism; photosynthesis and nitrogen metabolism. Integration and regulation of metabolic pathways in animals, humans, plants, and microbes.

Practicals: Laboratory and written assignments.

Assessment: Continuous assessment (no exam).

Offered in Semester 2.

BCHM242 - Biochemical Aspects of Microbial Pathogenesis

(PBC2MC2) (36L-9T-40P-0S-45H-24R-0F-6A-13W-16C)
Prerequisite: BCHM213.

Aim: To provide insight into the biochemical mechanisms of microbial pathogenicity and cell biological processes at the molecular level and especially into cell-toxin interactions, to give a holistic view of the importance of health and veterinary policies and health regulations.

Content: Molecular aspects of viral and microbial components in host colonization and

pathogenicity and host defense; proteins and toxins produced during invasion and infection,
or during growth in food: and water; mode of action at the cellular level and symptoms of
infection; food and water testing. –

Practicals: Practicals, tutorials, field trips.

Assessment: Practical reports or assignments (15%), class tests (35%), 1 3 h exam (50%).
Offered in Semester 2.

BCHM313 – Protein Isolation

(PBC3PI1) (27L–10T–27P–0S–70H–20R–OF–6A–13W–16C)
Prerequisite: Passes in BCHM221, 232, 242.

Aim: To provide insight into the physical principles applicable to methods in the isola tion
and characterization of proteins.

Content: Why proteins are isolated; assay, extraction and sub–cellular fractionation; concentration of the extract; chromatography and electrophoresis.

Practicals: Practicals and tutorials.

Assessment: Assignments (50%), 3 h exam (50%).

Offered in Semester 1.

BCHM322 – Immunobiochemistry

(PBC3IB2) (27L–12T–30P–1S–68H–18R–OF–5A–26W–16C)
Prerequisite: BCHM213, 232. :

Aim: Gain a biochemical view of immunology; principles of immune defence; acquaintance with theory and practice of immunochemical techniques used in research, analytical and diagnostic laboratories. Â©

Content: Innate immunity, complement; acquired immunity, B & T cells; antigen receptors on B and T cells, MHC complex; antibody–antigen interactions, lymphocyte activation, ce ll
surface markers, cytokines and immunoregulation. Raising and isolation of antibodies; precipitation techniques; ELISA, western blotting, cellular techniques e. 8. flow cytom etry.
Practicals: Histology; antibody isolation and characterisation.

Assessment: Assignments (50%), 3 h exam (50%).

Offered in Semester 2.

BCHM325 – Biochemistry of Nucleic Acids igang
(PBC3NA1) (13.5L–5T–12P–0S–33H–12R–0F–SA–13W–8C)
Prerequisite: BCHM213, 222, 231.

Aim: To attain insight into (i) purine and pyrimidine synthesis (ii) proei/DNA interact ions
in gene expression.

Content: Pathways of purine and pyrimidine synthesis, how these can be blocked with ant i–
cancer drugs and used for monoclonal antibody production; structure of nucleosides, nucleotides and oligonucleotides; primary, secondary and tertiary structure of nucleic acids;
introns and exons; protein/nucleic acid interactions, zinc fingers, polymerases, restri ction
endonucleases, transcription factors and repressors; practical analysis of chromatin st ructure
and plasmid manipulation and digestion.

Practicals: Practicals.

Assessment: Assignments (33%), 2 h exam (67%).

Offered in Semester 1.

BCHM326 – Protein Structure & Function

(PBC3PS2) (13.5L–5T–12P–0S–32.5H–12R–OF–SA–13W–8C)
Prerequisite: BCHM213.

Aim: To provide insight into the three levels of protein structure and the relationship between the structure and function (and evolution) of proteins.

Content: Concepts and methods in the determination of primary, secondary and tertiary structures of proteins; methods for the representation of the 3–D structure of proteins and the families of proteins which have thus been identified; mapping of enzyme active sites, enzyme reaction mechanisms.

Practicals: Computer-based exercises.
Assessment: Assignments (50%), 2 h exam (50%).
Offered in Semester 2.

BCHM328 - Regulation of Metabolism

(PBC3RM2) (18L-16.5T-OP-0S-3 1 H-10R-OF-4.5A-13W-8C)
Prerequisite: BCHM231 or 213.

Aim: To provide insight into how metabolism is regulated, and can be manipulated, in cells and whole organisms.

Content: The integration and regulation of metabolism in animals, humans, plants and microbes under normal, and stressful conditions such as exercise, disease (e.g. heart disease and diabetes), and toxicity (e.g. microbial toxins and drugs). Application of metabolic control analysis to metabolic regulation and the manipulation of genes and metabolic pathways in biotechnology and in the treatment of disease.

Practicals: None.

Assessment: Continuous (no exams).

Offered in Semester 2.

BCHM360 - Molecular Aspects of Microbial Pathogenesis

(PBC3MP2) (13.5L-4T-8P-21S-29H-3R-OF-1.5A-13W-8C)
Prerequisite: BCHM213, 222, 231.

Aim: To provide insight into the host-pathogen and toxin interaction and biochemical

mechanisms of pathogenesis to give a holistic view of the importance of health and veterinary policies, practices and health regulations.

Content: Molecular aspects of microorganism cell wall and other components in host colonization and pathogenicity; molecular aspects of innate, physical and chemical barriers of the host and host defence; proteins and toxins produced during invasion and infection, or during growth in food and water; mode of action and symptoms of infection; food and water testing.

Practicals: Practicals, tutorials, field trips.

Assessment: Assignments (50%), 2 h exam (50%).

Offered in Semester 2.

BCHM370 - Protein Toxins in Cell Biology & Pathology

(PBC3PT2) (13.5L-4T-8P-21S-29H-3R-OF-1.5A-13W-8C)
Prerequisite: BCHM213, 222, 231.

Aim: To provide insight into cell biological processes at the molecular level and especially into cell-toxin interactions.

Content: Membrane permeabilising toxin; toxins affecting protein synthesis; cytoskeleton-affecting toxins; toxins affecting membrane trafficking; sodium-, potassium-, and calcium channel targeted toxins. .

Practicals: Practicals, tutorials, field trips.
Assessment: Assignments (50%), 2 h exams (50%).
Offered in Semester 2.

BCHM380 – Biochemical Methods for Bioscientists

(PBC3RT1) (27L–10T–20P–0S–73H–25R–0F–5A–13W–16C)
Prerequisite: BCHM213.

Aim: Introduction: to techniques for DNA, fat, protein and carbohydrate analysis for biological, medical, agricultural, and food sciences.

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Content: Prep of biological material, centrifugation, safety. | Spectroscopy.
Mammalian/bacterial cell culture. Extraction, detection, determination of DNA, lipid, carbohydrate, protein. Electrophoresis: starch, agarose polyacrylamide, 2-D, western blot.
Chromatography: exclusion, ion-exchange, affinity, TLC, gas, HPLC. Antibodies in research, vaccines, raising antibodies, ELISA. Bio-informatics, biocomputing; analysis of
scientific literature, library, internet. Radio-isotopes in biochemistry.

Practicals: Chromatography, electrophoresis, ELISA, protein and enzyme analysis.
Assessment: Assignments (50%), 3 h exam (50%).

Offered in Semester 1. Credit cannot be earned for BCHM380 and 313.

BCHM701 - Cell Biology & Methods in Cell Biology

(PBC7CB}) (20L-10T-OP-0S-30H-18R-OF-2A-13W-8C)
Prerequisite: 128C in Biochemistry at level 3.

Aim: To introduce the theoretical aspects of intracellular trafficking of biomolecules.
Content: Topological continuity between organelle lumens and extracellular space; glucoprotein synthesis and trafficking; composition and autoassembly of extracellular matrix; structure and function of cytoskeleton; reciprocity between intracellular and extracellular order; relevance to cellular diseases such as cancer. Methods in subcellular
fractionation, histochemistry, immunochemistry, various electron microscopy techniques, application of radioisotopes, animal cell culture and lysosome-endosome trafficking.
Practicals: Introduction to aspects to study of trafficking.

Assessment: 2 h exam (100%).

Offered in Semester 1.

BCHM703 - Antigens and Vaccines

(PBC7AD1) (20L-10T-OP-0S-30H-18R-OF-2A-13W-8C)
Prerequisite: 128C in Biochemistry at level 3.

Aim: To introduce the student to antigen presentation and vaccine design.

Content: Vaccine development - the malaria and HIV models; immunological, parasitological, molecular and metabolic considerations for. host and malaria parasite. Preparation and evaluation of affinity purified antigens. BLAST and FASTA based computational diagnosis of protein and nucleic acid databases relevant to vaccine design.
Molecular Modeling. Antigen processing and presentation - HIV as a model. Cellular steps
to antigen presentation. Appraisal of protein subunit structure and protein structural motifs.
Vaccines for the AIDS virus.

Practicals: None.

Assessment: 2 h exam (100%).

Offered in Semester 1.

BCHM720 - Biochemistry Research Project

(PBC7BP2) (OL-0T-400P-80S-158H-OR-OF-2A-26W-64C)
Prerequisite: \28C at level 3 in Biochemistry.

Aim: Introduce students to lab research & analysis. Module serves as bridging between an
undergraduate and a post-graduate career and prepares graduates for a range of career

options.

Content: Single Semester Research project. Choice of projects: Malaria, Poultry Pathoge
ns,
Immunodiagnostics, Trypanosomiasis, Immunotechnology, Immunocytochemistry, Electron
microscopy, Cancer, Mechanisms of metastasis, Biochemical Education, Enzyme analysis,
Modeling and purification, Biotechnology.

Practicals: Laboratory work.

Assessment: Assignments (100%).
Offered in Semester 2.

BCHM725 - Advanced Biochemistry Topics

(PBC7AT1) (60L-30T-OP-0S-100H-44R-0F-6A-13W-24C)
Prerequisite: 128C at level 3 in Biochemistry.

Aim: To introduce the student to a range of advanced topics in Biochemistry, Molecular Biology, Biochemical education.

Content: Topics selected from (amongst others) - vaccine development, antigen presentat ion,
computational and molecular modeling, intracellular trafficking of bio-molecules, histochemistry, immunochemistry, animal cell culture and lysosome-endosome trafficking, assessment of scientific articles. Conceptual difficulties in biochemistry.

Practicals: None.
Assessment: Assignments (33%), exams (67%).
Offered in Semester 1.

BCHM727 - Advanced Biochemistry Research Topics

(PBC7RT1) (6L-40T-100P-0S-159H-10R-OF-5A-13W-32C)
Prerequisite: 128C at level 3 in Biochemistry.

Aim: To develop advanced research and cognitive skills.

Content: Topics selected from a range of (amongst others) techniques in biochemistry, histochemistry, immunochemistry, cellular and molecular biology, science education - quantitative research methods.

Practicals: Advanced experimental exercises.

Assessment: Assignments (100%).

Offered in Semester |.

BCHM790 - Agricultural Biochemistry Research Project

(PBC7ARY) (OL-OT-400P-80S-158H-OR-OF-2A-26W-64C)
Prerequisite: 128C at level 3 in Biochemistry.

Aim: Introduce students to lab research & analysis. module serves as bridging between a n
undergraduate and a post-graduate career and prepares graduates for a range of career options

Content: Single Semester Research project. Choice of projects: Malaria, Poultry Pathoge ns,
Immunodiagnostics, Trypanosomiasis, Immunotechnology, Immunocytochemistry, Electron microscopy, Cancer, Mechanisms of metastasis, Biochemical Education, Enzyme analysis, Modeling and purification, Biotechnology.

Practicals: Laboratory work.

Assessment: Assignments (100%).

Year-long Module.

BCHM810 - Masters by Research
(PBC8RM1) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher

Degrees Committee.

Aim: To undertake supervised research.
Content: To be determined by the discipline and is dependent on the project for the deg
ree.
Practicals: None.

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Assessment: To be determined by the discipline.
Year-long Module.

BCHM6910 - Doctor of Philosophy

(PBC9PH1) (OL-OT-OP-0S-1280H- OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Biological Systematics

Offered in the School of Botany & Zoology

BSYS801 - Theory & Philosophy of Biological Systematics

(PSY8TP1) (OL-60T-36P-12S-199H-10R-OF-3A-13W-32C)
Prerequisite: BScHons or four-year bachelors degree (512C) in an appropriate biological field, acceptable to the Board of the Faculty.

Aim: To produce in-depth understanding of and expertise in the philosophical and theoretical
bases of modern systematic studies, enabling informed application of appropriate methods.
Content: The nature of systematics, its philosophical and scientific justification; purposes
and properties of classifications; units and properties of the taxonomic hierarchy; relationships and phylogeny; theoretical bases and methods for phenetic, cladistic and eclectic approaches to estimation of relationships at all levels; systematics and biogeography.

Practicals: None.

Assessment: Essay(s) (30%), oral presentations (20%), 3 h exam (50%).

Offered in Semester 1.

BSYS803 - Methods in Biological Systematics

(PSY8MT1) (OL-36T-60P-12S-202H-10R-OF-0A-13W-32C)
Prerequisite: BScHons or four-year bachelors degree (512C) in an appropriate biological field, acceptable to the Board of the Faculty.

Aim: To produce expertise in the application ot different methods and techniques in modern
systematic studies.

Content: Derivation and utilization of molecular, morphological and other types of characters in phenetic, cladistic and integrative analyses using appropriate computer programs and interpretation of the results; solving of problems in nomenclature; techniques
for production of illustrated systematic publications; specimen handling and curation.
Practicals: Appropriate to the above.

Assessment: Integrative essay (20%), prac reports (60%), oral presentations (20%).

Offered in Semester 1.

BSYS890 - Biological Systematics Mini-Dissertation

(PSY8RDM) (OL-O0T-OP-0S-640H-OR-0F-0A-26W-64C)
Prerequisite: Passes in BSYS801; 803.

Aim: To produce expertise in research in modern systematic studies.

Content: Supervised research on the systematics of a chosen group of organisms.

Practicals: None.

Assessment: Mini-dissertation. (100%).

Year-long Module.

Biology

Offered in the School of Botany & Zoology

BIOLO10 - Foundation Biology

(PBIOBFY) (48L-0T-104P-0S-52H-20R-0F-16A-26W-24C)
Aim: To develop the appropriate science-process, practical and cognitive skills required for
undergraduate Life Science modules.

Content: Classification of living organisms; cell biology-constraints on maximum size, becoming multicellular; structure and function of a selected ecosystem; flowering plant structure, function and adaptations - selected aspects; cell tissue and organ-structure and
function relationships in selected examples; homeostasis and temp. regulation in mammals.
Practicals: Laboratory work and two field excursions.

Assessment: Regular theory & prac assessment (30%), June theory & prac tests (10%), November theory & prac exams (60%).

Year-long Module.

Biometry

Offered in the School of Mathematics, Statistics & Information Technology

BMET210 - Introduction to Biometry

(PBB2BP1!) (39L-0T-36P-0S-46H-33R-0F-6A-13W-16C)
Prerequisite: 8C in the Faculty of Science and Agriculture.

Aim: To provide students in Agriculture and the Life Sciences with the skills necessary to
adequately analyze and summarize various types of data using appropriate statistical methods.

Content: Types of data. Statistical distributions: normal, binomial, Poisson, negative binomial. Statistical methods for analyzing single, two- and multi- sample problems, including z-tests, t-tests and ANOVA. Correlation and linear regression analysis. Analysis
of categorical data by chi-square.

Practicals: Computer-based exercises on the above topics.

Assessment: 3 tests (33%), | exam (67%).

Offered in Semester 1.

BMET222 - Experimental Design & Multiple Regression

(PBB2DR2) : (39L-0T-40P-08-56H-20R-OF-5A-13W-16C)
Prerequisite: A pass in STAT110 or BMET210.

Aim: To introduce students in Agriculture and the Life Sciences to the concepts of efficient
experimental design and statistical modeling.

Content: The concept of an experimental unit. Blocking as a means to error reduction, such
blocking methods to include randomized complete blocks designs (RCBD), Latin square
designs, split-plot and split-block designs. Factorial treatment structures including
quantitative and qualitative factors. Covariance analysis. Analysis of data using multiple
linear regression methods. Extension of linear regression methods to resolve problems
arising from corrupted experiments.

Practicals: Computer-based exercises.
Assessment: 2 tests (22%), prac assignments (11%), 1 exam (67%).
Offered in Semester 2.

BMET314 - Multiple Regression Analysis

(PBB3MR1) (20L-0T-15P-0S-3 1 H-10R-OF-4A-13W-8C)
Prerequisite: Passes in (STAT110 or 210 or BMET210) and (MATH111, 122) or equivalent
modules.

Aim: To provide an overview of multivariate regression methods, including logistic
regression.

Content: Review of matrix algebra. Multiple linear regression methods, including least
squares estimates, the variance-covariance matrix associated with such estimates and the
concept of studentized residuals. Various forms of residual analytic methods. Data
transformation including the Box-Cox method. Automatic model selection methods
including forward, backward, stepwise and all-subsets selection. Logistic regression methods
and the concept of odds-ratios.

Practicals: Computer-based exercises.
Assessment: 2 tests (16%), prac assignments (17%), 1 exam (67%).
Offered in Semester 1.

BMET316 - Multivariate Analysis

(PBB3AM1) (20L-OT-21 P-0S-25H-9R-OF-5A-13W-8C)
Prerequisite: Passes in (STAT110 or 210 or BMET210) and (MATHI11, 122) or equivalent
modules.

Aim: To teach students to use multivariate analysis.

Content: General principles of multivariate analysis. Specific types of canonical and other
techniques. GENSTAT multivariate analysis.

Practicals: Computer-based exercises on the above topics.
Assessment: 2 tests (33%), 1 exam (67%).
Offered in Semester 1.

BMET701 - Practical Advanced Experimental Design

(PBB7ED1) (19L-0T-18P-0S-30H-10R-0F-3A-13W-8C)

Prerequisite: A pass in BMET222.

Aim: To teach students practical design and analysis of complex experiments.

Content: Factorial experiments at 2, 3 and 4 levels. Confounding for incomplete blocks in
factorial experiments. Incomplete block designs for non-factorial treatments.

Practicals: Computer-based exercises on the above topics.

Assessment: 2 tests (33%), 2 assignments (67%).
Offered in Semester 1.

BMET810 - Masters by Research

(PBB8RM1) : (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To: be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

BMET910 - Doctor of Philosophy

(PBB9PH1) (OL-O0T-OP-0S-1280H-OR-0F-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None. *

Assessment: Examination of thesis (100%).

Year-long Module.

Bio-Resources

Offered in the School of Applied Environmental Sciences

BIOR118 - Introduction to the Environment

(PBRIEM) (18L-5T-15P-0S-27H-10R-OF-5A-13W-8C)
Prerequisite: Matriculation exemption.

Aim: To introduce important environmental issues as they affect and are affected by the atmosphere, hydrosphere, lithosphere, pedosphere and biosphere.

Content: Atmosphere: composition; radiative processes; greenhouse effect; ozone controversy; climate change; El Nino; acid rain pollution. Hydrosphere: oceans and currents; hydrologic cycle. Lithosphere: earth structure; plate tectonics; earthquakes, vulcanism. Pedosphere: soils and pollution; waste disposal; soil erosion; organic and mineral matter. Biosphere: structure and function of ecosystems; energy flows; food cha ins;
succession; conservation of biodiversity.

Practicals: Visit to a weather station. Two field excursions.
Assessment: 2 theory tests (33%), 1 3 h exam (67%).
Offered in Semester 2.

BIOR130 - Nature of Agricultural Systems

(PBRIAS2) (18L–5T–12P–0S–27H–13R–OF–5A–13W–8C)
Prerequisite: Matriculation exemption.

Aim: To introduce the nature and functioning of agroecosystems.

SA 98 Science & Agriculture

Content: Nature and functioning of agricultural systems including: commercial forests, orchard crops, intensive field crops, controlled environment systems, grasslands, anima l
production; economics of agricultural resource use.

Practicals: 3 Field excursions, one applied exercise, one project.
Assessment: 2 tests (33%), 2 h exam (67%).
Offered in Semester 2.

Biosciences

Offered in the School of Botany & Zoology

BIOS101 - Cell Biology - :
(PBIIBC1) (37L-10T-36P-0S-53H-15R-OF-9A-13W-16C)
Aim: To develop a basic knowledge and understanding of the interactions between structu re
and function in living organisms at the cell, tissue, and organ levels of organization.
Content: Geological history and origin of life. Life at the cellular level of organizat ion
including cell chemistry, enzymes, cell structure and function, biochemistry of selecte d
organelles, mitosis and meiosis. Conformation of tissues and organs.

Practicals: 11 laboratory exercises.

Assessment: Practical reports (17%), 3 theory tests (9%), essay (8%), prac test (33%), 3 h
theory exam (33%).

Offered in Semester 1. ,

BIOS102 - Diversity of Life: Structure & Function

(PBI1DL2) (37L-10T-36P-0S-54H-15R-OF-8A-13W-16C)
Aim: To develop basic knowledge and understanding of the Set of organisms, their origin and their importance.

Content: Transition from cells to organisms. Principles of Mendelian genetics and inheritance. Introduction to natural selection and evolution. Concept of the life cycle in
bacteria, fungi, plants and animals. Structure and function of selected kinds of plants and
animals (acellular to complex multicellular). Principles of classification. Significanc e of
biodiversity.

Practicals: 12 laboratory and field exercises.

Assessment: Practical reports (17%), 3 theory tests (9%), essay (8%), prac test (33%), 3 h
theory exam (33%).

Offered in Semester 2.

BIOS202 - Global Biodiversity

(PBI2GB2) (19L-3T-9P-0S-36H-10R-OF-3A-13W-8C)
Aim: To introduce the concept of biodiversity; the historical background leading to, an d the
significance of, the current global biodiversity crisis; the importance of biodiversity in the
maintenance of healthy ecosystems.

Content: Global Biodiversity – past, present and future; Gaia hypothesis; The need for, and
status of, biodiversity conservation in southern Africa.

Practicals: 3 field excursions to local areas of interest.

Assessment: 3 field trip reports (30%), 1 essay (20%), test (10%), 2 h exam (40%).

Offered in Semester 2.

BIOS302 – Plant/Animal Interactions
(PBI3PA2) (14L-0T-28P-0S-25H-10R-0F-3A-13W-8C)
Prerequisite: Passes in BIOS101; (BOTY 102 or ZOOL102); at least 8C at level 3.

Aim: To develop a multi-disciplinary approach to both theoretical and applied issues in plant-animal interactions.

Content: Plant-pollinator mutualisms, including visual and scent perception by animals and
adaptations of flowers. Seed dispersal and seed predation by animals. Plant-herbivore interactions, including animal feeding and digestion and plant defence strategies. Theo ry of
coevolution.

Practicals: 6 laboratory exercises and a weekend field trip.

Assessment: Field trip & prac report (20%), test (10%), essay (20%), 2 h exam (50%).

Offered in Semester 2.

BIOS304 – Biological Systematics

(PBI3BS1) (14L-3T-18P-0S-32H-10R-OF-3A-13W-8C)
Prerequisite: Passes in BIOSI01: (BOTY102 or ZOOL102).

Aim: To demonstrate the importance of systematics as the organizing principle for all biological studies; to develop an understanding of methods of systematics and classific ation.
Content: Definitions of major terms; functions and forms of classifications; systematic s and
the nature of science; species as real entities; methods of classification; interpretat ion of
different types of characters; uses of systematic studies; rules of nomenclature.

Practicals: Derivation and utilization of characters in phenetic, cladistic and integra tive
analyses; exercises in nomenclature.

Assessment: Integrative essay (20%), prac reports (20%), test (10%), 2 h exam (50%).
Offered in Semester 1.

B10S306 – Evolutionary Biology

(PBI3EB2) (14L-3T-18P-0S-32H-10R-OF-3A-13W-8C)
Prerequisite: Passes in BIOS101; (BOTY 102 or ZOOL102); at least 8C at level 3.

Aim: To understand the process of evolution in biological organisms and some of the important debates in evolutionary biology .

Content: Sources of variation. Development of evolutionary thinking in biology. Modern evolutionary theory. Examples of natural selection in plants and animals. isolating mechanisms and mate recognition. Species concepts and speciation theory. Convergent evolution and mimicry. Adaptive radiation.

Practicals: 6 \aboratory exercises and afternoon field trips.

Assessment: Review essay (20%), test (10%), prac reports (20%), 2 h exam (50%).

Offered in Semester 2.

BIOS701 – Research Techniques

(PBI7BT1) (24L-36T-36P-0S-52H-8R-0F-4A-13W-16C)

Prerequisite: Acceptance into Honours.

Aim: To develop basic knowledge and understanding of principles and applications of selected practical research techniques.

Content: Compulsory: techniques – Communications and Applied Statistics; and any 3 Elective techniques offered by the School (eg Chromatography; Radiochemistry; etc.), dependant on staff availability and research interests within the School in any year. Practicals: Practical exercises will provide students with opportunities to develop the necessary skills to use research equipment safely and competently.

Assessment: Short tests (where appropriate) for communication–(28%), statistics (28%), and
for each of the elective techniques (44%).

Offered in Semester 1.

BIOS702 – Review Essay

(PBITESY) (OL–3T–OP–0S–77H–OR–OF–0A–26W–8C)
Prerequisite: Acceptance into Honours.

Aim: To collect and synthesise relevant scientific literature pertaining to a particula r research
field/area and to use this information to generate, as an essay, a coherent, cogent and logical
synthesis of the literature that realistically assesses past research, current understa nding and
potential directions for future research.

Content: Students will be provided with a list of supervisors and possible review essay topics at the beginning of their Honours year.

Practicals: None.

Assessment: Review essay (100%).

Year–long Module.

BIOS703 – Advanced Systematics

(PBI7SYM) (9L–0T–OP–10S–49H–10R–OF–2A–13W–8C)
Prerequisite: At least 64C in Botanical and/or Zoological sciences at level 3, includin g
BIOS304.

Aim: To produce understanding of, and expertise in, the derivation and application of different character systems in modern systematic studies.

Content: Systematics, phylogeny and the nature of science; renege of classification, us ing
phenetic, cladistic and eclectic (evolutionary) approaches; interpretation and integrat ion of
different types of characters in plants and animals.

Practicals: Derivation and utilization of different types of characters in phenetic, cl adistic
and integrative analyses using appropriate computer programs; interpretation of the res ults.
Assessment: Integrative essay (20%), prac reports (20%), oral presentations (10%), 2 h exam
(50%).

Offered in Semester 1 or 2.

BIOS704 – Biosystematics

(PBI7BSM) (14L–5T–6P–0S–43H–10R–OF–2A–13W–8C)
Prerequisite: At least 64C in Botanical and/or Zoological Sciences at level 3 and BOTY2 04.
Aim: To give an advanced understanding of the diversity and evolution of plants and the ir
classification.

Content: This course provides insight into assessing morphology, micromorphology, anatomy, palynology and ontogenetic characters for use in the classification of higher

plants
using phenetic and cladistic methodology.

Practicals: None.
Assessment: Essays (33%), 2 h exam (67%).
Offered in Semester 1 or 2.

BIOS705 - Biogeography

(PBI7BGM) (9L-OT-OP-10S-49H-10R-OF-2A-13W-8C)
Aim: To provide a general understanding of the patterns and origins of plant, and anima
l
distributions.

Science & Agriculture SA 101

Content: Geographical variation and speciation. Patterns of species richness in South A
frica.
The biome concept versus the chorion. Climate change and continental drift. Dispersal
versus vicariance biogeography. Island biogeography and the design of nature reserves.
Practicals: None.

Assessment: Mini-seminar (25%), essay (25%), 2 h exam (50%).

Offered in Semester 1 or 2.

BIOS706 - Comparative Method

(PBI7EMM) (6L-4T-20P-0S-38H-10R-OF-2A-13W-8C)
Prerequisite: At least 64C in Botanical and/or Ecological and/or Zoological sciences at
level
3.

Aim: Problems and limitations of conventional statistical analysis of interspecific con
tinuous
and discrete data. Contemporary methods for the comparative analysis of phylogeneticall
y
independent data.

Content: Assumptions of conventional statistical procedures; data independence; importa
nce
of phylogeny; the phylogenetically-independent (PI) analysis (PI ANOVA, PI ANCOVA,
independent contrast analysis; the Phylogenetic Diversity Analysis Programme (PDAP).
Practicals: Manipulation of computer-based PI models and statistical procedures.
Assessment: 2 prac assignments (50%), 2 h exam (50%).

Offered in Semester I or 2.

Botany

Offered in the School of Botany & Zoology

BOTY201 - Plant Ecophysiology

(PBO2PE1) (19L-OT-18P-0S-30H-10R-OF-3A-13W-8C)
Prerequisite: A pasâ\200\231 in BIOS101.

Aim: To review the interaction of plants with their environment. This module reviews ho
w
plants acquire the resources they need from the environment, namely water (Plant Water
Relations), nutrients (Plant Nutrition) and energy from the sun (Photosynthesis).

Content: Plants and water: concept of water potential; water movement through the soil-
plant-air continuum; drought tolerance in plants. Plant nutrition: nutrient movement th
rough
soils, across the root, through the xylem and into leaves; the N and P cycles. Photosyn
thesis:
pathways and forces driving carbon dioxide into leaves.

Practicals: 6 - plant â\200\230water relations, nutrition and photosynthesis.

Assessment: Practical reports (20%), essay (15%), theory & prac tests (15%), 2 h theory
exam (50%).

Offered in Semester 1.

BOTY202 - Plant Use & Diversity: Lower Plants

(PBO2DL2) (19L-OT-28P-0S-20H-10R-0F-3A-13W-8C)

Prerequisite: A pass in BOTY 102.

Aim: Provide an overview of evolution, morphological and reproductive diversity in alga
e
and seedless vascular land plants.

Content: Structure and reproduction of: major algal classes(Cyanophyceae, Chlorophyceae
,
Phaeophyceae and Rhodophyceae); spore-bearing vascular land plants( Psilopsida,
Lycopsida, Sphenopsida and Pteropsida). Evolutionary trends and relationships.

Practicals: 6 – characteristic features of major groups of algae and primitive land plants. Weekend field trip.

Assessment: Practical reports (20%), 2 theory tests (15%), essay (15%), 2 h exam (50%). Offered in Semester 2.

BOTY203 – Plant Structure & Function

(PBO2PF1) (19L–OT–18P–0S–30H–10R–OF–3A–13W–8C)
Prerequisite: A pass in BOTY 102.

Aim: Provide skills to interpret and understand the structure and function of plant cells and tissues.

Content; Nature and growth of the plant cell wall, and cambial activity. The development of secretory and storage cells and tissues.

Practicals: 6 – microscopic and histochemical examination of cell and tissue types; preparation protocols for microscopy.

Assessment: Prac reports (20%), theory test (15%), essay (1 5%), 2 i theory exam (50%). Offered in Semester 1.

BOTY204 – Plant Use & Diversity: Higher Plants

(PBO2DH2) (19L–OT–28P–0S–20H–10R–0F–3A–13W–8C)
Prerequisite: Passes in BOTY 102.

Aim: To give an overview of plant diversity in South Africa paying special attention to diverse and economically important families.

Content: This course deals with diversity, evolution and identification of dominant families of plants in South Africa. Students will be introduced to plant collection, specimen preparation and the range of available identification keys. The course also covers the economic, biological and cultural importance of these families.

Practicals: 6 – and a weekend field trip. ;

Assessment: Plant collection (15%), prac reports (10%), essay (10%), prac test (15%), 2 h exam (50%).

Offered in Semester 2.

BOTY301 – Plant Physiology :

(PBO3PP1) (28L–5T–36P–0S–69H–15R–OF–7A–13W–16C)
Prerequisite: Passes in BIOS101; BOTY 102.

Aim: To provide students with an understanding of how plants Aon at the cellular, tissue and organ levels.

Content: Scientific principles with respect to growth regulators in correlative processes such as germination, rooting, apical dominance, flowering, senescence and plant movements.

Practicals: 12 experiments to gain an understanding of plant growth using tissue culture, bioassays and chemical analysis.

Assessment: Practical reports (15%), essay (5%), prac test (5%), theory test (5%), 3 h

theory
exam (70%).

Offered in Semester 1.

BOTY701 – Plant Stress Physiology
(PBO7PSM) (12L–0T–OP–0S–56H–10R–OF–2A–13W–8C)
Prerequisite: Passes in BIOS101; BOTY201, 301.

Science & Agriculture SA 103

Aim: This module is concerned with the response of plants to environmental conditions t
hat
deviate significantly from those that are optimal. Adaptations at the biochemical,
physiological, anatomical and morphological levels that enable plants to survive in str
essed
environments will be discussed.

Content: The concept of stress; oxidative stress as a possible unifying consequence of
many
stresses; drought and desiccation stress; salinity, high temperature and high light str
esses;
man-made stresses including ozone pollution, the greenhouse effect, acid rain and metal
pollution.

Practicals: None.

Assessment: Test (30%), 2 h exam (70%).

Offered in Semester | or 2.

BOTY702 - Secondary Plant Products & Bioprospecting

(PBO7SPM) (13L-17T-OP-0S-38H-10R-OF-2A-13W-8C)
Prerequisite: At least 64C at level 3 including BOTY301.

Aim: To provide an explanation of the role secondary metabolites play in plants.

Content: Secondary metabolites: Biochemical origin and biosynthesis. Classes and
categories. The economics of metabolite production. Biotechnological manipulation of
secondary plant products.

Practicals: None.

Assessment: Essay (15%), tutorial participation (10%), test (5%), 2 h exam (70%).

Offered in Semester I or 2.

BOTY703 - Seed Biology

(PBO7SBM) (12L-0T-OP-0S-56H-10R-OF-2A-13W-8C)
Prerequisite: At least 64C at level 3 in Botany, Plant Physiology, Ecology, Ethnobotany
, or
Agricultural disciplines.

Aim: Provide an understanding of aspects of seed development, germination and dormancy
and their importance in human nutrition and agriculture. The use of seeds as systems fo
r
research in biochemistry and molecular biology.

Content: Seed structure and development; biochemical and hormonal aspects. Dormancy,
germination, and reserve utilization. Storage and longevity of seeds.

Practicals: None.

Assessment: Essay (20%), test (10%), 2 h exam (70%).

Offered in Semester I or 2.

BOTY790 - Botany Research Project

(PBO7RPY) (OL-20T-OP-30S-590H-OR-0F-0A-26W-64C)
Prerequisite: Acceptance into Honours in Botany.

Aim: To gain experience in the formulation, planning, execution, analysis, and reportin
g, of

their research project. _

Content: Students will-be provided with a list of supervisors and possible research topics at the beginning of their Honours year. The final choice of research project will be decided by discussion between the student and supervisor.

Practicals: Students will be expected to execute a research plan and, where necessary, demonstrate competence in the use of sophisticated research equipment to collect data for their project.

Assessment: 2. presentations (project proposal & research findings)(10%), project proposal (5%), research report (85%).

Year-long Module.

SA 104 Science & Agriculture

BOTY810 - Masters by Research

(PBO8RM1) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

BOTY910 - Doctor of Philosophy

(PBO9PH1) (OL-OT-OP-0S-1280H-OR-0F-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research. -

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Business Administration -

Offered in the Faculty of Human & Management Sciences (Pietermaritzburg)

BUMGI101 - Business Management 101 :

(PBS1BMB) (30L-9T-OP-30S-86H-OR-OF-5A-13W-16C)
Prerequisite: Matriculation exemption

Aim: To gain an overview of business management.

Content: Introduction to Business Management; the dynamic of business and economics; ethics and social responsibility; international business; starting and growing a busine ss;
quality and competitiveness; human resources, management function in business, marketin g;
financing enterprises. Case study analysis.

Assessment: 2 tests or assignments, 33% 1 exam. 67%

BUMG102 - Business Accounting 101

(PBS1IBAB) aorta ras loae LLCO Oat 3W-16C)
Prerequisite: Matriculation Exemption

Aim: To introduce basic accounting techniques and to prepare simple sets of financial statements.

Content: Accounting concepts and conventions; double entry system; format and layout of financial statements; adjusting and closing entries; bank reconciliation statements; preparation of financial statements; basic analysis of financial data

Assessment: | test, 33% 1 exam. 67%

Science & Agriculture : SA 105

BUMG107 - Human Resource Management 102

(PBS!HR2) (30L-9T-OP-30S-86H-OR-OF-SA-13W-16C)
Prerequisite: Business Management 101

Aim: To introduce Human Resources Management, its systems and processes.

Content: Overview of HRM; the supply of human resources; human resources maintenance, social responsibility, training & development: motivation and the improvement of performance.

Assessment: 2 tests/assignments, 33% 1 exam. 67%

BUMGI108 - Business Law 102 |

(PBS1BL2) (30L-9T-OP-30S-87H-OR-OF-4A-13W-16C)
Prerequisite: Business Management 101

Aim: To introduce business law - the law of contract and company law

Content: Introduction to SA Law; the law of contract; principles of contract; special contracts; corporate law; corporate entities; the company; registration of the company; legal
aspects of management

Assessment: | test, 1 assignment, 33% 1 exam. 67%

BUMG204 - Human Resource Management 201

(PBS2HR1) (30L-9T-OP-30S-86H-OR-0F-5A-13W-16C)
Prerequisite: Business Management 101

Aim: To introduce learners to Labour Relations in South Africa

Content: Development of labour relations; collective bargaining; SA labour legislation; disciplinary and grievance procedures; disputes, industrial action and the resolution o
f
disputes

Assessment: 2 assignments; 33% | exam. 67%

Business Information Systems

Offered in the School of Mathematics, Statistics & Information Technology

BISS111 - End User Computing

(PIBIECB) (29L-9T-26P-0S-66H-23R-O0F-7A-13W-16C)
Aim: The purpose of this module is to provide students with knowledge about principles
of
computer hardware and software, the use of common packages and issues related to the us
e
of computers as a personal productivity tool.

Content: Introduction to the computer and current operating systems, word processing, spreadsheets, presentation graphics, database. Information retrieval, World Wide Web concepts and human issues. Hardware involved in data capture, processing and storage. Theory and application of communications technology; Characteristics of software development tools.

Practicals: Computer-based exercises on the above topics.

Assessment:2 h exam (50%), tests (25%), tutorials, pracs & assignments

(25%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 1 & 2.

BISS121 - Business Information Systems Fundamentals .

(PIB1SF2) (29L-9T-26P-0S-66H-23R-OF-7A-13W-16C)
Prerequisite: A pass in (BISS111 or CSCI131).

Aim: An understanding of the nature of InformationTechnology and its use in organisatio
ns
and improvement of studentsâ\200\231 skills as knowledge workers.

Content: Internet and World Wide Web concepts, use of Internet in business, introductio
n to
HTML and web page design; business organisations and systems, introduction to Systems
Analysis and the Systems Development Life Cycle; The Programming Development Life
Cycle, introduction to programming and business algorithms; electronic spreadsheets for
business uses; developing a solution using personal database software; types of informa
tion
systems; computer security.

Practicals: Computer-based exercises on the above topics.

Assessment:3 h exam (50%), tests (25%), tutorials, pracs & assignments
(25%). Candidates who do not attain at least 40% in the examination part of the
assessment of a module shall not pass the module.

Offered in Semester 2.

BISS213 - Systems Analysis Fundamentals

(PIB2SA1) (29L-9T-39P-0S-53H-23R-OF-7A-13W-16C)
Prerequisite: Pass in BISS121 with a mark of at least 55%.

Aim: To provide an understanding of the fundamentals of Systems Analysis.

Content: Nature and characteristics of data and information, principles of general syst
ems
theory; Basic business processes; Completing the preliminary investigation, determining
user requirements, conducting feasibility studies, graphic representation of systems, t
he
systems proposal; the role of the systems analyst in integrating purchased software,
constructing, implementing and maintaining systems, systems evaluation.

Practicals: Exercises will be held to refresh and enhance the programming skills develo
ped
in BISS121. ;
Assessment: 3h exam (50%), tests and assignments (50%). Candidates who do not attain
at least 40% in the examination part of the assessment of a module shall not pass the
module.

Offered in Semester 1.

BISS221 - Business Programming & Data Structures

(PIB2DS2) (29L-9T-39P-0S-53H-23R-OF-7A-13W-16C)
Prerequisite: (MATH113, STAT112) or MATHI 10) and a pass in BISS121 of at least 55%.
Aim: To provide competence in programming, data structures and algorithms.

Content: Differences between scientific and business algorithms. Programming in a high
level language: variables, assignment, input and output, choice and repetition structur
es,
strings, arrays, records and files, objects. Introduction to data structures â\200\224
lists, stacks, trees
and queues. Basic algorithms for sorting and searching.

Practicals: Computer-based exercises on the above topics.

Assessment: 3h exam (50%), tests and assignments (50%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 2.

BISS311 - Systems Analysis & Design
(PIB3AD1) (29L-9T-20P-0S-73H-22R-0F-7A-13W-16C)
Prerequisite: Passes in (BISS211 and (BISS221 or CSCI223)).

Science & Agriculture. SA 107

Aim: To provide an understanding of the systems development and modification.

Content: Life cycle phases: requirements determination, logical design, physical design
,
implementation planning and performance evaluation; communication skills, interviewing,
presentation skills, group dynamics; risk and feasibility analysis; group based approac
hes:
project management, joint application development, object oriented design; use of CASE
tools. Software production and reviews; prototyping; software quality metrics; software
package evaluation and acquisition, professional ethics.

Practicals: Computer-based exercises on the above topics.

Assessment: 3 h exam (50%), project (17%), tests and assignments (33%). Candidates who
do not attain at least 40% in the examination part of the assessment of a module shall
not pass the module.

Offered in Semester I.

BISS312 - Information Management

(PIB3IM1) (29L-9T-20P-0S-73H-22R-0F-7A-13W-16C)
Prerequisite: Passes in ((BISS211 and BISS221) or (CSC1I223)).

Aim: To provide a theoretical and practical introduction to the design and implementati
on of
databases. 5 :
Content: Purpose of a database management system, historical perspective, components an
d
functions of a DBMS. End-user data modelling: the modelling of requirements using entit
y-
relationship (ER) diagrams, other modelling methods. Relational data model: relational
algebra, database tables and schema, mapping of ER model to relational
model. Implementation: Structured Query Language, embedding queries in other languages,
transaction processing. Access: Client-server issues, publishing databases using Intern
et
technology. :

Practicals: Computer-based exercises on the above topics.

Assessment: 3 h exam (67%), tests and assignments (33%). Candidates who do not attain
at least 40% in the examination part of the assessment of a module shall not pass the
module.

Offered in Semester 1.

BISS321 - Commercial Software Development

(PIB3CS2) (29L-9T-30P-0S-68H-17R-OF-7A-13W-16C)
Prerequisite: Passes in ((BISS211, 221) or (CSCI223)). â\200\230

Aim: To develop expertise in physical design, programming, testing and implementation o
f
an information system in an object-oriented, client server environment.

Content: Object orientated programming concepts. OO user interface development. UI
design. Event driven programming. Desktop applications. Distributed applications. Clien
t
server applications. WWW programming. SDLC as applied to GUI development with
special attention to user interface design, testing, quality assurance, user training.
Project
control. Team development techniques. Project.

Practicals: Computef-based exercises on the above topics.

Assessment: 3 h exam (50%), project (17%), tests and assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 2.

BISS322 – Information Systems Management s
(PIB3IM2) (29L–9T–9P–0S–78H–28R–OF–7A–13W–16C)
– Prerequisite: Passes in ((BISS211 and (BISS221 or CSC1223)).

SA 108 Science & Agriculture

Aim: To prepare students to fill leadership positions in the IT industry by being able to
manage the change which technology brings to organisations. -
Content: Characteristics of a project and a project manager, typical project problems, allocating resources to a project, role of the user and the steering committee, the pro ject plan,
controlling development quality, project success and failure; Current trends in the IT industry; Nature of change, theoretical foundations for managing change, models of organisational change, approaches to managing change, resistance to change.

Practicals: Computer-based exercises on the above topics.

Assessment: 3 h exam (67%), tests and assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 2.

BISS712 - Business Reengineering

(PIB7BRM) (30L-OT-OP-0S-109H-14R-0F-7A-13W-16C)
Prerequisite: BISS311 and BIS322.

Aim: To provide an understanding of the impact and value of improvement philosophies an d
packaged solutions on existing business processes.

Content: Improvement philosophies such as Business Process Reengineering, Total Quality Management; techniques of redesigning processes, critical success factors, current issues. Impact of integrated packaged solutions such as Enterprise Resource Planning; critical success factors, approaches and methods associated with packaged solutions. Detailed evaluation of a current integrated enterprise-wide package.

Practicals: None.

Assessment: 3 h exam (67%), tests & assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester | or 2.

BISS750 - Software Engineering

(PIB7SEM) (30L-10T-20P-0S-79H-14R-OF-7A-13W-16C)
Prerequisite: CSC1325 or BISS311.

Aim: Detailed understanding of the theory and practice of software engineering for buil ding
complex projects.

Content: Software processes and metrics. Software requirements and specification, desig n
and implementation, verification and validation, software tools and environments, softw are
project management.

Practicals: Computer-based exercises.

Assessment: 3 h exam (67%), tests & assignments (33%). Candidates who.do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 1 or 2.

BISS760 - Decision Support Technology

(PIB7DSM) (30L-0T-OP-0S-109H-14R-OF-7A-13W-16C)
Prerequisite: BISS311, 312.

Aim: Detailed understanding of the theory and practice of decision support technologies .
Content: Decision support systems (DSS) and the decision process, components of a DSS, designing a DSS, implementation and evaluation of DSS, Group DSS, executive information systems, Multicriteria decision making and MCDM DSS, Intelligent DSS, Geographic IS as a DSS, integration of various DSS.

Practicals: None.

Assessment: 3 h exam (67%), tests and assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester | or 2.

BISS780 – Managing IS Resources

(PIB7MMM) (30L–0T–OP–0S–109H–14R–OF–7A–13W–16C)
Prerequisite: BISS311, 322,

Aim: Focus on the central management issues facing role players involved in the IT industry.
Content: Responsibility, authority and accountability; evaluation of theories on the stages of growth within IT, defining and measuring systems success, measuring the performance of IS personnel, factors which influence IS productivity, development teams, leadership roles, IT career paths, the changing roles of people involved in the IT industry. Current trends in IS methodology.

Practicals: None.

Assessment: 3 h exam (67%), tests and assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester I or 2.

BISS781 – Contemporary Topics in Information Systems
(PIB7CTM) (30L–0T–OP–0S–109H–14R–0F–7A–13W–16C)

Prerequisite: A degree in Information Technolocy, Computer Science, Business–Information Systems or similar.

Aim: Detailed understanding of the theory and practice of selected recent topics in IS.
Content: Recent developments in IS.
Practicals: None.

Assessment: 3 h exam (67%), tests and assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 1 or 2.

BISS790 – Research Project

(PIB7RPM) (12L–0T–OP–0S–300H– ee 32C)
Prerequisite: A major in Business Information Systems.

Aim: To develop and demonstrate the ability to draw conclusions regarding a problem in the IS discipline within the framework of acceptable research methodologies.

Content: Nature of research, the research problem, hypothesis construction and testing, scales of measurement, types of research, sampling and questionnaires, the research proposal, writing the project, characteristics of good research; integrating material from various sources, deducing conclusions, presenting material within the framework of acceptable research methods.

Practicals: None.

Assessment: Assignments (5%), project proposal (15%), research project (80%).

Year long module.

SA 110 Science & Agriculture

BISS810 - Masters by Research :

(PIBBRMM) ; (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research in Business Information Systems.-

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

BISS910 - Doctor of Philosophy

(PIB9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research in Business Information Systems.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Chemical Technology

Offered in the School of Chemical & Physical Sciences

CTEC212 - Analytical & Environmental Chemistry

(PTC2AE2) (27L-9T-36P-0S-73H-10R-OF-5SA-13W-16C)
Prerequisite; CHEM111, 112 both with a mark of at least 55%.

Aim: To extend studentsâ\200\231 chemical experience into the field of applied chemistr y and to raise
their awareness of environmental issues.

Content: Aqueous equilibria; statistics in environmental analytical chemistry - measure ments
and errors, precision and accuracy, data analysis; industrial chemistry and the environ ment -
introduction to the holistic approach required by industry.

Practicals: Measurement, recording data, calculation and report writing. Topics include -
redox, complexometric and acid/base titrations, gravimetry, spectroscopy and
electrochemistry. â\200\231

Assessment: Tests (15%), exam (50%), laboratory performance (35%).

Offered in Semester 2. ;

CTEC311 – Materials

(PTC3MM1) (27L–5T–37P–0S–70H–16R–OF–5A–13W–16C)
Prerequisite: CHEM221, 231, 212 and either (MATHI11, 122; STATIO1; CSCI101) or (MATHI10, 120).

Corequisite: CHEM311, 321; PHYS111, 112.

Aim: To introduce students to the industrial growth areas of metals and polymers.

Content: Metals – terminology, extraction, processing and applications, properties and characterisation; organic polymers – terminology, synthesis, stereochemistry, copolymers, biodegradability, physical properties and industrial uses.

Practicals: X-ray powder diffraction techniques; synthesis of alloys; synthesis and characterisation of organic polymers; measurement of Contact Angles.

Assessment: Tests (10%), exam (67%), laboratory & report-writing performance (23%). Offered in Semester 1.

CTEC312 - Industrial Chemistry

(PTC31IC2) (27L-6T-36P-0S-68H-15R-OF-8A-13W-16C)
Prerequisite: CHEM221,.231, 212 either CHEM311 or CHEM331 and either (MATHI11, 122; STAT101; CSCI101) or (MATH110, 120).

Corequisite: PHYS111, 112.

Aim: To introduce students to industrial process analysis.

Content: Mass and energy balances - unit operations and unit processes, flow diagrams, batch and continuous processes, recycle, purge and bypass, heat exchange, steam tables; phase chemistry - the phase rule, two- and three-component phase diagrams; separation processes - distillation, solvent extraction and crystallisation.

Practicals: Phase chemistry; problem-solving workshops; industrial project. The course includes field trips over weekends.

Assessment: Tests (5%), exam (67%), laboratory & report-writing performance (14%), oral & poster presentation (14%).

Offered in Semester 2.

Students may be required to contribute to the cost of field trips.

CTEC321 - Environmental & Bioorganic Chemistry

(PTC3EB1) (27L-9T-44P-0S-59H-16R-OF-5A-13W-16C)
Prerequisite: CHEM221, 231; CTEC212 and either (MATHI11, 122; STAT101; CSCI101) or (MATHI10, 120).

Corequisite: PHYS111, 112.

Aim: To introduce the global growth area of industrial biotechnology and to explain the chemical and physical behaviour of anthropogenic and natural chemicals in the environme nt.
Content: Reservoirs, fluxes and residence times; integrative aspects of pollution cycli ng and
control; water and wastewater - the scientific, technological and legal framework; enzy mes
and supramolecular chemistry; industrial fermentation and downstream processing.
Practicals: Projects on aspects of environmental sampling, analysis and interpretation of
data; aspects of calibration of analytical instruments; beer, wine and cheese making.
Assessment: Tests (5%), exam (67%), laboratory & report-writing (28%).

Offered in Semester 1.

CTEC322 - Analysis & Catalysis

(PTC3AC2) (27L-10T-30P-0S-70H-18R-OF-SA-13W-16C)
Prerequisite: CHEM221, 231, 311, 321; CTEC212; and either (MATHI11, 122; STATIO1; CSCI101) or (MATHI10, 120).

Corequisite: CHEM312, 322; PHYS111, 112.

Aim: To introduce students to the wide range of instrumental techniques available to th e
modern analyst and to the analytical process; to introduce the subject of catalysis and

its
wide application in industry.

Content: Sample types and preparation; chromatographic, spectroscopic and electrochemical
techniques; catalytic kinetics; homogeneous catalysis; heterogeneous catalysis; enzymatic
catalysis.

Practicals: Sampling of heterogeneous systems; use of advanced analytical instrumentation;
Statistical interpretation; heterogeneous and homogeneous catalysis.

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Assessment: Tests (10%), exam (67%), laboratory performance & report writing (23%).
Offered in Semester 2.

CTECTI I - Chemical Engineering Principles
(PTC7PD1) (40L-24T-0P-0S-60H-30R-OF-6A-13W-16C)
Prerequisite: BSc degree including CTEC312.

Aim: To introduce students to fundamental chemical engineering principles in order to maximise the graduatesâ\200\231 effectiveness in industry.

Content: Industrial plant; advanced mass and energy balances; fluid flow; heat transfer ;
agitation and mixing in liquids; reactor design; packed columns; fluidised beds; absorption/stripping; size reduction; screening; settling; cyclones.

Practicals: None.
Assessment: Tests (10%), assignment (20%), exam (70%).
Offered in Semester 1.

CTEC722 - Special Topics in Chemical Technology

(PTC7ST2) (60L-36T-OP-0S-90H-45R-OF-9A-13W-24C)
Prerequisite: CTEC711, 741, 731 two modules each with a mark of at least 50%, the other module with a mark of at least 40%.

Aim: To allow students to specialise in their chosen areas of advanced applied chemistr y.

Content: Topics selected from (amongst others): pollution - causes, effects and prevent ion;
drug design; industrial biotechnology; advanced instrumental techniques; environmental modelling; agrochemicals; applied electrochemistry.

Practicals: None.
Assessment: Tests (10%), assignments 0%); exams (70%).
Offered in Semester 2.

CTEC731 - Topics in Advanced Chemistry

(PTC7AS1) (78L-14T-OP-0S-90H-49R-0F-9A-13W-24C)
Prerequisite: CHEM311, 312, 321, 322; CTEC311, 312, 321, 322.

Aim: To ensure students have a firm foundation in the traditional branches of Chemistry upon which Chemical Technology is built.

Content: Topics from (amongst others) mechanisms and rates of inorganic reactions; organometallic chemistry and homogeneous catalysis; modern spectroscopic methods in organic chemistry; advanced thermodynamics; surface chemistry.

Practicals: None.
Assessment: Tests (20%), exams (80%).
Offered in Semester 1.

CTEC73z2 - Industrial Biotechnology

(PTC7IB2) (15L-5T-OP-0S-40H-17R-OF-3A-13W-8C)
Prerequisite: BSc degree including CTEC321 or a BSc degree majoring in Microbiology.
Aim: To apply fundamental biotechnology principles to the production of chemicals and microorganisms on an industrial scale.

Content: Stoichiometry of growth and product fermentation; viscosities of fluids, fermentation kinetics; agitation; aeration; sterilisation.

Practicals: None.

Assessment: Test (10%), assignment (20%), exam (70%).

Offered in Semester 2.

CTEC741 – Business Seer mer in Chemical Technology
(PTC7BM1) (20L–12T–0P–0S–30H–15R–OF–3A–13W–8C)

Prerequisite: BSc degree with majors in an appropriate field, determined by the Program me
Director and approved by the Dean.

Aim: To introduce science students to the tenets of business and management.

Content: Macroeconomics and microeconomics; planning; organising and staffing; leading; controlling; decision making; strategic and operations planning; ethics; entrepreneursh ip and
intrapreneurship; managing change in organisations.

Practicals: None.

Assessment: Assignments (30%), exams (70%).

Offered in Semester 1.

CTEC742 – Operations Management in Chemical Technology

(PTC70M2) (20L–12T–OP–0S–30H–15R–0F–3A–13W–8C)
Prerequisite: BSc degree with majors in an appropriate field, determined by the Program me
Director and approved by the Dean.

Aim: To give students a working knowledge of how systems that create goods or provide services are managed effectively.

Content: Plant location and layout; types of process; production planning; inventory co ntrol;
MRP, MRP2 and JIT; supply chain management; quality assurance – ISO 9000 & 14000, benchmarking; project management – Gantt charts, critical path method; financial management – accounting and economic appraisal.

Practicals: None.

Assessment: Assignments (33%), exams (67%)

Offered in Semester 2. .

CTEC751 – Environmental Chemistry :

(PTC7EC1) (15L–6T–24P–0S–10H–15R–6F–4A–13W–8C)
Aim: To bring studentsâ\200\231 knowledge of Environmental Chemistry to Honours level.

Content: Chemistry * of the atmosphere, hydrosphere and geosphere. Elemental cycles. Integrated approach to assessing pollution.

Practicals: Small independent project to assess the quality of a water–body in the fiel d.
Assessment: Project (30%), 3 h exam (70%).

Offered in Semester 1.

CTEC762 – Occupational Hygiene

(PTC70OH2) : (20L–12T–OP–0S–30H–15R–OF–3A–13W–8C)
Prerequisite: BSc degree with majors in an appropriate field determined by the Programm e
Director and approved by the Dean.

Aim: To introduce students to the idea of safe production – for the workforce, the comm unity

and the environment.

Content: Recognition and identification of chemical hazards – risks and exposures, route of entry into the body, clearance mechanisms, adverse health effects; monitoring for hazardous substances – sampling, quality control, health surveillance, legislation, evaluation; risk assessment – information sources, task analysis, recording and reviewing; workplace control – ventilation, respirators, noise.

Practicals: None. .

Assessment: Tests (20%), assignment (40%), exam (40%).

Offered in Semester 2.

CTEC782 - Analytical Chemistry

(PTC7AC2) (30L-12T-48P-0S-30H-30R-6F-4A-13W-16C)
Aim: To bring studentsâ\200\231 knowledge of Analytical Chemistry to Honours level.

Content: Modern instrumental techniques. Sampling techniques. The analytical process.
Practicals: Introduce students to modern instrumentation.

Assessment: Practicals (30%), 3 h exam (70%).

Offered in Semester 2.

CTEC790 - Project
(PTC7CPY) (OL-OT-300P-50S-50H-OR-OF-0A-26W-40C)
Prerequisite: CHEM311, 312, 321, 322; CTEC311, CTEC312, 321, 322.

Aim: To introduce students to the process of applied chemical research to solve a parti cular
environmental or industrial problem.

Content: Workshops on the use of computers for the sophisticated treatment of scientifi c
data and for molecular Modelling; liaising with industrial sector; appropriately focuse d
literature search; laboratory work; preparation of scientific report.

Practicals: None.
Assessment: 2 assignments (18%), oral presentation (17%), project assessment ese)
Year-long Module.

CTEC810 - Masters by Research
(PTC8RMM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and aD eds by the Faculty Higher
Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

CTEC811 - Plant & Process Design :

(PTC8PP1) (S0L-24T-40P-20S-60H-30R-10F-6A-13W-24C)

Aim: To give students a rigorous background in the principles of chemical engineering,
allowing them to plan, and build, small chemical plants.

Content: Unit operations â\200\224 including heat and mass transfer, reactor design, mi xing,
separations. Planning a process. Designing a plant.

Practicals: Building a Pilot Plant.

Assessment: Tests (10%), practicals (10%), assignments (20%), 3 h exam (60%).

Offered in Semester 1

CTEC821 - Advanced Environmental Chemistry

(PTC8AE1) (20L-8T-0P-0S-30H-16R-OF-6A-13W-8C)
Aim: To give students an appreciation of the fundamental importance of thermodynamics in
explaining the movement of pollutants in the environment.

Content: Vapour pressure and the movement of chemicals. Solubilities and activity
coefficients. Organic chemicals in the environment â\200\224 partioning between air, water and
soils. Photochemical and biological transformations. Environmental modelling.

Assessment: Assignment (15%), test (5%), 3 h exam (80%).
Offered in Semester 1.

CTEC822 - Advanced Instrumental Analysis

(PTC8AI2) A (12L-9T-90P-0S-36H-10R-0F-3A-13W-16C)
Aim: To give studentsâ\200\231 the opportunity for an extended period of hands-on exper ience in
modern instrumental methods of analysis.

Content: Topics from (amongst others) AAS, ICP-OES, FT-IR, GC, HPLC, XRF.
Practicals: Developing methods and producing standard operating procedures, use of instrumentation, interpretation of data.

Assessment: 3 h exam (40%), laboratory & report-writing performance (60%).

Offered in Semester 2.

CTEC831 - Advanced Studies in Analytical Chemistry

(PTC8AS1) : (20L-12T-O0P-0S-30H-15R-OF-3A-13W-8C)
Aim: To equip studentsâ\200\231 with the skills and attitudes required of a professiona l analytical
chemist. : :

Content: Chemometrics as applied to instrument calibration, VAM principles, QA in analytical chemistry. -

Practicals: None. :

Assessment: Test (20%), assignment (20%), 3 h exam (60%).

Offered in Semester 1.

CTEC862 - Occupational Hygiene

(PTC80OH2) (20L-12T-14P-0S-30H-15R-66F-3A-13W-16C)
Aim: To bring studentsâ\200\231 abilities to the level where they can do an occupationa l hygiene
survey at an industrial site.

Content: Statistical sampling: NIOSH & HSE monitoring methods for dusts, metal fumes, gases and vapours. Risk assessments from initial survey through to report.

Practicals: Field trips to local industries to conduct risk assessment survey. Use of c ommon
OH equipment.

Assessment: Project Report (50%), 3 h exam (50%).

Offered in Semester 2.

CTEC890 - Research Dissertation

(PTC8RDM) (OL-0T-750P-50S-160H-OR-OF-0A-78W-96C)
Aim: To give studentsâ\200\231 experience in developing and executing an independent re search
project in applied chemistry.

Content: Workshops on data analysis using software packages. Sourcing scientific information. Literature survey. Industrial site visits if appropriate. Sampling in the field,
laboratory analysis, thesis preparation.

Practicals: None.

Assessment: Internal and External examination of thesis.
Offered over the duration of the MSc.

CTEC910 - Doctor of Philosophy

(PTC9PHM) ( (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

SA 116 Science & Agriculture

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Chemistry

Offered in the School of Chemical & Physical Sciences

CHEMO010 - Introductory Chemical Concepts & Techniques
(PCHOICY) (54L-15T-77P-0S-34H-48R-OF-12A-26W-24C)
Corequisite: MATHO10; BIOLO10; PHYS010; ACS101.

Aim: To ensure that students with an inadequate grounding in chemistry develop a level of
theoretical knowledge and practical and problem-solving skills to enable them to succeed in
a BSc programme. .

Content: Energy and matter; substances - elements, compounds and mixtures; chemical reactions; solutions - solubility and concentration; separation of mixtures; atomic structure -
electronic configuration and the Periodic Table; compounds - bonding and nomenclature; the
mole; reactions in aqueous solution; introduction to organic chemistry; reactions and energy.

Practicals: Measurement and observation.

Assessment: Tests (14%), 1 mid-year exam (7%), 1 end-of-year exam (70%), prac tests (6%), laboratory performance (3%).
Year-long Module.

CHEM121 - Chemistry & Society 1
(PCHICS1) (18L-9T-18P-0S-26H-6R-0F-3A-13W-8C)
Aim: To provide students with an overview of the role chemistry plays in everyday life.

Content: Recap on the mole; energy in chemical reactions; kinetics; equilibrium; gas laws;
solubility; acids and bases; redox chemistry; electrochemical processes.

Practicals: Measurement of physical constants.

Assessment: Tests (7%), exam (67%), laboratory performance (26%).

Offered in Semester 1.

CHEM122 - Chemistry & Society 2

(PCH1CS2) (18L-9T-18P-0S-24H-8R-OF-3A-13W-8C)
Aim: To provide students with an overview of the role chemistry plays in everyday life.
Content: The Periodic Table - elements, trends and classification; bonding - covalent, ionic
and metallic; chemical and physical properties arising from bonding - some specific examples; polymers - PVC, Teflon, Nylon-6,6, silicones, polyethylene, additives, physical
properties; explosives. :

Practicals: Qualitative analysis for common cations and anions.

Assessment: Tests (7%), exam (67%), laboratory performance (26%).

Offered in Semester 2.

CHEMI31 – General Principles of Chemistry
(PCHIGP1) (36L–9T–36P–0S–50H–24R–0F–5A–13W–16C)
Aim: To introduce students to the fundamental principles underpinning chemistry.

Content: Structure of the atom and introduction to atomic spectroscopy; stoichiometric calculations; Periodic Table; bonding; functional groups and biological molecules; gases;
equilibria in the gas phase and aqueous phase; kinetics; acids, bases and buffers; solubility.
Practicals: Volumetric analysis; measurement of physical constants.

Assessment: Tests (7%), 3 h exam (67%), laboratory performance (26%).

Offered in Semester 1.

CHEM132 – Chemical Reactivity

(PCHIRC2). : (36L–9T–36P–0S–50H–24R–OF–5A–13W–16C)
Prerequisite: CHEM131.

Aim: To introduce students to the general classes of inorganic and organic reactions.
Content: Physical properties of chemical mixtures; redox reactions and electrochemical cells; trends in the Periodic Table; main group chemistry; solid state structures; chemistry in
industry; chemical nomenclature; stereochemistry; isomerism; organic reactions and their
mechanisms.

Practicals: Qualitative analysis and observational exercises; laboratory techniques and synthetic procedures in organic chemistry.

Assessment: Tests (7%), 3 h exam (67%), laboratory performance (26%).

Offered in Semester 2.

CHEM212 – Physical Chemistry & Spectroscopic Methods

(PCH2PS2) (36L–9T–36P–0S–56H–18R–OF–5A–13W–16C)
Prerequisite: CHEM111, 112 both with a mark of at least 55%.

Corequisite: either (MATH111, 122) or (MATHI10, 120).

Aim: To introduce students to the physicochemical principles upon which the science of chemistry is based.

Content: Fundamentals of spectroscopy; chemical thermodynamics; electrolyte solutions; reaction kinetics; electrochemistry.

Practicals: Measurement and calculation of thermodynamic, kinetic and spectroscopic data.
Assessment: Tests (7%), exam (67%), laboratory performance (26%).

Offered in Semester 2.

CHEM 221 – Organic Chemistry

(PCH20C1) (27L–9T–36P–0S–66H–16R–OF–6A–13W–16C)
Prerequisite: CHEMI11, 112 both with a mark of at least 55%.

Aim: To impart the knowledge and skills necessary to succeed in theoretical and practical
organic chemistry.

Content: Introduction to spectroscopic techniques; stereochemistry; aromatic chemistry; carbonyl chemistry; alkene, alkyne, alkyl halide, alcohol and amine chemistry.

Practicals: Synthesis, separation and identification of organic compounds; spectroscopic
problem-solving workshops.

Assessment: Tests (15%), exam (60%), laboratory performance (25%).

Offered in Semester 1.

CHEM231 – Inorganic Chemistry

(PCH2IC1) (27L–9T–36P–0S–66H–16R–OF–6A–13W–16C)
Prerequisite: CHEM111, 112 both with a mark of at least 55%.

Aim: To impart the knowledge and skills necessary to succeed in theoretical and practic
al
inorganic chemistry.

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Content: MO theory; introduction to coordination chemistry; chemistry of hydrogen; soli
d
state chemistry – structure, bonding and thermodynamics.

Practicals: Synthesis and characterisation of Main Group compounds and Transition Metal complexes.

Assessment: Tests (10%), exam (67%), laboratory performance (23%).
Offered in Semester 1.

CHEMS11 – Physical Chemistry
(PCH3PC1) (27L–9T–36P–0S–70H–13R–OF–SA–13W–16C)

Prerequisite: Pass in CHEM212 and either (MATHI11, 122; STAT101; CSCI101) or (MATHI110, 120).

Corequisite: PHYSI11, 112.

Aim: To deepen the studentsâ\200\231 knowledge of the underlying principles of physical chemistry
and their application to non–ideal systems.

Content: Chemical thermodynamics of non–ideal solutions; chemical and electrochemical equilibrium; advanced reaction kinetics; quantum mechanics; molecular spectroscopy of diatomics.

Practicals: Measurement of physicochemical properties; recording, calculation, manipulation and interpretation of data; proper methodology in scientific report writin
g.
Assessment: Test (7%), exam (67%), laboratory & report–writing performance (26%).
Offered in Semester 1.

CHEM312 – Inorganic Chemistry :

(PCH3IC2) (27L–9T–36P–0S–70H–13R–OF–5A–13W–16C)
Prerequisite: Pass in CHEM231 and either (MATHII1, 122; STATIO1; CSCII01) or (MATHL110, 120).

Corequisite: PHYS111, 112.

Aim: To extend the understanding and knowledge of the student in the area of Transition Metal chemistry and to develop experimental synthetic skills.

Content: Crystal field theory; MO theory; electronic spectra of transition metal comple
xes;
Frost diagrams; introduction to bio–inorganic chemistry; carbonyl Com DENS: solid state chemistry of Transition Metal oxides; magnetism.

Practicals: Synthesis and characterisation of Transition Metal Bite
Assessment: Test (7%), exam (67%), laboratory & report–writing performance (26%).
Offered in Semester 2.

CHEM321 – Applied Physical Chemistry

(PCH3PA1) (27L–9T–36P–0S–65H–18R–0F–5A–13W–16C)
Prerequisite: Pass in CHEM212 and either (MATHII1, 122; STATIO1; CSCII01) or (MATH110, 120). 3

Corequisite: PHYS111, 112.

Aim: To give students an appreciation of the applications of physical cnermisiy to chem
ical
analysis.

Content: Separations and chromatography; atomic spectroscopy; electroanalytical

techniques.

Practicals: Use of modern instrumentation to study analytical and environmental problems.
Assessment: Test (3%), exam (67%), laboratory & report-writing performance (30%).
Offered in Semester 1.

CHEM322 - Organic Chemistry

(PCH30C2) â\200\230 (27L-9T-36P-0S-60H-24R-0F-4A-13W-16C)
Prerequisite: Pass in CHEM221 and either (MATH111, 122) or (MATHI10, 120).

Aim: To introduce the theoretical principles behind the synthesis and design of organic molecules and to enable students to attain competency in the organic chemistry laborato ry.
Content: Polar, radical and pericyclic reactions; design strategy; heterocyclic chemist ry;
conformational analysis; further spectroscopy of organic compounds - NMR, IR and MS.
Practicals: Experimental design, vacuum distillation, recrystallisation, anhydrous synt hesis;
product workup; extraction of natural products; characterisation of products.

Assessment: Test (7%), exam (67%), laboratory & report-writing performance (26%).
Offered in Semester 2.

CHEM331 --Chemical Thermodynamics & Kinetics
(PCH3CK1) (14L-5T-15P-0S-33H-8R-OF-5A-13W-8C)
Prerequisite: Pass in CHEM212.

Aim: To deepen studentsâ\200\231 knowledge of chemical thermodynamics and kinetics to s uch a
level that the application of the subject becomes self-evident.

Content: Chemical thermodynamics of non-ideal solutions; chemical and electrochemical equilibrium; advanced reaction kinetics. :

Practicals:; Measurement of physicochemical properties; recording, calculation, manipulation and interpretation of data; proper methodology in scientific report writin g.
Assessment: Test (7%), exam (67%), laboratory & report writing performance (26%).
Offered in Semester 1. This module is only available as part of the Industrial Bioproce ssing
Technology programme.

CHEM711 - Advanced Chemistry

(PCH7AC1) (10SL-18T-0P-0S-120H-65R-OF-12A-13W-32C)
Prerequisite: CHEM311, 312, 321,322 with a CWA of 60%.

Aim: To impart the academic rigour of the traditional disciplines of chemistry viz. ino rganic,
organic and physical chemistry.

Content: Mechanisms and rates of inorganic reactions; electronic spectroscopy and photochemistry of transition metal complexes; organometallic chemistry and homogeneous catalysis, modern spectroscopic methods in organic chemistry; pericyclic reactions; stereocontrol in organic synthesis; advanced synthetic organic chemistry; advanced chem ical
thermodynamics; surface chemistry, electrochemical kinetics; molecular symmetry and group theory applied to small molecules.

Practicals: None.

Assessment: Tests (10%), assignments (10%), exams (80%).

Offered in Semester I.

CHEM712 - Speciat Topics in Chemistry
(PCH7ST2) (105L-18T-OP-0S-120H-65R-0F-12A-13W-32C)

Prerequisite: CHEM711, 791 one module with a mark of at least 50%, the other module with a mark of at least 40%.

Aim: To allow students to specialise in their chosen areas of advanced chemistry.

Content: Topics selected from (amongst others) – symmetry in the solid state; bioinorganic
chemistry; advanced organic synthetic methods; drug design; natural products, isolation and
characterisation; quantum chemistry; advanced kinetic theory; organometallic chemistry and
. homogeneous catalysis; photochemistry and its applications.

Practicals: None.
Assessment: Tests (10%), assignments (10%), exams (80%). -
Offered in Semester 2.

CHEM?791 - Project I
(PCH7CP1) (OL-OT-220P-5S-95H-OR-OF-0A-13W-32C)
Prerequisite: CHEM311, 312, 321, 322.

Aim: To introduce students to the process of scientific research and the communication of
scientific data.

Content: Workshop on the use of computers for the sophisticated treatment of scientific data;
literature search; laboratory work; preparation of scientific report.

Practicals: None. :
Assessment: 1 assignment (11%), oral presentation (20%), project assessment (69%).
Offered in Semester 1.

CHEM?792 - Project II

(PCH7CP2) (OL-OT-220P-5S-95H-OR-O0F-0A-13W-32C)
Prerequisite: CHEM711, 791 one module with a mark of at least 50%, the other module with a mark of at least 40%.

Aim: To continue the process of developing research methodology.

Content: Workshop on computational molecular Modeling; literature search; laboratory work; preparation of scientific report.

Practicals: None.
Assessment: | assignment (11%), oral presentation (20%), project assessment (69%).
Offered in Semester 2.

CHEM810 - Masters by Research

(PCH8RMM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None. .

Assessment: To be determined by the discipline.

Year-long Module.

CHEM910 - Doctor of Philosophy

(PCH9PH1) (OL-OT-OP-0S-1280H-OR-0F-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Community Resources

Offered in the School of Agricultural Sciences and Agribusiness

CRMS120 - Communities: Changes & Challenges

(PCQICC2) : (20L-0T-12P-0S-28H-1 5R-OF-5A-13W-8C)
Aim: To introduce students to various ways of studying communities, development, management and systems of interaction.

Content: Definition of concepts: community, resources, development, management, participation. Theoretical approaches to studying households, communities and environments. Sustainable livelihoods analysis. Exploring growth, change, conflict and leadership in communities.

Practicals: Demonstrations, interactive exercises, group discussions, use of Internet, WebCT modules.

Assessment: 2 tests (25%), assignment (25%), 1.5h exam (50%).

Offered in Semester 2.

CRMS130 - Community Development

(PCQICE2) : (20L-0T-18P-0S-24H-15R-OF-3A-13W-8C)
Corequisite: CRMS120. y

Aim: To understand the concept of development and the factors influencing the outcomes of
development initiatives intended to improve the quality of life in developing countries.
Content: An exploration of sustainable development as presented in theory and in practical
application internationally (e.g. implementation of Agenda 21). Focus on People, Production
and Environmental issues. Â©

Practicals: Demonstrations, interactive exercises, group discussions, web CT modules.
Assessment: test (25%), assignment (25%), 1.5 h exam (50%).

Offered in Semester 2.

CRMS211 - Clothing Construction & Design

(PCQ2CC2) (39L-0T-36P-0S-57H-24R-OF-4A-13W-16C)
Prerequisite: 64C.

Aim: To equip students with the knowledge and skills for quality clothing construction and
design for small business applications.

Content: Clothing design theory. Principles and elements of design. Clothing construction
principles for constructing a skirt/trousers. Quality criteria for a skirt/trousers. Clothing
design methods. Construction principles for shirts. Quality criteria for shirts.

Practicals: Weekly assignments.

Assessment: 2 tests (15%), 5 assignments (15%), 3 h exam (70%).

Offered in Semester 2.

CRMS220 - Introductory Consumer Behaviour & Marketing

(PCQ2CB2) (40L-0T-26P-20S-36H-30R-0F-8A-13W-16C)
Aim: To develop an understanding of the role of consumers, marketers, suppliers and governments in the economy of small businessÃ©s.

Content: Consumer behaviour and marketing. Segmentation of the market. Consumer decision making, influencing variables: perception.motivation, attitudes and learning and personality and psycho graphics, external variables. Communication and diffusion of new ideas. Marketing: targeting and positioning, market analysis and research, sales forecasting, pricing, sales strategies, service strategies, advertising and promotion. Banking. Household income and expenditure.

Practicals: Assignments involving a variety of tasks.
Assessment: 2 tests (20%), 2 assignments (20%), 2 assignments (10%), 3 h exam (50%).
Offered in Semester 2.

CRMS230 - Housing & Development

(PCQ2HH1) (40L-OT-20P-20S-35H-34R-3F-8A-13W-16C)
Corequisite: CRMS 120, 130 or GEOG124.

Aim: To study factors influencing housing and understand the means with which to improv
e
the quality of residential environments.

Content: Ecology, the role of macro and micro environmental factors on housing. Systemi
c
theories and development. Human needs in housing, constraints and gender issues. Housin
g
forms: indigenous, conventional, high density, hi-tech, low cost. Current situation in
South
Africa: affordability, design, delivery systems, policy, and economics. Housing provisi
on:
planning, evaluation of plans, financial and legal factors. Potential solutions to hous
ing
problems.

Practicals: Field trips, design project.

Assessment: | test (10%), 2 assignments (20%), 2 mini assignments (10%), project (10%),
3
h exam(50%),.

Offered in Semester 1.

CRMS231 - Textiles

(PCQ2TP2) (19L-OT-18P-0S-22H-17R-OF-4A-13W-8C)
Aim: To equip students with the knowledge and skills for the selection and decoration o
f
textiles for small business applications.

Content: Introduction to the study of textiles. Textile characteristics. Textile
selection. Wool, silk, cotton, linen, viscose, nylon, polyester, acrylic, elastic fiber
s.
Practicals: Weekly laboratory exercises.

Assessment: | test (15%), 2 assignments(15%) & 3 h exam IS

Offered in Semester 2.

CRMS310 - Household Resource Management

(PCQ3HM1) (20L-0T-0P-23S-90H-20R-0F-7A-13W-16C)
Prerequisite: CRMS230.

Aim: To develop a base for resource management theory in the context of household
resource management in South African households specially rural farm households, and
related development issues such as poverty, unemployment, womenâ\200\231s time constrai
nts,
AIDS and HIV, domestic violence and health.

Content: Management systems. Household resource management functions. Household
structures. Values, goals and standards. Resources. Decision making. Management
communication. Feedback. Planning. Implementing plans. Time and energy management for

development applications. Financial management.

Practicals: None.

Assessment: 1 test (10%), 2 mini-assignments (20%), 1 seminar (10%), 1 project assignment (10%), 2.5 h exam (50%).

Offered in Semester 1.

CRMS330 – Community Participation
(PCQ3CP1) (20L-OT-20P-0S-110H-OR-OF-10A-13W-16C)
Corequisite: CRMS310.

Aim: To acquire skills required by a community development practitioner including understanding and applying the various approaches and models to development.

Content: Community development philosophies, theories, desirable outcomes, indicators. Community Development as a process. Planning, implementing, managing community projects. PRA techniques, community work roles and skills. Community Development models: Needs-based, asset-based, Sustainable Livelihoods, social action, community organization, social planning.

Practicals: Organizing community workshops, financial management, writing and presenting a project proposal.

Assessment: \ project proposal (25%), assignment (25%), 2.5 h exam (50%).

Offered in Semester 1.

CRMS340 - Programme Evaluation

(PCQ3PE2) (20L-0T-OP-20S-84H-30R-0F-6A-13W-16C)
Corequisite: CRMS330. -

Aim: On completion of the module, students should be able to design, assess and formall y
evaluate development related projects and programmes according to sound scientific principles of both quantitative and qualitative methodologies.

Content: Evaluation, research: definitions, historical perspectives, philosophies. Type s,
structures and functions of evaluation in projects and programmes. Critical analysis of evaluation designs, setting objectives, identifying indicators. Organisational processe s,
practical problems, contextual influences.

Practicals: None. ;

Assessment: | test (10%), 1 seminar (15%), project (35%), 2.5 h exam (40%).

Offered in Semester 2.

CRMS350 - Food Security

(PCQ3FS2) _ (10L-0T-OP-10S-37H-20R-0F-3A-13W-8C)
Aim: To introduce students in Community Resources to the concept of food security, the policy making process in South Africa and program interventions, with application to nutrition programmes.

Content: Conceptual framework for nutrition and development. Food Security (access, availability, vulnerability). Food Security measurement. Policy context in SA. Policy making. Nutrition policies, strategies and programs in SA with reference to Food Securi ty.
Practicals: None.

Assessment: \ test (10%), 4 assignments (20%), 2 assignments (20%), 1.5 h exam (50%).
Offered in Semester 2.

CRMS360 - Small Business Enterprises

(PCQ3SB2) (10L-0T-OP-10S-37H-20R-0F-3A-13W-8C)
Prerequisite: CRMS220. ,

Aim: To equip students with the theory and skills necessary to promote the development of
small business enterprises in communities.

Content: Entrepreneurship. SMMEs in SA. Types of business in SA (service, retailing, manufacturing, Informal Sector). Business formation (companies, closed corporations, so le
proprietors, partnerships, franchises) Assessing business opportunities. Markets and Ma rket
research. Feasibility Studies. Financing and control. Credit. Regulations. Pricing and profit.
Delivery mechanisms and options. Marketing and promotion.

Practicals: None.

Assessment: 3 assignments (33%), 3 assignments (33%), 1.5 h exam (34%).

Offered in Semester 2.

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CRMS710 - Community Participation

(PCQ7CP1) (20L-0T-OP-34S-85H-17R-OF-4A-13W-16C)
Prerequisite: CRMS310. Â°

Aim: Students should be able to understand the role of the macro-environment on community development, apply the various approaches ahd models to community development and know the value of, participation, capacity building and empowerment within communities

Content: Community development structures and functioning; development philosophies, theories, indicators. Community Development as a process: needs assessment, resource identification. Management of community projects, project cycle, planning and implementation, PRA techniques, community work roles and skills. Community Development models

Practicals: Community workshops, computerised financial management.
Assessment: 6 papers, (20%), oral presentation (10%), 3.5 h exam (70%).
Offered in Semester 1.

CRMS720 - Research Methods

(PCQ7RMW) (20L-20T-6P-0S-24H-OR-OF-10A-3W-8C)
Aim: Students are able to understand and use the theoretical knowledge gained at undergraduate levels in the analysis and synthesis of appropriate research designs, art icles
and reports in their research field.

Content: The post graduate program expectations; The research question - relating theor y to
research, scientific method. Research tools and Research design. Literature review. Sampling. Types of methodologies and data collection techniques. Data analysis -
Elementary social statistics. Presentation of ecules conclusions, recommendations - cri teria
for evaluation of research reports.

Practicals: Assignments, library search, computer statistical CHARBE.

Assessment: Open book assignment (100%).

Offered in the Winter Vacation.

CRMS730 - Community Resources Research Project

(PCQ7RPY) (OL-0T-0P-3S-237H-OR-OF-0A-26W-24C)
Aim: Students should be able to plan, implement and analyse data i in a research projec t and
produce a report of an acceptable standard.

Content: Investigation of a research question related to community development, communi ty
or normal nutrition, extension, housing, household resource management or small busines s
or income generation.

Practicals: None.

Assessment: Research report (80%), oral defence of research (20%).

Year-long Module.

CRMS740 - Community Development

(PCQ7CMM) (OL-OT-OP-22S-250H-45R-O0F-3A-13W-32C)

Aim: Students will understand the concept of development from a number of perspectives, develop process skills for community development and be able to debate issues so that t hey
will have competent research, policy making and management understanding of the development arena.

Content: Understanding community; Theories and philosophies of development. Role players in community development-government, NGOs, CBOs, Donors, International Aid. Principles and processes of community development. Project management in development - the project cycle, roles and functions. Community Development project (programme) evaluation and research. Community work roles and skills

Practicals: None.

Assessment: 3 assignments (20%), 3 assignments (20%), presentations (10%), 3 h exam (50%).

Offered in Semester I or 2.

CRMS741 - Communication in Extension

(PCQ7CEM) (2L-0T-5P-29S-250H-3 1 R-OF-3A-13W-32C)
Aim: To equip students with the necessary insight, skills and analytical ability to rev iew
agricultural extension and rural development work (and similar work environments) so as to
determine the optimal intervention for a particular community of what and how community education and technology transfer should best occur.

Content: Structures, roles -and purposes of extension services, Philosophy of adult education. Communication and networking, Adult education technology. Role of adult education in rural development. Policy for agricultural and rural development.

Practicals: Application project.

Assessment: 3 assignments (20%), 3 assignments (20%), presentations (10%), 3 h exam (50%).

Offered in Semester | or 2.

CRMS744 - Housing

(PCQ7HOM) (OL-O0T-OP-22S-245H-50R-0F-3A-13W-32C)
Aim: To provide student with a theoretical framework within which the housing problems of
developing countries can be placed, understanding the functions of role players in the housing delivery process. Data collection requirements to inform policy and research.
Content: Historical dimensions of housing; SA building styles; urbanisation, cultural housing differences. Theoretical approaches to the study of housing, micro-macro environmental influences. Housing technology and functional design. Peopleâ\200\231s ex perience
of place. City living and urban renewal. SA housing problems and_ potential solutions. Comparative housing policies. Housing research.

Practicals: None.

Assessment: 3 assignments (20%), 3 assignments (20%), presentations (10%), 3 h exam (50%).

Offered in Semester | or 2.

CRMS745 - Household Resource Management

(PCQ7HRM) (18L-0T-OP-20S-262H-16R-OF-4A-13W-32C)
Aim: To develop an appreciation for the complexity of household resource management in a
development context and explore the impact of household resource management systems on the role of women in development projects.

Content: Household structures. Values, goals and standards. Resources. Decision making. Management communication. Feedback. Planning. Implementing plans. Outcomes of management.

Practicals: None.

Assessment: 3 assignments (20%), 3 assignments (20%), presentations (10%), 3 h exam (50%).

Offered in Semester I or 2.

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CRMS750 - Independent Study in Community Resources

(PCQ7CRM) (OL-OT-OP-0S-320H-OR-OF-0A-13W-32C)
Aim: The main purpose of this module is that students will have the opportunity to have an
individually designed curriculum based upon individual requirements to build further knowledge and experience in the development arena.

Content: Topics and assignments and their assessment to be decided on for each specific case. Modules may include seminars, literature reviews, or parts of modules from various
disciplines.

Practicals: None.

Assessment: 3. assignments (20%), 3 assignments (20%), presentations (10%), 3 h exam (50%). ;

Offered in Semester | or 2.

CRMS751 - Consumer Behaviour & Marketing

(PCQ7CBM) (18L-0T-OP- 6S-276H- 16R-OF-4A-26W-32C)
Prerequisite: CRMS220.

Aim: To pursue advanced studies in consumer behaviour and marketing as related to small and medium enterprise (SMME) development in the South African context.

Content: Introduction to CB and Marketing: process, consumerism. Market segmentation and targeting: the South African consumer, the informal market. Media, perception, motivation, attitudes and learning. Consumer decision making. Pricing: marketing economics, supply and demand, pricing strategies. Distribution, sales and service: service
quality, distribution, store types. Packaging. Social responsibility. Banking and banking
technologies. Credit and investments.

Practicals: None.

Assessment: 4 discussion assignments (20%), seminar (20%), oral presentations (10%), 3h exam(50%).

Offered in Semester 1 or 2.

CRMS790 - Small Business Enterprises â\200\230
(PCQ7SBM) (18L-0T-OP-20S-262H-16R-OF-4A-13W-32C)
Prerequisite: CRMS360. 5

Aim: To explore the potential for SMEâ\200\231s in sustainable development within the South
African context.

Content: Constraints to SME development and possible solutions for ciate SME development, including investigation of market barriers, enterprise form, credit and appropriate financial service, regulations and policy, pricing and profitability of enterprises,
and enterprise support.

Practicals: None.

Assessment: 5 assignments (20%), class presentations (10%), enterprise assessment (20%),
3.5 h exam (70%).

Offered in Semester | or 2.

CRMS810 - Masters by Research

(PCQ8RM1) (OL-OT-OP-0S-1280H-OR-0F-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg
ree.
Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

CRMS820 - Advanced Research Methods

(PCQ8ARW) (18L-20T-6P-0S-26H-OR-OF-10A-3W-8C)
Aim: The main purpose of this module is to ensure that-students are able to understand
and
use theoreticalâ\200\231 knowledge in the analysis and synthesis of appropriate researc
h designs,
articles and reports in their research field.

Content: Analysing, critiquing and evaluating a variety of research projects reflecting
disperse research questions, theories, methodologies.

Practicals: Assignments.

Assessment: Open book assignment (100%).

Offered in the Winter Vacation.

CRMS830 - Research Project

(PCQ8RPY) - (OL-0T-OP-200S-360H-OR-OF-0A-26W-56C)
Corequisite: CRMS820.

Aim: Students should be able to independently plan, implement and analyse data in a
research project and produce a report of an acceptable standard that contributes to the
body
of knowledge in the discipline.

Content: Student selected research project.

Practicals: None.

Assessment: Thesis presentation (80%) & oral defense (20%).

Year-long Module.

CRMS910 - Doctor of Philosophy

(PCQ9PHM) (OL-OT-OP-0S-640H-OR-OF-0A-26W-64C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by
the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Computational Physics

Offered in the School of Chemical & Physical Sciences

CPHY211 – Computational Physics Techniques

(PPC2PT1) : (36L–12T–60P–0S–40H–9R–OF–3A–13W–16C)
Prerequisite: (MATH110, 120 or MATHI11, 122); PHYSI11, 112.

Aim: To introduce programming in Fortran90 and general computational techniques.

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Content: Fortran90. â\200\230Numerical Methods. Calculus. Taylor series expansions. Partial
differentiation. Vectors. The vector operator nabla and some of its applications in physics.
Complex numbers and their use in physics.

Practicals: Computational exercises.

Assessment: The assessment is based on the prac work (30%), tests (70%).

Offered in Semester 1.

CPHY212 - Comp Mechanics & Symbolic Programming

(PPC2DC2) Oe Bie cermson ise e uae oie aISe
Prerequisite: PHYS211; CPHY211.

Aim: To continue introducing general computational techniques and to model the behaviour
of mechanical systems using computational techniques.

Content: Two-body problem, orbits in an inverse square force field, projectiles with friction. Variable mass systems, coupled oscillations, damped driven simple harmonic motion, nonlinear pendulums. Introduction to symbolic manipulation using Mathematica: the basics, performing algebraic and calculus manipulations, solving equations, graph plotting, application to physical problems. Â°

Practicals: Computational exercises.

Assessment: 10 practicals (60%), tests (40%).

Offered in Semester 2.

CPHY311 - Computational Quantum Mechanics

(PPC3QM1) (14L-5T-30P-0S-0H-28R-0F-3A-13W-8C)
Prerequisite: CPHY211.

Corequisite: PHYS311.

Aim: This module introduces the field of quantum mechanics in a practical, roblenteslving
manner using the computer as a tool. i

Content: Hamiltonians, Operators, Eigenvalues and Eigenfunctions; Orthonormality of energy eigenfunctions; Expectation values of operators; Forms of wave equations for a range
of simple systems; Quantum mechanics of the H2 molecule; Evaluation of overlap integrals;
Computational techniques in Molecular Orbital theory; Variational Methods.

Practicals: Practicals: Students are required to attend weekly practicals and to submit a mini
project.

Assessment: 3 projects (60%), tests (40%).

Offered in Semester 1.

CPHY312 - Random Systems 5
(PPC3RS2) (14L-ST-30P-0S-0H-28R-0F-3A-13W-8C)
Prerequisite: CPHY211.

Aim: This module introduces the student to physical systems governed by random processes

and the use of random numbers in numerical techniques and simulations.

Content: Generation of and transformation of uniform and non uniform random deviates; Monte Carlo integration; random walks, molecular dynamics, the diffusion equation; clus ter
growth models, percolation; the Ising model and the mean field approximation.

Practicals: 6 practicals.

Assessment: 5 projects (60%), tests (40%).

Offered in Semester 2.

CPHY321 - Comp Statistical Physics & Thermodynamics

(PPC3ST1) (14L-ST-30P-0S-0H-28R-OF-3A-13W-8C)
Prerequisite: CPHY211.

Corequisite: PHYS321.

Aim: To apply computational techniques to the study of statistical and thermodynamical systems.

Content: Enumeration of quantum states; spin 1 paramagnetic system; ideal gas in the canonical ensemble; kinetic: theory of gases; and system of independent distinguishable harmonic oscillators.

Practicals: 6 practicals. .

Assessment: Projects (50%), tests (50%).

Offered in Semester 1.

CPHY322 - Computational Solid State Physics 3

(PPC3SS2) (14L-5T-30P-0S-0H-28R-0F-3A-13W-8C)
Prerequisite: CPHY211.

Corequisite: PHYS322.

Aim: To study solid state systems using computational techniques.

Content: Crystal structure; energetics of solids; X-ray diffraction; lattice dynamics; and
electronic structure.

Practicals: 6 practicals
Assessment: Projects (50%), tests (50%).
Offered in Semester 2.

CPHY810 - Masters by Research

(PPC8RMM) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

CPHY910 - Doctor of Philosophy

(PPC9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content; To be determined in collaboration with the Head of Discipline and approved by

the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

SA 130 Science & Agriculture
Computer Science

Offered in the School of Mathematics, Statistics & Information Technology

CSCI103 - Computers & Communication

(PCS1CM1) (19L-OT-26P-0S-22H-8R-OF-5A-13W-8C)
Aim: To teach students to use information technology effectively for the communication of
scientific knowledge.

Content: Scientific communication both in writing and verbally of laboratory reports, essays
and other communications. Issues of style, structure and format. Processing and display of
numerical data and â\200\230its inclusion. Searching for information and citing of
references. Reading and understanding scientific examination papers. Tools: word
processors (including spelling and grammar checking, and style files), spreadsheets,
presentations, graphics, electronic databases, web browsers, electronic mail.

Practicals: Computer-based exercises on the above topics.

Assessment: 2 h exam (50%), tests (25%), practicals & term papers (25%). Candidates who
do not attain at least 40% in the examination part of the assessment of a module shall
not pass the module.

Offered in Semester 1.

CSCI131 - Introduction to Computer Science

(PCS IHIC1) (39L-9T-39P-0S-43H-23R-OF-7A-13W-16C)
Prerequisite: Senior Certificate Mathematics HG D/Standard Grade A or Computer Studies
Grade C. :

Corequisite: MATH110.

Aim: To broadly introduce the field of Computer Science and to prepare the student for
programming.

Content: Overview of Computer Science. Operating systems, filing subsystem, GUI and
command line access. Software tools: text preparation, spreadsheets, databases, presentation
graphics. WWW: concepts, usage, e-mail, HTML, formal structures: numbers and their
representation; logic design (switching algebra, gates, synthesis of circuits); finite automata
and circuits with memory; von Neumann structure; Turing model of computation; low level
programming. ,
Practicals: Computer-based exercises on the above topics.

Assessment: 3 h exam (50%), tests (25%), assignments (25%). Candidates who do not
attain at least 40% in the examination part of the assessment of a module shall not pass
the module. ;

Offered in Semester 1.

CSCI1141 - Programming & Structures

(PCS1PS2) (39L-9T-39P-0S-43H-23R-0F-7A-13W-16C)
Prerequisite: A pass in CSCI131, or Matric Computer Studies HG C, or MATHI10, or any
64 credits passed at level 1.

Aim: To provide an introductory level of competency in programming.

Content: Algorithmics, problem solving, decomposition, algorithms (in general, summing,
searching sorting, number theoretic). Programming - syntax and semantics of a high leve

l
language, variables (types and assignment), control structures, debugging, functions an
d
parameters, simple IO, exceptions, style, practical development. Structures â\200\224 n
umeric types,
strings, arrays, records, pointers (references), objects. :
Practicals: Computer-based exercises on the above topics.

Assessment: 3 h exam (50%), tests (25%), assignments (25%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 2.

CSCI215 - Computer Organisation & Architecture

(PCS2CO1) (29L-9T-39P-0S-54H-22R-0F-7A-13W-16C)
Prerequisite: A pass in CSCI141.

Corequisite: MATH110.

Aim: To provide students with an understanding of the architecture of a computer and its low level operations.

Content: Digital logic and systems, machine level representation of data, assembly level, memory system, input/output devices, CPU (arithmetic unit, control unit, addressing modes).
Special topics.

Practicals: Computer-based exercises on the above topics.

Assessment: 3 h exam (50%), tests (20%), assignments (30%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 1.

CSC1223 - dieoritnmics

(PCS2AB2) : (29L-9T-39P-0S-54H-22R-0F-7A-13W-16C)
Prerequisite: Passes in ((CSCI141 or CPHY211) and MATH110).

Aim: To provide an understanding of the basic algorithms used in Computer Science, the data structures associated with them as well as with their analysis.

Content: Abstract data types. Pointers, dynamic memory, static and dynamic implementation of data structures. Storage management. Arrays, linked lists, stacks, queues. Recursion, recursive mathematical functions, recursive procedures, divide and conquer, backtracking, Hashing. Binary trees, tables, graphs. Canned data structures. Choice and use of algorithms.
Fundamental algorithms for searching and sorting. Space and run time complexity of associated algorithms. Introduction to empirical measurement of efficiency.

Practicals: Computer-based exercises on the above topics.

Assessment: 3 h exam (50%), tests (20%), assignments (30%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 2.

CSCI224 - Distributed Computing

(PCS2DC2) â\200\230 : (29L-9T-39P-0S-54H-22R-0F-7A-13W-16C)
Prerequisite: A pass in CSCI141.

Corequisite: MATH110.

Aim: To be able to design effective distributed computing systems.

Content: Data transmission and networks. Data communications models and protocols. Web

as a client server exaiple. Client and server side programming. Building web applicatio
ns
and databases,

Practicals: Computer-based exercises on the above topics.
Assessment: 3 h exam (50%), tests (20%), assignments (30%). Candidates who do not

attain at least 40% in the examination part of the assessment of a module shall not pas
s
the module.

Offered in Semester 2.

CSCI313 - Computability & Automata
(PCS3CT1) (29L-9T-0P-0S-93H-22R-0F-7A-13W-16C)
Prerequisite: MATH211 or 215.

Aim: To equip students with a knowledge and facility in the basic formal concepts surrounding computation. :

Content: Theory of Computation. Effective processes: computation, derivation, generation;
Computable objects: _â\200\224 functions and __â\200\224 sets; ~â\200\224-Decidability and __ effective
enumeration. Undecidable problems; Finite Automata; Turing machines

Practicals: None.

Assessment: 3 h exam (66%), tests (17%), assignments (17%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass
the module.

Offered in Semester 1.

CSCI315 - Operating Systems

(PCS30C1) (29L-9T-39P-0S-54H-22R-0F-7A-13W-16C)
Prerequisite: Pass in CSC1223.

Aim: To understand the various areas of abstraction provided by an operating system for system users and programmers,

Content: Operating systems - principals, concurrency, scheduling, virtual memory, device
management, security and protection, file system, net centric computing.

Practicals: Computer-based exercises on the above topics.

Assessment: 3 h exam (66%), tests (17%), assignments (17%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass
the module.

Offered in Semester 1.

CSCI323 - Intelligent Systems

(PCS31T2) (29L-9T-39P-0S-54H-22R-0F-7A-13W-16C)
Prerequisite: Pass in CSC1223.

Aim: To provide students with a knowledge and facility in computer systems that behave more like humans.

Content: Introduction to Artificial Intelligence challenge. Agents universe. Finite state
systems. Neural networks and learning. Logical foundations of Artificial Intelligence and
knowledge representation. Genetic programming approach. State-space models in Artificial
Intelligence. Programming in languages supporting Artificial Intelligence concepts. Topics
in Al. :
Practicals: Computer-based exercises on the above topics. ;

Assessment: 3 h exam (66%), tests (17%), assignments (17%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass

the module.

Offered in Semester 2.

CSCI325 - Software Design

(PCS3SD2) (29L-9T-39P-0S-54H-22R-0F-7A-13W-16C)
Prerequisite: Pass in CSC1I223.

Aim: To provide an understanding and facility in programming and design and specificati
on
of computer systems. :

Content: Abstract data types, object oriented programming and design, other programming paradigms event and concurrent programming, user interface specification, quality assurance
and testing, formal techniques for requirements and specification, programming tools, environments and integration techniques. Distributed objects.

Practicals: Computer-based exercises on the above topics.

Assessment: 3h exam (50%), project (20%), tests (15%), assignments (15%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 2.

CSCI710 - Programming Language Concepts

(PCS7PLM) (30L-10T-20P-0S-79H-14R-0F-7A-13W-16C)
Prerequisite: A major in Computer Science, Mathematics or Applied Mathematics.

Aim: Detailed understanding of the theory of programming languages and program verification.

Content: Syntactical structure of programming languages. Methods for describing programming languages semantics. Types of programming languages and their semantic background and use Program correctness and verification.

Practicals: Programming assignments.

Assessment: 3 h exam (67%), tests & assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module. ;

Offered in Semester 1 or 2.

CSCI720 - Language Translation Systems

(PCS7LTM) (30L-10T-20P-0S-79H-14R-0F-7A-13W-16C)
Prerequisite: A major in Computer Science.

Aim: Detailed understanding of the theory of programming languages and program verification.

Content: Syntax and semantics of languages. Levels of programming languages. Elements of
Formal Grammars theory. Lexical and syntactic analysis. Languages with rigid format and their translation. Translation, compilation and interpretation of high level programming
languages. 2

Practicals: Programming assignments.

Assessment: 3 h exam (67%), tests & assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 1 or 2.

CSCI726 - Bioinformatics & Biocomputing

(PCS7BBM) (30L-10T-20P-0S-79H-14R-OF-7A-13 W-16C)
Prerequisite: A major in Computer Science, Statistics, Physics or Applied Mathematics.
Aim: Detailed understanding of the algorithms associated with genetics and genetic processes.

Content: Basic genetic processes. Review of mathematical, computational and statistical background. Comparison of sequences. Multiple sequences comparison. Fragment reassembly. Protein structure prediction. Statistical processes in genetics. Project related to
student background. Special topics.

â\200\231 Practicals: Programming assignments.

SA 134 Science & Agriculture

Assessment: 3 h exam (55%), externally examined project (15%) tests & assignments (30%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester | or 2.

CSCI730 – Computer Graphics

(PCS7CGM) (30L–10T–20P–0S–79H–14R–OF–7A–13W–16C)
Prerequisite: A major in Computer Science, Mathematics, Applied Mathematics, Physics or Computational Physics.

Aim: To provide expertise in the theory and practice of computer graphics.

Content: Graphic systems, fundamental techniques in graphics, basic rendering, basic geometric modeling, programming. Topics from visualization, virtual reality, computer animation, multimedia data technologies, compression and decompression, multimedia applications and authoring, multimedia servers and file systems, networked and distributed multimedia systems, recent topics.

Practicals: Programming assignments.

Assessment: 3 h exam (67%), tests & assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester | or 2.

CSCI740 – Distributed Systems

(PCS7DSM) (30L–10T–20P–0S–79H–14R–0F–7A–13W–16C)
Prerequisite: A major in Computer Science.

Aim: Detailed understanding of the theory and practice of distributed computing.

Content: Distributed computing fundamentals. Collaboration technology. and groupware fundamentals, distributed operating systems concepts. Modeling and analysis of distributed systems. Security issues in distributed systems.

Practicals: Programming assignments.

Assessment: 3 h exam (67%), tests & assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester I or 2.

CSC1I770 – Human Factors in ICT

(PCS7HFM) (30L–10T–20P–0S–79H–14R–OF–7A–13W–16C)
Prerequisite: A major in Computer Science, Business Information Systems or Psychology.
Aim: To prepare students to design computer user interfaces and have a facility in social, ethical and professional issues in Information Technology.

Content: SDLC with special application to the process of developing usable computer information systems. Principles of Human Computer Interaction; modeling the user; window management design, help systems, evaluation methods, computer supported collaborative work. Social context of computing, professionalism and ethics; risks and liabilities of safety critical systems, privacy and civil liberties, social implications and the Internet.

Practicals: Usability implementation and testing.

Assessment: 3 h exam (55%), externally examined project (15%), tests & assignments (30%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Offered in Semester 1 or 2.

CSCE782 - Contemporary Topics in Computer Science a
(PCS7TCM) (30L-10T-20P-0S-79H-14R-OF-7A-13W-16C)
Prerequisite: A major in Computer Science.

Aim: Detailed understanding of the theory and practice of selected recent topics in CS.
Content: Recent developments in CS.

Practicals: Implementation techniques.

Assessment: 3 h exam (67%), tests & assignments (33%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module. :

Offered in Semester I or 2.

CSCI790 - Research & Development Project

(PCS7RPM) (8L-20T-20P-12S-260H-OR-OF-0A-26W-32C)
Prerequisite: A major in Computer Science.

Aim: To enable students to understand the applications of the techniques in Computer Science - to plan, analyze, implement, and write up a research and development project.

Content: Project proposals, research writing. Project will be carried out in consultation with
an advisor. Should project be done as part of a team the evaluation techniques will be discussed with the external examiner. Students will be expected to show an application of
appropriate modules from their Computer Science in the planning and conduct of the project.

Practicals: Implementation techniques.

Assessment: Project report & evaluation of any artifacts produced & externally moderated
(70%). Project review & presentations (30%). Candidates who do not attain at least 40% in the examination part of the assessment of a module shall not pass the module.

Year long module.

CSCI810 - Masters by Research

(PCS8RM1) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

CSCI910 - Doctor of Philosophy

(PCS9PH1) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme. ˜

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

## Crop Science

Offered in the School of Agricultural Sciences and Agribusiness

FOR UNDERGRADUATE PROGRAMME IN CROP SCIENCE - See Rules Ag4 and AgR4 and Agricultural Plant Sciences ~

### CROP810 - Masters by Research

(PCR8RMM) (OL-OT-OP-0S-1280H-O0R-OF-0A-OW-128C)
Prerequisite: Acceptance into Masters programme.

Corequisite: To be specified by the discipline.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

### CROP910 - Doctor of Philosophy

(PCR9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-0W-128C)
Prerequisite: Acceptance into the Doctoral programme. :

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

## Cultivated Pastures

Offered in the School of Agricultural Sciences and Agribusiness

### PAST810 - Masters by Research :

(PSC8RMM) (OL-OT-0P-0S-1280H-OR-0F-0A-26W-128C)
Prerequisite: Acceptance into Masters programme.

Corequisite: To be specified by the discipline.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module. For the undergraduate programme, see Rules Ag4 and AgR4 and Agricultural Plant Sciences.

PAST910 - Doctor of Philosophy
(PSC9PHM) (OL-0T-OP-0S-1280H-OR-OF-0A-0W-128C)
Prerequisite: Acceptance into the Doctoral programme. :

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of fleets (100%).

Year-long Module.

Dietetics & Human Nutrition

Offered in the School of Agricultural Sciences and Agribusiness

DIET237 - Dieti: pcan: diabetes, heart disease

(PDI2LD2) : (39L-0T-39P-0S-56H-20R-0F-6A-13W-16C)
Prerequisite: NUTR 118.

Corequisite: BCHM213, 222, 231, HPHY252, 254, NUTR214.

Aim: To develop an in-depth understanding of the causes, treatment and prevention of ma jor
lifestyle diseases. â\200\230

Content: Obesity, underweight/eating disorders, diabetes, hypoglycaemia, coronary heart disease, hypertension.

Practicals: Problem solving.

Assessment: Tests (17%), prac evaluation (17%), exam (66%).

Offered in Semester 2.

DIET310 - Research Methods

(PDI3RM1) (10L-0T-10P-0S-20H-OR-OF-0A-13W-4C)
Aim: This module gives students a further understanding of research methodology used in nutrition and dietetic research, and enables them to evaluate the literature and presen t
seminars.

Content: Reviewing the literature; The research process; Methodology available to determine dietary intakes; Qualitative research methods in nutrition and dietetics; How to
write analytical seminars; Planning seminars â\200\224 Abstract, Introduction, Body, Co nclusion,
References.

Practicals: Research methods.

Assessment: Module attendance & participation in group exercises (100%).

Offered in Semester I.

DIET330 - Diet2: Surgery, Infection & Hyperalimentation

(PDI3SI1) (49L-0T-63P-15S-78H-30R-OF-5SA-13W-24C)
Prerequisite: DIET237, NUTR214.

Aim: To develop an understanding of assessment, consistency modifications, hyperalimentation, hypermetabolism

Content: Pharmacology, assessment, consistency modifications, enteral, parenteral, sepsis, surgery, burns and infections.

Practicals: Problem solving, visits to hospitals, case studies.

Assessment: Oral & seminar (11%), prac evaluation (11%), 2 tests (11%), exam (67%). Offered in Semester 1.

SA 138 Science & Agriculture

DIET340 - Diet3: Liver, kidney, cancer, allergies, gut

(PDI3LK2) (49L-0T-63P-15S-78H-30R-OF-SA-13W-24C)
Prerequisite: DIET 237, NUTR 214.

Aim: To develop an understanding of renal, liver, pancreatic, gallbladder and GI diseas
es,
cancer and food allergies.

Content: Renal, liver, pancreas, gallbladder, diarrhoea, constipation, IBD, cancer, foo
d
allergies and intolerances.

Practicals: Problem solving, visits to hospitals, case studies.

Assessment: Oral & seminar (11%), prac evaluation (11%), 2 tests (11%), exam (67%).
Offered in Semester 2.

DIET351 - Behavioural Science for Dietetics x
(PDI3BD2) (19L-0T-9P-0S-38H-10R-OF-4A-13W-8C)
Corequisite: DIET237, 320. ve:

Aim: To introduce basic aspects of human science from the perspective of the discipline
of
psychology. These aspects, combined with the development of basic counselling skills, a
re
intended to enhance the ability of the Dietetics graduate to function effectively acros
s a
range of professional settings.

Content: Paradigms and their application to health and health care practice; health, il
lness
and behaviour; Human development; Human behaviour and behaviour change; Psychiatric
disorders; Professional development(e.g. dealing with death and dying, self care)

Practicals: Basic counseling skills. Group facilitation. Basic assessment skills.

Assessment: Tests (40%), exam (50%), prac assessment of counselling skills (10%).

Offered in Semester 2.

DIET710 - Therapeutic Dietetics Internship

(PDI7TNY) (40L-0T-OP-0S-20H-30R-387F-3A-26W-48C)
Prerequisite: BScDiet degree. :

Aim: The purpose of the module is for the students to become competent in the ee
nutritional care of patients in a hospital setting.

Content: Medical, surgical and paediatric diseases and complications requiring dietary
intervention.

Practicals: Students work in a hospital for the duration of the module.

Assessment: Evaluation of student’s professional competence during placement (30%,
submin 50%), case study (10%), assignments (20%), pharmacology test (5%), seminar (5%),
oral on seminar (5%), exam (25%, submin 40%).

Year-long Module.

DIET820 - Dietetics Dissertation

(PDI8RMM) (OL-OT-OP-0S-1120H-OR-OF-0A-26W-112C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module,

DIET910 - Doctor of Philosophy

(PDI9SPH!) ; (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None. :
Assessment: Examination of thesis (100%).
Year-long Module.

Earth Science

' Offered in the School of Applied Environmental Sciences

EARTI122 - Rocks Minerals & the Environment

(PGLIRM2) ˜ â\200\230 (18L-0T-21P-0S-23H-13R-OF-5A-13W-8C)
Prerequisite: Matriculation exemption.

Aim: To provide an understanding of the genesis and classification of rocks and mineral s as
they occur in southern Africa.

Content: Sedimentation and the formation of sedimentary rocks; processes involved in igneous rock formation; metamorphic rock formation; rocks as a soil forming factor; roc ks
and ground water.

Practicals: Laboratory and field identification of common rocks and minerals,

Assessment: | 1.5-hour theory exam (50%), 1 1.5-hour prac exam (25%), 2 theory tests & laboratory prac reports (25%) .

Offered in Semester 2,

EART124 - Structural Geology/South African Stratigraphy

(PGLISG2) (18L-OT-26P-0S-18H-1 3R-OF-5A-13W-8C)
Prerequisite: Matriculation Exemption.

Aim: To provide an understanding of the geological history of southern Africa and an introduction to structural geology.

Content: Introduction to the geological history (stratigraphy) of southern Africa; introduction to southern African rocks including some economic deposits; evolution and palaeontology of southern Africa; principles and practices of structural geology.

Practicals: Exercises in geological mapping and a one day field trip to observe selecte d
South African strata.

Assessment: | 1.5-hour theory exam (50%), 1 1.5-hour prac exam (25%), 2 theory tests & laboratory prac reports (25%).

Offered in Semester 2.

SA 140 Science & Agriculture

Ecology

Offered in the School of Applied Environmental Sciences

ECOL201 - Introduction to the Biomes of sthn. Africa :

(PEL2BA1) (18L-0T-24P-0S-15H-16R-OF-7A-13W-8C)
Aim: This module is designed to provide learners taking any programme in the agricultur
al,
environmental, geographical, life sciences or appropriate human sciences with a basic understanding of the principle features and distribution of the major biomes and other major
vegetation types that occur within the southern African region. Â°

Content: Introduction to biogeography of Africa; patterns of distribution; distribution
al
processes; vegetation mapping techniques; critical examination of the works of selected authorities describing the biota of southern Africa.

Practicals: Field visits of major biomes represented in KwaZulu-Natal. This will includ
e a
compulsory weekend field trip.

Assessment: 2 tests (10%), 1 essay (10%), 1 assignment (10%), | prac report (20%), 1 2h theory exam (50%).

Offered in Semester 1. .

Offered in the School of Botany & Zoology

ECOL211 - Principles of Population Ecology 4

(PEL2PP1) (19L-5T-34P-0S-8H-10R-OF-4A-13W-8C)
Prerequisite: Pass in BOTY 102 or ZOOL102.

Aim: To introduce the role of population demography in ecology with an emphasis on the dynamics of single species.

Content: Principle of population ecology, population limitation, models of population growth, the niche, fecundity, recruitment, dispersal, survival, immigration and emigrat
ion.
Stochastic population effects. Introduction to inter-specific competition, Lotka-Volter
ra
model, predation and herbivory. Overview of human demography and the demographic consequences of HIV/AIDS.

Practicals: Laboratory experiment, fieldtrip and computer-based: eimulation and models.
Assessment: | Test (20%), 3 prac reports (30%), 2 h exam (50%).

Offered in Semester 1.

ECOL212 - Applied Population Ecology

(PEL2AP2) (19L-5T-34P-0S-8H-10R-0F-4A-13W-8C)
Prerequisite: ECOL211.

Aim: To further develop studentsâ\200\231 understanding of population demography with a
n
emphasis on the interactions of two or more species.

Content: Principles of inter-specific interactions. More detailed analyses of competiti
on,
predation, optimal foraging, predator-prey systems, herbivory and symbiosis. Methods of estimating population size and standing crop, fecundity, recruitment, survival and movements rates. The use of the techniques of minimum viable population (MVP) and

population and habitat viability analyses (PHVA). Topics in metapopulations. Introducti
on
to the principles of harvesting and exploitation.

Practicals: Laboratory experiment, fieldtrip and computer-based simulation and models.
Assessment: | Test (20%), 3 prac reports (30%), 2 h exam (50%).

Offered in Semester 2.

ECOL302 - Biodiversity Conservation

(PEL3BC2) (14L-3T-18P-0S-32H-10R-OF-3A-13W-8C)
Prerequisite: A pass in ECOL301.

Aim; An introductory module to provide the basic knowledge and understanding needed to make informed management decisions about biodiversity and conservation biology issues.
Content: What is Biodiversity (Species-, Ecosystem-, and, Genetic-diversity); Threats to biodiversity (Extinction processes, Over-exploitation, Landscape degradation and Habitat loss); Managing ecosystems, populations, individuals, and setting management priorities.
Practicals: Students will have to collect the necessary data to solve a real conservation problem at a specific location.

Assessment: Project report (40%), class test (20%), 2 h exam (40%).

Offered in Semester 2.

ECOL311 - Principles of Community Ecology :

(PEL3CE}!) (10L-5T-30P-0S-24H-10R-OF-6A-13W-8C)
Prerequisite: ECOL201; BMET210; pass in ECOL211.

Aim: To create rigorous and critical understanding of fundamental patterns and processes operating within biotic communities.

Content: Spatial and temporal structural and functional organization of biotic communities within ecosystems. Community assemblage structure, influences of competitive and predatory interactions and disturbance, spatial and temporal dynamics, successional change, ecological energetics, food webs and feeding guilds, biogeochemistry, diversity, stability and resilience, biogeography.

Practicals: Field/lab practicals; weekend field trip; mini-project.

Assessment: Test(s) (15%), scientific paper (15%), practical reports & assignments (15%), oral presentation (5%), 2 h exam (50%).

Offered in Semester 1.

ECOL312 - Ecosystem Ecology & Management

(PEL3EE2) (10L-5T-30P-0S-24H-1 0R-OF-6A-13W-8C)
Prerequisite: ECOL311.

Aim: To create comprehension and critical assessment of the structural and functional attributes and their causality among selected ecosystems of special regional relevance in Africa, and thereby a rigorous scientific basis for their sustainable management.

Content: Patterns and processes in biogeochemical cycling, ecological energetics and temporal change in selected terrestrial and aquatic ecosystem types (deserts, fynbos, forests, rivers, lakes and swampy wetlands), with respect to African case studies. Threats, anthropogenic impacts and their holistic management.

Practicals: Field/lab practicals; weekend field trip; mini-project.

Assessment: Test(s) (15%), scientific paper (15%), practical reports & assignments (15%),
oral presentation (5%), 2 h exam (50%).

Offered in Semester 2..-

ECOL701 - Conservation Biology

(PEL7CBM) (LOL-ST-15P-0S-38H-10R-OF-2A-13W-8C)
Prerequisite: Passes in ECOL301, 302.

Aim: An advanced module dealing with major, contemporary, regional conservation principles, issues and philosophies.

Content: Conservation issues at the level of landscapes, communities, populations and species. Conservation options and ecosystem health.

Practicals: As appropriate to gain first-hand experience related to conservation manage
ment.
Assessment: Conservation management assignment (40%), 2 h exam (60%).
Offered in Semester | or 2.

ECOL702 - African Mammalogy & Wildlife Conservation

(PEL7AMM) (14L-8T-18P-0S-27H-10R-OF-3A-13W-8C)
Prerequisite: Passes in ZOOL204; ECOL301.

Aim: To develop and understand aspects of the ecology of African wildlife.

Content: Relevant scientific principles such as biogeography, status and distribution,
origins

and affinities, diversity and emnicity, breeding biology and life history theory, use o
f space,
and social organisation.

Practicals: Skills such as game capture, radio-telemetry, abundance estimation, evaluat
ion
of reproductive and physiological condition, determination of home range, territory, co
re
areas, will be developed.

Assessment: Seminar (10%), essay/literature review (10%), mini-project (10%), test (10%
),
2 hexam (16%).

Offered in Semester 1 or 2.

ECOL703 - Ecology & Management of African Inland Waters

(PEL7EWM) (4L-4T-21P-0S-39H-10R-OF-2A-13W-8C)
Prerequisite: A pass in ECOL301.

Aim: To develop theoretical and practical knowledge and understanding of the structural
and
functional nature of African inland waters to assist in their sustainable utilization.

Content: Physical, chemical, and biological features, structures, and fundamental funct
ioning
of lake, river, and other wetland ecosystems - case studies; importance and threats - s
ome
regional: perspectives; anthropogenic impacts (pollution, eutrophication, hydrological
modification, over-exploitation) - causes, ecological consequences, and management
options.

Practicals. Field excursions to determine selected physico-chemical and biological feat
ures
of lakes and/or river; laboratory analyses.

Assessment: Mini-project report (20%), seminar (10%), 2 h exam m (70%),

Offered in Semester | or 2.

ECOL704 - Current Issues in Conservation Biology

(PEL7ICM) (OL-6T-24P-0S-38H-10R-OF-2A-13W-8C)
Prerequisite: ECOL701.

Aim: A specialist module designed to provide a detailed understanding of the current st
atus -
and issues related to a specific conservation aspect currently being researched within
the

School.

Content: Students will select from topics such as: Coral reef biodiversity and health; Forest
biodiversity and conservation; African mammal, Avian/Parrot, or Insect conservation; Conservation of inland waters; and, Pollination ecology.

Practicals: Field excursions to local sites as appropriate.

Assessment: Tutorial assessment (50%), 2 h exam (50%).

Offered in Semester | or 2.

ECOL705 - Conservation Genetics :
(PEL7MCM) (OL-6T-24P-0S-38H-10R-O0F-2A-13W-8C)
Prerequisite: Passes in BIOS304, 306.

Aim: To generate an understanding of the molecular basis of variability, its importance for animal populations and research methods for analysis of genetic status and corrective measures. :

Content: Biochemical methods in conservation and population genetic research. Process of mutation and selection. Importance of heterozygosity in natural populations. Scope and limits of molecular and interpretive tools and software. Research applications on the group, species and phylogenetic level. Human impact on nature and legal aspects of conservation issues.

Practicals: 6 exercises.

Assessment: Tutorial participation (10%), research report (10%), oral presentation (10%), 2 h exam (70%).

Offered in Semester 1 or 2.

Offered in the School of Applied Environmental Sciences

ECOL732 - Rehabilitation Ecology

(PEL7RE1) (10L-5T-15P-0S-38H-10R-OF-2A-13W-8C)
Prerequisite: ECOL301; GEOG326; GRAS343.

Aim: To provide specialist knowledge for the rehabilitation of degraded vegetation and establishment of vegetation on disturbed sites.

Content: An overview of factors leading to degradation of natural vegetation and strategies that can be implemented to arrest and reverse degradation. An overview of activities which lead to the creation of disturbed areas, characteristics of such habitats; features of plants that can be grown on disturbed sites and means of establishing them.

Practicals: Visits to disturbed areas and rehabilitation and revegetation projects and where feasible limited participation in such projects.

Assessment: | test (10%), 2 prac reports (30%), | literature review (20%), 2 h exam (40%).
Offered in Semester 1.

ECOL753 - Contemporary Issues in Resource Ecology

(PEL7CI1) (OL-6T-24P-0S-38H-10R-OF-2A-13W-8C)
Aim: To expose the important issues concerning rangelands worldwide.

Content: Not fixed, but concentrates on the multiple demands of society on renewable resources.

Practicals: None.

Assessment: Written review paper (60%), leading of discussion (40%).

Offered in Semester 1.

ECOL763 - Case Studies in Resource Ecology

(PEL7CSM) (OL-6T-24P-0S-38H-10R-OF-2A-13W-8C)

Aim: To expose the complexity of ecological, economic and social real world issues, and the resolution of resource problems.

Content: Not fixed. Cases that provide the vehicle for achieving the aim.

Practicals: None.

Assessment: Review paper (60%), leading of discussion (40%).

Offered in Semester I or 2. :

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Offered in the School of Botany & Zoology

ECOL790 - Ecology/Conservation Biology Research Project
(PEL7RPY) (OL-20T-0P-30S-590H-OR-OF-0A-26W-64C)
Prerequisite: Acceptance into Honours in Ecology/Conservation Biology.

Aim: To gain experience in the formulation, planning, execution, analysis, and reportin g on,
of their research project.

Content: Students will be provided with a list of supervisors and possible research top ics at
the beginning of their Honours year. The final choice of research project will be decid ed by
discussion between the student and supervisor.

Practicals: Students will be expected to execute a research plan and, where necessary, demonstrate competence in the use of sophisticated research equipment to collect data f or
their project.

Assessment: 2 Oral presentations (project proposal & research findings) (10%), project proposal (5%), research report (85%).

Year-long Module.

Offered in the School of Applied Environmental Sciences

ECOL791 - Resource Ecology Research Project

(PELTEPY) (OL-20T-OP-30S-588H-OR-OF-2A-26W-64C)
Prerequisite: Admission to BSc Hons majoring in Resource Ecology.

Aim: To provide experience in conducting research and the preparation of a scientific p aper.
Content: Conduct a research project, prepare and present a scientific paper on the resu lts.
Practicals: None.

Assessment: 2 oral presentations (project proposal & research findings) (40%), research report (60%).

Year-long Module.

Offered in the School of Botany & Zoology

ECOL795 - Ecology Literature Review

(PEL7AMY) (OL-3T-OP-0S-77H-OR-OF-0A-26W-8C)
Prerequisite: Acceptance into Honours.

Aim: To collect and synthesize relevant scientific literature pertaining to a particula r research
field relevant to the ecological programme undertaken, and to use this information to generate, as an essay or other report, a coherent, cogent and logical analysis of the l iterature
that realistically assesses past research, current understanding and â\200\230potential directions for
research.

Content: Students will be provided with a list of supervisors and possible review essay topics at the beginning of their Honours year.

Practicals: None.

Assessment: Essay or other appropriate report (100%).

Year-long Module.

ECOL810 - Masters by Research

(PEL8RM1) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

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Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg
ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

ECOL910 - Doctor of Philosophy

(PEL9PH1) : (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by
the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Economics

Offered in the Faculty of Human & Management Sciences (Pietermaritzburg)

ECONI110 - Economics 110 Microeconomics & Intern.Trade :
(PEC1101) (30L-4T-12P-20S-90H-OR-OF-4A-13W-16C)
Prerequisite: Higher Grade E or Standard Grade C for Matric Mathematics

Aim: To provide an introduction to the principles of microeconomics, and the theory of
international trade and the balance of payments.

Content: The economic problem, how markets work, elasticity concepts, utility and
demand, production efficiency output and cost, competition versus monopoly as market
forms, basis for international trade, trade barriers and policy, the balance of payment
s.
Practicals: 6 :

Assessment: \ test; | assignment ; 33% 1 exam. 67%

ECON120 - Economics 120 Macroeconomics & Finance

(PEC1202) (30L-4T-12P-20S-90H-OR-0F-4A-13W-16C)
Prerequisite: Higher Grade E or Standard Grade C for Matric Mathematics

Aim: To provide an introduction to the principles of macroeconomics, and the functionin
g of
financial markets. The module also introduces the problems and policies concerning the
economic development and growth of the South African economy.

Content: The national income, inflation, aggregate supply and demand, expenditure
multipliers, functions and characteristics of money, financial intermediaries and money
creation, the role of money in the macro economy, the South African Reserve Bank and
monetary policy, introduction to business finance, economic development and growth in t
he
South African economy.

Practicals: 6

Assessment: \ test; 1 assignment; 33% | exam. 67%

ECON130 - Economics 130 Introduction to Microeconomics
(PEC1301) (39L-13T-0P-20S-84H-OR-OF-4A-13W-16C)
Aim: To provide an introduction to the principles of microeconomics.

Content: The economic problem, how markets work, elasticity concepts, utility and demand, production efficiency output and cost, competition versus monopoly as market forms.

Assessment: | test; 1 assignment; 33% | exam. 67%

ECON140 - Economics 140 Introduction to Macroeconomics -
(PEC1402) (39L-13T-OP-20S- -84H-OR-OF-4A-13W-16C)

Aim: To provide an introduction to the principles of macroeconomics, and the functionin g of
financial markets.

Content: The national income, inflation, aggregate supply and demand, expenditure multipliers, functions and characteristics of money, financial intermediaries and money creation, the role of money in the macro economy, the South African Reserve Bank and monetary policy, introduction to business finance.

Assessment: | test; 1 assignment; 33% | exam. 67%

ECON211 - Economics 211 Managerial Economics

(PEC2111) (1SL-OT-6P-0S-47H-10R-OF-2A-6W-8C)
Prerequisite: Economics 110 or 60 percent in Economics 130

Aim: To provide learners with an intermediate knowledge of the tools of economic theory required for effective managerial decision making.

Content: Basic concepts; demand; production and costs; market structure.

Assessment: | test; 1 assignment; (33%) 1 exam. (67%)

ECON212 - Economics 212 Public Finance Â°
(PEC2121) (15L-OT-6P-0S-47H-10R-0F-2A-0W-8C)
Prerequisite: Economics 110 or 60 percent in Economics 130

Aim: To introduce learners to theoretical and applied topics in Public Finance.

Content: Methodological tools used in the study of Public Finance; the role of the publ ic
sector in the economy; economic incidence of taxation.

Assessment: | test; 1 assignment; (33%) | exam. (67%)

ECON213 - Economics 213 Operations Research

(PEC2131) (15L-0T-6P-0S-47H- 10R- OF-2A-6W-8C)
Prerequisite: Economics 110 or 60 percent in Economics 130

Aim: To introduce learners to Quantitative Methods widely used in business and economic decision making.

Content: Linear programming, game theory, forecasting, optimisation, use of probability distributions in decision making.

Assessment: | test; 1 assignment; (33%) | exam. (67%)

ECON221 - Economics 221 Macro Economics
(PEC2212) (15L-OT-6P-0S-47H-10R-OF-2A-6W-8C)

Prerequisite: Economics 120 or 60 percent in Economics 140.

Aim: To have learnersâ\200\231s study the theoretical structure and statistical perform ance of national
economies and the policies available to government for affecting performance.

Content; National income accounting, consumption, savings and investment, IS-LM/AD-AS models and problems of inflation and unemployment.

Assessment: \ test; 1 assignment; (33%) | exam. (67%)

ECON223 - Economics 223 Forecasting Techniques
(PEC2232) (15L-0T-6P-0S-47H-10R-OF-2A-0W-8C)
Prerequisite: Economics 120 or 60 percent in Economics 140

Aim: To introduce learners to the art and science of forecasting economic events with t
he aid
of computers using historical data.

Content: Time series analysis, moving average and exponential smoothing, MAD and MSE,
linear regression analysis.

Assessment: | test; 1 assignment; (33%) 1 exam. (67%)

ECON320 - Economics 320 Econometrics
(PEC3202) (20L-0T-8P-20S-109H-O0R-OF-3A-6W-16C)
Prerequisite: 32 credits in level 100 Statistics modules or Economics 211 and 221

Aim: To introduce learners to theory and application of single-equation linear regressi
on
models.

Content: The methodology of Econometrics, review of basic statistical concepts, two
variable linear regression model, multiple regression models, pathology of regression
analysis.

Practicals: 5 computer based practicals.

Assessment: \ test; 5 assignments; 33% 1 exam. 67%

ECON330 - Economics 330 Applied Microeconomics ;

(PEC3301) f (20L-18T-OP-20S-99H-OR-OF-3A-6W-16C)
Prerequisite: Economics 211

Aim: To develop the analytical skills of learners in the application of micro-economic
theory
using graphs, algebra and elementary calculus.

Content: The theory of consumer behaviour and demand, the theory of production, cost an
d
pricing in competitive markets, the theory of the firm in imperfectly competitive marke
ts,
inter-temporal choice, asset markets and consumption under uncertainty.

Assessment: | test; 5 assignments; 33% | exam. 67%

ECON340 - Economics 340 Monetary Economics

(PEC3401) . (20L-8T-OP-20S-109H-OR-OF-3A-6W-16C)
Prerequisite: Economics 221

Aim: To develop a conceptual framework which will enable learners to critically analyse
national and international monetary behaviour and markets. d
Content: Demand for money, supply of money, level and structure of interest rates, infl
ation,
balance of payments and exchange rates, the transmission mechanism, South African
monetary policy. :

Assessment: | test; 1 essay; 33% 1 exam. 67%

ECON350 - Economics 350 Labour Economics
(PEC3502) (20L-8T-OP-0S-109H-20R-0F-3A-13W-16C)
Prerequisite: Economics 211 and Economics 120 or 60% in Economics 140

Aim: To study the operation of labour markets under various forms of industrial

organisation, with emphasis on the South African labour market.

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Content: Labour markets, Labour supply, Labour demand, Human capital,Unions, Discrimination, Unemployment, South African applications.

Assessment: \test; lessay; (33%) | exam. (67%)

ECON360 - Economics 360 International Trade

(PEC3602) (20L-8T-OP-20S-109H-OR-OF-3A-6W-16C)
Prerequisite: Economics 211 and Economics 120 or 60 % in Economics 140

Aim: To enable learners to explain why international trade takes place, the operation of foreign exchange markets, the economic effects of international capital and monetary flows.
Content: International Trade Theory and Policy, Exchange Rate Determination and Policy, South African Applications.

Assessment: \ test; 1 essay; 33% 1 exam. 67%

English

Offered in the Faculty of Human & Management Sciences (Pietermaritzburg)

ENGL111 - English 111 Introduction to Writing: Part 2

(PEG1112) (OL-OT-OP-48S-90H-16R-OF-8A-13W-16C)
Prerequisite: English 110 or the permission of the module co-ordinator

Aim: To develop second language studentsâ\200\231 writing skills, particularly with regard to Se essay writing, and to continue with the development of their comprehension and oral skills. :

Content: The course assists students in developing the required skills needed to research, construct and present logical, coherent academic essays. Comprehension of and critical response to texts continue to be developed. Correct usage continues to be emphasised.
Assessment: Class work 50%Examination 50%

ENGL112 - English 112 Effective Writing

(PEG1121) (OL-OT-OP-36S-100H-16R-OF-8A-13W-16C)
Aim: To develop writing skills by helping students polish grammar and expression, and by providing opportunities to practise writing in a variety of essay styles: descriptive, comparison and contrast, argument, and literary. Students will study suitable examples of successful writing, both literary and non-literary. The course also teaches students how to write a research essay and correctly document sources.

Content: A course reader dealing with expression in essay writing, and containing suitable passages for analysis with accompanying exercises.

Assessment: Class work 67%Examination 33%

Entomology

Offered in the School of Botany & Zoology

ENTO202 – Functional Diversity of Insects :
(PET2FD2) (38L–5T–36P–0S–55H–20R–0F–6A–13W–16C)
Prerequisite: Passes in BIOS101, ZOOL102; ZOOL201.

Aim: To develop an understanding of the diversity, classification, biology and economic or other significance of the commonest families of insects in all orders.

Content: Review of functional morphology and ontogenetic systems of insects; life histories, ecological interactions, biological requirements, biotic significance and classification of families of the modern orders of insects; survey of orders known only from fossils.
Practicals: Dissection to elucidate basic insect morphology and anatomy; identification of specimens using keys; basic collecting techniques and compilation of a collection of insects.
Assessment: Essay (15%), prac reports (15%), theory & prac tests (15%), insect collection (15%), 4h theory & prac exam (40%).

Offered in Semester 2. ~

ENTO204 - Functional Diversity of Major Insect Groups

(PET2DG2) - (19L-3T-18P-0S-25H-1 1R-OF-4A-13W-8C)
Prerequisite: Passes in BIOS101, ZOOL102; ZOOL201.

Aim: To develop knowledge and understanding of the diversity, classification, biology and economic or other significance of the most important orders of insects.

Content: Review of functional morphology and ontogenetic systems of insects; life histories, ecological interactions, biological requirements, biotic significance and classification of important families of the major orders.

Practicals: Dissection to elucidate basic insect morphology and anatomy; identification of specimens using keys; basic collecting techniques and compilation of a collection of insects.
Assessment: Essay (15%); prac reports (15%), theory & prac test (15%), insect collection (15%), 3 h theory & prac exam (40%).

Offered in Semester 2.

ENTO301 - Medical & Veterinary Entomology

(PET3VE1) (15L-3T-23P-0S-24H-10R-OF-SA-13W-8C)
Prerequisite: Passes in BIOS101; ZOOL102.

Aim: To enable students to recognize insect and arachnids that attack humans and domestic livestock in order to understand and manage these problems.

Content: Scope of the field of study, biting and non-biting flies as major pests and vectors of disease-causing pathogens and parasites, domestic insect pests, venomous arthropods especially arachnids and ticks, and other inflictions and adverse effects to animals including allergies and phobias to arthropods.

Practicals: 6 Practicals - Laboratory identification of specimens, | local field trip.
Assessment: Review. paper & seminar (15%), theory & prac test (15%), quizzes (4%), 3 h theory & prac exam (66%).

Offered in Semester 1. _

ENTO701 – Applied Entomology
(PET7EEM) (OL–18T–24P–0S–100H–15R–OF–3A–13W–16C)
Prerequisite: Passes in ENTO202, ENTO301, ENTO302.

Aim: To enable students to specialize in topics of their choice from the broad field of applied entomology in order to gain the most recent information and approaches.

Content: Choice of a relevant topic in two of the following fields: systematics, landscape ecology, alien invasives, cultural control, biocontrol, integrated pest management and medical or veterinary insects.

Practicals: None.

Assessment: Seminar (20%), research review paper (30%), 3 h exam (50%).

Offered in Semester 1 or 2.

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ENTO790 - Entomology Research Project

(PET7RPY) (OL-20T-OP-30S-590H-OR-OF-0A-26W-64C)
Prerequisite: Acceptance into Honours in Entomology.

Aim: To gain experience in the formulation, planning, execution, analysis, and reportin g, of
their research project.

Content: Students will be provided with a list of supervisors and possible research top ics at
the beginning of their Honours year. The final choice of research project will be decid ed by
discussion between the student and supervisor.

Practicals: Students will be expected to execute a research plan and, where necessary, demonstrate competence in the use of sophisticated research equipment to collect data f or
their project.

Assessment: 2 Oral presentations (project proposal & research findings) (10%), project proposal (5%), research report (85%).

Year-long Module.

ENTO810 - Masters by Research
(PET8RM1) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the ECU Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

ENTO910 - Doctor of Philosophy

(PET9PH1) (OL-OT-OP-0S-1280H-O0R-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Environment & Development

Offered in the School of Applied Environmental Sciences

EDEL202 – Computer Skills for Environment & Development

(PEV2CSB) (5L–10T–10P–0S–10H–3R– OF– 2A–1W–4C)
Prerequisite: Acceptance into the programme in Environment & Development.

Aim: To provide the skills necessary for the use of databases, presentation and project –
management packages in environmental and development fields.

Content: Introduction to software appropriate for electronic presentations, Se and project management.

Practicals: Assignments to gain proficiency in using databases, presentation and project-
management packages.
Assessment: Presentation demonstrating proficiency (100%).

Offered in Semester.1 & 2.

EDEL204 – Numeracy Skills for Environment & Development

(PEV2NSB) (5L-20T-OP-0S-10H-3R-OF-2A-1 W-4C)
Prerequisite: Acceptance into the programme in Environment & Development.

Aim: To prepare students for dealing with numerical aspects of environmental and development data.

Content: Basic algebra: equations, linear and quadratic functions, trigonometry functions;
reduction formulae; unit conversion. Purpose and objectives of statistics; descriptive statistics; introduction to probability and normal distributions.

Practicals: None.
Assessment: Written exam (100%).
Offered in Semester 1 & 2..

EDEL302 – Basic Wilderness Concepts & Practice

(PEV3BW2) ; (OL-20T-8P-0S-12H-OR-0F-0A-1W-4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To introduce the concepts and philosophies of wilderness conservation within an African context; to develop an understanding of the need for the legal protection, wilderness-
sensitive management and use of wilderness areas to preserve their character and resources.
Content: Wilderness concepts, philosophy, history and legal aspects; managing the wilderness resource; visitor management in wilderness; global and local ideas of wilderness;
wilderness education strategies.

Practicals: Case studies.

Assessment: Case studies (50%), essay (50%).

Offered in Semester 2. Not available in undergraduate programmes.

EDEL702 – Project Planning & Evaluation ;

(PEV7TPB) (5L-20T-2P-2S-1 1 H-OR-OF-0A-1 W-4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide students with a theoretical knowledge of project planning and management
as a basis for practice.

Content; Planning techniques and systems: design of investigations, protocols, professional
ethics, research methodologies and scientific investigations; preparation and adjudication of
proposals, procurement procedures; project management in the context of development and environmental concerns; evaluation techniques and measuring success.

Practicals: Use of appropriate software packages for project planning.

Assessment: Group assignments (20%), individual assignments (80%).

Offered in Semester 1 & 2.

EDEL704 – Communication Skills
(PEV7TCB) : (5L–20T–5P–5S–5H–OR–OF–0A–1 W–4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

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Aim: To provide academic writing and language skills in the field of environment and development.

Content: Understanding the link between the purposes of different genres and their conventional structural and linguistic realisations; developing linguistic and structural criteria for effective writing in different academic genres; referencing in academic texts; academic language issues including cohesion and theme development, modality, personal and impersonal writing and nominalization.

Practicals: Related to acquisition of relevant skills, as required.

Assessment: Assignments (100%).

Offered in Semester 1 & 2.

EDEL706 – Integrated Environmental Management

(PEV7TMB) (10L–10T–5P–0S–10H–OR–5F–0A–1 W–4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To Provide an introduction to the Integrated Environmental Management (IEM) process in South Africa, focusing on environmental management principles, public participation, scoping and impact assessment.

Content: IEM principles, legal framework, guidelines and procedures; public participation; purpose, methodology and techniques in scoping, plan of study for scoping, preparing a scoping report; strategic environmental assessment (SEA); impact assessments, terms of reference for specialist studies and management of the process; review and assessment; future directions in IEM.

Practicals: Related to case-study work.

Assessment: Assignments (100%).

Offered in Semester 1 & 2.

EDEL708 – Resource & Environmental Economics

(PEV7TRB) (4L–20T–0P–2S–14H–OR–OF–0A–1 W–4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To introduce learners to the use of economic analysis in understanding and attempting to solve environmental problems, by providing them with a basic knowledge of the relevant economic concepts and techniques.

Content: The contribution of economics to understanding environmental problems; public and private goods, externalities, social welfare and the environment; economic techniques for environmental impact assessment; the role of government; sustainable economic development.

Practicals: None.

Assessment: Assignments (100%).

Offered in Semester 1 & 2.

EDEL710 – Decision Making & Systems Modelling

(PEV7TDB) (15L-OT-5P-0S-20H-OR-OF-0A-1 W-4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To. provide learners with the skills necessary to analyse complex environmental management problems, and the ability to identify better courses of action through recognition of multiple objectives and stakeholders and the complexities of their interactions.

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Content: The nature of complex â\200\230messyâ\200\231 problems; techniques supporting creativity in
decision making; how to choose techniques for problem solving; integration of problem structuring and decision-support techniques in environmental management and development
.
Practicals: Individual and group work in a computer laboratory context.

Assessment: Assignments (100%).

Offered in Semester 1 & 2.

EDEL712 - Environmental Auditing

(PEV7TAB) . (16L-8T-8P-0S-8H-OR-OF-0A-1 W-4C)
Prerequisite: Admission to the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide learners with an introduction to environmental auditing, with special reference to techniques and methods.

Content: Techniques and methods of environmental auditing; environmental auditing tools (observations, protocols, photography, etc); psychology and people skills involved in environmental auditing; environmental auditing and the ISO 14 000 series and EMAS; policy and legislation issues and environmental auditing; undertaking an environmental audit.

Practicals: Participation in a simulated environmental audit.

Assessment: Assignments (100%).

Offered in Semester 1 & 2.

EDEL713 - Wilderness Concepts & Practice

(PEV7TW1) (15L-5T-8P-0S-12H-OR-OF-0A-1 W-4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To introduce learners to the concepts and practice of wilderness.

Content: Concepts, definitions, need for and legal aspects of wilderness; introduction to
management principles; role of wilderness as a protected-area category in relation to o ther
categories; planning processes and the setting of limits for acceptable change for management purposes.

Practicals: Real-world wilderness management encounters.

Assessment: Group & individual project assignments (100%).

Offered in Semester 1. Credit may not be obtained for both EDEL713 and 714.

EDEL714 - Advanced Wilderness Concepts & Practice

(PEV7AW2) (OL-20T-8P-0S-12H-OR-OF-0A-1W-4C)
Prerequisite: EDEL302.

Aim: To introduce planning principles of the Recreation Opportunities Spectrum and Wilderness Opportunity Spectrum and the role that the Limits of Acceptable Change programme can play -in wilderness areas; to apply these principles in preparation of a wilderness management plan; to provide hands-on experience in management of a wilderness area.

Content: Review of importance of wilderness areas as resource, concepts, philosophies a

nd
values, and role; participantsâ\200\231 presentations on a familiar wilderness; princip
les of
wilderness planning, monitoring of management action and visitor use.

Practicals: Wilderness manager-for-a-day case study; fieldwork exercises; wilderness planning exercise and presentations.

Assessment: Case studies (50%), essay (50%).

Offered in Semester 2. Credit may not be obtained for both EDEL713 and 714.

EDEL716 – River Rehabilitation & Planning g

(PEV7TWB) (10L–10T–SP–0S–10H–OR–SF–0A–1W–4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide a conceptual and practical foundation in river rehabilitation and planning.
Content: Principles and conceptual framework; setting objectives, community participation;
identifying problems and mapping assets; hydrological, geomorphological and aquatic ecosystem principles and techniques; rehabilitation techniques and bioengineering; setting
priorities and formulation of a rehabilitation strategy (river action plan); implementation,
monitoring and evaluation; international case studies in river rehabilitation.

Practicals: Preparation of a river action plan.

Assessment: Individual assessment (70%), group project assignment (30%).

Offered in Semester | & 2.

EDEL718 – Geographic Information Systems (GIS)

(PEV7TGB) : (12L–4T–16P–0S–8H–OR–OF–0A–1 W–4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide a broad introduction to the theoretical and applied aspects of GIS in the
context of the environment and development.

Content: Introduction to cartography; concepts of scale, generalisation, projections & co-
ordinate systems; basic geodesy; introduction to GIS; technological environment of GIS; First- versus Third-World GIS; legal aspects; spatial data models; data quality, inputs and
analysis; applied nature of GIS: socio-economic and environmental aspects, decision-support
systems; GPS, aerial photography and remote sensing.

Practicals: Introduction to ArcView, data input, display, editing, management, analysis and
output. :

Assessment; Individual assignments (50%), project work (50%).

Offered in Semester 1 & 2.

EDEL805 – Development Theory & Practice ;
(PEV8DTM) (40L–0T–20P–40S–60H–OR–OF–0A–8W–16C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide a thorough grounding in the theory and practice of development.

Content: Development history, ethics, concepts and principles, economic development and human needs; demography and questions of over-population, unemployment in a global economy; disease and hunger; concepts of sustainability, PRA methods; indicators of sustainable development; industrial development and environmental impact; technology transfer.

Practicals: Five-day field trip held in conjunction with EDEL807, focussing on the integration of environmental and development issues.

Assessment: Individual reports (70%), group reports (30%).

Offered in Semester | or 2.

EDEL807 - Contemporary Environmental Issues :

(PEV8CEM) (40L-0T-20P-40S-60H-OR-OF-0A-8W-16C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Science & Agriculture : SA 155

Aim: To develop skills in the analysis of complex environmental problems.

Content: Consideration of world views, ethics, philosophy in contemporary environmental problems; environmental history; contemporary environmental politics, the role of NGOs and public participation; environmental policy formulation and policy analysis; mechanisms
for environmental management; exploration of issues through an intensive case study.
Practicals: As required by particular issues and five-day field trip held in conjunction with
EDEL805, focussing on the integration of environmental and development issues.
Assessment: Individual reports (70%), group assignments (30%).

Offered in Semester I or 2,

EDELS810 - Masters by Research

(PEV8RMM) Ã© (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None.

Assessment: Dissertation (100%).

Year-long Module.

EDELS812 - Statistical Analysis in Research

(PEV8SRB) (5L-10T-10P-10S-0H-3R-OF-2A-1W-4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To enable students to understand and apply statistical methods to research in environment and development.

Content: Inferences about a population mean and proportion; inferences about means and proportion with two populations; analysis of variance and experimental design; linear regression and correlation; categorical data analytic methods; introduction to multivariate
techniques.

Practicals: Exercises in the use of statistical methods.

Assessment: Exam (100%).

Offered in Semester | & 2.

EDEL814 - Research Design & Methods

(PEV8DMB) (10L-O0T-20P-0S-8H-OR-OF-2A-1W-4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide an understanding of research design methods and data analysis.

Content: Characteristics of formal surveys: questionnaire design, sampling methods, data
analysis and presentation; quantitative surveys; surveys and data collection; data analysis

and presentation; proposal and report writing.

Practicals: Exercises on methods of research design and data analysis.

Assessment; Written exam (50%), prac work (50%).

Offered in Semester 1 & 2.

EDEL816 - Participatory Research (PRA)

(PEV8RPB) (10L-0T-20P-0S-8H-OR-OF-2A-1 W-4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean. :

Aim: To provide an understanding of the merits and constraints of PRA as compared to other social-survey techniques.

Content: Review of social-survey techniques; informal surveys: erecta preparations, key informants, group interviews, analysis of data; RRAâ\200\231s and PRAâ\200\231s; Gender Analysis: WID vs. GAD, gender and access to resources; sources of socio-economic surveys and data.
Practicals: Assignments and case studies on PRA.

Assessment: Assignment (100%).

Offered in Semester 1 & 2.

EDEL851 - Biodiversity & Conservation

(PEV8BSM) (23L-OT-20P-15S-102H-OR-OF-0A-12W-16C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide learners with a transdisciplinary perspective on biodiversity conservation and the pivotal role it plays in environmental and development work.

Content: Components of biodiversity and importance; threats; biodiversity assessment and monitoring; in situ and ex situ conservation; rehabilitation programmes; policies and conventions; current global and national biodiversity and development initiatives.
Practicals: Fieldwork.

Assessment: Individual assignments (50%), oral presentations (20%), group work (30%).
Offered in Semester | or 2.

EDEL863 - Sustainable Tourism

(PEV8STM) (20L-0T-20P-40S-80H-OR-OF-0A-12W-16C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To explore the field of tourism with a specific focus on the environmental dimensions of tourism and the tourism industry.

Content: Leisure, recreation and tourism; history of tourism; conceptualising tourism-critical issues; tourism and the less developed countries; production of tourism services; enterprise promotion; â\200\230greenâ\200\231 and other forms of tourism; tourism development and planning.
Practicals: Fieldwork related to making the link between theory and practice.

Assessment: Individual assessment (50%), oral presentations (20%), group work G0%).
Offered in Semester I or 2.

EDEL867 - Integrated Catchment Management

(PEV8SWM) (40L-0T-40P-20S-60H-OR-OF-0A-12W-16C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide learners with an overview of contemporary challenges in integrated catchment management in southern Africa.

Content: Principles; fundamental concepts in hydrology, soil conservation and land-use management; sustainability in water-resource management; the legislative and policy environment; water-management institutions; water scarcity and management of supply and demand; international issues and the large-dam debate; management of river systems.

Practicals: Exercises and field trips linking theory and practice.
Assessment: Individual assignments (50%), oral presentations (20%), group work (30%).
Offered in Semester | or 2.

EDELS869 - Urban Environmental Management & Development

(PEV8UMM) (20L-40T-40P-20S-40H-0R-OF-0A-12W-16C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To link theory and practice, focussed on the issues of environment and the manufacturing firm within a southern African context.

Content: Industry and environment in southern Africa; transformation of business in an African context; environment-competitiveness relationships; the travelling of ideas, North-South-North, and their impact on environmental management; implementing EMS.

Practicals: Two-week field-based course involving students and staff from universities in southern Africa, Denmark, Thailand and Malaysia, emphasising student project work.
Assessment: Individual assignments (50%), oral presentations (20%), group work (30%).
Offered in Semester I or 2.

EDELS880 - Environmental Management Internship

(PEV8PIB) (OL-0T-OP-0S-0H-OR-640F-0A-20W-64C)
Prerequisite: Successful completion of all prescribed modules and the integrative examination for the course-work component of the programme in Environmental Management stream with a final mark of at least 50%.

Aim: To provide relevant experience in an organization which deals with appropriate environmental and development issues for those who do not pursue a research dissertation.

Content: Location within host organization for a period, usually August through November, performing duties as required by the organizational supervisor.

Practicals: None.
Assessment: 2 written and 2 formal verbal reports on progress made during the period of the internship (60%), written reports by the organizational & internal supervisors (40%).

Offered in Semester | and 2.

EDELS890 - Environmental Management Mini-Dissertation

(PEV8RDB) (OL-0T-OP-0S-640H-OR-0F-0A-24W-64C)
Prerequisite: Successful completion of all prescribed modules and the integrative examination for the course-work component of the Environmental Management Stream with a final mark of at least 60%.

Corequisite: EDEL812, 814.
Aim: To undertake supervised research on a transdisciplinary theme of the studentâ\200\231s choice.

Content: Decided upon by the student in consultation with his/her supervisor(s) and the related research panel.

Practicals: None.
Assessment: Examination of mini-dissertation (100%).
Offered in Semester I and 2.

EDEL910 - Doctor of Philosophy

(PEV9PH1) (OL-OT-OP-0S-1280H-OR-OF-0A-52W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research under supervision.

SA 158 Science & Agriculture

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Environmental Law

ELAW812 - Legal Dimensions of Protected-Area Management

(PEV812M) (20L-10T-OP-0S-35H-OR-OF-15A-6W-8C)
Prerequisite: Admission to the programme in Protected-Area Management or relevant background acceptable to the Dean.

Aim: To provide understanding of environmental and labour law that enables learners to be
aware of the extent to which the law impacts on their activities, and how to find the d etail of
that law.

Content: Environmental law: common-law principles, nature and scope, enforcement, international, and the Constitution. National Environmental Management Act 107 of 1998. Pollution-control law. Natural-resources law. Land-use and planning law. Labour Relatio ns
Act 66 of 1995 and other relevant labour legislation.

Practicals: None.

Assessment: Assignments based on prescribed reading & lectures (100%).

Offered in Semester I or 2.

ELAW814 - Environmental Law : â\200\230 .
(PEV814M) (6L-20T-0P-3S-11H-OR-OF-0A-1 W-4C)
Prerequisite: Admission to the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To introduce learners without a legal grounding to the basic principles of law whi ch are
relevant in the sphere of the environment; to provide learners with a basic understandi ng of
environmental law and how it operates within South Africa, and familiarity with the mos t
important legislation applicable in South Africa.

Content: Common-law principles relevant to environmental law; the nature and scope of environmental law; enforcement; the Constitution; coverage of a range of national laws.
Practicals: None.

Assessment: Assignments based on prescribed reading & lectures (100%).

Offered in Semester I or 2.

Environmental Science

Offered in the School of Applied Environmental Sciences

ESCI390 - Environmental Science Seminar "

(PEV3LRY) (OL-OT-OP-160S-0H-OR-OF-0A-26W-16C)
Aim: To provide experience in researching and synthesizing specific scientific literatu
re.
Content: Search for information in the scientific literature on an approved topic, prep
are a
scientific review paper, present the paper orally.

Practitvals: None.
Assessment: Review paper (70%), oral presentation (30%).
Year-long Module.

ESCI1790 - Environmental Science Research Project

(PEV7RPY) (OL-OT-430P-0S-210H-OR-OF-0A-26W-64C)
Prerequisite: Admission to BSc (Hons) majoring in Applied Environmental Science.

Aim: To provide experience in conductance of a research project and preparation of a scientific paper.

Content: Conduct an approved research project, prepare a scientific paper on the result s,
present the results orally.

Practicals: None.

Assessment: Scientific paper (75%), oral presentation (25%).

Year-long Module.

ESCI810 - Masters by Research
(PEV8MRM) (OL-OT-OP-0S-0H-1280R-0F-0A-26W-128C)
Prerequisite: Acceptance into Masters programme.

Corequisite: To be specified by the discipline.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None. *

Assessment: To be determined by the discipline.

Year-long Module.

ESCI910 - Doctor of Philosophy

(PEV9PHM) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Ethics Studies

Offered in the School of Human & Social Studies

ETHI202 - Ethics in the Sciences

(PAT2ES2) _ (19L-4T-0P-0S-33H-20R-OF-4A-13W-8C)
Aim: To enable students in the sciences to understand and use concepts, arguments and s

kills
in applied ethics in connection with selected contemporary issues involving the various sciences in a culturally plural society.

Content: An introduction to ethics and to contemporary value-systems in relation to the sciences, followed by applied ethics in the sciences, involving issues such as genetics ,
animal experimentation, cosmology, agriculture and the environment and the ethics of knowledge.

SA 160 Science & Agriculture

Practicals: None.
Assessment: Assignments (25%), | class test (25%), 2 h exam (50%).
Offered in Semester 2.

Ethnobotany

Offered in the School of Botany & Zoology

EBOT202 - Economic Botany

(PEB2EC2) (19L-OT-28P-0S-20H-10R-OF-3A-13W-8C)
Prerequisite: A pass in BOTY 102, or alternative modules approved by the Dean. .

Aim: To familiarize students with plants that have economic value as crops.

Content: Staple and protein crops, beverages, oils and fats, gums, fibres, timber and ornamentals: sources, origins, harvesting, storage, processing and utilization. The morphology of selected families and plants regarded as weeds.

Practicals; 6 Practicals - Observations of vegetative and floral morphology; classification of fruits and seeds; plant identification using keys.

Assessment: Theory test (15%), assignment (15%), practical reports (20%), 2 h exam (50%).
Offered in Semester 2.

EBOT301 - Ethnobotany â\200\235
(PEB3EB2) (27L-0T-39P-0S-74H-I 5R-OF-SA-13W-16C)
Prerequisite: Passes in BIOS202; BOTY203, 202, 204, 301.

Aim: To provide a well-grounded knowledge of indigenous plants that traditionally are or have been used by humans.

Content: Overview of plants that are used by indigenous African peoples and their potential for domestication and development as (alternative) crops. Food & drink, health and beauty, skills and crafts. Zulu nomenclature, ritual uses of plants.

Practicals: 12 Practicals - Dyes, fibres, wood identification, curation of artifacts, cooking of traditional foods, soap making.

Assessment: Practical reports (20%), assignment (10%), theory test (10%), 3 h theory exam (60%).

Offered in Semester 2.

EBOT701 - Ethnomedicine

(PEB7EMM) (27L-0T-33P-0S-81H-15R-OF-4A-13W-16C)
Prerequisite: At least 64C at level 3.

Aim: To familiarise student with various aspects of traditional medicine.

Content: Phytochemistry, screening for secondary metabolites, bioassays; Plant -derived drugs and the use of plants in traditional medicine; Traditional healers, traditional medicine in South Africa and the world. Muti markets and trade in medicinal plants, sources of medicinal plants, small scale farming and nature conservation.

Practicals: 11 Practicals– visits to muti–markets and medicinal plant nursery, testing for
pharmacological activities, screening for secondary metabolites.

Assessment: Test (10%), prac reports (20%), assignments (10%), 3 h exam (60%).

Offered in Semester | or 2. :

EBOT702 - Ethnobotany Community Project

(PEB7CPM) (OL-8T-OP-0S-67H-4R-0F-1 A-13W-8C)
Prerequisite: EBOT701.

Aim: The purpose of this module is to expose the student to the community, so he/she

becomes aware of the complexity of problems and culturally sensitive issues. The module will also teach the student to-work accountably in a group of 5-6 members.

Content: The topic of the community project will change from year to year. The module concentrates on the process rather than on the content.

Practicals: None.

Assessment: Assessment of progress at tutorial meetings (10%), report (70%), oral (group)
exam - with discussion of how the project was undertaken (20%).

Offered in Semester I or 2.

EBOT790 - Ethnobotany Research Project

(PEB7RPY) (OL-20T-0P-30S-590H-OR-OF-0A-26W-64C)
Prerequisite: Acceptance into Honours in Ethnobotany.

Aim: To gain experience in the formulation, planning, execution, analysis, and reporting, of
their research project.

Content: Students will be provided with a list of supervisors and possible research topics at
the beginning of their Honours year. The final choice . of research project will be decided
by discussion between the-student and supervisor.

Practicals: Students will be expected to execute a research plan and, where necessary, demonstrate competence in the use of sophisticated research equipment to collect data for
their project.

Assessment: 2 Oral presentations (project proposal & research findings) (10%), project proposal (5%), research report (85%).

Year-long Module.

EBOTS810 - Masters by Research
(PEB8RMM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None. â\200\224

Assessment: To be determined by the discipline.

Year-long Module.

EBOT910 - Doctor of Philosophy

(PEB9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

# Food Processing

Offered in the School of Agricultural Sciences and Agribusiness

## FPRO110 - Food Theory

(PFP1FP1) (40L-0T-43P-0S-55H-15R-OF-7A-13W-16C)
Prerequisite: CRMS360.

Aim: To provide students with the foundation for analytical perspectives related to food processing.

Content: Introduction to the food chain and the scientific principles involved in food processing preparation and storage. Introduction to entrepreneurship.

Practicals: Laboratory based

Assessment: 2 tests (20%), practical reports (14%), 3 h exam (66%).

Offered only to Human & Management Science and Education students.

## FPRO311 - Food Preparation & Marketing ;

(PFP3PF1) (39L-OT-36P-0S-129H-30R-OF-6A-13W-24C)
Prerequisite: FSC1210. :

Aim: Identify and practice principles of food preparation. Recognise factors affecting quality. Identify and resolve food preparation problems. Develop quality control measures and ensure food safety.

Content: Food labeling, food packaging, preservation, food safety, quality control mechanisms, value adding to farm products, advertising, design & copy, promotional aids and food demonstrations.

Practicals: Complex food preparation, preservation of fruits and vegetables; development of recipes for demonstration purposes.

Assessment: Tests (20%), prac work (10%), seminar HED prac test (10%), exam (50%).
Offered in Semester 1.

## FPRO320 - Food Product Development :

(PFP3PE2) (39L-0T-36P-0S-209H-30R-OF-6A-13W-32C)
Prerequisite: FPRO311.

Aim: Develop a knowledge of food consumption trends and processes for foods for sale. Able to deal with complex food preparation. Product and _ recipe development. Develop skills to market manufactured and home-made products.

Content: Sugar cookery, frozen desserts, crystallisation. Product development, quality control, food additives, risk/benefit concept. Sensory evaluation. Small scale food processing with support systems and small scale equipment.

Practicals: Preparation of confectionary and frozen desserts. Product development tested by sensory evaluation and sold to the public.

Assessment: Tests (20%), seminar (10%), demonstration (10%), Â° tren development (10%), exam 50%.

Offered i in Semester 2.

FPRO711 – Food Processing & Marketing
(PFP7FMY) (OL–12T–OP–10S–242H–SOR–OF–6A–26W–32C)
Prerequisite: FPRO311, 320.

Aim: To further the knowledge of the processes by which food products are prepared for consumption and sale. Food safety and quality assurance. To obtain knowledge of international food related legislation.

Content: Food related legislation, international and local. Marketing and sales concepts. Food for the informal market. Codex Alimentarius. HACCP. Pesticide residues in food. Fortification and enrichment. Genetically modified foods.

Assessment: 5 seminars (50%), exam (50%).

Year-long Module.

FPRO720 - Advanced Food Product Development

(PFP7PDY) (OL-12T-OP-10S-242H-50R-OF-6A-26W-32C)
Prerequisite: FPRO311, 320.

Aim: To further the knowledge of food preparation processes to develop foods for consumption and for sale. Develop an understanding of the principles of quality control . Be
able to plan and organise the production of new and improved products for small and lar ge
business.

Content: Production concepts. Generating new ideas. Food surveys. Sensory evaluation. Food additives, that enhance. Use of vegetable proteins. Functional foods. GMOâ\200\231s. Texture and flavour modification.

Assessment: 5 seminars (50%), exam (50%)

Year-long Module.

FPRO810 - Masters by Research

(PFP8RMM) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None. ˜

Assessment: Examination of thesis (100%).

Year-long Module.

FPRO910 - Doctor of Philosophy

(PFP9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Food Science

Offered in the School of Agricultural Sciences and Agribusiness

FSCI120 - Introduction to Food Science
(PFS1FP2) (39L-0T-36P-0S-50H-30R-0F-5A-13W-16C)
Prerequisite: CHEM111 or a pass in FPRO110.

Aim: To develop a sound base of Food Science theory. To introduce students to basic cookery skills, experimental work and recipe development.

Content: Measuring techniques, chemical composition, types and origins of beverages, milk, milk products, cereals, eggs, vegetables and fruit, alternative protein foods, herbs and spices. Storage of food. Types of flour, formation of dough and batter, leavening, gelatinisation. Sensory evaluation, brief physiological background, taste panel testing and environment in which it is done.

Practicals: Basic preparation of foods as listed above. Experimental work to illustrate effects of temperature and manipulation on food.

Assessment: 2 tests (20%), essay (10%) prac reports (20%), exam (50%).
Offered in Semester 2.

FSCI1210 - Food Science

(PFS2FP1) (39L-0T-36P-0S-60H-20R-OF-5A-13W-16C)
Prerequisite: FSC1120.

Aim: To develop a further knowledge of Food Science theory. To further the students cooking skills and develop a higher standard of food preparation. To develop a further knowledge of the experimental study of foods.

Content: Water, structure, properties and functions. Water _ activity. Colloid chemistry. Properties of carbohydrates, proteins and lipids. Enzymes, artificial sweeteners, hydrocolloids, anti-oxidants. Low fat spreads. Milk as a food system, milk foams, cheese. Meat structure, grading and cooking. Poultry and fish. Browning. Microwave ovens. Menus and menu terms. Preservation of foods, freezing, irradiation, Ohmic heating and Modified Atmosphere Packaging.

Practicals: Advanced food preparation. Experimental study of the affect of all processes on food.

Assessment: Tests (20%), seminar (10%), prac test (20%), exam (50%).

Offered in Semester 1.

FSCI810 - Masters by Research

(PFS8RMM) (OL-OT-OP-0S- Sor OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved: by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is fependent on the project for the deg

ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

FSCI910 - Doctor of Philosophy
(PFS9PHM) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

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Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None. :

Assessment: Examination of thesis (100%).

Year-long Module.

Food Security

Offered in the School of Agricultural Sciences and Agribusiness

FDSC700 - Food Security Studies

(PFD7SF1) | : (OL-0T-14P-66S-80H-OR-OF-0A-6W-16C)
Prerequisite: Entry into at least the Certificate in Food Security programme or relevant
background acceptable to the Dean.

Aim: The multi disciplinary study of food security issues.

Content: Introduction to food security systems and components. South African food security
context. Food production, storage and access. Animal, plant , forest and food storage systems. Livelihoods, risk and vulnerability to food insecurity. Household coping strategies. Nutrition. Land reform. Environmental issues. HIV/AIDS, production and livelihoods. Food policy analysis. Food security measurement, management
and interventions.

Practicals: Field trip case studies.
Assessment: 3 class assignments (33%), 1 assignment (67%).
Offered in Semester 1.

FDSC701 - Food Security Internship

(PFD7FI2) (OL-0T-OP-50S-340H-OR-OF-10A-13W-40C)
Corequisite: FDSC700; PPD701M

Aim: To give postgraduate certificate students a practical experience dealing with food security issues in a community setting.

Content: An individual internship for which the student will prepare at several levels. The
primary foci will be integration of disciplines, particularly the studentâ\200\231s own discipline with
food security, identification of food security issues and collection of data, evaluation of
collected information and communication of results to others. This final step will include
positive suggestions for dealing with food security issues in the community.

Practicals: None.

Assessment: Oral presentation (15%), externally examined report (70%), seminar (15%).

Offered in Semester 2.

FDSC710 - Independent Study in Food Security 701

(PFD7FSM) (OL-OT-OP-80S-0H-OR-OF-0A-13W-8C)
Prerequisite: Admission to the programme in Food Security or relevant background acceptable to the Dean. :

Aim: \ndividually designed curricula based on individual student requirements to build further knowledge and experience in a food security related issue.

Content: Topics and assignments and their assessment to be decided on for each specific case. Modules may include seminars, literature reviews or parts of modules from various disciplines.

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Practicals: None.
Assessment: 3 seminars (100%).
Offered in Semester | or 2.

FDSC711 - Food Security Dissertation .

(PFD7RDB) (OL-OT-OP-2S-398H-OR-0F-0A-13W-40C)
Corequisite: FDSC700; CRMS720.

Aim: For students to independently investigate a food security related issue and contri
bute to
the knowledge in any areas/aspect of food security. Ã©

Content: Independent investigation of any food security related problem using qualitati
ve or
quantitative methodologies. Preparation of a project report and presentation of the fin
dings.
Practicals: None.

Assessment: Dissertation (100%).

Offered in Semester | or 2.

FDSC720 - Food Storage for Food Security

(PFD7SSM) y (16L-8T-20P-0S-25H-1 OR-OF-1A-2W-8C)
Prerequisite: Admission to the programme in Food Security or relevant background
acceptable to the Dean.

Aim: To introduce non-agricultural science students to some of the foundational concept
s of
post-harvest crop storage, food preservation and food safety.

Content: Causes of primary crop and product losses. Microorganisms responsible for food
loss, food contamination, toxin production. Pathological effects of contaminated water
and
food. Testing for water and food contamination. Preservation methods for food storage:
freezing, bottling, salt, sugar, acid, dehydration, pasteurisation, sterilisation, UHT,
 sanitation,
UV radiation. :

Practicals: Demonstrations and hands-on participation in exercises, visits to local
(university) sites.

Assessment: 3 class assignments (30%), externally examined assignment (70%).

Offered in Semester 1 or 2.

FDSC724 - Food Production for Food Security â\200\234

(PFD7FPM) (16L-8T-25P-0S-30H-OR-OF-1A-2W-8C)
Prerequisite: Admission to the programme in Food Security or relevant background
acceptable to the Dean.

Aim: To introduce key concepts of crop and animal production which rmnpaat food securit
y.
Content: Crop and animal selection. Scale and relative productivity. Tenure and land
security, land use systems, land size, economically viable unit. Crop and animal system
s
(interactions). Crop plant â\200\224_ requirements-soil, water, temperature, _ light. S
oil
fertility. Management practices. Classification of common farm animals (digestive syste
m),
feeds and feed quality. Animal production systems and nutrients for production function
s

(egg, milk, meat).

Practicals: Demonstration and hands-on activities and field trips.

Assessment: 3 class assignments (30%), one externally examined assignment (70%).
Offered in Semester | or 2.

FDSC730 - Food Access for Food Security 7

(PFD7FAM) (16L-8T-25P-0S-30H-OR-OF-1A-2W-8C)
Prerequisite: Admission to the programme in Food Security or relevant background acceptable to the Dean.

Aim: To explore issues related to access to food or the means to purchase food and related nutrition and food utilisation issues.

Content: Issues relating to access to food and the means to purchase food, including gender dynamics, livelihoods, intra-household allocation, HIV, and food preference. Nutrition requirements of various population groups, food utilisation and how food access affects nutritional status.

Practicals: Independent interactive on-line assignments and a one-day nutrition workshop.
Assessment: 4 assignments (30%), externally examined case study assessment (35%) and externally examined poster (35%).

Offered in Semester | or 2.

FDSC801 - Food Security Internship 801
(PFD8FIM) 4 (OL-10T-OP-40S-590H-OR-OF-0A-26W-64C)
Prerequisite: FDSC701; (CRMS720 or ENVD813). :

Aim: To give students an opportunity to assess the feasibility and analyse the impact of programmes and policies on community food security situations.

Content: This is an individual internship for which the student will prepare at several levels. The primary foci will be integration of disciplines, particularly the studentâ\200\231s own discipline with food security, identification of food security issues and collection of data, evaluation of collected information in regard to the feasibility and impact of programmes and policies on community Food Security.

Practicals: None.

Assessment: Report (70%), oral report (15%), seminar (15%).

Year-long Module.

FDSC810 - Independent Study in Food Security

(PFD8ISM) (OL-0T-OP-0S-320H-OR-OF-0A-13W-32C)
Prerequisite: Admission to the programme in Food Security or relevant background acceptable to the Dean.

Aim: Individually designed curricula based on individual student requirements to build further knowledge and experience in a food security related issue.

Content: Topics and assignments and their assessment to be decided on for each specific case. Modules may include seminars, literature reviews or parts of modules from various disciplines.

Practicals: None. :

Assessment: 3 externally examined seminars (100%).

Offered in Semester I or 2.

FDSC811 - Food Security Dissertation

(PFD8RDM) (OL-0T-OP-2S-638H-OR-OF-0A-26W-64C)
Prerequisite: FDSC840.

Aim: To equip students with knowledge and skills to: plan and implement qualitative and

quantitative research related to food security.

Content: Independent investigation of any food security related problem using qulitativ
e
and/or quantitative methods. Preparation of dissertation.

Practicals: None.
Assessment: Dissertation (100%).
Year-long Module.

FDSC840 – Research Methods for Food Security
(PFD8RM1) (45L-OT-9P-0S-106H-OR-OF-0A-13W-16C)
Prerequisite: FDSC700.

Aim: To equip students with knowledge and skills to plan and implement research related to food security.

Content: The scientific method. Types of research. Populations vs Samples in research. Qualitative and quantitative data collection techniques and tools. Information retrieval. Research design. Statistical analysis. Scientific writing and reporting. Popular dissemination of research. Moral-ethical aspects of research and publication. Food security indicators (response variables in food security research).

Practicals: Workshop or on-line sessions to develop a research proposal.
Assessment: Assignments on different aspects of the module (30%), proposal (70%).
Offered in Semester 1.

FDSC860 – Food Security Modelling Systems

(PFD8FMM) (OL-10T-OP-10S-140H-OR-OF-0A-13W-16C)
Prerequisite: FDSC701 and admission to the programme in Food Security or relevant background acceptable to the Dean.

Aim: To develop an integrated, multi disciplinary approach to food security studies.

Content: Spreadsheet programming. System analysis. Statistics of demographics. Literature reviews. Least cost feed formulation.

Practicals: Problem-solving exercises (pairs) : simulation modelling using spreadsheet programming. Experimental design and evaluation (groups).

Assessment: 2 externally examined prac assignments (34%), reflective essay (33%), internally evaluated oral presentation (33%).

Offered in Semester I or 2.

FDSC910 – Doctor of Philosophy ;
(PFD9PHM) (OL-OT-OP-0S-640H-OR-OF-0A-26W-64C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Programme Director and approved by the Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Food Service Management

Offered in the School of Agricultural Sciences and Agribusiness

FSMT318 – Management Theory & Practice

(PFS3TP2) (39L-O0T-27P-0S-60H-25R-4F-5A-13W-16C)
Corequisite: FSMT332 or NUTR343.

Aim: To provide the student with the knowledge and basic skills needed for managerial effectiveness in the Dietetics profession and in nutrition related areas.

Content: Areas roles and skills of managers; management roles of dietetics and nutritio
n
professionals; evolution of management; functions of management, human resource management; managing production and operations; marketing; managing change; ethics and social responsibility; entrepreneurship; paradigm shifts in nutrition management.

Practicals: Managing a large scale catering event (laboratory work); management aspects of
a nutrition intervention programme.

Assessment: Assignment (l 1%), management task evaluation (11%), tests (11%), 3hr exam (67%).

Offered in Semester 2.

FSMT332 - Food production: Systems & Plans

(PFS3FP1) (39L-0T-28P-0S-60H-24R-4F-5A-13W-16C)
Prerequisite: FSCI210; NUTR214 or 250.

Aim: To provide the student with knowledge and insight required of a competent foodservice
manager.

Content: Trends in the foodservice industry, menu planning, development and implementation; production; systems approach to foodservice management; foodservice systems; sanitation and hygiene (HACCP); facility planning and design; financial management.

Practicals: Finance practical (recipe adjustment, purchasing); managing a large scale catering event (laboratory work); food presentation.

Assessment: Practicals (3%), assignments (18%), tests (12%), 3 hr exam (67%).

Offered in Semester 1.

FSMT710 - Food Service Management Internship

(PFS7INY) (20L-0T-OP-0S-17H-20R-180F-3A-13W-24C)
Prerequisite: BScDiet degree.

Aim: To enable the student to expand the ability to manage a food-service unit and to develop communication skills further.

Content: Large scale food preparation, kitchen administration and managment, menu planning, kitchen layout evaluation, kitchen safety and hygiene.

Practicals: Students work in a food-service unit for the duration of the module.

Assessment: Professional evaluation(15%), submin 50%), FSMT prac assignments in the units (15%), FSMT assignments (35%), seminar (5%), oral on seminar (5%), exam (25%, submin 40%).

Year-long Module.

Forestry

Offered in the School of Agricultural Sciences and Agribusiness

FORT3\11 - Fundamentals of Forestry

(PFO3FF1) (39L-0T-39P-0S-77H-OR-O0F-5A-13W-16C)
Prerequisite: BIOR128; BOTY 102. .

Aim: To teach principles of commercial and community forestry, distribution and function of
forests, forestry techniques, management objectives, and forest functions.

Content: Development theory supporting forestry. Government policy and its importance.

Types of forests and their distribution, biological environment, functions and management by objectives. Forests, their management, and forestry industry in South Africa. Forestry terminology, definitions, techniques in forestry. Data and data analysis. Forest products and multiple forest use.

Practicals: 6 field trips (students may be required to contribute to the cost of field trips).
Assessment: 2 tests (20%), 1 report (30%), 1 exam (50%).
Offered in Semester 1.

FORT321 – Principles of Silviculture :

(PFO3PS2) (39L–OT–39P–0S–77H–OR–OF–5A–13W–16C)
Prerequisite: FORT311.

Aim: To teach sound methods of cultivating forest crops in the context of their ecologi cal

functioning, cost effective technical means, social needs including needs of rural and peri–
urban communities.

Content: Elements of site, site definition and classification. Forest stand and _ its characterisation. Taxonomy, morphology and biology of major species of trees for commercial and other uses. Tree selection, propagation and biotechnology. Silvicultural systems. Site preparation and stand establishment. Nutrition. Stand tending and mainten ance.
Woodlots. Reclamation forestry. Urban Forestry. Agroforestry.

Practicals: 6 field trips (students may be required to contribute to the cost of field trips).
Assessment: 2 tests (20%), 1 report (30%), 1 exam (50%).
Offered in Semester 2.

FORT350 – Forest Protection

(PFO3FB2) (39L–0T–39P–0S–77H–OR–OF–5A–13W–16C)
Prerequisite: FORT311.

Aim: To identify harmful agents having an impact on forest functioning, health, and qua lity
and quantity of forest products.

Content: Physiological state of trees and stands. Fundamentals of pathology and most common harmful fungi. Insect pests associated with exotic species of trees. Damage by mammals and its prevention. Abiotic harmful factors including fire, wind, hail, extreme temperatures. Anthropogenic destructive impacts. Integrated forest protection.

Practicals: Six days of field trips over weekends or holidays. Students may be required to
contribute to the cost of field trips.

Assessment: | test (10%), 1 report (20%), plant & insect collection (20%), 1 exam (50%) .
Offered in Semester 2.

FORT711 – Forestry Mea aee men

(PFO7MF1) (39L–0T–OP–0S–36H–OR–OF–SA–13W–8C)
Prerequisite: FORT321, 350.

Aim: To optimise forestry operations through decision making based on combined knowledge of tree growth manipulation, engineering, logistics, economics, ergonomics, information management and decision making techniques.

Content: Spatial organization of land and plantations. Growth modelling and yield optimisation. Forest inventory. Regime selection. Planning in forestry. Harvesting and logistics of timber supply. Decision making and artificial intelligence systems.

Practicals: None.

Assessment: 2 tests (20%), 1 report (30%), 1 exam (50%).
Offered in Semester 1.

FORT712 – Practical Forestry Management
(PFO7WSW) (OL–OT–80P–0S–0H–OR–OF–0A–3W–8C)
Prerequisite: FORT321, 350.

Aim: To provide experience-based perspective on forest land management including nature conservation, rural development, multiple forest use, harvesting and processing. This will be achieved through field visits in KwaZulu-Natal over 3 weeks.

Content: Forest policy and strategistsâ\200\231 perspective. Establishment and management of timber plantations. Conservation, certification, and sustainable use of natural resources. Infrastructure, roads, transport, machinery and forest products. Products and processing.
Rural development through forestry applications.

Practicals: 18 days of field trips during winter holidays (students may be required to contribute to the cost of the trips).

Assessment: \ report (100%).

Offered in the Winter Vacation.

FORT720 - Forest Products & Processing

(PFO7FT2) c (39L-0T-55P-0S-3 1 H-30R-OF-SA-13W-16C)
Prerequisite: FORT711.

Aim: To optimise forestry products through knowledge on types of products and associated norms, product quality, and understanding of processing and market requirements.

Content: Wood growth, anatomy and identification. Chemistry of wood. Physicochemical wood properties. Abnormal wood and wood deterioration. Timber treatment, wood drying and preservation. Major processing technologies and their requirements. Specifications of timber and standardisation. Non-timber forest products and uses.

Practicals: The course includes 2 days of field trips. Students may be required to contribute to the cost of field trips.

Assessment: 2 tests (20%), | report (30%), exam (50%).

Offered in Semester 2.

FORT730 - Community Forestry: Planning & Implementation

(PFO7CPM) (39L-0T-87P-0S-0H-29R-OF-5A-13W-16C)
Prerequisite: FORT311, 321.

Aim: The development of the student through engaging them in the planning and implementing of small-scale community project with a local interest group.

Content: Principles of project planning, design and management, budgeting and costing of projects, report writing, evaluation and monitoring techniques, extension methodologies, and participatory approaches to community empowerment.

Practicals: The course includes 6 days of field trips. Students may be required to contribute to the cost of trips.

Assessment: \ test (20%), | report (30%), exam (50%).

Offered in Semester 1 or 2.

FORT740 - Community Forestry: policy & development

(PFO7ACM) (9L-30T-63P-0S-30H-23R-0F-5A-13W-16C)
Prerequisite: FORT311, 321.

Aim: The development of potential new policies and supporting curricula to enhance the promotion of community forestry in South Africa.

Content: Study of current South African forest policy with special reference to community forestry. Evaluation of development strategies, the role of State, non-government organizations, and donor funded projects in achieving policy aims and objectives. Critical review of current training initiatives in community forestry and practice in the development of policy orientated curricula.

Practicals: The course includes 6 days of field trips. Students may be required to contribute to the cost of field trips.

SA 172 Science & Agriculture

Assessment: | tests (20%), 1 report (30%),-exam (50%).
Offered in Semester I or 2.

FORT790 - Forestry Research Projects & Seminars

(PFO7RSY) (OL-OT-OP-40S-280H-OR-0F-0A-26W-32C)
Prerequisite: FORT321, 350.

Aim: To develop skills in conducting scientific research relevant to the forestry industry.
Content: Problem identification. Access and evaluation of relevant information. Critical evaluation of information and presentation of a project proposal. Proposal writing. Project management and implementation. Report writing. Presentation of results and/or practical implementation.

Practicals: None.

Assessment: 2 reports (20%), 2 verbal presentations (20%), final research report (60%).
Year-long Module.

FORTS810 - Masters by Research

(PFO8RMM) (OL-OT-OP-0S- err OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree,
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

FORT910 - Doctor of Philosophy

(PFO9PH1) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Genetics

Offered in the School of Molecular & Cellular Biosciences

GENE213 - Introductory Genetics

(PGN2GI1) (36L-36T-OP-0S-53H-28R-OF-7A-13W-16C)
Prerequisite: Passes in BIOS101, MATHI11.

Aim: To attain an understanding of basic inheritance patterns and solve relevant problems.
Content: The rules of inheritance in cells, individuals, and populations and the molecular
mechanisms by which genes control the growth, development and appearance of an
organism. Provides a grounding in the areas of Mendelian genetics, molecular genetics,
cytogenetics and population genetics linking basic concepts to applied examples in â
\200\224
agriculture, medicine, breeding and other fields of interest.

Practicals: Tutorials. Problem solving exercises.
Assessment: 2h theory & 2 h tutorials tests (50%), 3 h exam (50%).
Offered in Semester 1.

GENE222 - Cytogenetics

(PGN2GC2) â\200\230 (36L-6T-30P-0S-53H-28R-OF-7A-13W-16C)
Prerequisite: GENE213.

Aim: To attain an understanding of the different types of meioses, factors that influen
ce
fertility, and embryosac development.

Content: Chromosome structure and karyotypes. Chiasmatic meiosis, non chiasmatic meiosis and inverted meiosis. Chromosome number (polyploidy and aneuploidy) and structure (deletion, duplication, inversion and translocation) variation. Embryosac development. Asexual reproduction.

Practicals: Preparation of slides of mitosis and meiosis and analysis of chromosome behaviour and karyotype analysis.

Assessment: 2h theory & 2 h tutorials tests (50%), 3 h exam (50%).

Offered in Semester 2.

GENE226 - Foundational Microbial Genetics

(PGN2FP2) ; (18L-OT-18P-0S-25H-13R-0F-6A-13W-8C)
Prerequisite: GENE213 or BCHM213.

Aim: To attain a foundational knowledge of the genetics of microbes (prokaryotes and viruses) at a molecular level, including structure and function of microbial genomes.
Content: Theory of microbial DNA organization, understanding DNA function with relation to replication, restriction and repair, gene expression, genetic variation and the enzy
mology
that control these processes.

Practicals: Hands on experience in screening for bacterial mutants, bacterial antibioti
c
resistance, conjugation and transduction and transformation and bacteriophage cultivati
on.
Assessment: 2 h theory test(s), reports, assignments (50%); 2 h exam (50%).

Offered in Semester 2.

GENE230 - Population Genetics

(PGN2PO2) Ae (18L-18T-OP-0S-22H-1 5R-OF-7A-13W-8C)
Prerequisite: GENE213.

Aim: To attain insight into the principles of Mendelian Genetics applied to entire populations.

Content: Genetic variation within natural populations; including: random mating; multip
le
alleles, sex-linked genes, linkage and linkage disequilibrium; assortative mating and inbreeding; nature and effect of evolutionary phenomena such as random genetic drift, mutation, migration and selection; molecular population genetics.

Practicals: Tutorials. Problem solving exercises.
Assessment: 2 h theory & 2 h tutorials tests (50%), 3 h exam (50%).
Offered in Semester 2.

GENE319 – Molecular Population Genetics & Diagnostics

(PGN3MP1) (18L–4T–18P–0S–23H–10R–OF–7A–13W–8C)
Prerequisite: GENE213.

Aim: To attain an understanding of the principles of molecular diversity in individuals ,
populations and species, and gain insight into genotyping and molecular diagnostic techniques and their application.

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Content: Principles underlying the analysis of genes and genomes. Comparison of techniques used in genotyping and forensics, eg. allozymes, RFLP, AFLP, microsatellites .
Development of molecular diagnostics.

Practicals: Hands-on experience of molecular techniques and data analysis.
Assessment: 2 h theory & 2 h prac tests, practical reports Ce 3 h exam (67%).
Offered in Semester 1.

GENE322 - Molecular Evolution & Bioinformatics

(PGN3ME2) * (18L-4T-18P-0S-24H-9R-OF-7A-13W-8C)
Prerequisite: GENE213.

Aim: To attain an understanding of the basic theory of molecular evolutionary genetics and
bioinformatics and gain practical experience of DNA and protein sequence analyses.

Content: Models of evolutionary change in DNA and protein sequences, sequence alignment algorithms, structure-function prediction, and the organization and use of public domai n
sequence databases.

Practicals: Hands-on experience with the retrieval and manipulation of data from online databases.

Assessment: 2 h theory & 2 h prac tests (33%); 3 h exam (67%).
Offered in Semester 2.

GENE325 - Foundational Eukaryotic Genetics
(PGN3FE1) (18L-6T-15P-0S-24H-12R-OF-5A-13W-8C)
Prerequisite: GENE213. A

Aim: To attain an in depth knowledge of the genetics of eukaryotes including structure and
function of eukaryotic genomes in cells, individuals and populations. Â°

Content: Theory of eukaryotic DNA structure and organization, gene expression and gene control.

Practicals: Analysis of eukaryotic molecular and cellular systems.

Assessment: 2 h theory & prac reports (33%), 3 h exam (67%).

Offered in Semester 1.

GENE327 - Principles of Genetic Engineering
(PGN3GE1) (18L-OT-18P-0S-28H-10R-0F-6A-13W-8C)
Prerequisite: GENE213 or BCHM213.

Aim: To attain insight, skills and experience in recombinant DNA technology and in vitr o
manipulation of cells.

Content: Theory of cloning, manipulation and analysis of genes and the expression of th eir
protein products will be mastered. This includes providing a working knowledge of enzymology and recombinant DNA technology used in genetic engineering. â\200\224

Practicals: Hands-on experience with basic recombinant DNA technology.
Assessment: 2 h theory test(s), reports, assignments (50%); 2 h exam (50%).
Offered in Semester 1.

GENE328 - Molecular Phylogenetics
(PGN3MP2) (18L-6T-18P-0S-23H-10R-OF-5A-13W-8C)

Prerequisite: GENE 213.

Aim: To attain an understanding of the basic theory and practical feppiication of molec
ular
phylogenetics.

Content: Principles underlying the phylogenetic analysis of DNA and protein sequences, including parsimony, distance and likelihood methods. Combining data sets, assessing support for phylogenetic hypotheses. Case studies in the practical application of molecular phylogenetics.

Practicals: Hands-on experience with phylogenetic analysis software packages.

Assessment: 2h theory tests (25%) & prac assignment (25%), 3 h exam (50%).

Offered in Semester 2.

GENE332 - Introduction to Quantitative Genetics

(PGN3QG1) (18L-15T-O0P-0S-25H-15R-OF-7A-13W-8C)
Prerequisite: GENE213.

Corequisite: BMET210.

Aim: To attain insight into the principles of Mendelian inheritance when extended to the properties of populations and to the simultaneous segregation of genes at many loci.

Content: Components of â\200\234genetic variation, resemblance between relatives, heritability, selection, genotype-environment interaction and threshold traits.

Practicals: Tutorials..Problem solving exercises.
Assessment: 2h theory & 2 h tutorials tests (33%), 3 h exam (67%).
Offered in Semester │.

GENE342 - Eukaryotic Genome Evolution

(PGN3EC2) (18L-18T-OP-0S-20H-17R-OF-7A-13W-8C)
Prerequisite: GENE213.

Aim: To attain an understanding of the principles underlying gene and karyotype change and the consequences therÃ©of on speciation and genetic diversity.

Content: Different mechanisms of gene and karyotype change; gene mutations, recombination and chromosome mutations. Effects of changes of gene frequencies and changes of recombinational potential on speciation. Genetic recombination control systems in plants and animals.

Practicals: Tutorials. Analysis of evolutionary change and problem solving debates.
Assessment: 2 h theory, 2 h tutorial & oral tests (33%), 3 h exam (67%).

Offered in Semester 2.

GENE350 - Animal Genetics

(PGN3GA2) (36L-26T-10P-34S-17H-30R-OF-7A-13W-16C)
Prerequisite: GENE213.

Aim: To attain insight into how genetic principles may be used to assess and predict, and thereby improve the genetic merit of animal populations.

Content: Aspects of cytogenetics, molecular genetics, population genetics, conservation genetics, quantitative genetics and biotechnology, with special reference to their application and use in animal populations.

Practicals: Tutorials. Problem solving exercises and field trips.

Assessment: 2h theory & 2 h tutorial tests, 1 seminar (50%); 3 h exam (50%).

Offered in Semester 2.

GENE360 - Human Genetics
(PGN3HG2) (18L-OT-18P-0S-27H-10R-0F-7A-13W-8C)
Prerequisite: GENE213.

Aim: To attain an understanding of the diverse nature of human genetic studies, apply principles to the solution of genetic problems through cytomolecular and quantitative assessment of data.

Content: The organisation of the human genome and mapping; somatic cell genetics; identifying the genetic basis of disease, genetic screening and prenatal diagnosis; tre atment
of genetic disease; genetic basis of cancer and the immune system; mitochondrial pathol ogy
and the human genome project.

Practicals: Human cytogenetics preparations, tutorials and problem solving debates.
Assessment: 2 h theory & 2 h prac tests (33%), 3 h exam (67%).
Offered in Semester 2.

GENE702 - Research Project in Genetics ,
(PGN7HGY) (OL-46T-240P-1S-350H-OR-OF-3A-26W-64C)

Prerequisite: 128C in Genetics, Biochemistry and/or Molecular Biology disciplines at le vel
3, or modules providing adequate background approved by Head of-Programme.

Aim: To provide insight to the principles of conducting research through laboratory bas ed
and/or computer based research and developing the skills to analyze, alias and present results.

Content: Research project which falls within the thrust of the schoolâ\200\231s researc h area. This
includes a relevant literature survey and the execution of research.

Practicals: Design and execution of a research project.

Assessment: Written & 1 h oral presentations, 30 minutes oral exam.

Year-long Module.

GENE732 - Quantitative Genetics

(PGN7QGM) (18L-15T-OP-0S-27H-15R-0F-5A-13W-8C)
Prerequisite: GENE 332 or modules which in the opinion of the Programme Director (and with approval of the Dean) has (have) provided the candidate with pale knowledge to complete the module.

Aim: To attain insight into the principles of Mendelian inheritance whieh extended to t he
properties of populations and to the simultaneous segregation of genes at many loci.
Content: Artificial selection, genotype-environment interaction, genetic correlations, inbreeding and crossbreeding, evolutionary quantitative genetics, mapping of QTLâ\200 \231s and
aspects of experimental design.

Practicals: Tutorials. Problem solving exercises.

Assessment: 2 h theory (33%), 3 h exam (67%).

Offered in Semester | or 2.

GENE810 - Masters by Research
(PGN8RM1) (OL-0T-0P-0S- 1280H- OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg
ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

GENE910 - Doctor of Philosophy

(PGN9PH1) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of mee (100%).

Year-long Module.

Geography

Offered in the School of Applied Environmental Sciences

GEOGI113 - SA Weather & Climate

(PGEI1WC2) : (18L-4T-18P-0S-25H-12R-OF-3A-13W-8C)
Prerequisite: Entry into the Faculty.

Aim: To introduce the diverse weather patterns, and the causative atmospheric processes for
the patterns found in southern Africa within a regional and global context.

Content: The structure of the earthâ\200\231s atmosphere. Weather forming processes in the southern
African context. The principal climatic regions of southern Africa and reasons for thei r
existence. An introduction to the global context of southern African climates.

Practicals: 6 assignments.

Assessment: | 2 h exam (50%), theory test (15%), prac test (15%), tutorial work sheets (10%), assignments (10%).

Offered in Semester 2.

GEOG114 - SA Landscapes & Process

(PGEILP2) (18L-4T-18P-0S-25H-12R-OF-3A-13W-8C)
Prerequisite: Entry into the Faculty.

Aim: To provide an introduction to the range of landscape types found in southern Afric a,
and to introduce the associated geomorphological and geological processes.

Content: The earthâ\200\231s crustal system; endo- and exogenic processes in the southe rn African
context. The dominant processes and characteristics of rivers, slopes/mass movement systems, and semi-arid environments in South Africa. Introduction to landscape systems and
the principles of the southern African Land type classification.

Practicals: 6 assignments.

Assessment: | 2 h exam (50%), theory test (15%), prac test (15%), tutorial work sheets (10%), assignment (10%). ;

Offered in Semester 2.

GEOG122 – Spatial Representation & Cartography

(PGE1SCB) (18L–4T–18P–0S–24H–12R–0F–4A–13W–8C)
Prerequisite: Entry into the Faculty.

Aim: To introduce the key concepts of cartography and spatial data representation.

SA 178 Science & Agriculture

Content: Spatial representation concepts and applications. Map projections. Location an
d
grid systems. Direction, bearings and magnetic declination. Symbolic representation of
points, lines and areas. Representation of relief. Gradients, slopes and profiles. Scal
e
considerations. Maps as records and as reflections of dominant ideologies. Introduction
to
aerial photography and stereoscope use. Spatial data capture, land use surveys and mapp
ing.
Practicals: 6 assignments.

Assessment: 3 h exam (50%), tests (30%), prac work & assignments (20%).

Offered in Semester 1 & 2.

GEOG124 - Human Environments & Development

(PGE1EDB) (18L-4T-18P-0S-25H- 12R- -OF-3A-13W-8C)
Prerequisite: Entry into the Faculty.

Aim: To introduce concepts of development in comparative socio-economic, cultural and

political contexts dealing with basic principles of spatial een population dynamics, ru
ral
and urban systems, city forms and economic growth.

Content: Introduction to concepts of environment and development including: rural and
urban environments; explanation and derivatives of terms; spatial location and distriab
ution
patterns; demographics.

Practicals: 5 exercises, a field trip and an assignment.

Assessment: 2 h exam (50%), tests (30%), pracs & assignments (20%).
Offered in Semester | & 2.

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GEOG213 - Cultural Environments & the City

(PGE2CS2) (18L-0T-18P-0S-25H-16R-OF-3A-13W-8C)
Prerequisite: 50% in GEOG124 or 64C with 32C in development related modules.

Aim: To introduce urbanisation theory of spatial dynamics of towns & cities.

Content: Cultural environment concepts; sustainability; urbanisation problems; history
of
cities; urban infrastructure, resources, institutional structures and functions; sustai
nable
cities; formal vs informal development; less developed vs developed cities; core/periph
ery
tensions; counter urbanisation, intra-urban and inter-urban flows; population mobility;
migration; urban sprawl, blight and decay; gentrification; greening cities and urban
agriculture; cities of the future. :

Practicals: Seminars, workshops and projects.

Assessment: 2 h exam (50%), tests (30% ), pracs/projects (20%).

Offered in Semester 2.

GEOG216 - Development Theory & Practice

(PGE2DT2) (18L-0T-18P-0S-25H-16R-0F-3A-13W-8C)
Prerequisite: 50% in GEOG124 or 64C with at least 32C in development related modules .

Aim: To introduce students to an historical and holistic perspective on development deb ates.

Content: Derivative of development nomenclature. Historical context of development theory. Classical development theory. Modernisation theory. Mer Capitalist theory. Dependency theory. Development and post-modernism.

Practicals: Practical sessions include seminar discussions, workshops and project repor ts.
Assessment: 2 h exam (50%), tests (30%), projects (20%).
Offered in Semester 2.

GEOG217 - SA Landform Processes & Change
(PGE2LC1) (18L-4T-40P-6S-69H-20R-0F-3A-13W-16C)
Prerequisite: 50% in GEOG1 14 or have 64C of which 32 must be in the earth sciences.

Aim: To provide an understanding of the dominant processes governing the landscapes in southern Africa and how these processes modify environments in time and space.

Content: Transfer mechanisms within slopes. The strength of geomorphic materials; sediment transport. Denudational systems and process measurement. Geomorphic change in southern Africa. Measurement of geomorphic processes in the field.

Practicals: 5 exercises, an assignment and a compulsory four day field excursion, the c osts
of which students are expected to contribute to.

Assessment: 2 h exam (50%), field report (20%), prac work (10%), tutorial style work sh eets
(10%), assignments (10%).

Offered in Semester 1.

GEOG222 – Remote Sensing & GIS

(PGE2GS2) (18L–0T–18P–0S–25H–16R–OF–3A–13W–8C)
Prerequisite: 50% in GEOG122 (exemption can be granted for specified programmes)

Aim: To introduce the theory of remote sensing and Geographic Information Systems (GIS) and the application of these to environmental problems.

Content: Concepts and functionality of remote sensing; interpretation of aerial photogr aphy;
distortions and projections; satellite remote sensing techniques, applications; introdu ction to
GIS, data structures, capabilities, limitations.

Practicals: 6 assignments.
Assessment: 2 h exam (50%), tests (20%), project/assignments (10%), pracs (20%).
Offered in Semester 2.

GEOG230 – South African Biophysical Environments

(PGE2BEW) (8L–4T–40P–15S–68H–20R–0F–5A–5W–16C)
Prerequisite: 50% in GEOG114; GEOG113 and GEOG217 or 180C of which 64 must be in the earth science related disciplines.

Aim: The field-based study of South African landscape processes and biomes.

Content: Denudational systems; biophysical parameters in time and space, geomorphic and ecological change in southern African landscapes. Biomes, ecosystems and succession of afro-montane and fluvio-marine environments in South Africa as illustrated by specific field
areas.

Practicals: 3 week field course (students to contribute towards the costs), and a limit ed
number of lectures during the winter semester.

Assessment: 3 h exam (50%), field report (30%), seminar work (20%).

Offered in the Winter Vacation.

GEOG311 – Biogeography & Climatic Change

(PGE3CC1) (18L–4T–40P–6S–64H–24R–0F–4A–13W–16C)
Prerequisite: Passes in GEOG113, 114 and ECOL201 or 80C with at least 64C in the Ecological Sciences.

Aim: The non-random distribution of organisms in terms of processes through pattern definition and process identification from systematics, ecology and palaeontology.

Content: Process, pattern and scale in biogeography; distributional patterns, the role of climate and climatic change in southern Africa. Palaeo-reconstruction techniques; the role of evolution and plate tectonics; dating techniques; adaptation, speciation, extinction and ecological interactions. Phylogentic and cladistic biogeography.

Practicals: 6 exercises.

Assessment: 3 h exam (50%), tests (15%), pracs & project (20%), field work (15%).

Offered in Semester 1.

GEOG316 - Environmental Geomorphology .

(PGE3EG1) (18L-4T-40P-6S-64H-24R-OF-4A-13W-16C)
Prerequisite: 50% in GEOG217 or 230.

Aim: To teach an understanding of geomorphology as an applied environmental discipline and to illustrate how some environmental problems could have been averted.

Content: Principles underlying the application of geomorphology to solving problems in natural and urban environments. Professional ethics; social and economic considerations

pertinent to applied work. The field based identification and remediation of degraded systems through careful process intervention.

Practicals: Exercises dealing with pertinent case studies and applications. A compulsor y
four day excursion (students to contribute towards the costs).

Assessment: 3 h exam (50%), field report (20%), prac work & assignments (30%).

Offered in Semester 1.

GEOG319 - Cities & Planning in Developing Countries

(PGE3CP2) (18L-4T-26P-4S-80H-24R-OF-4A-13W-16C)
Prerequisite: At least 50% in GEOG213 or 216.

Aim: To appraise national, regional and local planning and development theory and pract ice.
Content: Environmental and development theory; South Africaâ\200\231s small town develo pment
policy and Spatial Development Initiatives (SDIâ\200\231s); an overview of Durbanâ\200 \231s Agenda 21
policy; environmental policies for NGOâ\200\231s; Local Economic Development (LED) init iatives.
Practicals: Seminars, workshops and project reports.

Assessment: 3 h exam (50%), tests (30%), pracs/report/projects (20%).

Offered in Semester 2.

GEOG322 - Environmental Management & EIAs

(PGE3ME2) (18L-4T-30P-4S- 76H-24R- OF-4A-13W-16C)
Prerequisite: Candidates must have completed 224C.

Aim: Introduce integrated environmental management, impact assessments (EIAs) and environmental audits through theory, case studies and practicals.

Content: Environmental policies and conservation strategies, Agenda 21 and ISO issues; Integrated Catchment Management; urban management & -socio-economic issues; environmental ethics and sustainable development; IEM; environmental law and EIAs; air pollution and waste; the management of ecologically sensitive areas.

Practicals: Field-trips and several day excursion (students to contribute to costs) req uiring a
written report for â\200\230capstoneâ\200\231 course-work assessment.

Assessment: 3 h exam (50%), seminars (10%), tests & prac work (20%), field report (20%) .
Offered in Semester 2.

GEOG325 - Geography of Development

(PGE3GD1) (18L-4T-26P-4S-80H-24R-0F-4A-13W-16C)
Prerequisite: Passes in GEOG213 or 216, or 180C in development related disciplines.

Aim: To highlight the shortcomings of mainstream models and theories of development, especially the inability to address problems of poverty and environmental sustainabilit y.

Content: The course will cover development debates; Agrarian change and rural development;Survival strategies of the poor; Globalization and development; Gender and development; Alternative approaches to development for the future.

Practicals: None.

Assessment: 3 h exam (60%), pracs (10%), projects & assignments (20%), seminars (20%).
Offered in Semester 1. :

GEOG326 - Environmental Assessments

(PGE3EI2) (18L-0T-19P-0S-28H-12R-0F-3A-13W-8C)
Prerequisite: 224C. This course is only available to students in specified programs.

Aim: Introduce integrated environmental management, impact assessments (EIAs) and environmental audits through theory, case studies, practicals and limited field work.

Content: Environmental policies and conservation strategies, Agenda 21 and ISO issues; Integrated Catchment Management, urban management & socio-economic issues, environmental ethics and sustainable development; IEM; environmental law and EIAs; air pollution and waste; the management of ecologically sensitive areas.

Practicals: Limited field-work (students to contribute to costs)
Assessment: 2 h exam (60%), prac work (20%), assignment/report (20%).

Note: Students may not obtain credits for GEOG322 & 326.
Offered in Semester 2.

GEOG329 - Geographical Information Systems

(PGE3GG2) (24L-10T-36P-0S-62H-21R-OF-7A-16W-16C)
Prerequisite: A pass in GEOG222.

Aim: This module is designed to provide further insight into GIS as a management tool f
or
spatial data.

Content: Spatial data and modeling; Attribute data management; Analysis of remotely sensed GIS data and its classification; Data quality issues; GIS project management and design.

Practicals: Applications of GIS.

Assessment: 3 h theory exam (40%), 3 h prac exam (20%), module assignments (20%), tests (20%).

Offered in Semester 2.

GEOG702 - Contemporary Environmental Issues
(PGE7CE2) (20L-0T-25P-10S-72H-30R-0F-3A-13W-16C)
Prerequisite: 60% in GEOG322, 32C in final yr Geography or environmental courses.

Aim: To understand the complexity of contemporary environmental issues in applied environmental science and the broader southern African and global context.

Content: Hazard assessment in an environmental context; people - environment dependencies; sustainability and biodiversity; energy, fuel, pollution; conservation st
rategies
and policies including Agenda 21 and ISO issues; environmental ethics and sustainable development; environmental consequences of population displacements.

Practicals: Workshops, a major assignment and limited field-work, to the costs of which students are expected to contribute.

Assessment: 3 h exam (60%), seminar work (20%), assignment (20%).
Offered in Semester 2.

GEOG712 - Advanced GIS
(PGE7AG1) (20L-0T-22P-10S-72H-30R-0F-6A-13W-16C)
Prerequisite: At least 60% in GEOG329 and a first degree.

Aim: This module is designed to provide advanced insight into GIS and_ its applications. Emphasis is on understanding through application.

SA 182 Science & Agriculture

Content: Analytical modelling; Entity relationship modelling; Spatial database design a
nd
manipulation; Spatial interpolation; Error assessment and management; GIS in intra net
map
servers/web based design; GIS project design and management.

Practicals: Application of spatial database design and manipulation.

Assessment: 3h theory exam (40%), 3 h prac exam (20%), tests (20%), module assignments
(20%).

Offered in Semester 1.

GEOG721 - Applied Geomorphology

(PGE7AG2) (20L-0T-32P-15S-60H-30R-OF-3A-13W-16C)
Prerequisite: 60% in GEOG316 and 32C at level 3 in Geography or Earth Science modules,
Aim: To impart an understanding of process geomorphology as an applied environmental
science based on the analysis of case studies. ;

Content: The application of geomorphology to solving problems in natural and urban
environments; professional ethics; risk assessment and hazard mitigation in geomorphic
systems; field based identification and remediation of degraded landscapes through care
ful
process intervention; the solution of specific environmental problems.

Practicals: Field excursions to investigate case studies (students to contribute to cos
ts).
Assessment: 3 h exam (50%), field research (20%), seminars & major project (30%).
Offered in Semester 2.

GEOG723 - Advanced Biogeography

(PGE7AB2) (20L-0T-32P-15S-60H-30R-OF-3A-13W-16C)
Prerequisite: 60% in GEOG31 land 32C at level 3 in Geography or the Ecological Sciences
.
Aim: To draw attention to the major topics of current controversy, synthesising and
integrating the various approaches to modern biogeography.

Content: Vicariance biogeography; Centres of origin; Pan-biogeography; Applied historic
al
biogeography; Techniques of historical biogeography â\200\224 retrospection; Experiment
al island
biogeography; The man/land paradox and the depletion/conservation of resources; Species
diversity; Environmentalism and Gaia Hypothesis; Modern environmentalism.

Practicals: A field excursion (students to contribute to costs), laboratory work.

Assessment: 3 h exam (50%), pracs (20%), field report & projects (30%).

Offered in Semester 2.

GEOG724 - Advanced Remote Sensing

(PGE7AR2) (20L-0T-22P-10S-72H-30R-OF-6A-13W-16C)
Prerequisite: At least 60% in GEOG712 and a primary degree. Â©

Corequisite: GEOG329.

Aim: To provide students with an advanced instruction to Remote Scie and is coupled
with the use of Geographic Information Systems (GIS) in environmental applications.
Emphasis is on understanding through application.

Content: Image Processing, Image Restoration: radiometric, geometric restoration,
Classification of Remotely Sensed Imagery: supervised, unsupervised classifications,

Hyperspectral remote sensing, hyperspectral classification, Quality Assessment: Replicability, Assessing positional accuracy, assessing thematic accuracy, RADAR imagin
g
and analysis, Vegetation Indices/ applications, Time series/ change analysis in Remote Sensing and GIS, Decision making using Multiple Criteria Advanced Applications. Assessment: 3 h theory exam (45%), 3 h prac exam (20%), module assignments (25%), seminars (10%).

Offered in Semester 2.

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GEOG725 – Soil Erosion & Land Degradation

(PGE7SE1) (20L–0T–32P–15S–60H–30R–OF–3A–13W–16C)
Prerequisite: 60% in GEOG316 or 322, 32C at level 3 in Geography or Earth Science related modules.

Aim: Understanding the complexity of soil erosion and land degradation issues in Africa.
Content: Land degradation and sustainability; risk assessment; people – environment dependence; political and socio-economic aspects of soil erosion; physical, chemical and anthropogenic erosion: processes; soil conservation strategies; desertification – natural oscillation or anthropogenically induced?

Practicals: Field excursions to investigate case studies (students to contribute to costs).
Assessment: 3 h exam (50%), field research (20%), seminar & major project (30%).

Offered in Semester 1.

GEOG726 – Urban Governance: Managing Sustainable Cities

(PGE7UG2) (20L–0T–25P–10S–72H–30R–0F–3A–13W–16C)
Prerequisite: Primary degree with 32C in Geography at level 3 with a CWA of 60%, or other modules approved by the Dean

Aim: To appraise national, regional and local policies and practices in managing cities, and to examine urban planning and management in developing countries.

Content: Democratisation, neo-liberal growth strategies and the economic impacts of globalization on cities. Urban management, social equity and sustainability. Urban governance: urban policies; the role of local government and the private sector; financing sustainable urban Sone community participation; social movements and urban impacts.

Practicals: Examination of case studies.

Assessment: 3h theory exam (60%), module assignments (20%), seminars (20%).

Offered in Semester 2.

GEOG731 – Environmental Politics

(PGE7EP1) (20L–0T–25P–10S–72H–30R–OF–3A–13W–16C)
Prerequisite: Primary degree with at least 32C at level 3 in Geography with a CWA of 60% or other modules approved by the Dean.

Aim: Debates on politics and the environment, concepts and issues surrounding environmental ethics problems and associated political solutions.

Content: Environmental philosophy and policy; green ideology; environmental movements and collective actions; valuation of the environment; international and national responses, democracy and local authorities; environmental politics in RSA.

Practicals: Workshops, seminars, assignments and field excursion, which students are expected to contribute to.

Assessment: 3 h exam (60%), assignments (20%), seminars (20%).

Offered in Semester 1.

GEOG735 – Rural Development & Land Reform

(PGE7LR1) (20L–0T–25P–10S–72H–30R–0F–3A–13W–16C)
Prerequisite: Primary degree with at least 32C at level 3 in Geography with a CWA of 60 %
or other modules approved by the Dean.

Aim: To consider the principles, concepts and practical realities of rural development and
land reform in South African and third world contexts.

SA 184 Science & Agriculture

Content: Traditional rural systems and development constraints, gender, housing, qualit y of
life; migration; land degradation; resources for tourism; appropriate technology; susta inable
development; rural–urban fringes; land tenure and reform.

Practicals: Seminars, workshops, assignments, projects and field excursion, the costs o f
which students are expected to contribute to.

Assessment: 3 h exam (60%), seminars (20%), project/assignment reports (20%).
Offered in Semester 1.

GEOG790 – Research Techniques & Projects
(PGE7RTY) (30L–10T–20P–10S–500H–60R–0F–10A–26W–64C)
Prerequisite: Bachelorâ\200\231s degree and at least a 60% CWA in 64C of Geography at l evel 3.

Aim: To consolidate the principles, philosophy and methods of Geography as an holistic, applied environmental science, within a spatial and temporal context.

Content: The development of geographical paradigms, technology and scientific thought; debates on the philosophy and methodology of geography and the environmental movement; the role of geography in a technocratic society.

Practicals: Workshops, presentations and assignments.

Assessment: 3 h exam (25%), research paper (50%), formal seminars (12, 5%), assignments & field work (5%), scientific poster paper (7, 5%).

Year–long Module.

GEOG810 – Masters by Research
(PGE8RM1) (OL–OT–OP–0S–1280H–OR–OF–0A–26W–128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the pene Higher Degrees Committee.

Aim: To undertake supervised research in a field relevant to Geography.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year–long Module.

GEOG910 – Doctor of Philosophy

(PGE9PH1) (OL–0T–OP–0S–1280H–OR–OF–0A–26W–128C)
Prerequisite: Acceptance into the Doctoral programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To conduct independent research in a field relevant to Geography.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Science & Agriculture SA 185
Grassland Science

Offered in the School of Applied Environmental Sciences

GRAS211 - Introduction to Range Management

(PGR2IR1) (18L-0T-18P-0S-30H-1 1 R-OF-3A-13W-8C)
Prerequisite: BIOS101 and (BOTY102 or ZOOL102) or (8C in any appropriate biological subject). :

Aim: This module focuses on the principles of grassland and savannah management and their relevance to livestock and-wildlife systems. This includes assessing the grazing potential of rangeland, carrying capacity, bush encroachment, veld burning and grazing systems.
Content: Key principles and applications in range and wildlife management.

Practicals: The course includes the use of field techniques to assess veld condition; collection and identification of grass species; application of laboratory techniques to assess forage quality of plants; visits to veld experiments.

Assessment: 2 theory tests (20%), 1 project & essay (10%), 3 pracs (10%), 1 3 h exam (60%).

Offered in Semester 1.

GRAS226 - Plant Field Methods

(PGR2FM2) (18L-OT-18P-0S-30H-1 1R-OF-3A-13W-8C)
Prerequisite: BIOS101 and (BOTY102 or ZOOL102), MATHI11, 122 and (STAT110 or BIOM210) or equivalent courses approved by the Head of School.

Aim: To introduce the student to the four commonly used measures of vegetation: frequency, cover, biomass and density. Introduction to the concepts of variation in vegetation, units of measurement, sampling and monitoring. The module introduces basic statistical concepts of field sampling.

Content: Key. principles and techniques for measuring vegetation.

Practicals: Application of different field techniques for measuring grassland and savanna systems. Collection of data, data reduction, presentation and interpretation.

Assessment: | test (20%), prac reports (20%), 1 1.5 h exam (60%).
Offered in Semester 2.

GRAS228 - Plant Identification

(PGR2PI2) (18L-0T-18P-0S-25H-1 1R-OF-8A-13W-8C)
Prerequisite: BIOS101 and (BOTY 102 or ZOOL102).

Aim: To give students practical experience in the use of plant identification keys and recognition of diagnostic features of grasses and trees.

Content: Key principles and skills for identifying the most important grasses and trees of South Africa.

Practicals: Use of microscope techniques and keys for identifying plants. Field identification of grass and tree species.

Assessment: 2 tests (23%), prac reports (10%), 1 1.5 h theory exam (33%), 3.5 h prac ex

am
(34%).

Offered in Semester 2.

GRAS312 - Advanced Range & Wildlife Management
(PGR3GM2) (18L-18T-SOP-20S-110H-20R-0F-4A-13W-24C)
Prerequisite: Passes in GRAS211, 226.

Aim: To provide students with skills and experience in understanding and planning syste
ms
and solving problems in range and wildlife management.

SA 186 Science & Agriculture

Content: Scientific principles pertinent to management of forage resources inter alia; stocking rates, communal and commercial grazing strategies, foraging theory, forage quality, supplementation and the animal factor. Principles for applied rangeland problems including erosion, reclamation and the use of fire, game management. :
Practicals: The course includes two compulsory field trips over weekends. Students may be required to contribute to the cost of trips. Mini-project.

Assessment: | tests (7%), 2 presentations (14%), | literature review (23%), 1 project plan (23%), 3 h exam (33%).

Offered in Semester 2.

GRAS343 - Range Ecology

(PGR3RE1) (19L-O0T-18P-0S-27H-12R-O0F-4A-13W-8C)
Prerequisite: Passes in GRAS211, 226. ;

Aim: To provide students with a conceptual foundation of rangeland ecology for addressing applied issues.

Content: Soil-plant-animal relations and environmental factors including fire; application of population and community ecology theory in management of grassland and savanna

systems; ecosystem functioning; degradation and desertification. Work from Africa and especially southern Africa is emphasized.

Practicals: Field sampling of vegetation in response to treatments and environment; pot-based experiments on plant growth.

Assessment: 2 theory tests (33%), 1 literature review (17%), prac exercises 5 (16%), ie oeh) exam (34%).

Offered in Semester 1.

GRAS728 - Multivariate Analysis: Landscape/CommEcology :

(PGR7MA1) (19L-0T-18P-0S-30H-9R-OF-4A-13W-8C)
Prerequisite: BIOM210 or STAT 110. ;

Aim: To provide students with the skill required for the planning, sampling and analysis of plant community data using multivariate statistics.

Content: Historical development and current concepts of plant community ecology. Introduction to database systems. Direct gradient analysis. ordination, including linear (Principal Components Analysis) and unimodal (Correspondence Analysis, Detrended Correspondence Analysis) models. Constrained ordination, using CANOCO. Classification, including Braun-Blanquet and TWINSPAN.

Practicals: Field collection of data and its subsequent analysis using ordination and classification procedures.

Assessment: | theory test (15%), | prac test (15%), prac assignment (5%), | prac report (15%), 1 3 h exam (50%).

Offered in Semester 1.

GRAS753 – Current Issues in Range & Wildlife Science

(PGR7CI2) (OL–39T–0P–0S–198H–OR–OF–3A–13W–24C)
Prerequisite: Admission to BSc (Hons) majoring in Grassland or Wildlife Se or to level 7 of BSc (Agric) majoring in Grassland Science.

Aim: To consolidate the knowledge of important specialist topics in Range, Pasture & Wildlife Science.

Content: Dependent on choice of specialist topics made in consultation with Head of Discipline.

Practicals: None.

Assessment: 4 papers for each topic (80%), an exercise involving synthesis of quantitative information obtained from the literature for 2 of the topics (20%).

Offered in Semester 2.

GRAS791 - Grassland Science Seminar

(PGR7GS1) 7 (OL-OT-OP-1S-79H-OR-OF-0A-13W-8C)
Prerequisite: Admission to BSc (Hons) majoring in Grassland Science or to level 7 of BSc (Agric) majoring in Grassland Science.

Aim: To provide experience in researching and synthesizing scientific literature on a specific topic of the student's choice.

Content: Search for information in the scientific literature on an approved topic, prepare a scientific review paper, present the paper orally.

Practicals: None.

Assessment: Written review paper (60%), oral presentation (40%).

Offered in Semester |.

GRAS793 - Grassland Science Research Project

(PGR7RPY) : (OL-OT-OP-1S-639H-OR-OF-0A-26W-64C)
Prerequisite: Admission to BSc (Hons) majoring in Grassland Science or to level 7 of BSc (Agric) majoring in Grassland Science.

Aim: To provide experience in conducting a research project and preparation of a scientific paper.

Content: Conduct an approved research project, prepare a scientific paper on the results, present the results orally.

Practicals: None.

Assessment: 2 oral presentations (project proposal & research findings) (40%), written scientific paper (60%).

Year-long Module.

GRASS810 - Masters by Research

(PGR8RM1) : (OL-OT-0P-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research in an aspect of intensive or extensive rangeland or pasture systems.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None. _

Assessment: To be determined by the discipline.

Year-long Module.

GRAS910 - Doctor of Philosophy

(PGR9PH1) ! (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research in intensive or extensive rangeland or pasture systems.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

## Horticultural Science

Offered in the School of Agricultural Sciences and Agribusiness

FOR UNDERGRADUATE PROGRAMME IN HORTICULTURAL SCIENCE - See Rules Ag4 and AgR4 and Agricultural Plant Sciences

### HORTS810 - Masters by Research

(PHO8RMM) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into Masters programme.

Corequisite: To be specified by the discipline.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

### HORT910 - Doctor of Philosophy

(PHO9PHM) (0L-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research. :

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

## Human Physiology

Offered in the School of Agricultural Sciences and Agribusiness

### HPHY112 - Tissues, Skin, Senses nie

(POP 1IH2) (20L-6T-10P-0S-29H-10R-OF-5A-13W-8C)
Corequisite: BIOS101. :

Aim: To give the student an overview of human anatomy and a thorough knowledge of the physiology of the various systems covered in order to provide a background to therapeutic
nutrition modules. :

Content: Epithelial tissue; connective tissue; membrane transport; nervous tissue; organization of the human body; receptors; integumentary system; temperature regulation;
special sense organs.

Practicals: Histological studies; case studies.

Assessment: Tests (22%), pracs (11%), exams (67%).

Offered in Semester 2.

HPHY252 - Bone, Muscle, Metabolism

(POP2HP1) (39L-0T-25P-0S-75H-15R-OF-6A-13W-16C)
Corequisite: BIOS101, HPHY 112.

Aim: To give the student an overview of human anatomy and a thorough knowledge of the physiology of the various systems covered, in order to provide a background to therapeutic nutrition modules.

Content: Organisation of the human body; skeletal system; muscle; nervous system; endocrine system; digestive system; respiratory system. *

Practicals: Histological studies, case studies.

Assessment: Tests (20%), assignments (10%), practicals, tutorials (3%), 3 hr exam (67%).
Offered in Semester 1. ~

HPHY254 - Circulation, Kidney, Reproduction .

(POP2HF2) (39L-0T-25P-0S-75H-15R-0F-6A-13W-16C)
Corequisite: HPHY252.

Aim: To give the student an overview of human anatomy and a thorough knowledge of the physiology of the various systems covered, in order to provide a background to therapeutic nutrition modules.

Content: The heart; circulation; blood; lymphatic system; immune system; renal system and fluid balance; reproductive physiology.

Practicals: Histological studies, case studies.

Assessment: Tests (20%), assignments (10%), practicals, tutorials (3%), 3 hr exam (67%).
Offered in Semester 2.

Hydrology

Offered in the School of Bioresources Engineering & Environmental Hydrology

HYDR210 - Introduction to Physical Hydrology

(PHY2PH1) (26L-7T-40P-0S-65H-15R-OF-7A-13W-16C)
Prerequisite: CSC1101, GEOG113, 112, MATHI11, 112, PHYS121 or equivalent modules acceptable to the Dean.

Aim: To develop an understanding of the fundamentals of major components making up the hydrological cycle and manâ\200\231s interaction with it.

Content: This course is designed to provide students taking agriculture and environmental science options with key concepts underlying the science of hydrology. Content includes studies of rainfall, evaporation, runoff, soil water, interception, systems and anthropogenic impacts on the hydrological cycle.

Practicals: 12 - covering various basic hydrological concepts. | field trip to a research catchment.

Assessment: 2 class tests (11%), 1 prac exam (11%), 1 3 h exam (67%), assessment of cla
ss
tutorials & pracs (11%).

Offered in Semester 1.

HYDR220 – Environmental Aspects of Hydrology
(PHY2EA2) (26L–7T–40P–0S–65H–15R–OF–7A–13W–16C)
Prerequisite: HYDR210.

SA 190 Science & Agriculture

Aim: This double module provides students taking agriculture and environmental science options with an understanding of current topics in environmental hydrology and anthropogenic impacts on the hydrological cycle.

Content: Physical and environmental basics of groundwater; the water budget; soil loss; morphometry; as well as an introduction to hydrological models. -

Practicals: 12 - covering the subjects above. | field trip.

Assessment: 2 class tests (11%), class tutorials & pracs (11%), 1 prac exam (11%), 13h exam (67%).

Offered in Semester 2.

HYDR310 - Modelling for Hydrological Design

(PHY3MD1) (24L-8T-40P-0S-65H-15R-0F-8A-13W-16C)
Prerequisite: HYDR210, 220.

Aim: To understand hydrological simulation models commonly used in South Africa and their application to design and water conflict problems.

Content: Application of hydrological models to sustainable integrated water resources management and planning, under varying environmental conditions. Specific outcomes: understanding theoretical concepts of hydrological simulation; ability to select approp riate
models for particular problems; application of hydrological models to obtain water reso urces
design and planning information; ability to set up and run the ACRU Agrohydrological model.

Practicals: Compulsory 3 day field trip. Students contribute to costs. .

Assessment: 2 class tests (20%), class tutorials & pracs (10%), 1 prac exam (10%), 13h exam (60%).

Offered in Semester 1.

HYDR311 - Agrohydrological Simulation Modelling
(PHY3AS1) (16L-6T-20P-0S-24H-8R- OF- 6A-13W-8C)

Prerequisite: At least 32C from level 1 courses in Mathematics, â\200\230Physics, Stati stics or
Computer Science.

Aim: To provide students not majoring in Hydrology with an understanding and appreciati on
of the role of simulation models in hydrological science.

Content: Development philosophies of hydrological modelling systems and ability to oper ate
selected models. Specific outcomes: an understanding of theoretical concepts of hydrological simulation; ability to select appropriate models for particular problems; ability
to configure and run the ACRU model.

Practicals: 6 - covering the subjects above. | field trip to a nearby research catchmen t.
Assessment: | class test (15%), | prac exam (10%), 1 2 h exam (60%), class work (15%).
Offered in Semester 1.

HYDR312 - Dam Design

(PHY3DD1) (12L-0T-16P-0S-52H-OR-OF-0A-13W-8C)
Prerequisite: HYDR210, 220.

Corequisite: HYDR310.

Aim: This module is designed to provide students who have completed HYDR210 and 220 with the ability to apply their hydrological design knowledge to practical application by
designing a small dam.

Content: Hydrological design of a small dam.

Practicals: Application of design flood methodologies by the student, assisted by the c lass
tutors. 1 field trip.

Assessment: 2 class tests (30%), project (70%).
Offered in Semester 1.

HYDR320 - Applied Hydrology

(PHY3AH2) (24L-8T-40P-0S-65H-15R-OF-8A-13W-16C)
Prerequisite: HYDR310 with a minimum of 40%.

Aim: To provide an integrated understanding of hydrological sciences and the ability to solve applied hydrological problems.

Content: Interrelationships between principles and theories learned in preceding courses; applied hydrological issugs and problem solving. These include: prediction of soil loss at different scales; basic hydraulic principles; variability and uncertainty in water resources planning; anthropogenic factors affecting water resources management such as forestry, climate change, etc.

Practicals: 12 plus a field trip.

Assessment: 2 class tests (20%), | prac exam (10%), I 3hr exam (60%), class work (10%).
Offered in Semester 2.

HYDR321 - Hydrology Project

(PHY3HP2) (2L-1T-3P-9S-65H-OR-OF-0A-13W-8C)
Prerequisite: HYDR310.

Corequisite: HYDR320.

Aim: To provide the ability to study in some detail a particular topic of contemporary hydrological concern, by way of literature review and practical application of hydrological knowledge learned in preceding modules and to present this as a formal document to laid down specifications.

Content: Detailed self-study by way of literature review, interview, etc regarding a particular topic of contemporary hydrological concern.

Practicals: Application of a document to formal scientific specifications.

Assessment: Assessment of completed document in terms of content (80%), adherence to specifications. Assessment of verbal presentation of topic as well as participation in peer presentations (20%). _

Offered in Semester 2.

HYDR322 - Environmental Water Quality

(PHY3WQ2) : (15L-4T-18P-0S-30H-8R-0F-5A-13W-8C)
Prerequisite: A pass in HYDR210.

Aim: To provide an intermediate level of understanding and appreciation of water quality issues in hydrology especially those relevant to southern African conditions, such as eutrophication and E.coli problems.

Content: The causes and effects of water quality problems and the potential for simulation modelling thereof, with particular reference to South African conditions.

Practicals: Exercises covering the subjects above, as well as monitoring of a local river.
Assessment: 2 class tests (20%), 1 2 h exam (60%), class tutorials & pracs (20%).
Offered in Semester 2.

HYDR710 – Current Issues in Hydrology
(PHY7CI1) ; (16L–16T–OP–8S–95H–20R–0F–5A–13W–16C)
Prerequisite: HYDR310, 320 with a minimum averaged mark of 60%.

SA 192 Science & Agriculture

Aim: To provide honours level students with an understanding of current and topical issues of importance in hydrological sciences. Specific outcomes include: the ability to understand and synthesis particular topics from scientific literature; an understanding of the philosophy of hydrological science; and understanding of the dynamic nature of the science of hydrology; an awareness of the external forces driving the science.

Content: The study of topical and relevant issues pertaining to the science of hydrology.
Practicals: Exercises covering the subjects above, as well as monitoring of a local river.
Assessment: 5 assignments (40%), 1 3 h exam (60%).

Offered in Semester 1.

HYDR720 - Integrated Water Resources Management

(PHY7WM2) (24L-18T-8P-0S-85H-20R-0F-SA-13W-16C)
Prerequisite: HYDR310, 320 with a minimum av. of 60%.

Aim: To provide an integrated understanding of hydrological sciences and an ability to solve applied hydrological problems in an interdisciplinary environment.

Content: The interrelationships between principles and theories learned in preceding courses and the processes they represent. In particular, students should be aware of the integrating nature of the hydrological catchment. Topics include: environmental impact assessment; integrated catchment management; environmental water requirements; water quality issues.
Practicals: Practicals covering the subjects above as well as visits to sites of relevance.
Assessment: 5 assignments (40%), 1 3 h exam (60%).

Offered in Semester 2.

HYDR725 - Advanced Hydrological Processes

(PHY7AH2) (16L-16T-8P-8S-87H-20R-0F-5A-13W-16C)
Prerequisite: HYDR310, 320 with a minimum of 60%.

Aim: This double module is designed to provide honours level students with an in depth understanding of fundamental hydrological processes.

Content: After successful completion this module students should have an in-depth understanding of specific hydrological processes. These include: design flood estimation; soil water and hillslope processes; groundwater modelling; forest hydrology.
Practicals: Practicals covering the subjects above as well as visits to sites of relevance.
Assessment: 5 assignments (40%), 1 3 h exam (60%).

Offered in Semester 2.

HYDR790 - Hydrology Honours Project

(PHY7RPY) (OL-4T-OP-0S-3 1 1 H-OR-OF-5A-26W-32C)
Prerequisite: HYDR310, 320 with a minimum credit weighted av. of 60%.

Aim: This module is designed to train hydrology honours level students to conduct an approved research project and prepare and present a scientific report on the results.

Content: Access and review scientific documentation. Conduct a small research project, analyse results. Presentation by way of written report to specified scientific format a s well as
orally to a group of academic staff and peers.

Practicals: All work is conducted under supervision and will be assessed by three revie wers
from the School. Written project 66%, oral presentation 25%, contribution to peer assessment 9%,

Assessment: Written report (80%), oral presentation (20%).

Year-long Module.

HYDR795 - Advanced Hydrological Modelling Skills

(PHY7HMY) (30L-12T-40P-0S-203H-30R-OF-5A-26W-32C)
Prerequisite: HYDR310, 320 with a minimum av. of 60%.

Aim: To apply advanced hydrological skills to water resources problems by simulation modelling.

Content: Collection of data, configuration and application of a model to a specific water resources problem providing skills in: GIS applications; catchment delineation; rainfall surfaces; landuse and soils information; irrigation; crop yield; results analysis; planning scenarios. Progress reports handed in during the year; also, full final project report on the project in full, as if to a client.

Practicals: Site visits, analysis of field data; use of GIS.

Assessment: Work is supervised. Progress & final reports assessed by 3 reviewers(50%), 1 3-hour exam (50%).

Year-long Module.

HYDR810 - Masters by Research

(PHY8RM1) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the degree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

HYDR910 - Doctor of Philosophy

(PHY9PH1) (OL-OT-0P-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module,

Land-Information Management

Offered in the School of Applied Environmental Sciences

LIMT702 – Urban Planning

(PLM7UPB) : (20L–0T–12P–0S–6H–OR–OF–2A–1W–4C)
Prerequisite: Acceptance into the programme in Environment & povgooment or relevant background acceptable to the Dean.

Aim: To provide an understanding of the concepts, techniques and procedures of planning and design in the built environment.

SA 194 Science & Agriculture

Content: Urban land use classifications in South Africa, types of plans: IPP's, structure plans, town-planning schemes, master plans, architectural drawings, town-planning standards, urban land uses, zoning and development control regulations, design and land-use organisation.

Practicals: Assignments and case studies on urban planning.

Assessment: Written exam (100%).

Offered in Semester | & 2.

LIMT704 - Integrated Environment Management & Planning

(PLM7EMB) (8L-OT-18P-0S-12H-OR-OF-2A-1W-4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide an understanding of the role of environmental impact assessment (EIA) in a land-reform context.

Content: Environmental management principles; legislative framework, guidelines and procedures; public participation and communication; purpose, methodology and techniques in scoping; strategic environmental assessment (SEA); purpose of impact assessments; GIS and environmental impact assessment; review and assessment of two case studies (urban and tural); future directions in integrated environmental management.

Practicals: Assignments and case studies on EIA.

Assessment: Written exam (100%).

Offered in Semester 1 & 2.

LIMT802 - Land Economics & Valuation

(PLM8LEB) (24L-16T-26P-10S-0H-OR-OF-4A-2W-8C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To provide an understanding of the principles and practices of land valuation, and the underlying economic rationale of stakeholders in land reform.

Content: Land economics; land tenure and markets; land market and allocative efficiency; land zoning; economics of rent; price and value of land in formal and informal markets; land valuation institutions; land measuring and land valuation; land valuation in the southern African region.

Practicals: Exercises on methods of land economics and valuation.

Assessment: Written exam (100%).

Offered in Semester 1 & 2.

LIMT804 - Land-Use Planning & Farm Resettlement

(PLM8LUB) (32L-10T-26P-0S-O0H-8R-0F-4A-2W-8C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant

background acceptable to the Dean.

Aim: To provide an understanding of the principles and practices in land-use planning p
olicy
and farm resettlement within a land-reform context.

Content: Planning themes; role and policies of public land-use planning institutions in
 South
Africa; farm, labour and capital planning; data acquisition for farming systems analysi
s
(FSA); FSA & LUP; decision-making processes (farms): enterprise/farm budgeting;
cost/benefit; government regulations on resettlement and farm size.

Practicals: Assignments on the practices in land-use planning and farm resettlement.
Assessment: Written exam (100%).

Offered in Semester | & 2.

LIMT806 – Land Administration & Legislation

(PLM8LAB) (16L–8T–8P–0S–0H–4R–0F–4A–1W–4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Corequisite: LIMT808.

Aim: To provide an understanding of the role of deed registration, land-administration institutions and land legislation in the land-reform context.

Content: Deed registration; land tenure, legal status of land and real property; land administration; benefits of land administration systems, legal framework, financial mat ters,
institutional arrangements and instruments for land administration: right, use and valu ation;
LIS concepts and design for land-administration purposes.

Practicals: Exercises on land registration and land legislation.

Assessment: Assignment (100%).

Offered in Semester I & 2.

LIMT808 – Geomatics for Land Management

(PLM8GLB) i (26L–0T–48P–0S–4H–OR–OF–2A–2W–8C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To develop an understanding of geomatics in a land-reform context.

Content: Maps: scales, map reading, projections, topographic and thematic maps; desktop cartography. GPS: GPS in surveying; types of GPS; WGS84 coordinates; UTM data; types of error; precision of equipment. Principles of data, data bases. Principles oa GIS: da ta
acquisition techniques; GIS analysis techniques.

Practicals: Exercises on the methods used in surveying, mapping & spatial analysis.
Assessment: Written exam (100%).
Offered in Semester 1 & 2.

LIMTS810 – Land Reform & Dispute Resolution

(PLM8LRB) (16L–18T–16P–0S–26H–OR–OF–4A–2W–8C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Corequisite: LIMT806.

Aim: To provide an understanding of land reform in southern Africa, and enhance skills in
communication for adjudication and land-dispute resolution.

Content: Land-reform adjudication and land-dispute resolution in southern Africa; objec tives
of land reform; land-reform institutions; case studies/examples; land-reform acts and policies; adjudication; legal meaning; activities; planning law; policies related to la nd-use
planning.

Practicals: Case studies to improve the understanding of on-going land reform.

Assessment: Assignment (50%), exam (50%).

Offered in Semester 1 & 2.

LIMT812 – Land-Information Database Management

(PLM8DBB) (10L-13T-15P-0S-OH-OR-OF-2A-1 W-4C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

˜ Corequisite: LIMT808.

Aim: To provide an understanding of cadastral information management and database desig
n
in a GIS and land-reform context.

Content: Introduction to cadastral information management, database types, structures,
design; cadastral maps (work plan, general plan and survey plan); cadastre, new townshi
ps,
subdivisions, road networks as related to cadastre, digital aerial photography.

Practicals: Assignments on cadastral information management and database design.
Assessment: Presentation (100%).
Offered in Semester 1 & 2.

LIMT814 - Applications of GIS in Land Management

(PLM8GSB) (10L-0T-28P-0S-0H-OR-OF-2A-1 W-4C)
Prerequisite: Acceptance into the programme in Environment: & Development or relevant
background acceptable to the Dean.

Corequisite: LIMT808, 812.

Aim: To provide an understanding of the application of GIS in land management.

Content: Information-systems development methodologies; design of land-information
systems (LIS): implementation and operation of LIS; geo-information infrastructure;
GIS/spatial data standards; process operations and workflow management; advanced spatia
l
data analyses; error assessment and management; spatial decision support systems; other
recent trends in GIS.

Practicals; Assignments on the use of GIS in a land-reform context.

Assessment: Prac exam (100%).

Offered in Semester 1 & 2.

LIMT880 - Land-Information Management Internship

(PLM8PIB) (O0L-0T-OP-0S-0H-0R-640F-0A-20W-64C)
Prerequisite: Successful completion of all prescribed modules and the integrative
examination for the course-work component of the Land-Information Management stream
with a final mark of at least 50%.

Aim: To develop knowledge, skills and understanding in land-information management.
Content: Application for internship; definition of learning objectives; keeping an inte
rnship
record book; design, run and report on internship project; recommendations on land-
information handling by the intern to the employer; digital/electronic presentations, m
aps on
internship; relevant techniques in the workplace.

Practicals: None.

Assessment: Report by internal supervisor (20%), report by organisational supervisor (2
0%),
two reports by intern (40%), oral presentation by intern (20%).

Offered in Semester 1] & 2.

LIMT890 - Land-Information Management Mini-Dissertation

(PLM8RDB) (OL-0T-0P-0S-640H-OR-0F-0A-24W-64C)
Prerequisite: Successful completion of all prescribed modules and the integrative
examination for the course-work component of the Land-Information Management stream
with a final mark of at least 60%.

Corequisite: EDEL812, 814.

Aim: Under supervision, to develop competence in applied resÃ©arch, critical analysis o
f data,
development of scientific arguments and logical presentation of research materials.

Content: Research proposal and design, fieldwork and scientific presentation.

Practicals: None.

Assessment: Examination of mini-dissertation (100%).
Offered in Semester 1 & 2.

## Management

Offered in the Fe aculty of Human & Management Sciences (Pietermaritzburg)

### MAGT110 - Management 110

(PMN110B) (30L-9T-20P-0S-97H-OR-OF-4A-13W-16C)
Aim: To introduce the concepts of the organisation as an open system, and the managemen t
of organisations.

Content: The organisation as an open system and its environment; managers and the work of
managers; management. as a process; the development of modern management theory, introduction to topics in organisational behaviour; a brief introduction to the managem ent of
the functional areas of human resource, marketing and supply chain management.

Assessment: \ test; 1 assignment; (33%) 1 exam. (67%)

### MAGT230 - Management 230

(PMN2301) (30L-9T-0P-0S-96H-20R-0F-5A-13W-16C)
Prerequisite: Management 110. Not available for ESS or BA students, see Rules of Combination section.

Aim: To introduce the concepts of Operations and are Chain Management.

Content: An introduction the concepts of operations management, quality management, Total Quality Management, design of products and services, process technology, location and layout. Procurement, physical distribution and transportation. Planning and control ,
inventory, MRP, JIT and project management.

Assessment: 2 tests; 2 assignments; (33%) | exam. (67%)

## Mathematics

Offered in the School of Mathematics, Statistics & Information Technology

### MATHO010 - Foundation Mathematics :

(PMAOMFY) (72L-60T-OP-0S-71 H-25R-OF-12A-26W-24C)
Prerequisite: Any symbol on Standard or Higher Grade Matric Mathematics.

Aim: Mathematics 010 forms part of a package of modules (the Science Foundation Programme). It provides a foundation for all first year mathematics modules.

Content: Numerical skills; Ratio and proportion; Set theoty; Data collection; Equations and
inequalities, Perimeter, area and volume; Trigonometry; Open-ended investigation of a mathematical problem; Numbers; Relations and functions; Graphs; Absolute value; 3-D coordinates and polar coordinates; Introductory Calculus.

Practicals: None.

Assessment: 2 investigations, 6 class tests, June test and quizzes (50%), 1 3 h exam (5 0%),
homework assignments (to be used to influence borderline mark decisions).

Year-long Module.

SA 198 Science & Agriculture

MATH110 - Differential Calculus & Discrete Mathematics

(PMAIDC1) (36L-32T-4P-0S-55H-28R-0F-5A-13W-16C)
Prerequisite: Higher Grade D or Standard Grade A for Matric Mathematics.

Aim: To introduce and develop the Differential and Integral Calculus as well as the fundamentals of proof technique, rudimentary logic and Discrete Mathematics.

Content: Differential Calculus: radian measure, trigonometric and inyerse trigonometric functions, exponential and logarithmic functions, limits, continuity, derivatives and differentiation rules, implicit differentiation, shapes of curves, optimization problem s and
other applications; introduction to the Integral Calculus.

Discrete Mathematics: logic, proof techniques and elementary Number Theory, mathematical induction, basics of naive Set Theory, counting principles and the Binomia l
Theorem.

Practicals: Problem solving using a computer algebra system.

Assessment: Class tests & assignments (50%), 1 3 h exam (50%).

Offered in Semester 1.

MATHIII - Differential Calculus for Life Sciences A

(PMAIDL1) (18L-18T-OP-0S-34H-6R-OF-4A-13W-8C)
Prerequisite: Higher Grade E or Standard Grade C for Matric Mathematics. Â©

Aim: To equip students with basic mathematical tools needed especially in the life scie nces.
Content: Logarithmic, exponential and trigonometric functions; differentiation with application to graphs, maxima/minima and rates of change; linear equations, matrices.
Practicals: None.

Assessment: Class tests & quizzes (50%), 1 2 hr exam (50%).

Offered in Semester 1.

MATHI12 - Calculus & Discrete Mathematics (Engineering)

(PMAICD1) (36L-32T-4P-0S-55H-28R-0F-5A-13W-16C)
Prerequisite: Entry into the Faculty of Engineering.

Aim: To introduce and develop the Differential and Integral Calculus as well as the fundamentals of proof technique, rudimentary logic and Discrete Mathematics.

Content: Differential Calculus: radian measure, trigonometric and inverse trigonometric functions, exponential and logarithmic functions, limits, continuity, derivatives and differentiation rules, implicit differentiation, shapes of curves, optimisation problem s and
other applications; introduction to the Integral Calculus.

Discrete Mathematics: Logic, proof techniques and elementary Number Theory, mathematical induction, basics of naive Set Theory, counting principles; the Binomial Theorem.

Practicals: Problem solving using a computer algebra system. ˜

Assessment: Class tests & computer assignments (50%), 1 3 h exam (50%).

Offered in Semester 1.

MATHI13 - Quantitative Methods 1 ’

(PMAIMQ!1) (36L-18T-4P-0S-69H-27R-0F-6A-13W-16C)
Prerequisite: Higher Grade E or Standard Grade C for Matric Mathematics.

Aim: To equip students with basic quantitative reasoning skills derived from linear alg
ebra,
financial mathematics and calculus as needed in business management.

Content: Demand and supply functions, systems of linear equations, matrices, linear programming including the simplex algorithm, applications to constrained optimization problems. Arithmetic and geometric progressions, simple and compound interest, annuities, ammortization, sinking funds, perpetuities. Meaning and techniques of differentiation, exponential and logarithmic functions, rates of change, maxima and minima, meaning and techniques of integration and applications. Use of technology in teaching above topics. Practicals: Computer-based exercises on the above topics.

Assessment: 3 1 h tests (33%), 3 h exam (67%).

Offered in Semester 1. Not normally available to students in BSc or BScAgric programmes.

MATHI1I15 - Vectors & Matrices

(PMAIMV1) (36L-36T-OP-0S-55H-28R-0F-5A-13W-16C)
Prerequisite: Higher Grade D or Standard Grade A for Matric Mathematics.

Corequisite: MATHI 12.

Aim: To introduce and develop basic principles of Mechanics using Differential Calculus and the study of vectorsâ\200\235 ty matrices in preparation for a more advanced treatment of Mechanics.

Content: Motion of a particle in a straight line; displacement, velocity and acceleration in 2-D and 3-D space; relative velocity, acceleration; Newtons laws of motion; projectiles; statics of particles; vectors and analytic geometry.

Practicals: None.

Assessment: 2.1 h tests (50%), 3 h exam (50%).

Offered in Semester 1.

MATHILIG6 - Mechanics

(PMAIEM2) ; (36L-36T-OP-0S-55H-28R-0F-5A-13W-16C)
Prerequisite: Vectors and Matrices or permission from Head of Mathematics Discipline.
Corequisite: MATH120 or MATHI121.

Aim: A more advanced study of Mechanics exploiting Differential and Integral Calculus and vector cross product with an introduction to motion of a body in 3-D space.

Content: Simple hatmonic motion; work, energy and power; motion in a circle; centre of gravity; impulsive forces; variable acceleration of a body; moments and angular momentum; moments of inertia; motion of a body in 3-D space.

Practicals: None.

Assessment: 2 | h tests (50%), 1 3 h exam (50%).

Offered in Semester 2.

MATH120 - Integral Calculus & Linear Algebra

(PMAIIC2) (36L-32T-4P-0S-55H-28R-0F-5A-13W-16C)
Prerequisite: MATH110.

Aim: To develop further the Integral Calculus and to introduce elementary Linear Algebr

a.
Content: Integral Calculus: definite and indefinite integrals, techniques of integratio
n,
approximate integration, their applications of the Integral Calculus, simple ordinary
differential equations and applications, infinite sequences, infinite series. Linear
Algebra: systems of linear equations, linear combinations in Rn, matrix algebra,
determinants, vectors, lines and planes in R3, curves in polar coordinates, areas and l
engths
in polar coordinates, complex numbers.

Practicals: Problem solving using a computer algebra system.

Assessment: Class tests & assignments (50%), 3 h exam (50%).

Offered in Semester 2.

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MATH 121 - Integral Calculus for Engineers

(PMAICE2) (36L-32T-4P-0S-55H-28R-OF-5A-13W-16C)
Prerequisite: MATH112.

Aim: To develop further the Integral Calculus and introduce functions of several variab
les.

Content: Definite and indefinite integrals, techniques of integration, approximate
integration, applications of the Integral Calculus, simple ordinary differential equati
ons and
their applications, infinite sequences, infinite series, curves in polar coordinates, a
reas and
lengths in polar coordinates, complex numbers, hyperbolic functions, improper integrals
,
vector functions and curves in space, derivatives and integrals of vector functions, ar
c length
and curvature, motion in space, functions of several variables, limits and continuity,
partial
derivatives. .

Practicals: Problem solving using a computer algebra system.
Assessment: Class tests & computer assignments (50%), 3 h exam (50%).
Offered in Semester 2.

MATH 122 - Integral Calculus for Life Sciences

(PMAICL2) (18L-18T-0P-0S-34H-6R-OF-4A-13W-8C)
Prerequisite: MATH1I11.

Aim: To equip students with basic mathematical tools needed especially in the life scie
nces

Content: Elementary indefinite integrals; differential equations; definite integrals; a
reas and
numerical integration; partial derivatives; linear programming.

Practicals: None.
Assessment: Class tests & quizzes (50%), 1 2 hr exam (50%).
Offered in Semester 2.

MATH211 - Introduction to Algebra & Number Theory

(PMA2AN1) (15L-18T-0P-0S-32H-12R-0F-3A-13W-8C)
Prerequisite: Passes in MATHI 10, 120.

Aim: This module discusses basic theories from Modern Algebra and Number Theory which
are fundamental in various parts of Mathematics and Computer Science.

Content: Sets, mappings, equivalence relations, equivalence classes, partitions. Intege
rs,
prime factorisation, integers modulo n, Euler function. Binary operations, symmetric
differences, algebraic systems, semi-groups, monoids, groups and examples of erups
permutations, symmetric and alternating groups.

Practicals: None.

Assessment: 2 1/2 h tests (33%), 2 h exam (67%).

Offered in Semester 1.

MATH213 - Advanced Calculus 4

(PMA2AC1) (15L-14T-6P-0S-31H-10R-OF-4A-13W-8C)
Prerequisite: Passes in MATH110, 120. â\200\230

Aim: This module gives a coherent treatment of basic theories and problem solving techniques from Multivariate Calculus which is fundamental to Mathematics and Applied Sciences.

Content: Functions of several variables, partial derivatives, Chain Rules, Implicit Fun ction
Theorem, extrema and Lagrange multipliers, multiple integrals, change of variables.

Practicals: Problem solving using a computer algebra system.
Assessment: 2 0.5 h tests (33%), 2 h exam (67%).
Offered in Semester 1.

MATH215 - Discrete Mathematics

(PMA2DN1) (15L-18T-OP-0S-32H-12R-0F-3A-13W-8C)
Prerequisite: Passes in MATH110, 120.

Aim: This -module is the continuation of the Discrete Mathematics section of MATHI110. The study of basic theories with applications of discrete mathematics is continued.

Content: Counting, arrangements and selections with repetition, distributions, inclusio n-
exclusion principle, finite-state automata, pigeonhole principle, recursion, graph theo ry,
applications.

Practicals: None.

Assessment: 2 1/2 h tests (33%), 2 h exam (67%).

Offered in Semester 1.

MATH222 - Introduction to Real Analysis
(PMA2RA2) (1S5L-18T-OP-0S-32H-12R-OF-3A-13W-8C)
Prerequisite: MATH213 arch passes in MATHI10, 120.

Aim: This is-an introductory single module on Real Analysis. Basic topics which are fundamental in further real analysis and in other parts of Mathematics are discussed.
Content: The completeness: axiom of the real numbers, the natural numbers, limits, real

valued functions, monotonic functions, inverse of functions, limits of functions, prope rties of
continuous functions, mean value and intermediate value theorems.

Practicals: None.
Assessment: 2 0.5 h tests (33%), 2 h exam (67%).
Offered in Semester 2.

MATH224 - Linear Algebra
(PMA2AL2) (15L-14T-6P-0S-3 | H-10R-OF-4A-13W-8C)
Prerequisite: Passes in MATHI10 and 120.

Aim: This module gives a coherent treatment of basic theories and problem solving techniques from Linear Algebra and its applications which are fundamental to Mathematic s
and the Applied Sciences.

Content: Axioms of Vector Spaces; Linear Independence; Bases; Dimensions; Matrices and Linear Transformations; Eigenvectors and Eigenvalues; Diagonal Matrices; Inner Product Spaces; Gram-Schmidt Process; Orthogonal Matrices; Linear Differential Equations and Quadratic Surfaces.

Practicals: Problem solving using a computer algebra system.

Assessment: 2 0.5 h tests (33%), 2 h exam (67%).

Offered in Semester 2.

MATH232 - Vector Calculus
(PMA2VC2) (18L-11T-2P-0S-32H-14R-OF-3A-13W-8C)
Prerequisite: A pass in MATH213.

Aim: To give students: A oa foundation in the theory and methods required in Applied Mathematics.

Content: Vector functions and vector fields. Line and surface integrals.

Practicals: Computer-based exercises on the above topics.
Assessment: | 1.5 h test (33%), 1.5 h exam (67%).

Offered in Semester 2.

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MATH242 - Differential Equations

(PMA2DE2) (18L-11T-2P-0S-32H-14R-0F-3A-13W-8C)
Prerequisite: A pass in MATH213. â\200\230

Aim: To give students a solid foundation in the basic theory of differential equations and
skills in solving differential equations.

Content: Differential equations: first order â\200\224 solution methods, existence, uni queness;
second order â\200\224 general theory, undetermined coefficients, variation of paramete rs, series
solution. Applications

Practicals: Computer-based exercises on the above topics.

Assessment: 1 1.5 h test (33%), 1 1.5 h exam (67%).

Offered in Semester 2.

MATH255 - Operations Research Modelling :

(PMA2RM1) (20L-12T-12P-0S-28H-6R-OF-2A-13W-8C)
Prerequisite: Any 8C in Mathematics at NQF level 5b.

Aim: To teach students to: formulate real problems as mathematical models; to interpret the
solution in terms of the real world; to formulate and test policies for managing dynami c
systems; to communicate results through report-writing.

Content: Modeling complex nonlinear dynamic systems, policy formulation and policy
testing. Techniques will be illustrated with examples from population Synemicss ecology and
business systems.

Practicals: Computer-based exercises on the above topics.

Assessment: 3 projects (50%), 1 1.5 h exam (50%).

Offered in Semester 1.

MATH310 - Real Analysis

(PMA3RR1) (27L-27T-0P-0S-74H-27R-OF-5A-13W-16C)
Prerequisite: Passes in MATH211, 222, 213, 224. :

Aim: To introduce and develop in a mathematically rigorous manner, the Riemann integral ,
sequences and series of functions, and metric spaces.

Content: Upper and Lower Riemann integrals, Riemann integrability, properties of the
Riemann integral, the Fundamental Theorem of Integral Calculus, improper integrals,
sequences and series of functions, uniform convergence, the interchange of limiting
processes, power series, Taylor's Theorem, sets, functions and countability, metric spa ces,
continuity and convergence, completions, fixed point theorems and applications.

Practicals: None.

Assessment: 2 | h tests (33%), 3 h exam (67%).

Offered in Semester 1.

MATH322 – Networks & Graph Theory

(PMA3NG2) (27L–27T–0P–0S–74H–27R–0F–5A–13W–16C)
Prerequisite: Passes in at least two of MATH211, 213, 215, 222, 224.

Aim: To explore proof techniques and algorithms and to acquire problem solving skills in discrete mathematics.

Content: Introductory concepts, isomorphic graphs, connectivity, shortest path algorithms, distance in graphs, trees and the minimum spanning tree problem, transport problems, networks, maximum flow problems, CPM and PERT, assignment problems, Eulerian graphs and the Chinese postman problem, Hamiltonian , Matchings. Planar graphs and colouring problems.

Practicals: None.
Assessment: 2 \ h tests (33%), 3 h exam (67%).
Offered in Semester 2.

MATH330 – Complex Analysis

(PMA3AC2) (27L–27T–0P–0S–73H–28R–OF–5A–13W–16C)
Prerequisite: Passes in MATH213, 224

Aim: This module discusses basic theories and techniques from Complex Analysis, including methods of solving classical problems relevant to Applied Sciences.

Content: Complex Plane and Riemann Sphere; elementary complex functions; complex differentiation; Cauchy–Riemann equations; contour integral and Cauchy Theorem for analytic functions; Cauchy Integral Formula; harmonic functions; Taylorâ\200\231s Theorem; Laurent Series; isolated singularities and residues; conformal mappings; linear fractional transformation; either Riemann surfaces of elementary functions or application to Laplace equations.

Practicals: None.

Assessment: 2 1 h tests (33%), 3 h exam (67%).

Offered in Semester 2.

MATH340 – Algebraic Structures

(PMA3AS2) (27L–27T–0P–0S–74H–27R–0F–5A–13W–16C)
Prerequisite: Passes in MATH211, 213, 224.

Aim: To investigate properties of groups, rings, polynomial rings and fields which are fundamental to Modern Algebra.

Content: Subgroups, cyclic groups, normal subgroups, quotient groups, isomorphism theorems for groups, permutation groups. Rings, polynomial rings, ideals, prime and maximal ideals. Fields, field of fractions, finite fields, extension fields. Vector spaces over arbitrary fields, linear transformations, linear functionals and dual spaces, matrices of linear transformations.

Practicals: None.

Assessment: 2 1h tests (33%), 3 h exam (67%).

Offered in Semester 2.

MATH353 – Dynamical Systems

(PMA3DS1) (27L–27T–OP–0S–74H–27R–0F–5A–13W–16C)
Prerequisite: Passes in MATH213 and 224.

Aim: To acquire knowledge of the underlying mathematical theory needed to analyse dynamical systems and to master the techniques used to solve differential equations.
Content: (i) discrete systems, logistic maps, chaos, Lyapunov exponent, fractals, strange attractors, HÃ©non maps, Mandelbrot set. (ii) 2–dim systems, linear systems, classification, phase plane, nonlinear systems, Poincare–Bendixon theorem, limit cycles, Lyapunov functions, bifurcations, Poincare map, applications.

Practicals: None.

Assessment: 2 1 h tests (33%), 3 h exam (67%).

Offered in Semester 1.

MATH361 - Operations Research Methods ; :
(PMA3RM1) (27L-27T-OP-0S-75H-26R-0F-5A-13W-16C)
Prerequisite: A pass in MATH224.

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Aim: To acquire knowledge of the theory behind optimisation algorithms; and to acquire skills in solving optimisation problems.

Content: Formulation of problems, simplex method, duality, integer programming, heuristics, introduction to nonlinear programming.

Practicals: None.

Assessment: Tutorial & project work (10%), 2 1 h tests (30%), 3 h exam (60%).

Offered in Semester 1.

MATH371 - Numerical Methods

(PMA3NU2) (27L-27T-0P-0S-74H-27R-0F-5A-13W-16C)
Prerequisite: Passes in MATH213, 224.

Aim: To give students a solid foundation in the theory and techniques of numerical meth ods
and skills in solving mathematical problems numerically.

Content: Computer arithmetic, roots of nonlinear equations, systems of linear equations ,
systems of nonlinear equations. Curve fitting, numerical differentiation and integratio n,
numerical methods for ordinary differential equations.

Practicals: None.
Assessment: 2 1.5 h tests (33%), 3 h exam (67%).
Offered in Semester 2.

MATH710 - Set Theory & Logic

(PMA7SL]1) (27L-0T-OP-0S-103H-25R-OF-5A-13W-16C)
Prerequisite: MATH211 and a pass in any level 3 Mathematics module.

Aim: This module provides mathematical treatment of the basic ideas and results from Se t
Theory and Logic. It places emphasis on Axiomatic Approach to Set Theory, the Semantic and Syntactic interaction in Mathematical Languages. It is suitable for students regist ered in
Mathematics Honours programmes and those from Computer Sciences.

Content: Propositional Logic; First Order Logic; Zermelo-Fraenkel Set Theory with Axiom of Choice; Cardinal Arithmetic; GÃ©delâ\200\231s Completeness and Incompleteness Theore m;
Compactness Theorem; Undecidability,; beginning Model pn:

Practicals: None.

Assessment: Assignments (33%), 3 h exam (67%).

Offered in Semester 1.

MATH720 - Functional Analysis

(PMA7FA1) (27L-0T-0P-0S-103H-25R-0F-5A-13W-16C)
Prerequisite: A pass in MATH310. ,

Aim: This module provides knowledge in basic Measure Theory and beginning Functional Analysis. It is a natural sequence to either Real Analysis or Complex Analysis.

Content: Abstract Integration and Measure Spaces; Radon-Nikodym Derivative; Hilbert Spaces; Lp-spaces; Banach Spaces; Dual Spaces; Open Mapping Theorem; Hahn-Banach Theorem; and some selections from the following topics: Riesz Representation Theorem;

Fourier Transforms; Distribution Theory; weak and weak* cote onCe, operator theory.
Practicals: None.

Assessment: Assignments (33%), 3 h exam (67%).

Offered in Semester 1.

MATH730 - Computability Theory

(PMA7CT1) (27L-0T-OP-0S-103H-25R-OF-5A-13W-16C)
Prerequisite: MATH211 and a pass in any level 3 Mathematics module. MATH710 is recommended.

Science & Agriculture SA 205

Aim: To introduce an up-to-date mathematical theory of Computable Functions and Computability.

Content: Basic logic; Turing machines; Churchâ\200\231s Thesis, Computability, Universal Machines; Lambda Calculus; the Halting Problem; GÃ©delâ\200\231s Incompleteness Theorem; Undefinability of Truth; Recursion Theorem; Recursively Enumerable Sets; Simple Sets; and two of the following topics: Turing Degree and Jump Operator; Arithmetical Hierarchy; Recursive Ordinals; Hilbertâ\200\231s Tenth Problem.

Practicals: None.

Assessment: Assignments (33%), 3 h exam (67%).

Offered in Semester I.

MATH740 - Further Graph Theory

(PMA7GTM) ; (27L-0T-OP-0S-108H-22R-OF-3A-13W-16C)
Prerequisite: Passes in MATH321.

Aim: To further develop Graph Theory.

Content: Colourings; connectivity; domination in graphs; external graph theory; graph algorithms and complexity theory; Hamiltonicity; matchings; vertex covers; planar graphs; probabilistic methods in graph theory; graph Ramsey theory.

Practicals: None.

Assessment: Assignments (33%), 3 h exam (67%).

Offered in Semester 1 or 2.

MATH751 - Further Group Theory

(PMA7GTM) (27L-OT-OP-0S-108H-22R-0F-3A-13W-16C)
Prerequisite: A pass in MATH340.

Aim: To develop further the Theory of Groups.

Content: Permutation groups, simplicity of A,, groups of small order, permutation representations, p-groups, Sylow theorems, normal series, solvable and nilpotent groups, finite direct products, basis theorem, fundamental theorem of finite abelian groups, general linear group, some simple groups.

Practicals: None.

Assessment: Assignments (33%), 3 h exam (67%).

Offered in Semester I or 2.

MATH752 - Representation Theory

(PMA7TH2) (27L-0T-0P-0S-108H-22R-0F-3A-13W-16C)
Prerequisite: A pass in MATH340.

Corequisite: MATH751. â\200\224

Aim: To introduce and develop the Theory of Group Representations.

Content: Basic concepts of representation theory, characters, Maschke’s theorem, Schur’s
lemma, ordinary characters of finite groups, regular representation, algebraic integers, group
algebras, orthogonality relations, character tables, tensor products and product of characters,
restriction and induction of representations and characters, the Frobenius reciprocity law,
normal subgroups and lifted characters, Clifford theorem, inertia subgroups, Burnsideâ
\200\231s p*q?
theorem. :

Practicals: None.

Assessment: Assignments (33%). 3 h exam (67%).

Offered in Semester 2.

MATH760 – General Topology

(PMA7TP2) (27L–0T–OP–0S–103H–25R–OF–5A–13W–16C)
Prerequisite: A pass in MATH310 (MATH720 is recommended).

Aim: This module is intended as an introduction to General Topology in its own right an d to
lay the foundations for future study in analysis. It is most suitable for students who want to
specialise in Analysis or Mathematical Logic.

Content: Basic Set Theory; Topological Spaces and their constructions; Continuous Functions; Connectedness; Compactness; Separation Axioms; Urysohn Lemma; Tychonoff Theorem; Stone– Ech Compactification; Metrizable Spaces.

Practicals: None.

Assessment: Assignments (33%), 3 h exam (67%).

Offered in Semester 2.

MATH771 – Rings & Fields

(PMA7RF 1) (27L–0T–0P–0S–108H–22R–0F–3A–13W–16C)
Prerequisite: A pass in MATH340.

Aim: To develop further the Theory of Fields and introduce the Theory of Commutative Rings.

Content: Field extensions and Galois Theory, elementary Commutative Ring Theory.
Practicals: None.

Assessment: Assignments (33%), 3 h exam (67%).

Offered in Semester 1.

MATH772 – Further Ring Theory

(PMA7FR2) (27L–0T–OP–0S–108H–22R–0F–3A–13W–16C)
Prerequisite: A pass in MATH340.

Corequisite: MATH771.

Aim: To develop further the Theory of Rings and Modules.

Content: Ordered structures, one–sided and two–sided ideals, modules and submodules, Isomorphism Theorems, composition series and chain conditions, simple primitive and prime rings, the prime and Jacobson radicals, semisimple modules and the Wedderburn–Artin Theorem, artinian and noetherian rings, injective and ee modules, localization and rings of quotients.

Practicals: None.

Assessment: Assignments (33%), 3 h exam (67%).

Offered in Semester 2.

MATH780 – Recent Topics in Mathematics

(PMA7TMM) (15L–0T–OP–0S–52H–1 1 R–OF–2A–13W–8C)
Prerequisite: Relevant Mathematics modules subject to the approval of the Head of Programme.

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Aim: To gain and benefit from the experience of studying in depth a recent topic in Mathematics.

Content: Will vary according to the most recent developments in Mathematics.

Practicals: None. 5

Assessment: Assignments (33%), 2 h exam (67%).

Offered in Semester I or 2.

MATH790 - Project in Maths Honours

(PMA7PM2) . (OL-OT-OP-0S-160H-0R-OF-0A-13W-16C)
Aim: To gain an ability to read and understand modern mathematical texts; to study in d epth
atopic in Pure Mathematics.

Content: In consultation with the Head of the Mathematics Programme and a supervisor, students choose a topic in Pure Mathematics. Their study may include reading mathematic al
works, using advanced mathematical methods to solve a given problem, explore new topics. The project will be carried out under the regular supervision of the supervisor .
Practicals: None. ;

Assessment: Based on work during the project (40%). Students will present their achievements both in a â\200\230brief oral presentation & in a report (60%), preferably word-
processed.

Offered in Semester 2.

MATHS8I10 - Masters by Research :

(PMA8RMM) Ã© (OL-OT-0P-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Coreguisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None. i

Assessment: Examination of thesis (100%).

Year-long Module.

MATH910 - Doctor of Philosophy

(PMA9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the. Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

SA 208 Science & Agriculture
Microbiology

Offered in the School of Applied Environmental Sciences

MICR210 - Introductory Microbiology :
(PMI2MI2) (36L-6T-36P-0S-48H-24R-0F-10A-13W-16C)
Prerequisite: CHEM111, 112.

Corequisite: (BCHM213, 222, 231) or (BCHM213, MYCO211) or (BOTY201, 202, 203, 204) or (ZOOL201, 202,204).

Aim: To study key concepts and applications of bacteriology, mycology, protozoology and virology.

Content: Introduction to the morphology, physiology and classification of microorganisms.
Concepts in microbial growth and nutrition. Energy production, reproduction and dissemination in microorganisms. Elementary soil, water, rumen, dairy, food and industrial microbiology. Parasitism and symbiosis; microbiological aspects of organic and inorganic pollution of soil, water and air.

Practicals: Laboratory exercises in the above.

Assessment: 2 tests (17%), 3 h exam (66%), prac report (17%).

Offered in Semester 2.

MICR212 - Agricultural Microbiology

(PMI2MA2) (18L-6T-18P-0S-21H-12R-OF-5A-13W-8C)
Aim: To provide key concepts and application in the area of agricultural microbiology.
Content: Introduction to the morphology, physiology and _ classification of microorganisms. Parasitism and symbiosis; soil-rumen-dairy-water- and industrial-microbiology. Role of microorganisms in legumes, the rumen and in cycling of the elements N, C, S and P. Microbiological aspects of composting and silage making; role of microbial associations in bioremediation of polluted agricultural soils; microbiological treatment of contaminated water. Selected topics in agricultural industrial microbiology.

Practicals: Laboratory exercises in selected topics from the above.

Assessment: 2 tests (17%), 1.5 h exam (66%), prac reports (17%).

Offered in Semester 2.

MICR214 - Introductory Food Microbiology

(PMI2FM2) (18L-6T-18P-0S-21H-12R-0F-5A-13W-8C)
Aim: To provide concepts and applications in food microbiology.

Content: The morphology, physiology and classification of microorganisms. Aspects of food, diary and water microbiology, including food safety and preservation; use of microorganisms in the production of selected fermented food and dairy products, and the importance of safe sources of water. Methods of preventing post harvest food spoilage and food poisoning are discussed. Principles of food safety. Nutritional enhancement of foodstuffs by microorganisms. Selected topics in food-orientated industrial microbiology applications.

Practicals: Laboratory exercises in selected topics.

Assessment: 2 tests (17%), 1.5 h exam (66%), prac reports (17%).

Offered in Semester 2.

MICR310 – Soil Microbiology }

(PMI3SM2) (29L–7T–48P–0S–47H–24R–0F–5A–13W–16C)
Prerequisite: Passes in BACT220, 222; MYCO211.

Aim: To provide a knowledge of the role of microorganisms in agricultural and other soi
ls.

Content: Microbiota found in soil; range and scope. Physical and chemical aspects of so
il
structure and its influence on microorganisms, Environmental variables influencing
microbial activity. Introduction to microbial interactions, development of microbial
communities and ecosystems. Introduction to biochemical cycling. Microbial participatio
n in
C, N, S and P cycles. Introduction to environmental biotechnology.

Practicals: Project in Soil Microbiology.

Assessment: 2 tests (4%), research project report & presentation (22%), essay & class
assignments (4%), group & individual discussion sessions (4%), 3 h exam (66%).

Offered in Semester 2.-

MICR316 - Role of So ee. in the Soil

(PMI3RM2) (18L-OT-24P-0S-26H-12R-0F-5A-13W-8C)
Prerequisite: Passes in (BACT220, 222; MYCO211; PPTH222) or PPTH 242.

Aim: To provide a knowledge of the role of microorganisms in agricultural soils.

Content: Microbiota found in soil; range and scope. Physical and chemical aspects of so
il
structure and its influence on microorganisms. Environmental variables influencing
microbial activity. Introduction to microbial interactions, development of microbial
communities and ecosystems. Introduction to biochemical cycling. Microbial participatio
n
in C, N, S and P cycles.

Practicals: None.

Assessment: 2 tests (4%) and ahr exam (66%), mini-research project, report and
presentation (25%), essay and class assignments (5%).

Offered in Semester 2. Students may not obtain credit for MICR310 and MICR315.

MICR320 - Advanced Microbial Metabolism & Ecophysiology

(PMI3ME2) (29L-7T-40P-0S-55H-24R-0F-5A-13W-16C)
Prerequisite: Passes in BACT220, 222. :

Corequisite: (BCHM213, 222, 231) or (CHEM221, 212).

Aim: To study microbial physiology and metabolism in natural ecosystems and industrial
environments.

Content: Review of microbial metabolism and energy generation under aerobic and
anaerobic conditions. Energy sources of chemolithotrophs, photoautotrophs and
chemoorganotrophs. Metabolic regulatory systems in bacteria. Biotechnological aspects o
f
process control. Environmental impacts of microbial activity. Metabolic interactions in
microbial populations. P

Practicals: Experiments on microbial _e-donors, = e-acceptors and redox
potential. Laboratory-scale industrial microbiology processes. Excursions.

Assessment: 2. tests (17%), 3 h exam (66%), prac reports, essays & reports on excursion
s
(17%).

Offered in Semester 2.

MICR350 - Growth & Nutrition of Micro-organisms

(PMI3NM1) (29L-7T-42P-0S- 53H-24R- OF-5A-13W-16C)
Prerequisite: Passes in BACT220, 222; MYCO211.

Aim: To provide an understanding of microbial growth and nutrition. To introduce industrial microbiology and waste disposal technology.

Content: Nutrient requirements for cultivation of microorganisms. Methods of monitoring microbial growth. Screening, isolation and maintenance of microorganisms. Growth kinetics in batch vs continuous culture. Environmental factors influencing growth . Introduction to industrial microbiology.

Practicals: Use of selective, differential and enrichment media; evaluation of bacterial growth in batch culture. Excursions to facilities employing microbiological processes.
Assessment: 2 class tests (17%), 3 h class exam (66%), prac reports, essays & excursions (17%).

Offered in Semester 1.

MICR360 - Death & Control of Micro-organisms

(PMI3DO2) (29L-7T-36P-0S-S9H-24R-0F-SA-13W-16C)
Prerequisite: Passes in BACT220, 222; MYCO211.

Aim: To study the procedures available to kill or control undesirable microbes.

Content: Death and decline in microbial populations. Enzymes in cellular defense mechanisms. Structure of cells in relation to resistance. Methods of removing undesirable microorganisms. Applications of chemotherapeutic compounds, disinfectants and germicides. Plasmids in microbial drug resistance. Recovery mechanisms in chemically- and UV-damaged bacteria.

Practicals: Assessing various physical and chemical antimicrobial agents, the effect of environmental factors on the killing/inhibitory activity of selected antimicrobials.
Assessment: 2 tests (17%) , 3 h exam (66%), prac reports & performance in tutorials (17%).
Offered in Semester 2. j

MICR714 - Project, Paper & Literature Review

(PMI7RPY) (OL-63T-OP-3S-574H-OR-OF-0A-26W-64C)
Prerequisite: Completion of the major in Microbiology or Environmental or Industrial Microbiology. See SP3 & SQ3.

Aim: To provide a sound training in environmental microbiology, microbial ecology or industrial microbiology research techniques/procedures.

Content: Writing literature reviews; research project design and implementation; data generation and analysis. Thesis writing; research paper writing; oral presentation of research results.

Practicals: None.

Assessment: All work is conducted under supervision and will be assessed by the supervisor and an examiner external to the University. Thesis (65%), research paper (10%), oral presentations (10%), and a literature review (15%).

Year-long Module.

MICR715 - Industrial Bioprocessing Technology Project

(PMI7IBY) (OL-0T-300P-50S-50H-OR-OF-0A-26W-40C)
Prerequisite: Completion of programme in Industrial Bioprocessing Technology.

Aim: To introduce students to the process of applied biotechnological research and to provide a sound training in relevant research techniques/procedures.

Content: Writing literature reviews; research project design and implementation; data generation and analysis. Thesis writing; research paper writing; oral presentation of research results. â\200\230

Practicals: None.

Assessment: All work is conducted under supervision & will be assessed by the superviso
r &
an examiner external to the University. Thesis (65%), research paper (10%), oral
presentations (10%), literature review (15%).

Year-long Module.

MICR716 – Applied Environmental Microbiology

(PMI7EM2) (OL–36T–OP–0S–121H–OR–OF–3A–13W–16C)
Prerequisite: BACT220, 222 or MICR210.

Corequisite: CHEM211, 212 or MYCO211; SSCI212.

Aim: To provide a sound training in environmental microbiology and microbial ecology.

Content: Microbial responses in healthy and polluted aquatic, terrestrial and atmospher ic
environments. Role of microorganisms in biodeterioration and biodegradation processes (timber, fuels, lubricants, foodstuffs etc ), metal corrosion; defacing of man–made str uctures;
microbiological mining; treatment of acidic mine wastewaters; removal of toxic heavy metals from effluents and natural water sources.

Practicals: None.
Assessment: Performance in tutorials (14%), presentations (20%), 3 h exam (66%).
Offered in Semester 2.

MICR718 – Environmental Microbiology

(PMI7EM1) (OL–36T–OP–0S–121H–OR–OF–3A–13W–16C)
Prerequisite: BACT220, 222 or MICR210.

Corequisite: CHEM221, 212 or SSCI212; MYCO211 if prerequisite is BACT220, 222.
Aim: To provide a sound training in environmental microbiology and waste technology at a
relatively advanced level. To expose students to microbiological sampling and analytica l
techniques used in this field.

Content: Role of micro–organisms in bioremediation processes: microorganism–microorganism, microorganism–environmental variable and environmental variable–environmental variable interaction underpinning selected environmental biotechnologies. Landfill microbiology, solid waste treatment, composting, land reclamation, industrial wastewater treatment, soil bioremediation, gas biofiltration.

Practicals: None.

Assessment: | exam (100%).

Offered in Semester 1.

MICR720 – Fermentation Microbiology

(PMI7FM1) (30L–6T–10P–0S–23H–6R–OF–5A–13W–8C)
Prerequisite: GENE212, 226; (BCHM213, 222, 231; MICR320, 350, 360) or (BACT220, 222; BCHM325, 326, 328, 380); MYCO211.

Aim: To provide the skills required in establishing and maintaining an industrial microbiological process.

Content: Screening and selection procedures for strain improvement. Scale–up; maintenan ce
of sterility and foam control. Bioreactor design – production methods; batch, fed–batch and
continuous culture processes. Immobilisation of whole cells. Selection, preparation and pre–
treatment of feedstocks. Product recovery and downstream processing and waste treatment .
Practicals: None.

Assessment: 2 class tests (14%) 1 class exam on theory & prac work (66%), prac & projec

t
reports (10%), tutorial participation & assignments (10%).

Offered in Semester 1.

MICR810 - Masters by Research
(PMI8RMM) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

SA 212 Science & Agriculture

Aim: To undertake supervised research..

Content: To be determined by the discipline and is dependent on the project for the deg
ree.
Practicals: None.

Assessment: To be determined by the feline

Year-long Module.

MICR910 - Doctor of Philosophy

(PMI9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by
the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Molecular & Cellular Biosciences

Offered in the School of Molecular & Cellular Biosciences

MCBS702 - Research in Molecular & Cellular Biosciences

(PMC7HGY) (OL-50T-200P-0S-390H-OR-OF-2A-26W-64C)
Prerequisite: 128C in the disciplines of genetics, biochemistry and/or molecular biolog
y at
level 6 (3rd year) or modules which in the opinion of the Programme Director (and with
the
approval of the Dean) has (have) provided the candidate with adequate knowledge to
complete the module.

Aim: To provide insight to the principles of conducting research through laboratory bas
ed
and/or computer based research and developing the skills to analyse, interpret and pres
ent
results.

Content: Research project which falls within the thrust of the school? s research area.
 This
includes a relevant literature survey and the execution of research. -

Practicals: Design and execution of a research project.

Assessment: Written & oral presentation (100%)

Year-long Module.

MCBS707 - Advanced Techniques Molec & Cell Biosciences

(PMC7AT1) (6L-40T-100P-0S-159H-10R-0F-5A-13W-32C)
Prerequisite: 128C in Genetics, Biochemistry and/or Molecular Biology disciplines at le
vel
3, or modules providing adequate background approved by Head of Programme.

Aim: To introduce students to laboratory /computer research environments.

Content: Recombinant DNA and protein genetics, advanced DNA diagnostic and analysis techniques including forensic techniques, biochemical techniques relating to protein en zyme
characterization and analysis, immunochemical techniques and microscopy.

Practicals: Hands-on laboratory-based and/or computer-based advanced techniques in genetics, biochemistry molecular and cellular biology.

Assessment: Written & oral presentations (100%).

Offered in Semester 1.

MCBS709 - Seminars/Discussions Molec & Cell Biosciences

(PMC7SMM) (OL-OT-22P-0S-56H-OR-OF-2A-13W-8C)
Prerequisite: 128C in Genetics, Biochemistry and/or Molecular Biology disciplines at le
vel
3, or modules providing-adequate background approved by Head of Programme.

Aim: To develop skills to access, collect and crystallize scientific information on rec
ent
topics in biochemistry, genetics and molecular and cellular biology through discussions
,
verbal and written presentations.

Content: Topics chosen from the disciplines of biochemistry, genetics or molecular and
cellular biology of which written and oral overview are prepared and presented, includi
ng a
number of article discussions.

Practicals: None. -

Assessment: 2 h oral presentations, report/seminar (100%).

Offered in Semester | or 2.

MCBS711 - Advanced Topics in Molec & Cell Bios 1

(PMC7TM2) ; (44L-OT-OP-4S-108H-OR-OF-4A-13W-16C)
Prerequisite: 128C in Biochemistry at level 6 (3rd year) and prerequisites pertaining t
o these
modules or 128C in Genetics at level 6 (3rd year) and prerequisites pertaining to these
modules or modules which in the opinion of the Programme Director (and with the approva
l
of the Dean) has (have) provided the candidate with adequate knowledge to complete the
module.

Aim: To introduce the latest developments in molecular and cellular biology.

Content: Selected advanced topics from the disciplines of biochemistry, genetics, molec
ular
and cellular biology, biocomputing or bioinformatics

Practicals: None.

Assessment: | or more oral presentation, report/seminar or 3 h theory exam (100%).

Offered in Semester 2.

MCBS722 - Advanced Topics in Molec & Cell Biosciences 2
(PMC7ATM) (OL-20T-OP-4S-55H-OR-OF-1 A-13W-8C)

Prerequisite: 128C in Genetics, Biochemistry and/or Molecular Biology disciplines at le
vel
3, or modules providing adequate background approved by Head of Programme.Corequisite:
None.

Aim: To introduce the latest developments in molecular and cellular biology.

Content: Selected advanced topics from the disciplines of biochemistry, genetics, molec
ular
and cellular biology, .biocomputing and bioinformatics.

Practicals: None.
Assessment: | h oral presentations, report/seminar (100%).
Offered in Semester I or 2.

MCBS810 - Masters by Research
(PMC8RMM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.
Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

SA 214 Science & Agriculture

Assessment: To be determined by the discipline.
Year-long Module.

MCBS910 - Doctor of Philosophy

(PMC9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Multidisciplinary Studies

In the Faculty of Human & Management Sciences (Pietermaritzburg)

MUSTS801 - MD 801 Conceptualising Protected Area Mgt

(PMD8012) (10L-0T-20P-10S-20H-10R-OF-10A-4W-8C)
Prerequisite: Admission to the PAM Programme.

Aim: To introduce the social and historical dimensions of conservation.

Content: Conservation from past to present, the evolution of ecological thought, ideas of
wilderness, people as resource managers, community partnerships.

Practicals: Field trip to case site. :

Assessment: | group task, 2 tests, 2 seminar papers, 1 long assignment, 1 examination.

Mycology

Offered in the School of Applied Environmental Sciences

MYCO211 - Mushrooms, Moulds & Man

(PMY2MM1) (20L-OT-40P-6S-3H-7R-OF-4A-13W-8C)
Prerequisite: BIOS101, (BOTY 102 or ZOOL102); CHEM111,112.

Aim: To introduce students to basic taxonomy, key concepts and application in mycology.
Content: An introduction to the structure, function and diversity of the Kingdom: Fungi.
Relationships of fungi with higher plants, algae and insects. Industrial and agricultural
applications of fungi and their role in human health.

Practicals: Use of the microscope, beer-making, experimental techniques in the isolation,
inoculation, germination and infection of various fungi.

Assessment: Short tests (8%), 1 class test (8%), weekly prac assignment (9%), literature
survey (9%), 2 h exam (66%).

Offered in Semester 1.

Science & Agriculture SA 215
Nutrition

Offered in the School of Agricultural Sciences and Agribusiness

NUTRI114 - Introductory Nutrition & Community Resources

(PNUISN1) (36L-13T-28P-0S-60H-20R-0F-3A-13W-16C)
Aim: To enable students to develop an understanding of: the link between health and nutrition and what causes malnutrition, various factors affecting eating behaviour, the guidelines for healthy eating, and food purchasing & food safety issues.

Content: Introduction to Nutrition; Nutrients (overview). Factors influencing food selection & eating behaviour. Public health nutrition; Planning a healthy diet. Procuring and using food.

Practicals: Eating behaviour, RDA, Religion & culture, UNICEF conceptual framework, Nutrition education, Food groups & FBDGs, Food purchasing & food labels.

Assessment: Assignments/practicals (40%), 2 tests (10%), 3 h exam (50%).

Offered in Semester 1.

NUTRI118 - Human Nutrition: Energy & Macronutrients

(PNUINH2) (25L-14T-15P-0S-70H-25R-6F-5A-13W-16C)
Prerequisite: NUTRI 14.

Corequisite: BIOS101, CHEMI11, 112, HPHY112.

Aim: To give students an in-depth understanding of: methods of assessing nutritional status, the nutrition situation in South Africa, Energy, Macronutrients & Fibre, and the Roles of Dietitians & Nutritionists.

Content: Nutritional Assessment. Nutrition status of South Africans. Energy. Protein. Carbohydrate. Fibre. Fats. Alcohol. Skills, capabilities & job opportunities for the Dietitian and Nutritionist.

Practicals: Anthropometry, NFCS, SA nutrition research, Food Composition Tables, 24 hr recall, Case study on child with PEM, Exchange List.

Assessment: 2 tests (30%), prac/assignments (20%), 3 h exam (50%).
Offered in Semester 2.

NUTR214 - Human Nutrition2: Vitamins, minerals, lifecye

(PNU2HN1) (39L-0T-72P-0S-26H-20R-OF-3A-13W-16C)
Prerequisite: NUTR118.

Corequisite: BCHM213, HPHY252

Aim: To teach students the specific nutritional requirements during the life cycle, as well as an in depth knowledge of the nature of the relationship & dependencies of both macro- & micro nutrients throughout life. Students are introduced to the concepts of research & its importance in nutrition & dietetics.

Content: Concepts & importance of research. Water soluble vitamins. Fat soluble vitamins. Minerals. Pregnancy & lactation. Nutrition during infancy, childhood, adolescence & aging.

Practicals; Vitamin, Mineral & Herbal supplements, DRIs, Anti-oxidants, Food diary, Posters, Planning diets.

Assessment: 2 tests (25%), pracs/assignments (25%), 3 h exam (50%).

Offered in Semester 1.

NUTR241 - Nutrition in Agriculture ;
(PNU2NA1) (36L-9T-26P-0S-62H-22R-0F-5A-13W-16C)
Prerequisite: NUTR1I31.

SA 216 Science & Agriculture

Aim: To enable students to develop an understanding of the interrelationship between nutrition and agriculture and particularly how agriculture and nutrition programmes may be used to improve nutrition status.

Content: Gender and nutrition; nutrition problems in the world; agriculture problems in the world; agriculture and related factors which affect nutritional status; government nutrition policy in South Africa; The role of agriculture in solving nutritional problems; Policy development.

Practicals: Case studies and field trips.

Assessment: Assignments (20%), pracs (20%), tests (10%), exam (50%).

Offered in Semester 1.

NUTR250 - Normal Nutrition: Nutrients & Lifecycles

(PNU2NN2) (34L-10T-40P-0S-62H-10R-0F-4A-13W-16C)
Prerequisite: NUTR114. :

Aim: To build on introductory nutrition concepts previously introduced. Students should understand the roles of the major nutrients in body, the effects of deficiencies & excesses, and interventions which can prevent these. Students will also become familiar with the stages of the lifecycle & the main nutritional and food implications of the different stages.
Content: Carbohydrates. Proteins. Fats. Energy balance. Vitamins. Minerals. Nutrition during pregnancy, lactation, infancy & childhood, adolescence & old age, exchange lists & portion sizes.

Practicals: Carbohydrate & protein, Fats & energy, Vitamins & Minerals, PEM, Pregnancy, Nutrition education, Exchange lists & portion sizes.

Assessment: 2 tests (10%), assignments (40%), 3 h exam (50%).

Offered in Semester 2.

NUTR322 - Nutrition & Health

(PNU3NH2) C2 OTe eos Ors RO Gast SW EC)
Prerequisite: NUTR250.

Aim: The aim of this module is to enable students to understand nutrition related problems i in South Africa with particular reference to the promotion of health and the prevention of public health problems.

Content: A selection of problems of public health significance such as Diabetes, Obesity, Hypertension, Coronary Heart Disease, Cancer, Alcoholism, Disability, HIV Aids, TB.
Practicals: Case studies.

Assessment: Assignment (50%), pracs (formative â\200\224 no weighting), tests (15%), seen exam (35%). â\200\230

Offered in Semester 2.

NUTR342 - Nutrition & Communication ;

(PNU3NC2) (30L-0T-36P-0S-74H-15R-OF-SA-13W-16C)

Prerequisite: NUT 118, 214, 250.

Aim: To equip students to plan, conduct and evaluate effective nutrition education programmes to groups of people.

Content: What is nutrition and nutrition education; Why educate in food ar nutrition; W hat
can nutrition education achieve; Learning and influences on the learning process; Defin ing
needs; Setting goals and objectives; Defining the destination, Who is the
communicator/educator; Selecting the code and formats; Using teaching aids; Prograннune evaluation; Communication problems; Adult and continuing education.

Practicals: Visual and hands-on participation in exercises and preparation for a nutrit ion
education episode.

Science & Agriculture SA 217

Assessment: Assignments 19%, Tests 15% and examination 66%.
Offered in Semester 2.

NUTR343 - Community Nutrition Level3

(PNU3CC1) (20L-18T-6P-0S-80H-16R-16F-4A-13W-16C)
Prerequisite: NUTR118, 214 or NUTR250.

Aim: This module gives students an understanding of the nutrition security of people in South Africa, Africa and internationally, and of national and international initiatives to
improve nutritional security.

Content: Epidemiological concepts, methods and applications to nutrition, Factors influencing nutritional status; Food Security, Care Security and Health Security; Development Policies and Nutrition; Policies and Programmes to improve nutrition; Principles of successful nutrition programmes; Nutrition Interventions in South Africa. Practicals: Case Studies.

Assessment: Test (15%), 2 assignments (35%), exam (50%).

Offered in Semester 1.

NUTR350 - Applied Nutrition Science

(PNU3AS2) (10L-10T-12P-0S-100H-14R-10F-4A-13W-16C)
Prerequisite: NUTRI18, 214.

Aim: This module gives students an understanding of the scientific basis of nutrient requirements, the use of epidemiology to prioritise nutrition related problems, to dete rmine
their causes and to evaluate the effectiveness of specific nutrition interventions.

Content: Scientific basis of nutritional requirements; Nutritional assessment and nutri tional
surveillance; Basic epidemiological concepts and methods; Prevalence, causes, consequences and prioritisation of nutrition related problems of public health significance. Specific nutrition and other interventions. Sources of data. Community involvement in nutrition security.

Practicals: Case studies and field trips.

Assessment: 3 assignments (70%), exam (30%).

Offered in Semester 2.

NUTR710 - Community Nutrition Internship

(PNU7CIY) (31L-OT-OP-0S-59H-10R-217F-3A-26W-32C)
Prerequisite: BScDiet Degree.

Aim: To enable students to have practical experience in working with community members and/or clients and developing appropriate intervention strategies.

Content: Needs assessment, options for intervention; growth monitoring and promotion; nutrition requirements for vulnerable groups; communication and education strategies; community based prevention and management of nutrition related problems; HIV/AIDS and nutrition; students select their own area of interest for final report and book review.

Practicals: Students work in a community based setting for the duration of the module.

Assessment: Professional evaluation & task assessment (30%, submin 50%), final report (35%), seminar (5% ) oral on seminar (5%), exam (25%, submin 40%).

Year-long Module.

NUTR720 - Independent Study Nutrition
(PNU7ISY) (OL-6T-OP-3S-151H-OR-OF-0A-26W-16C)
Prerequisite: NUTR118, 214; (NUTR343 or 350).

SA 218 Science & Agriculture

Aim: Toâ\200\231enable the student to select a topic of interest in the field of nutrit ion and carry out
an in depth investigation and analysis using literature and other resources as agreed w ith the
supervisor.

Content: A topic in the field of nutrition selected by the student and aprerd by the supervisor.

Practicals: As appropriate for topic choice.
Assessment: Assignment report (100%).
Year-long Module.

NUTR730 - Com Nutrition Case Study Level 7
(PNU7INY) (2L-8T-OP-3S-67H-OR-OF-0A-13W-8C)
Prerequisite: NUTR343.

Aim: To enable students to carry out a nutritional situational analysis and propose sui table
interventions in the community, with reference to the literature. The student should al so
propose the methods of evaluating the intervention.

Content: Exact content will depend on community selected.
Practicals: Case study.

Assessment: Case study report (100%).

Year-long Module.

NUTR740 - Research Project
(PNU7PRY) (OL-6T-OP-0S-234H-OR-OF-0A-26W-24C)
Prerequisite: DIET310.

Aim: This module enables students to plan, implement, analyse and write up a relevant research project as part of a research group.

Content: A research question in the area of nutrition and dietetics as agreed vei the r esearch
supervisor.

Practicals: Project related.

Assessment: Research project report (95%), group participation (peer assessment) (5%).
Year-long Module.

NUTR820 - Nutrition Dissertation
(PNU8MRM) (OL-0T-OP-0S-1120H-OR-OF-0A-26W-112C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is See on the project for the degree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

NUTR910 - Doctor of Philosophy

(PNU9PHM) (OL-O0T-OP-0S-1280H-OR-OF-0A-26W-128C)

Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

## Philosophy

Offered in the Faculty of Human & Management Sciences (Pietermaritzburg)

### PHIL120 - Philosophy 120 Morals and Metaphysics

(PPH1202) (24L-0T-OP-12S-98H-23R-0F-3A-12W-16C)
Aim: To introduce learners to the basics of ethical theory and its practical applications, as well as to related issues concerning moral knowledge, freedom and responsibility.

Content: Basic ethical theory; The capital punishment debate, The recreational drug use debate; Issues in the ethics of sports; Moral knowledge; Identity and moral responsibility, Determinism and moral responsibility

Assessment: 2 essays; seminar assignments, 32% 1x 3 hour exam, 68%

Offered in the School of Molecular & Cellular Biosciences

### PHIL202 - Philosophy of Science: an Introduction

(PBC2SE2) ; (24L-6T-0P-0S-26H-20R-0F-4A-13W-8C)
Aim: To introduce learners to philosophical issues in science and its history, especially about the nature of scientific reasoning, the development of science, and the application of philosophical thought to practical and ethical issues.

Content: Case studies from the history of science; traditional models of science; the problem of induction; alternative models of science. Two modules, from a range of electives, that debate various philosophical issues of importance to scientists such as on: Darwin and Philosophy, Ethics in Science, Issues Affecting Scientific Research, Philosophy of Technology, and Philosophy of Measurement.

Practicals: None.

Assessment: Continuous assessment (no exam) (100%).

Offered in Semester 2.

## Physics

Offered in the School of Chemical & Physical Sciences

### PHYS010 - Foundation Physics

(PPYOPFY) (30L-9T-99P-0S-63H-30R-OF-9A-26W-24C)
Corequisite: MATH010, BIOL010, CHEMO010, ACS101.

Aim: To provide students from disadvantaged educational backgrounds with scientific reasoning and foundational skills to enable them to pursue a BSc degree.

Content: Experimental investigations of properties of matter; Heat transfer and temperature; Scalars and vectors; Electrostatics and current electricity; Newton’s laws of motion, G

raphs
and equations of motion; Newton’s gravitational law; Reflection, refraction, and the op
tics of
thin lenses; Introduction to astronomy.

Practicals: Experimental exercises.

Assessment: Class mark from tests (30%), quizzes (5%), homework & laboratory reports (15%), theory exam (50%).

Year-long Module.

PHYSI101 - Introductory Physics: Motion in Everyday Life

(PPY1HPM) (20L-12T-6P-0S-90H-20R-OF-12A-13W-16C)
Aim: To provide students at any level with a non-mathematical introduction to the princ iples
and methods of the physics of motion.

Content: Introduction to the ideas of physics, including the ole played by observation, measurement and experiment. The first scientific revolution: the origins of classical mechanics. A detailed and illustrated development of Newtonian mechanics. Conservation: momentum and energy with applications. Probability and the mechanics of matter. The second scientific revolution: a preliminary introduction to relativity and: quantum mechanics. Summary and prospect for later study.

Practicals: Six

Assessment: 2 tests (20%), 1 assignment (20%), 2 h exam (60%).

Offered in either Semester | or 2.

PHYSI11 - Mechanics, Optics & Thermal Physics

(PPY1MOl1) (36L-9T-36P-0S-41 H-30R-OF-8A-13W-16C)
Aim: To acquaint students with the basic theory and applications of mechanics, optics a nd
heat.

Content: Vectors and scalars. Kinematics, dynamics, hydrostatics. Hookeâ\200\231s law, elasticity,
simple harmonic motion. Geometrical and physical optics (mirrors, lenses, diffraction, interference). Temperature, heat, calorimetry. Expansion. Conduction, radiation. Kineti c
theory. First law of thermodynamics.

Practicals: One experiment per week on the above topics.

Assessment: 2 theory tests (15%), prac reports (10%), 3 h theory exam (50%), 2 h prac exam (25%).

Offered in Semester 1. Note: MATH110 and MATH120 are prerequisites for second-year Physics.

PHYS112 - Waves, Electromagnetism & Modern Physics

(PPY1WE2) (36L-9T-38P-0S-39H-30R-0F-8A-13W-16C)
Prerequisite: PHYS111, or aminimum of 60% in PHYS121.

Aim: To provide a general introduction to electromagnetism, waves and modern physics.
Content: The experimental laws of electricity and magnetism. Current electricity, resis tance,
capacitance and inductance. DC and AC circuits. Travelling waves, standing waves, beats ,
the Doppler effect. Aspects of atomic and nuclear physics together with some elementary astonomy and cosmology

Practicals: One experiment per week on the above topics.

Assessment: 2 theory tests (15%), prac reports & 1 test (10%), 3 h theory exam (50%), 2

h
prac exam (25%).

Offered in Semester 2.

PHYSI121 – Intro Physics for Agriculture & Life Sciences

(PPY1PB1) (36L–9T–36P–0S–41H–30R–OF–8A–13W–16C)
Aim: To provide a general overview of introductory physics presented in a practical and applied way.

Science & Agriculture SA 221

Content: Kinematics, forces and Newtonâ\200\231s laws of motion. Friction, work and energy. Moment of force and equilibrium. Archimedesâ\200\231 principle. Laws of reflect ion and
refraction, lenses, dispersion, the microscope and telescope, the eye. Interference and diffraction of light, polarization. Temperature, expansion of solids, liquids and gases . The
gas laws, calorimetry, thermodynamics. Conduction and radiation of heat.

Practicals: 12 \aboratory exercises.

Assessment: Class record based on 2 20-minute & 2 40-minute theory tests (15%), 1 120-minute prac test: & prac reports (10%), 3 h theory exam (50%), 2 h prac exam (25%).

Offered in Semester 1.

PHYS122 - Modern Maley for Agriculture & Life Science

(PPY 1PB2) (18L-5T-18P-0S-20H-15R-OF-4A-13W-8C)
Corequisite: PHYS121 or 111.

Aim: To provide an introduction to Modern Physics, presented in an applied and practica l
manner.

Content: Coulombâ\200\231s law; electric field and potential. Current, emf, dc circuits . Magnetic
forces and fields, ac waveforms and devices. Transverse and longitudinal waves. Doppler effect. Elasticity, stress, strain, Youngâ\200\231s modulus, surface tension. The nucle us, nuclear
reaction equations. Radioactivity. Biological effects of radiation, handling of radio-a ctive
sources.

Practicals: 6 laboratory exercises.

Assessment: Class record based on | 20-minute & 1 40-minute theory test (15%), 1 120-minute prac test & prac reports (10%), 2 h theory exam (50%), 2 h prac exam (25%).
Offered in Semester 2.

PHYS211 - Mechanics & Modern Physics

(PPY2MP1) - (36L-12T-36P-0S-40H-30R-0F-6A-13W-16C)
Prerequisite: Passes in PHYS111, 112; MATHI10, 120 (Concession to complete MATH110 and MATH120 concurrently with PHYS211 and PHYS212 may be granted in special cases to students who have performed well in MATH111 and MATHI22).

Aim: Teach the fundamentals and applications of mechanics and introductory modern physics.

Content: Solution of dynamical problems. Energy, momentum, angular momentum of a system of particles. Harmonic oscillator. Special __ relativity. Black body radiation. Photoelectric effect. Bohr model. Compton effect. De Brogliеâ\200\231s hypot hesis.
Practicals: 6 experiments in modern physics.

Assessment: Class record based on prac reports & 2 tests (40%), 3 h exam CO)

Offered in Semester 1.

PHYS212 - Electromagnetism, Waves & Vibrations
(PPY2EV2) ; (36L-12T-36P-0S-40H-30R-0F-6A-13W-16C)
Prerequisite: Passes in PHYS111; 112; MATH110, 120 (Concession to complete MATHI1 10

and MATHI120 concurrently with PHYS211 and PHYS212 may be granted in special cases to students who have performed well in MATH111 and MATH!12.)

Corequisite: PHYS211.
Aim: Teach the basics and applications of electromagnetism, circuit theory and waves.

Content: Electromagnetism, including Maxwellâ\200\231s equations in integral form. DC a
nd AC
circuit theory. Wave theory and waves in physical media. Waves, driven vibrations and
coupled oscillations.

Practicals: 12 – topics in electricity, electronics, and instrumentation.

Assessment: Class record based on prac reports & 2 tests 072), 3 h exam (60%).
Offered in Semester 2.

PHYS221 - Modern Physics for Educators

(PPY2TP1) : (18L-6T-18P-0S-20H-15R-OF-3A-13W-8C)
Prerequisite: Passes in PHYS111 or PHYS121, and in PHYSI12. This course is limited to proposed educators studying in the SETD. i

Aim: To acquaint educators with modern developments in Physics.

Content: Principles of relativity. Contemporary astronomy and cosmology. The foundation s
of Quantum Mechanics.

Practicals: 3 experiments in modern physics.

Assessment: Class record based on prac reports & | test (40%), | â\200\2302h exam (60%) .

Offered in Semester 1.

PHYS311 - Quantum Mechanics & Experimental Physics

(PPY3QE1) (27L-9T-36P-0S-68H-16R-OF-4A-13W-16C)
Prerequisite: Passes in PHYS211, 212.

Aim: To introduce the formalism of quantum mechanics and develop pmcual physics techniques.

Content: de Broglie waves and the wave function. SchrÃ©dinger wave equation, particle i n
infinite one- and two-dimensional square wells. Particle on a ring. Hermitian operators and
expectation values. Simple harmonic oscillator, rigid rotor and hydrogen atom.
Spectroscopic applications. Many-electron atoms and central field approximation.
Practicals: Projects (literature survey; phase sensitive detection; harmonic analysis; Joule-
Thomson effects; speed of sound; latent heat of nitrogen).

Assessment: Class record from assignments: & 1 test (15%), 2 h exam (35%), 6 project reports (50%).

Offered in Semester 1.

PHYS312 - Electromagnetism & Experimental Physics

(PPY3PE2) (27L-9T-36P-0S-68H-16R-OF-4A-13W-16C)
Prerequisite: Passes in PHYS211, 212.

Aim: To teach an understanding of and facility with microscopic and macroscopic electromagnetic theory in the form of Maxwellâ\200\231s equations in vacuum and matter and
develop experimental physics techniques.

Content: Vector calculus, Cartesian tensors, Maxwellâ\200\231s equations in integral an d differential
form. Solution of these equations for different boundary conditions. Six projects (ESR, dielectric constant; magnetic susceptibility; spectral splitting; refractive index; cry stal
structure).

Practicals: Weekly exercises.

Assessment: Class record based on assignments & | test (5%), 2 2h theory exams (45%),

assessment of 6 project reports (50%).

Offered in Semester 2.

PHYS321 – Stat Physics Thermodyn & Cosmology

(PPY3ST1) (36L–12T–OP–0S–74H–32R–0F–6A–13W–16C)
Prerequisite: Passes in PHYS211, 212

Aim: To introduce the basic concepts of thermodynamics, statistical physics and modern physics.

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Content: Macroscopic versus microscopic physics; first and second laws of thermodynamics; reversible work done and reversible heat transferred; microcanonical and canonical ensembles; application to the ideal classical gas,paramagnetic solid, Schottky defect. Fundamental particles and nuclei, fundamental interactions. Nucleosynthesis. Introduction to general relativity, cosmology and contemporary astronomy.

Practicals: None.

Assessment: Class record from assignments (30%), 2 2 h theory exams (70%).

Offered in Semester 1.

PHYS322 - Solid State Phys, Atomic Spectros & Symmetry

(PPY3PA2) (36L-12T-OP-0S-74H-32R-0F-6A-13W-16C)
Prerequisite: Passes in PHYS211, 212.

Aim: To introduce the basic concepts of solid state systems and use quantum-mechanical theory of the spectra of many-electron atoms.

Content: A survey of solid state physics, basic properties, real crystal lattices and structures of solids; elastic scattering of waves; bonding in solids. Electronic configurations, Pauliâ\200\231s exclusion principle. Perturbation theory, terms and levels, Hundâ\200\231s rules, energy-level diagrams, selection rules, the normal and anomalous Zeeman effects. Assigning a body to its symmetry group. Polar and axial tensors. The effect of symmetry on property tensors. Prediction of physical effects.

Practicals: None. :

Assessment: Class record (30%), 2 2 h exams (70%).

Offered in Semester 2.

PHYS711 - Quantum Mechanics & Electrodynamics

(PPY7QE1!) (60L-21T-OP-0S-133H-100R-0F-6A-13W-32C)
Prerequisite: Passes in PHYS311, 321, 312, 322.

Aim: To consolidate and extend 3rd-year concepts of quantum mechanics and electrodynamics.

Content: Abstract vectors, operations, parity, displacement operators for position and momentum, coordinate representation, time evolution, Hellmann-Feynman, virial and hypervirial theorems, shift operators, oscillator angular momentum, H atom, nondegenerate, degenerate, time-dependent perturbation theories. Review of Maxwellâ\200\231s equations, advanced applications thereof. Electromagnetic potentials and gauge. Relativistic field transformations.

Practicals: None within this module, but project work may stem from it.
Assessment: 1 2h, 1 3 h exams (80%), class record (20%).
Offered in Semester 1. -

PHYS721 - Special Topics in Physics 1

(PPY7ST1) (30L-12T-OP-0S-70H-45R-OF-3A-13W-16C)
Prerequisite: Passes in PHYS311, 321, 312, 322.

Aim: To introduce the Honours students to specialist topics in Physics to suit their ca

reer
directions and interests. Students may also go outside the Physics discipline to select material with equivalent credit, subject to the approval of the Programme Director. A t otal
of 16C is elected.

Content: Topics include: Advanced symbolic programming, Cosmology. Galaxies and galactic structure, Group theory, Particle physics, Molecular spectroscopy, Polarizatio n
optics, Relativity, Field theory, and other material subject to available expertise.

Practicals: None, but topics may form the basis for projects in the Project modules.

Assessment: By arrangement, ranging from project work to formal exam, with a minimum class record of 20%.

Offered in Semester 1.

PHYS73]1 - Project I

(PPY7PP1) (OL-OT-70P-20S-70H-OR-OF-0A-13W-16C)
Prerequisite: PHYS311, 321, 312, 322.

Aim: To provide an introduction to research methods in experimental, theoretical, and computational Physics. Projects will also be used to promote writing and verbal skills through the preparation of written reports and presentation of a seminar.

Content: Variable, but in the general fields of experimental, theoretical, and computational physics. Topics or problems will be on offer from lecturers, who will supervise the projects, giving guidance and assistance as within a normal research-programme.

Practicals: Each project will contain a large experimental and/or computational component.
Assessment: This will be based on the project report & a verbal presentation (100%).
Offered in Semester 1.

PHYS732 - Project I

(PPY7PP2) (OL-OT-70P-20S-70H-OR-OF-0A-13W-16C)
Prerequisite: PHYS711, 721, 731 (two modules each with a mark of at least 50%).

Aim: To provide an introduction to research methods in experimental, theoretical, and

computational Physics. Projects will also be used to promote writing and verbal skills through the preparation of written reports and presentation of a seminar.
Content: Variable, but in the general fields of experimental, theoretical, and computational physics. Topics or problems will be on offer from lecturers, who will supervise the projects, giving guidance and assistance as within a normal research programme.

Practicals: Each project will contain a large experimental and/or computational component.
Assessment: Project report and verbal presentation (100%).
Offered in Semester 2.

PHYS742 - Statistical Physics and Superfluidity

(PPY7SP2) (30L-12T-0P-0S-70H-45R-0F-3A-13W-16C)
Prerequisite: PHYS711, 721, 731 (two modules each with a mark of at least 50%, the other module with a mark of at least 40%). :

Aim: To teach the theory and applications of intermediate level statistical physics.

Content: Grand canonical ensemble. Fluctuations, thermodynamic limit. Quantum statistics; the ideal fermion and boson gases, the photon gas. Properties of superfluids.
Practicals: None. The module may form the basis for a project within the project modules.
Assessment: Theory exam (80%), class record (20%).

Offered in Semester 2.

PHYS7S2 - Special Topics in Physics II .

(PPY7TS2) (60L-24T-0P-0S-140H-90R-0F-6A-13W-32C)
Prerequisite: PHYS711, 721, 731 (two modules each with a mark of at least 50%, the other
module with a mark of at least 40%). :

Aim: Special Topics in Physics II (and its counterpart Special Topics in Physics 1) serve to
introduce the Honours students to specialist topics in Physics to suit their career directions
and interests. Students may also go outside the Physics discipline to select material with
equivalent credit, subject to the approval of the Programme Director. A total of 32C is
elected. :

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Content: See PHYS721, Special Topics I for a list of present options, plus Solid State Physics offered in Semester 2.

Practicals: Topics may form the basis for projects in the Project modules.

Assessment: Project work &/or formal exam with a nimimum class record of 20%.

Offered in Semester 2.

PHYS810 - Masters by Research

(PPY8RM1) (OL-0T-OP-0S-640H-OR-OF-0A-26W-64C)
Prerequisite: Acceptance into the Masters programme. Â©

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

PHYS910 - Doctor of Philosophy

(PPY9PH1) : (OL-OT-OP-0S-640H-OR-0F-0A-26W-64C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Plant Breeding

Offered in the School of Agricultural Sciences and Agribusiness

FOR UNDERGRADUATE PROGRAMME IN PLANT BREEDING - See Rules Ag4 and
; AgRÃ©4 and Agricultural Plant Sciences

PLBR810 - Masters by Research

(PPR8RMM) (OL-OT-OP-0S-1280H-OR-OF-0A-0W-128C)
Prerequisite: Acceptance into Masters programme.

Corequisite: To be specified by the discipline.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

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PLBR910 - Doctor of Philosophy

(PPR9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-OW-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Plant Molecular Biology & Physiology

Offered in the School of Botany & Zoology

PMBP301 - Recombinant DNA Technology

(PPM3RD1) (13L-OT-18P-0S-33H-10R-OF-6A-13W-8C)
Prerequisite: Pass in BIOS101.

Aim: Introduces the candidates to gene cloning and its importance in research and biotechnology, and outlines methods employed in gene transfer and gene analysis.

Content: Principles of gene cloning; plasmid vector selection; transformation techniques;
gene location and structure.

Practicals: 6 Practicals.

Assessment: Theory test (8%), prac test (7%), reports (15%), 2 h theory exam (70%).
Offered in Semester 1. ;

PMBP302 - Plant Biotechnology: Tissue Culture

(PPM3PB2) (14L-3T-18P-0S-29H-10R-0F-6A-13W-8C)
Prerequisite: Passes in BIOS101; BOTY 102.

Aim: To provide an introduction to basic experimental methods of each of the major areas of
investigation involving the isolation and culture of plant cells, tissues and organs.

Content: Introduction to plant biotechnology: principles, techniques and morality. Propagation: Principles of micropropagation and commercial application. Callus and organ
culture: Callus induction organogenesis and morphogenesis. Embryogenesis: Embryo induction and synthetic seeds. Survey: organisms in culture from algae to higher plants.
Practicals: 6 Practicals- techniques of plant tissue culture.

Assessment: Essay (6%), prac & theory test (6%), prac reports (18%), 2 h exam (70%).
Offered in Semester 2.

PMBP304 - Plant Biotechnology: Growth Manipulation

(PPM3GM2) (14L-3T-18P-0S-29H-10R-0F-6A-13W-8C)
Prerequisite: A pass in BOTY301.

Aim: To provide the students with an opportunity to manipulate plant growth and function

by the application of various biotechnology techniques.

Content: Study methods whereby the plant resources can be manipulated using environmental strategies and plant growth regulators. Emphasis is placed on the relevance of biotechnology in modern society.

Practicals: 6 Practicals – Hands-on experience will be obtained both in the laboratory and field situation on plant growth modification in situ and in vitro.

Assessment: Theory & prac test (5%), prac reports (20%), oral presentation (5%), 2 h exam
(70%).
Offered in Semester 2.

PMBP306 - Plant Molecular-Technology: Basis

(PPM3MT2) (13L-0T-18P-0S-33H-10R-OF-6A-13W-8C)
Prerequisite: PMBP301lor GENE325 or 327.

Aim: To discuss the organisation of nuclear DNA, genome variation and mechanisms involved in the regulation of gene expression.

Practicals: 6 Practicals - the course includes laboratory work which must be completed by
all students.

Assessment: Theory & prac tests (10%), essay (5%), prac reports (15%), 2 h exam (70%).
Offered in Semester 2. ~

PMBP308 - Plant Molecular Technology: Applications

(PPM3AP2)- : (13L-3T-18P-0S-30H-10R-OF-6A-13W-8C)
Prerequisite: PMBP301or GENE325 or 327.

Aim: To demonstrate the relevance of Biotechnology techniques in the manipulation of plant
genetic material.

Content; Introduction of novel and foreign genes into plants using direct methods of gene
transfer, Agrobacterium mediated transformation, suspension culture, germplasm storage and differential gene expression.

Practicals: The course includes laboratory work which must be completed by all students.
Assessment: Test (4%), essay (4%), prac test (4%), prac reports (18%), 2 h theory exam (70%).

Offered in Semester 2.

PMBP701 - Plant Hormones .

(PPM7PHM) (13L-5T-OP-0S-49H-10R-OF-3A-13W-8C)
Prerequisite: A pass in BOTY 301.

Aim: To provide students with detailed information on hormonal occurrence, biosynthesis,
transport, metabolism and mode of action and/or involvement in physiological processes.
Content: Hormone structure, biosynthetic pathways, use of hormones as inhibitors of growth, hormonal inactivation, understanding of the molecular control exerted by plant hormones.

Practicals: None.

Assessment: Test (10%), essay (20%), 2 h exam (70%).

Offered in Semester I or 2.

PMBP702 - Gene Expression & Regulation
(PPM7GRM) (13L-OT-OP-0S-54H-10R-OF-3A-13W-8C)
Prerequisite: Passes in BOTY301, PMBP304, 306, 308.

Aim: To develop an understanding of contemporary trends in research investigating gene regulation in plants.

Content: The course covers aspects of gene regulation, plant stress responses, current finding

about signal transduction pathways and issues of biosafety and risk assessment of genet ically
modified organisms.

Practicals: None.
Assessment: Test (10%), essay (20%), 2 h exam (70%).
Offered in Semester I or 2.

PMBP790 - Plant Molecular/Physiology Research Project
(PPM7RPY) (OL-20T-OP-30S-590H-OR-OF-0A-26W-64C)
Prerequisite: Acceptance into Honours in Plant Molecular/Physiology.

Aim: To gain experience in the formulation, planning, execution, analysis, and reportin g, of
their research project.

Content: Students will be provided with a list of supervisors and possible research top ics at
the beginning of their Honours year. The final choice of research project will be decid ed
by discussion between the student and supervisor.

Practicals: Students will be expected to execute a research plan and, where necessary, demonstrate competence in the use of sophisticated research equipment to collect data f or
their project.

Assessment: 2 Oral presentations (project proposal & research findings) (10%), project proposal (5%), research report (85%). â\200\230

Year-long Module.

PMBP810 - Masters by Research
(PPM8RMM) (OL-OT-OP-0S-1280H-OR-0F-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the role. for the degre e.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

PMBP910 - Doctor of Philosophy

(PPM9PHM) (OL-0T-OP-0S-1280H- OR-OF-0A- 26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Disciline and approved by t he
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Plant Pathology

Offered in the School of Applied Environmental Sciences

PPTH222 - Plants & their Diseases

(PPP2PL2) (20L-0T-40P-6S-3H-7R-OF-4A-13W-8C)

Prerequisite: MYCO211 (See under Mycology).

Aim: To give students a basic understanding of fungi, bacteria, viruses and nematodes causing plant diseases.

Content: Biotic, abiotic factors and agricultural practices causing plant disease, fungal epidemiology, disease symptoms on plants and methods of control.

Practicals: Practical skills in identification of disease symptoms on plants. Isolation techniques for identifying fungal plant pathogens.

Assessment: Tests (8%), presentation of literature survey from MYCO2I1 (7%), disease collection (12%), pracs (7%), 2 h exam (66%).

Offered in Semester 2.

PPTH242 – Plant Diseases in Agriculture

(PPP2PD2) : (20L–0T–23P–6S–14H–13R–OF–4A–13W–8C)
Prerequisite: BIOS101, (BOTY 102 or ZOOL102)

Aim: To give students and introduction to fungal taxonomy and a basic understanding of fungi, bacteria, viruses arid nematodes causing plant diseases.

Content: Biotic, abiotic factors and agricultural practices affecting the spread and multiplication of pathogens; basic taxonomy of fungi, fungal epidemiology, disease symptoms on plants and methods of control.

Practicals: Identification of parasitic plants and pathogenic fungi, bacteria, viruses and
nematodes.

Assessment: Short tests (8%), a disease collection (17%), prac assignments (9%), 1 2 h exam
(66%).

Offered in Semester 2.

PPTH310 – Introductory Plant Virology

(PPP3PV1) (20L–0T–23P–6S–14H–13R–OF–4A–13W–8C)
Prerequisite: MYCO211 and PPTH222, or PPTH242

Aim: Plant viruses cause significant losses to global agriculture. This module will giv e a
background and understanding of plant viruses and their control.

Content: An introduction to virus diseases of plants, especially their epidemiology and control, and to plant pathogenic plants (phanerogams).

Practicals: An introduction to plant virus diseases in the laboratory and field

Assessment: Class tests (10%), prac assignments (10%), 1 2 h exam (40%), literature rev iew
(40%).

Offered in Semester 1.

PPTH330 – Plant Disease Epidemiology & Bacteriology
(PPP3PD2) (40L–10T–40P–18S–24H–23R–0F–5A–13W–16C)
Prerequisite: (MYCO211 and PPTH222) or PPTH242.

Aim: This module introduces a mathematical background to disease progress, the genetics and biochemistry of disease resistance and an introduction to plant diseases caused by bacteria.

Content: An introduction to quantitative plant disease epidemiology, host–parasite interactions, the genetics of plant disease resistance and plant bacteriology.

Practicals: An applied project involved in the isolation and testing of a biocontrol ag ent.
Assessment: Tests (17%), bacteriology assignment (8%), prac project & assignments (9%),

h exam (66%).

Offered in Semester 2.

PPTH711 – Fungi in Phytopathology – Advanced Mycology

(PPP7FM1) (OL–20T–OP–21S–20H–15R–OF–4A–13W–8C)
Prerequisite: PPTH310, 320, 330 or AGPS308.

Corequisite: PPTH730.

SA 230 Science & Agriculture

Aim: To introduce students to advanced, current and controversial topics in phytopathol
ogy
with emphasis on the impact of fungi on agriculture and food production.

Content: An extensive reading course in advanced topics in plant phytopathology,
including: advanced mycology, physiology, biochemistry, aerobiology, conidiogenesis,
infection processes and host-parasite interactions; precis and present papers in mini-
seminars.

Practicals: None.

Assessment: Assignments (17%), essays (17%), 3 h theory exam (66%).

Offered in Semester 1.

PPTH712 - Fungi in Phytopathology: Advanced Topics

(PPP7FT2) (OL-20T-OP-21S-20H-15R-0F-4A-13W-8C)
Prerequisite: PPTH711. ;

Aim: To introduce students to advanced, current and controversial topics in phytopathol
ogy
with emphasis on the impact of fungi on agriculture and food production.

Content: An extensive reading course in advanced topics in plant phytopathology,
including: disease forecasting and modelling, a case study of a significant pathogen, t
he
sociological impact of plant diseases, GMOâ\200\231s and food security; precis and pres
ent papers in
mini-seminars.

Practicals: None.

Assessment: Assignments (17%), essays (17%), 3 h exam (66%).

Offered in Semester 2.

PPTH721 - Advanced Virology
(PPP7AV1) (OL-20T-0P-21S-20H-15R-OF-4A-13W-8C)
Prerequisite: PPTH310, 320, 330 or AGPS308.

Aim: To study a wide range of selected topics to fully understand the complex relations
hips
between viruses, their hosts and vectors and to formulate disease control measures.

Content: An extensive reading course in advanced topics in plant phytopathology,
including: taxonomy of viruses, infection processes, vectored diseases, virus helpers a
nd
viroids; precis and present papers in mini-seminars.

Practicals: None.

Assessment: Assignments (17%), essays (17%), 3 h exam (66%).

Offered in Semester 1.

PPTH722 - Advanced Viral Epidemiology
(PPP7VE2) (OL-20T-OP-21S-20H-15R-0F-4A-13W-8C)
Prerequisite: PPTH 721.

Aim: To study a wide range of selected topics to fully understand the complex relations
hips
between viruses, their hosts and vectors and to formulate disease control measures:

Content: An extensive reading course in advanced topics in viral epidemiology,

including: significant plant viruses, virus control measures, GE virus resistance and t
he
social impact of viruses; precis and present papers in mini-seminars.

Practicals: None.

Assessment: Assignments (17%), essays (17%), 3 h theory exam (66%).

Offered in Semester 2.

PPTH730 - Advanced Plant Disease Epidemiology

(PPP7PD1) : (OL-40T-OP-42S-40H-30R-OF-8A-13W-16C)
Prerequisite: PPTH310, 320, 330 or AGPS308.

Aim: A development of advanced concepts and practice in plant disease epidemiology.
Content: Discussion, reviÃ©w and practice of the theory and application of plant diseas
e
epidemiology in the form of seminars and laboratory tutorials.

Practicals: An applied project involved in the isolation and testing of a biocontrol ag
ent.
Assessment: Class tests (17%), essays (17%), 3 h exam (66%).

Offered in Semester 1.

PPTH740 - Plant Pathology in the Field

(PPP7PF1) (OL-6T-66P-6S-0H-2R-0F-0A-13W-8C)
Aim: Experiential learning of applied plant pathology provided by farm visits to diseas
ed
crops.

Content: Weekly visits to farms, nurseries and other sites of plant pathological intere
st,
where applied disease diagnosis and control measures are developed.

Practicals: Field work and evaluations.

Assessment: Field prac reports (40%), short essays (30%).

Offered in Semester 1.

PPTH780 - Plant Pathology Major Research Project
(PPP7MRY) (OL-40T-0P-50S-550H-OR-OF-0A-26W-64C)
Aim: To teach scientific research methods in plant pathology.

Content: An extended research project on a plant pathological topic, to give the studen
t
experiential learning of the application of the scientific process in plant pathology.

Practicals: The project will require detailed design, implementation and analysis of a
series
of experiments for an overall project, at a significant depth.

Assessment: Project report (70%), research paper taken from the report (15%), conferenc
e
presentation of results (15%).

Year-long Module.

PPTH790 - Plant Pathology Research Project :

(PPP7PRY) (OL-40T-OP-40S-240H-OR-0F-0A-26W-32C)
Aim: To teach scientific research methods in plant pathology.

Content: A research project on a plant pathological topic, to give the student experien
tial
learning of the application of the scientific process in plant pathology.

Practicals: The project will require detailed design, implementation and analysis of a
series
of experiments for an overall project.

Assessment: Project report (70%), research paper taken corn the report (15%), conferenc

e
presentation of results (15%).

Year-long Module.

PPTH795 - Plant Pathology Literature Review

(PPP7PL1) (OL-4T-OP-76S-0H-OR-OF-0A-13W-8C)
Corequisite: PPTH780 or 790. Â°

Aim: To develop skills in the accessing and synthesis of scientific literature in plant pathology.

Content: A detailed literature review on a plant pathology topic, using all accessible forms of
technical information. :

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Practicals: Use of library resources, interlibrary loans, abstracting services, compute
r
databases, the Internet, etc. to access information on the chosen subject. Collation an
d
synthesis of the information into a coherent review correct technical writing. Formal
presentation of the review in a seminar. :

Assessment: Literature review (75%), seminar presentation (25%).
Offered in Semester 1.

PPTHS810 - Masters by Research
(PPP8RMY) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher
Degrees Committee.

Aim: To undertake supervised research in a plant pathological topic.

Content: To be determined by the discipline and is dependent on the project for the deg
ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

PPTH910 - Doctor of Philosophy

(PPP9PHY) (OL-OT-0P-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by
the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Policy & Development Studies

Offered in the Faculty of Human & Management Sciences (PiÃ©termaritzburg)

PODS803 - Policy & Dev Stud 803 ManagEnv Policy & Gov

(PPD803M) (OL-OT-OP-0S-148H-OR-8F-4A-13W-16C)
Aim: To realise a sophisticated understanding of techniques and issues concerning polic
y
design and implementation, embracing management and governance, both in generic terms
as well as in relation to specific policy areas.

Content: Techniques of policy analysis; web of governance; intergovernmental relations;
state capacity; public-private partnerships. Applied to specific cases in protected are
a
management, water management, and other related policy areas.

Assessment: Assignments 50%,1x 3 hours exam 50%

Science & Agriculture SA 233
Poultry Science

Offered in the School of Agricultural Sciences and Agribusiness

POLTS810 - Masters by Research

(PPO8RMM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To: be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

POLT910 - Doctor of Philosophy

(PPO9PHM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None. Â°
Assessment: Examination of thesis (100%).
Year-long Module.

Protected-Area Management

Offered in the School of Applied Environmental Sciences

PAMT804 - Biodiversity, People, Economics & Management

(PPA8BPM) (20L-0T-40P-0S-60H-20R-0F-20A-13W-16C)
Prerequisite: Acceptance into the programme in Environment & Development or relevant background acceptable to the Dean.

Aim: To train learners as managers who are capable of drawing on the relevant aspects o f
biodiversity, peoplesâ\200\231 expectations and demands, economics and other relevant i nformation
in order to make balanced decisions and formulate holistic management strategies for protected areas.

Content: Biodiversity, people issues, economics, sustainable tourism and management.
Practicals: Case study of pertinent protected area.

Assessment: Group tasks (20%), tests (20%), seminar papers (20%), oral & written exam (40%).

Offered in Semester 1 or 2.

PAMT880 - Protected Area Management Internship
(PPA8INB) (OL-0T-OP-0S-0H-OR-640F-0A-20W-64C)

Prerequisite: Successful completion of all prescribed modules and the integrative examination for the course-work component of the Protected-Area Management stream eae a final mark of at least 50%.

Aim: To provide relevant experience in an organization, whether public or private, whic
h
deals with appropriate environmental and development issues for those learners who do n
ot
want to pursue a research dissertation.

Content: Location within host organization for a period, usually January through April, performing duties as required by the organizational supervisor.

Practicals: None.

Assessment; 2 written and 2 formal verbal reports by the intern on progiess made during
the
period of the internship (60%), reports by the organizational & internal supervisors (4
0%).
Offered in Semester 1 and 2.

PAMT890 - Protected Area Management Mini-Dissertation

(PPA8RSB) (OL-0T-OP-0S-640H-OR-0F-0A-24W-64C)
Prerequisite: Successful completion of all prescribed modules and the integrative examination for the course-work component of the Protected-Area Management stream with a final mark of at least 60%.

Corequisite: EDEL812, 814.

Aim: To undertake supervised research on an interdisciplinary theme of the studentâ\200
\231s choice.
Content: Decided upon by the student in consultation with his/her supervisor(s) and the related research panel.

Practicals: None.

Assessment: Mini-dissertation (100%).

Offered in Semester | and 2.

Psychology

Offered in the Faculty of Human & Management Sciences (Pietermaritzburg)

PSYC110 - Psychology 110 Foundations of Social Psychol

(PPG1101) (40L-3T-2P-0S-40H-50R-OF-20A-13W-16C)
Prerequisite: University entrance ;

Aim: To introduce students to the scientific study of the psychological aspects of the social
lives of humans and animals

Content: This introductory module in Psychology provides an orientation to the history, conceptual underpinnings and research methods of Social Psychology, Development, Personality, Motivation and Health.

Practicals: 2

Assessment: course assignments (28%) ; examination : continuous assessment through 3 examinations (72%)

PSYC120 - Psychology 120 Foundations of Individ Psychol

(PPG1202) (40L-3T-2P-0S-40H-50R-0F-20A-13W-16C)
Prerequisite: University entrance

Aim: To introduce students to the scientific study of mental processes. –

Content: This introductory module in Psychology provides an orientation to the history, conceptual underpinnings and research methods of Biological Psychology, Perception, Thinking, Learning and Intelligence.

Practicals: 2

Assessment: course assignments (28%); examination : continuous assessment through 3 examinations (72%)

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PSYC201 - Psychology 201 Introduction to Research

(PPG2011) : (20L-11T-OP-0S-60H-SOR-OF-19A-13W-16C)
Prerequisite: 64C in Level 100 modules

Aim: To introduce students to basic principles of qualitative and quantitative research design
and analysis. :

Content: The module introduces students to perspectives in social science research, including paradigms and ethics, and covers practical topics such as research design and proposal writing. The tutorial programme explores a variety of elementary graphical and mathematical statistical procedures, including frequency displays, measures of central tendency and variability, sampling distributions, and two-group inferential tests.

Practicals: \1.tutorials on data analysis.

Assessment: course work: | test and 11 assignments (30%); 3hr exam (70%).

PSYC202 - Psychology 202 Fundamental Neuropsychology

(PPG2022) â\200\224 (25L-OT-2P-0S-40H-80R-0F-13A-13W-16C)
Prerequisite: 64C in any Level 100 modules

Aim: To introduce fundamental aspects of neuropsychology by providing a foundation in physiological psychology, neuroanatomy and examining conceptual and methodological issues involved in research and clinical applications.

Content: The overall theoretical aim is to set out the rationale of a physiological approach to
psychology. The second objective is to systematically describe the structure and function of
the brain and nervous system, and examine aspects of neuropychological dysfunction as they
relate conceptually and empirically to this description. Relevant clinical assessment and
research procedures are presented as an integral part of the course.

Practicals: |

Assessment: | assignment and 2 tests (30%); 3hr exam (70%)

PSYC203 - Psychology 203 Social & Cultural Psychology

(PPG2032) (40L-0T-0P-0S-50H-SOR-OF-20A-13W-16C)
Prerequisite: 64C in any Level 100 modules

Aim: To introduce students to psychological features of group, Collective, and cultural life.

Content: The module introduces students to major perspectives and theories in social and
cultural psychology, with a view to teaching reflective skills central to understanding
contemporary society and ourselves as social beings. Topics include social influence,
attitudes and representations, intergroup conflict and racism, identity, culture and self.

Assessment: course work: 3 assignments, 10 quizzes and | test (30%); 3hr exam (70%).

PSYC204 - Psychology 204 Child & Adult Development
(PPG2041) (40L-0T-OP-0S-60H-50R-OF-10A-13W-16C)
Prerequisite: 64 C in any Level 100 modules

Aim: To give students an understanding of the processes of psycho-social development and

change over the lifespan.

Content: The module. offers a critical exploration of a number of developmental issues within cultural contexts and different time frames. Students are introduced to the major conceptual, research and applied areas of developmental psychology, including the fields of language, social, emotional, moral, cognitive and self development.

Assessment: course work: | assignment and 1 test (30%); 3hr exam (70%).

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PSYC206 - Psychology 206 Educational Applic of Psych

(PPG2061) (40L-8T-0P-0S-79H-18R-OF-15A-13W-16C)
Prerequisite: 64 C in any Level 100 modules .

Aim: To enable students to consider education in various settings from a psychological perspective.

Content: A number of theoretical paradigms are presented to develop a psychological understanding of issues in education. The multidimensional role of the educator is emphasised, especially in the context of changing curricular demands and the need to be responsive to learners' needs. A number of specialist areas are covered, including whol e-
school development, diversity in teaching and learning, career education and guidance, and
information, education and communication in adult learning.

Practicals: 8 tutorials :

Assessment: course work: 3 assignments and 3 tests (30%); 3hr exam (70%).

PSYC208 - Psychology 208 Foundations of Personality

(PPG208M) (30L-0T-0P-0S-88H-36R-0F-6A-13W-16C)
Prerequisite: 64 Credit points in any level 100 modules.

Aim: This module aims to introduce students to the fundamental theoretical and biologic al
bases of human personality and their practical application.

Content: Various theoretical perspectives in human personality will be systematically evaluated. Furthermore, the biological basis of personality will be elucidated and illu strated.
The course will also offer students perspectives on the practical application of this knowledge to research, assessment and psychological intervention (e.g. psychotherapy). Finally these perspectives will be located within relevant cultural contexts.

Assessment: Coursework (30%): 1 test (15%), 1 assignment (15%); Examination (70%): 1x3hr examination

PSYC209 - Psychology 209 Fund of Organisational Psychol

(PPG209M) (30L-0T-OP-0S-91 H-35R-OF-4A-13W-16C)
Prerequisite: 64 Credit points at level 100

Aim: To provide students with an introduction to key organizational theories and the fundamentals of applied psychology in organizations.

Content: This module provides an overview of organizational theory, organizational structure and design, the individual in the work context, personnel psychology and the labour
relationship.

Assessment: | test (15%), 1 assignment (15%) and 1 x 3hr examination (70%)

PSYC301 - Psychology 301 Advanced behavioural research

(PPG3012) (26L-0T-11P-0S-70H-37R-OF-16A-13W-16C)
Prerequisite: Psychology 201 i

Aim: To teach students advanced behavioural research and data analytic procedures, as w ell
as the principles of psychological measurement

Content: The module covers a variety of behavioural research methods, including

experimentation, survey methods, programme evaluation, and action research. The tutorials cover data-analytic methods using the computer package SPSS, including: contingency table analysis, statistical power calculation, analysis of variance, item analysis, and non-parametric data analysis.

Practicals: 11 tutorials on data analysis, 1 practical on psychometrics

Assessment: course work: 11 assignments, 11 quizzes, 1 practical, 2 tests (30%); 3hr exam (70%). :

PSYC302 - Psychology 302 Change and Transformation

(PPG3021) (36L-0T-1 0P-0S-66H-40R-0F-8A-13W-16C)
Prerequisite: 64 C in any Level 100 modules

Aim: To teach theoretical reflective skills central to understanding the social-psychological context relevant to individual and social change.

Content: The focus is on the current context of change and transformation and considers the challenge of living in and thinking about our rapidly changing society. The module starts with a theoretical overview of theories of change and adaptation. It proceeds to investigate selected and related social-psychological topics which represent current challenges for change and transformation.

Practicals: |

Assessment: | assignment and 2 tests (30%); 3hr exam (70%).

PSYC303 - Psychology 303 Health & Illness
(PPG303 1) ;

Prerequisite: 64 C in any Level 100 modules
Aim: To introduce students to some of the basic issues and methods in the application of psychology to health and illness

Content: The module â\200\230examines physical and psychological health and illness from a psychological perspective, as well as developmental issues that contribute to health and illness. Special topics include HIV/AIDS, and developmental factors affecting physical and mental health, such as marriage, family and career.

Practicals: | full day on counselling skills

Assessment: course work: practical ssignment and test (30%); 3hr exam (70%).

(30L-0T-8P-0S-84H-30R-0F-8A-13W-16C)

PSYC304 - Psychology 304 Organizational Behaviour & Dev

(PPG3041) (40L-0T-20P-0S-70H-24R-0F-6A-13W-16C)
Prerequisite: 64 C in any Level 100 modules :

Aim: To introduce students to organisation development and the theory relating to organisational behaviour.

Content: The moduie begins with an overview of the nature of organisations, and introduces the characteristics, operational components, and models underlying OD interventions, including action research. Students are introduced to the concept of organisational culture and its functions within an organisational setting. Organisational consultation is covered by a review of definitions, followed by presentations of specific models. Factors affecting the behaviour of individuals and groups are also considered, along with their impact on labour relations.

Practicals: 2

Assessment: course work: 2 assignments and I test (30%); 3hr exam (70%)

PSYC305 – Psychology 305 Cognitive Psychology

(PPG3052) (40L–0T–0P–0S–40H–73R–OF–7A–13W–16C)
Prerequisite: 64 C in any Level 100 modules

Aim: To introduce and link neuropsychology cognition, perception and action, and to examine their role in understanding everyday behaviours as well as to a number of applied topics.

Content: Students are introduced to a number of different topics and current debates in cognitive psychology. Issues in neuropsychology cognitive, motivational and perceptual psychology are presented and current theoretical and applied perspectives in these areas are critically evaluated. Special topics include the role of cognitive psychology in skilled performance such as sport, and in counselling and psychotherapy.

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Assessment: Course work: a practical course with assignments in a cognitive skill and 2 class
tests (30%); 3hr exam (70%).

PSYC306 - Psychology 306 Psychology & the Law
(PPG3062) (30L-0T-OP-0S-85H-30R-OF-15A-13W-16C)
Prerequisite: 64 C in any Level 100 modules

Aim: To introduce students to conceptual and applied issues at the interface of psychol ogy
and law.

Content: The module examines psychological theory and research as applied and communicated through law and forensic practice, and includes material on the nature of testimony, criminal behaviour, disability and compensation, crime prevention, rehabilit ation,
and professional ethics.

Assessment: course work: | essay and 1 test (30%); 3hr exam (70%).

PSYC701 - Psychology 701 Research Project
(PPG701Y) (4L-0T-150P- 0S-0H-OR-160F-6A-28W- -32C)
Prerequisite: Complete undergraduate degree with a psychology major.

Aim: For students to gain experience of research by focussing on a chosen area of speci alist
study.

Content: Students are encouraged to join staff-led research teams. During the course of the
project, students are required to review the available knowledge in the field, devise m ethods
to describe and investigate issues of social and psychological interest, evaluate their research
by the criteria used in the field, and write up their work. Students are encouraged to present
their research at conferences and to attempt to publish their results.

Practicals: Practical data collection and analysis.
Assessment: Examined report 100%.

PSYC711 - Psychology 711 Conceptual Foundations

(PPG7111) (60L-OT-0P-60S-100H-50R-0F-5S0A-14W-32C)
Prerequisite: Complete undergraduate degree with a psychology major.

Aim: To expose students to some of the major conceptual foundations of psychology so as to
provide a critical theoretical foundation for research and practice.

Content: The module comprises three topics: Conceptual Foundations (16C) is compulsory. In addition, students must select two (8C) topics from the following list: Cognitive Development, Neuropsychology, Personality, Social Psychology, and/or any other topic approved by the school.

Assessment: Course work (50%); A written examination with a minimum duration of Ihr per 16C (50%).

PSYC712 - Psychology 712 Theory of Applied Psychology

(PPG7122) (60L-0T-0P-60S-50H-OR-100F-50A-14W-32C)
Prerequisite: UG degree with a psychology major.

Aim: To provide students with the opportunity to study the theoretical and empirical ba ses of

psychological research and practice in areas which are of particular interest to them.
Content: The module consists of four 8C topics, selected from a list which can be obtai
ned
from the School Office. A topic may not be offered if fewer than 5 learners select the
topic.
This module may accommodate interdisciplinary topics.

Assessment: Course work 50%; A written examination with a minimum duration of Ihr per
16C 50%.

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PSYC721 - Psychology 721 Research Fundamentals

(PPG7211) (60L-0T-10P-60S-40H-OR-100F-50A-14W-32C)
Prerequisite: Complete undergraduate degree with a psychology major.

Aim: To equip students with research and data analysis skills appropriate for completio n of
an applied research project. â\200\224

Content: The module comprises two compulsory 16C topics: Research Design and Data Analysis. Research Design introduces students to a range of methodologies that are used by
psychologists and social scientists, and provides an understanding of when to use diffe rent
methods appropriately. Data Analysis is an advanced theoretical and practical course on analytical methods for experimental, quasi-experimental and field research.

Practicals: Practical exercises in computer data analysis.

Assessment: Course work 50%; A written examination with a minimum duration of Ihr per 16C 50%.

Rural Resource Management

Offered in the School of. Agricultural Sciences and Agribusiness

RRMGII1 - Organisation & Project Management

(PRRIOMI) (39L-52T-27P-0S-27H-12R-0F-3A-13W-16C)
Aim: To introduce concepts of rural development, wealth and poverty; build skills in structuring projects to facilitate movement of communities along a pathway to prosperit y.
Content: The nature of wealth and poverty, rural and community development, sustainable livelihoods; project planning.

Practicals: Group discussions; use of library & Internet; workshops on academic researc h
and writing.

Assessment: Class work: | project proposal (30%), 1 assignment (30%), class participati on
(10%), oral exam (30%).

Offered in Semester 1.

RRMGI112 - Rural Economic Systems
(PRRIRE2) (39L-OT-40P-0S-6 1 H-15R-OF-SA-13W-16C)

Aim: To provide a basic understanding of macro and micro economic systems in the rural socio-agricultural context in relation to facilitating prosperity.

Content: Basic concepts in economics; holistic planning using the 8-point model (land, skills
& information, input supply, technology support, marketing, finance, infrastructure, institutions); analysis of farm/enterprise records; budgeting techniques.

Learning outcomes: Preparing feasibility studies; developing small-scale farm/enterpris e
plan; evaluating farm/enterprise operation; computer skills.

Practicals: Interactive computer exercises; case studies.

Assessment: Feasibility study (50%), application of 8-point model (25%), 3 hour prac ex

am
(25%). :

Offered in Semester 2.

RRMG212 – Extension Methods
(PRR2ME1) : (30L–0T–10P–0S–100H–15R–OF–5A–13W–16C)
Prerequisite: RRMG111, 121.

Aim: To introduce different models of extension and to equip learners with basic skills in
participatory extension work.

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Content: Introduction to rural development and extension; Perspectives, values and atti tudes
in rural development; Theory of adult learning and experiential learning; Introduction to
systems thinking; Participatory approaches to extension; PRA, PTD, Farmer to Farmer;
Policies impacting on extension and rural development. Application of Farming Systems
Analysis in the field.

Practicals: None. :

Assessment: Journal (20%), individual presentation (20%), | test (15%), 1 exam (25%), f ield
report (20%).

Offered in Semester 1.

RRMG222 - Extension Practice
(PRR2EX2) (30L-0T-26P-0S-85H-15R-OF-4A-13W-16C)
Prerequisite: RRMG212.

Aim: The module offers the RRM students the opportunity to apply the competencies learn ed
in RRM 212 in a â\200\234realâ\200\235 extension tasks in resource poor rural communiti es.

Content: Group dynamics; Facilitation and presentation skills; Active listening and tea m
contracts; â\200\230Rich picturingâ\200\231.

Practicals: Field trips & community placements.
Assessment: Group report (30%), group presentation (15%), individual report (15%), exam (25%), project plan (15%).

Offered in Semester 2.

e

RRMG311 - Rural Organisations & their Management

(PRR30M1) (19L-12T-OP-0S-109H-15R-OF-5A-13W-16C)
Prerequisite: RRMGI11, 121.

Aim: To explore the potential that local rural organisations have to contribute to development in South Africa and to build the knowledge and skills of students in facili tating
collective organisation.

Content: Contextualising local organisation in rural development; the anticipated role of
local organisations in rural development in South Africa; power in rural development as a
local and international level; theories of group action; research skills.

Practicals: Students are required to undertake a (specified) campus based research proj ect.
Assessment: Journal, project, presentations, test (33%), 1 3 h exam (67%).

Offered in Semester 1. â\200\230

RRMG312 - Organisation & Project Management

(PRR3MP1) (21L-OT-15P-30S-86H-6R-OF-2A-13W-16C)
Prerequisite: RRMG222.

Aim: To understand the sustainable livelihoods assets and vulnerability framework; writ

e a
cogent academic paper about development; design and write a proposal for a project.
Content: Learning models, Group dynamics, Sustainable Livelihoods approach, participato
ry
project planning.

Practicals: Interactive exercises; working in a virtual community; group work.

Assessment: | seminar (30%), 1 project proposal (30%), 1 learning journal (10%), 1 oral exam/presentation (30%).

Offered in Semester 1.

RRMG350 – Community Development Systems Project
(PRR3SPW) (12L-0T-OP-0S-304H-3R-OF-1A-13W-32C)
Prerequisite: RRMG312.

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Aim: To enable students to design and implement a situation improving project in a rura
l
community context.

Content: The theory for this module is given in RRMG312.

Practicals: Students are required to spend 5-6 weeks in a rural community during which
time they are expected to engage with key stakeholders in the community in designing an
d
implementing a project to improve a situation in the community.

Assessment: | Portfolio with oral presentation (100%).

Offered in Semester 2.

RRMG700 - Systems Thinking Foundations

(PRR7ST1) (32L-0T-OP-0S-124H-OR-OF-4A-13W-16C)
Aim: To give students a foundation in experiential learning and systems methodologies.
Content: Formal systems characteristics; Kolbâ\200\231s Learning Cycle; Hard & Soft Sys
tems
Thinking; Soft Systems Methodology; Viable Systems Method; Critical Systems Thinking.
Practicals: None.

Assessment: | report on a project in which a systems methodology is applied to a real w
orld
problem situation (100%).

Offered in Semester 1.

RRMG711 - Advanced Communication & Innovation

(PRR7AE]) (32L-0T-OP-0S-124H-OR-OF-4A-13W-16C)
Prerequisite: RRMG700 or experience in working with organisational systems
recommended in consultation with the Programme Director and approved by the Dean of the
Faculty of Science & Agriculture.

Aim: To give students an understanding of, and hands on experience in innovation in
agriculture and rural development.

Content: Social learning theory; Participatory Technology Development (PTD); farmer to
farmer learning through Farmer Field Schools (FFS); Rapid Appraisal of Agricultural
Knowledge Systems (RAAKS); facilitating joint learning and action through Participatory
Learning & Action methodologies.

Practicals: None.

Assessment: Papers (40%), project plan (10%), final paper (40%), presentation (10%).
Offered in Semester 1.

RRMG712 - Project Design & Management

(PRR7PD1) (32L-0T-OP-0S-124H-OR-OF-4A-13W-16C)
Prerequisite: RRMG700 or experience in working with organisational systems
recommended in consultation with the Programme Director and approved by the Dean of the
Faculty of Science & Agriculture.

Aim: To give students advanced project design & management skills.

Content: Development & development projects: Project cycle: blueprint vs. process
approach; Project boundaries & environments: taxonomy of environments & insights from
CST; Project Appraisal; Implementation planning: work breakdown structure; Gantt Charts
;
Critical Path Analysis, PERT; Recent trends in the development paradigm.

Practicals: None. 4
Assessment: \ report on the process & outcome of a project designing activity (100%).
Offered in Semester |. ;

RRMG720 - Internship: Extension & Rural Systems .
(PRR7ER2) (12L-0T-OP-0S-624H-OR-OF-4A-6W-64C)
Prerequisite: RRMG711, 712.

Aim: To enable learners to plan, implement and reflect on a development/extension proje
ct
with a client community or organisation.

Content: The theory for this module is provided by RRMG711 & RRMG712.

Practicals: An internship with an organisation/institution.

Assessment: Portfolio (80%), oral presentation reflecting on the internship experience
(20%).
Offered in Semester 2.

RRMG811 - Rural Development
(PRR8CD1) (32L-0T-OP-32S-252H-OR- UAE -13W-32C)
Prerequisite: Acceptance into the Masters Programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher
Degrees Committee.

Aim: To enable students to understand a wide range of contemporary rural development
issues.

Content: Seminars on a variety of issues relevant to rural development.
Practicals: None.

Assessment: Written papers (50%), seminar presentations (50%).
Offered in Semester 1.

RRMG812 - Stakeholder Analysis & Partnerships

(PRR8EC1) (32L-OT-OP-32S-252H-OR-OF-4A-13W-32C)
Prerequisite: RRMG711.

Aim: To enable students to apply methods and techniques of Stakeholder Analysis and the
RAAKS methodology, and partnership development in real-world situations, and incorporat
e
these in project management and planning.

Content: Presentations, discussions, and assignments on around â\200\230real-worldâ\200
\231 applications of
Stakeholder Analysis and the RAAKS methodology are geared at learning-by-doing.
Practicals: None.

Assessment: Presentations (10%), assignments (30%), project plan (20%), project report
(40%).

Offered in Semester 1.

RRMG820 - Dissertation
(PRR8DDM) (OL-0T-OP-0S-960H-0R-OF-0A-26W-96C)
Prerequisite: Acceptance into the Masters Programme.

Corequisite: To be specified by the discipline and approved by the Faculty Higher Degre
es
Committee.

Aim: To undertake supervised research which applies systems. and/or resource management
thinking to field based work.

Content: Chosen by the student in consultation with the Programme Director

Practicals: None.

Assessment: Dissertation (100%).

Year-long Module.

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RRMG910 - Doctor of Philosophy

(PRR9PHM) : (OL-OT-OP-0S-640H-OR-OF-0A-26W-64C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Science Education

Offered in the School of Molecular & Cellular Biosciences

SCED701 - Understanding in Science & Mathematics

(PSE7DS1) (OL-12T-OP-0S-44H-OR-OF-24A-13W-8C)
Prerequisite: A Bachelors degree or an approved 4-year teaching diploma in science/mathematics, or any qualification approved by senate.

Aim: To give students insight into current theories on how people learn and understand science and mathematics, and some methods for investigating student understanding and difficulties.

Content: The nature of understanding. Learning theories of Piaget, Ausubel, Vygotsky an d
constructivism, and their application to learning, teaching and assessment. Research me thods
for identifying conceptual and reasoning difficulties, especially in mathematics, physi cs,
chemistry, biology, genetics, biochemistry and microbiology.

Practicals: None.

Assessment: Assignments (100%).

Offered in Semester 1.

SCED704 - Curriculum Development in Science & Maths

(PSE7CD2) (OL-12T-OP-0S-44H-OR-OF-24A-13W-8C)
Prerequisite: A Bachelors degree or an approved 4-year teaching diploma in science or mathematics or any qualification approved by the Dean.

Aim: To give students insight into the development and implementation of science and ma ths
curricula, and the design of teaching strategies for promoting understanding and remedi ating
conceptual and reasoning difficulties.

Content: Sources and remediation of student difficulties: curriculum change, problem-solving, conceptual change, metacognition, analogies, multiple representations. Curricu lum
design, development and implementation and, barriers to curriculum transformation. Acti on
research. 3

Practicals: None.

Assessment: Assignments (100%).

Offered in Semester 2.

SA 244 Science & Agriculture
Sociology

Offered in the Faculty of Human & Management Sciences (Pietermaritzburg)

SOCI110 - Sociology 110 Introduction to Sociology .

(PSO1101) (39L-6T-OP-0S-24H-OR-82F-9A-13W-16C)
Aim: To introduce sociology and lay conceptual foundations for further study of the discipline.

Content: Sociological perspective, theory, research, culture, socialisation, deviance, gender,
social institutions and modernity.

Assessment: 5 tutorial assignments; 2 tests; 1 essay ; 33% 1x 3hour Exam, 67%

SOCI120 - Sociology 120 Social Structure & SA Society

(PSO1202) (39L-6T-OP-0S-24H-OR-82F-9A-13W-16C)
Aim: To introduce sociological perspectives of social structure with reference to South African society. :

Content: Class, race, ethnicity, gender, demography and social change.

Assessment: 5 tutorial assignments; 2 tests; 1 essay; 33% 1x 3hour Exam, 67%

SOCI221 - Sociology 221 Sociology of Development in SA

(PSO2211) (39L-6T-OP-0S-10H-OR-100F-4A-13W-16C)
Aim: To explore and evaluate development patterns and policy in contemporary South Africa.

Content: Wealth, poverty, work, health, transport infrastructure, and education in SA; policy
initiatives -RDP, GEAR and HIV-AIDS; macro theoretical frameworks -Globalization, Modernisation and their critique. :

Assessment: Three tests, one essay 33% 1x 3hour Exam, 67%

SOCI322 - Sociology 322 Soc & Econ Iss in 3rd World Dev

(PSO3222) (26L-6T-OP-0S-20H-OR-100F-4A-13W-16C)
Aim: To evaluate the usefulness of dominant theories of development for explaining majo r
problems facing less developed countries.

Content: Third world debt, Structural adjustment, understanding and addressing poverty, Globalization, state and civil society, the crisis in development theory.

Assessment: One test, two essays 33% 1x 3hour Exam, 67%

SOCI330 - Sociology 330 Sociology of Rural South Africa

(PSO3301) (26L-6T-0P-0S-20H-OR-100F-4A-13W-16C)
Aim: To consider some major problems facing South Africaâ\200\231s rural areas and eval uate policy
responses to these problems

Content: Land tenure, vulnerability to poverty, rural livelihood strategies, impact of HIV/AIDS on rural society, power and inequality in the South African countryside, land and
agrarian reform policy.

Assessment: One test, two essays 33% Ix 3hour Exam, 67%

SOCI380 - Sociology 380 Social Studies in Conservation

(PSO3801) (39L-6T-OP-0S-24H-OR-82F-9A-13W-16C)
Aim: To forge interdisciplinary understanding of wildlife conservation as a social acti
vity.

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Content: Human dimension of conservation, ideas of wilderness, natural resource management, role of local communities, Southern African case studies.
Assessment: One test, two essays, 33% 1x 3hour Exam, 67%

Soil Science

Offered in the School of Applied Environmental Sciences

SSCI212 - Introduction to Soil Science

(PSS2SI1) (18L-4T-18P-0S-25H-12R-OF-3A-13W-8C)
Prerequisite: CHEMI11.

Aim: To provide a basic introduction to the physical and chemical properties and processes of soils.

Content: Particulate nature of soil; texture, structure and porosity; retention and movement of water in soil; plant available water. Types of clay minerals; cation exchange capacity and ion exchange reactions; flocculation/dispersion behaviour of colloids and its effect on soil aggregation.

Practicals: Field determination of texture, colour and water infiltration. Laboratory analysis of particle size, organic carbon, exchangeable cations, extractable phosphorus and hydraulic conductivity.

Assessment: 1 2 h exam (67%), 2 theory tests (20%), eae laboratory reports & tutorial reports (13%).

Offered in Semester 1.

SSCI217 - Introduction to Soils & the Environment

(PSS2EI1) (37L-6T-33P-0S-54H-25R-0F-5A-13W-16C)
Aim: To understand soil processes and their role within the environment.

Content: Soil-quality; formation; properties; survey; land evaluation. Reactions of nutrients with soil mineral and organic surfaces, land treatment of wastes and soil pollution. Major and trace elements and fertilizer sources. Water retention and movement; water availability; infiltration and evaporation. Soil compaction, aggregate stability and crusting.

Practicals: Field: texture; colour; infiltration; soil identification; land evaluation. Laboratory: particle size; pH; cation exchange properties; P; C; hydraulic conductivity; heavy metal sorption; fertilizer sources; assessment of variability.

Assessment: 3 h exam (67%), 2 theory tests (17%), laboratory & field reports & tutorials (16%).

Offered in Semester 1.

SSC1230 - Pedology

(PSS2PP2)- . (36L-OT-61P-0S-40H-19R-OF-4A-13W-16C)

Prerequisite: SSC1217 or 212.

Aim: To provide an understanding of the field study of soits.

Content: The morphology, gÃ©nesis and spatial distribution of soils. Palaeopedology and recognition of relic features within current surface soils. Soil classification – South African,
FAO, and USDA systems. Soil survey and mapping methods and objectives. Land capability and suitability using international and local systems.

Practicals: The field description and classification of soils. Attendance at two full d ay field
trips held on weekends is compulsory. A compulsory five-day field mapping project may also be held and students are required to contribute towards the costs.

SA 246 Science & Agriculture

Assessment: | 3 h exam (60%), 2 tests (20%), & prac reports G0);
Offered in Semester 2.

SSC1I320 - Soil Fertility & Plant Nutrition :

(PSS3SF2) (36L-ST-40P-0S-5 1 H-24R-OF-4A-13W-16C)
Prerequisite: SSCI217 or 212. :

Aim: To provide a scientific and practical understanding of the management of agricultu
ral
and horticultural soils for sustainable crop production.

Content: Soil testing and plant analysis as aids to making fertilizer recommendations a
nd
diagnosing nutrient deficiencies/imbalances. Fundamentals of fertilizer practice.
Chemistry/biochemistry of nitrogen, phosphorus, potassium, magnesium, calcium, sulphur
and micronutrients in soils in relation to their uptake and use by crops. Nature of soi
l acidity,
tolerance of crops to acidity, use of lime and gypsum as ameliorants.

Practicals: Soil fertility evaluation involving a glasshouse experiment.

Assessment: | 3 h exam (67%), 2 tests (17%), project report (16%).

Offered in Semester 2.

SSCI351 - Soil Water Use & Management

(PSS3WS1) (17L-4T-18P-0S-26H-12R-OF-3A-13W-8C)
Prerequisite: MATH110, 120 or 111, 122; SSCI217 or 212.

Aim: To provide a fundamental understanding of soil-water relationships and their
applications.

Content: Soil water content and energy; water retention characteristics; measurement of
soil
water; water flow under saturated and unsaturated conditions. Soil physical properties
in
relation to hydrological processes; infiltration; internal drainage and redistribution;
evaporation from bare and vegetated surfaces; soil water management in irrigated
agriculture.

Practicals: A laboratory project involving measurement of soil water status and water f
low
through soils.

Assessment: | 2 h exam (67%), 1 theory test (17%), laboratory project report (16%).
Offered in Semester 1.

SSCI35S2 - Soil Structure & its Management

(PSS3SMM) (18L-3T-18P-0S-26H-12R-OF-3A-13W-8C)
Prerequisite: SSC1217 or 212.

Aim: To gain an understanding of the structural make-up of soils and its implications.
Content: Factors influencing soil strength and consistence and the formation and
stabilization of micro- and macrostructure. Effects of dissolved salts on hydraulic pro
perties,
crusting and hard setting. Quality of irrigation water and liquid wastes and their effe
cts on
soil structure. Sodic soils and their reclamation. Sources and consequences of soil
compaction and corrective measures.

Practicals: A laboratory project on selected local soils involving measurement of vario
us

soil structural characteristics.

Assessment: | 2 h exam (67%), | theory test (20%), laboratory project report (13%). Offered in Semester I or 2.

SSCI371 - Contaminants of the Soil Environment

(PSS3SC1) (18L-4T-18P-0S-25H-12R-OF-3A-13W-8C)
Prerequisite: CHEM111, 112, SSCI217 or 212. :

Aim: To provide an understanding of the causes and consequences of contamination of soi ls.

Content: Source and nature of the major contaminants added to soils (e.g. industrial, municipal and agricultural wastes, pesticides, petroleum hydrocarbons and other organic materials), Reactions of inorganic (e.g. heavy metals) and organic (e.g. pesticides) contaminants with soils and soil components; factors affecting their mobility and/or degradation in soils; their effect on soil processes; management and amelioration of contaminated soils.

Practicals: A laboratory project on soil contamination and its effect on soil processes .
Assessment: | 2 h exam (67%), | theory test (17%), laboratory project report (16%).

Offered in Semester 1.

SSCI372 - Soil Processes,Ground Water,AtmosPollution

(PSS3SP2) (18L-4T-18P-0S-25H-12R-0F-3A-13W-8C)
Prerequisite: SSC1217 or 212.

Aim: To provide an SCS eI of soil processes that lead to pollution of waterways and the atmosphere.

Content: Leaching losses of nitrate and other solutes from soils; principles and modeli ng of
solute movement: factors affecting leaching and effects on groundwater pollution. Proce sses
involved in gaseous emissions of nitrous oxide, ammonia and methane from soils includin g
denitrification, ammonia volatilization and methanogenisis. Extent and consequences and such losses.

Practicals: A laboratory project on soil processes leading to environmental pollution.
Assessment: | 2 h exam (67%), | test (17%), laboratory project report (16%).

Offered in Semester 2.

SSCI710 - Chemical Processes in the Soil Environment

(PSS7CP1) (18L-4T-18P-0S-25H-12R-OF-3A-13W-8C)
Prerequisite: CHEM111, 112; SSC1I217 or 212.

Aim: To provide an understanding of basic chemical processes which occur in the soils.
Content: Soil solution chemistry; colloidal chemistry; electrical double layer theory; adsorption phenomena; mineral solubility; ion exchange; redox equilibria; organic interactions with soil surfaces. Applications of soil chemical ees in agriculture and environmental protection. -

Practicals: Laboratory measurements of chemical properties and processes in soils.
Assessment: | 2 h exam (67%), | theory test (17%), laboratory project report (16%).
Offered in Semester 1.

SSCI760 - Biological Processes in the Soil Environment

(PSS7BP2) (18L-4T-18P-0S-25H-12R-0F-3A-13W-8C)
Prerequisite: SSC1I217 or 212.

Aim: To provide an understanding of biota and the biological processes that occur in so ils.
Content: Nature of microorganisms and fauna that inhabit soils. Role of the soil microb ial
biomass and soil enzymes in nutrient availability and as indicators of soil quality. Ro le of

earthworm and termite communities in nutrient turnover and soil structural condition. Manipulation of the soil microbial community to ameliorate contaminated soils.

Practicals: A laboratory project on soil biological processes.
Assessment: | 2 h exam (67%), | test (17%), laboratory project report (16%).
Offered in Semester 2.

SSCI770 - Sustainable Soil Fertility Management
(PSS7FM2) (18L-4T-18P-0S-25H-12R-OF-3A-13W-8C)
Prerequisite: SSC1217 or 212.

Aim: To provide an understanding of selected contemporary issues in soil fertility management.

Content: Nature and management of acid soils; chemistry of soil Al, speciation of Al in soil solution, Al toxicity in plants, lime as an ameliorant; P/lime interactions. Nature of subsoil acidity, role of gypsum. Role of soil organic matter in sustainable agriculture, effects of tillage practice and crop rotations on soil fertility. Concept and role of soil quality indices.
Practicals: A field/laboratory project on soil fertility evaluation.

Assessment: 1 2h exam (67%), | test (17%), laboratory project report (16%).

Offered in Semester 2.

SSC1780 - Pedological Processes in the Environment

(PSS7PP2) (18L-4T-23P-0S-22H-10R-0F-3A-13W-8C)
Prerequisite: SSCI217 or 212.

Aim: To provide a detailed understanding of selected contemporary pedological topics.

Content: Weathering and humification processes and environmental factors; movement of material in soils and across landscapes; time as a factor of soil formation; soils and archaeology; alternative theories of soil formation; micromorphological and electron optical studies of soil materials; pedological Modeling; X-ray diffraction as a pedological tool.

Practicals: Computer simulation techniques for pedology; introduction to electron microscopy and X-ray diffraction for clay mineral identification; field trip.

Assessment: 1 2 h exam (67%), | test (17%), reports on prac work (16%).
Offered in Semester 2.

SSCI1790 - Research Project

(PSS7RPY) (OL-0T-430P-0S-210H-OR-OF-0A-26W-64C)
Prerequisite: Admission to BSc (Hons) majoring in Soil Science or to level 4 of BSc (Agric) majoring in Soil Science.

Aim: To provide experience in conducting of a research project and preparation of a scientific paper.

Content: Conduct an approved research project, prepare a scientific paper on the results, present the results orally.

Practicals: None.

Assessment: Written scientific paper (75%), oral presentation (25%).

Year-long Module.

SSCI1792 - Soil Science Seminar ;

(PSS7SS1) (OL-0T-OP-160S-0H-OR-OF-0A-13W-16C)
Prerequisite: SSC1217 or 212. :

Aim: To provide experience in researching and synthesizing scientific literature on a specific topic.

Content: Search for information in the scientific literature on an approved topic, prepare a scientific review paper, present the paper orally.

Practicals: None.

Assessment: Review paper (70%), oral presentation (30%).

Offered in Semester 1.

SSCI810 - Masters by Research

(PSS8RM1) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

SSCI910 - Doctor of Philosophy

(PSS9PH1) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None. :

Assessment: Examination of thesis (100%).

Year-long Module.

Sports Turf Management

Offered in the School of Agricultural Sciences and-Agribusiness

STMA241 - Introduction to Sports Turf

(PSM2IT1) < (18L-0T-18P-0S-30H-10R-OF-4A-13W-8C)
Aim: To provide students with a basic understanding of sports turfs and their growth an d
management requirements. Â©

Content: Common turf grass identification, morphology and response to mowing, fertilization and irrigation. Fertilizers and fertilization. Field levelling.

Practicals: Visits, exercises, demonstrations and assignments to reinforce and suppleme nt
the lectures.

Assessment: 2 class tests (24%), prac exercises (9%), 1 exam (67%).

Offered in Semester I.

STMA242 - Sports Field Management

(PSM2FM2) (3L-OT-6P-0S-7H-3R-58F-3A-13W-8C)
Prerequisite: A pass in STMA241.

Aim: To provide students with experience of basic field management operations.

Content: Experience in turf management practice, inter alia mowing, scarifying, levelli
ng,
irrigation etc.

Practicals: Field placements at various sporting venues to learn techniques of mowing, scarifying, levelling, irrigating, setting and marking of sports fields.

Assessment: Field assessment (33%), assignment (33%), 1 exam (34%).

Offered in Semester 2.

SA 250 Science & Agriculture

STMA340 - Sports Venue Work Experience

(PSM3SWW) (4L-0T-7P-0S-20H-5SR-120F-4A-8W-16C)
Prerequisite: Passes in STMA241, 242.

Aim: To provide students with experience of more advanced field management operations for a variety of sports codes.

Content: Aspects of advanced field management for a variety of sports codes.

Practicals: Field placements at various sporting venues to learn how to prepare a field for play and to learn about whole-venue management.

Assessment: Field assessment (33%), assignment (33%), 1 exam (34%).
Offered in the Winter Vacation.

STMA342 - Sports Turf Management

(PSM3TM1) (37L-0T-39P-0S-70H-10R-OF-4A-13W-16C)
Prerequisite: A pass in STMA241.

Aim: To provide students with an understanding of specialized practices of sports turf management, and the basics of sports field design and construction.

Content; Specialised management practices for summer and winter sports fields including thatch accumulation, layering, compaction, liquid and foliar fertilization. Design criteria and construction methods for different sports.

Practicals: Visits, exercises, demonstrations and assignments to reinforce and supplement the lectures.

Assessment: 2 class tests (30%), prac exercises (10%), assignments (10%), 1 exam (50%).
Offered in Semester 1.

STMA344 - Sports Turf Project & Seminar

(PSM3SP2) (4L-3T-0P-10S-60H-OR-OF-3A-13W-8C)
Prerequisite: A pass in STMA241.

Corequisite: STMA342.

Aim: To provide students with the opportunity to research and conduct a field experiment.
Content: One Seminar and a research project.

Practicals: None.

Assessment: Presentation of seminar (30%), project report (70%). .

Offered in Semester 2.

Statistics

Offered in the School of Mathematics, Statistics & Information Technology

STAT101 - Basic Statistics

(PSTIBSB) (18L-10T-8P-0S-24H-15R-OF-5A-13W-8C)
Aim: To introduce the student to the basic concepts of Statistics and how these may be applied in problem solving.

Content: Organizing data. Introduction to probability. Probability Fomenions Estimation
,
confidence limits and hypothesis testing. Regression and correlation. Chi-square tests.
Practicals: None.

Assessment: 2 tests (33%), exam (67%).

Offered in Semester 1] & 2.

STAT110 - Introduction to Statistics

(PSTIIS1) (38L-18T-1 8P-0S-60H-20R-0F-6A-13W-16C)
Aim: To introduce. the student to basic statistical theory and methods, and in particul ar to
equip the student with the knowledge to apply these ideas to statistical problem solvin g.
Content: Organizing and summarizing data. Probability and probability
distributions. Sampling distributions. Estimation, confidence intervals and hypothesis testing. Introduction to sampling distribution.

Practicals: Computer-based practicals on the above topics.

Assessment: 2 tests (25%), prac assignments (8%), | exam (67%).

Offered in Semester 1. j

STAT112 - Quantitative Methods 2

(PST1MQ2) (36L-18T-4P-0S-69H-27R-0F-6A-13W-16C)
Corequisite: MATH113.

Aim: To introduce the student to statistical techniques required for the analysis of quantitative data.

Content; Organizing data. Introduction to probability. Probability distributions. Estim ation,
confidence limits and hypothesis testing. Regression and correlation. Chi-square
test. Analysis of variance. Time series. Quality control. Introduction to queuing.

Practicals: Computer-based exercises on the above topics.
Assessment: 3 1h tests (33%), 1 3 h exam (67%).
Offered in Semester 2. Not normally available to students in BSc or BScAgric programmes .

STAT120 - Statistical Methods

(PSTISM2) (38L-18T-18P-0S-60H-20R-0F-6A-13W-16C)
Prerequisite: STAT110.

Aim: To expand the studentâ\200\231s knowledge of basic statistical theory and methods, to introduce
the student to a wide range of statistical techniques and to reinforce the studentâ\200 \231s ability to
solve statistical problems.

Content: Simple linear regression and correlation. Multiple regression. Analysis of variance. Time series. Quality control. Decision theory. Analysis of categorical data, Nonparametrics.

Practicals: Computer-based practicals on the above topics.

Assessment: 2 tests (23%), practical assignments (10%), 3 h exam (67%).

Offered in Semester 2.

STAT210 - Probability Theory

(PST2TP1) (38L-36T-OP-0S-58H-20R-0F-8A-13W-16C)
Prerequisite: Passes in MATH110, 120.

Corequisite: MATH213.

Aim: To introduce the student to the elements of probability theory.

Content: The axioms of probability. Random variables, probability density functions and distribution functions. Expectation and moment generating functions. Special distributions. Two or more random variables. Transformation of variables.

Practicals: None.

Assessment: 2 tests (28%), assignments (5%), | exam (67%).

Offered in Semester 1.

STAT213 - Sample Survey Methods
(PST2SS1) (18L-0T-20P-0S-27H-10R-0F-5A-13W-8C)
Prerequisite: A pass in (BMET210 or STAT101 or STAT1I10 or QUANIO1).

Aim: To equip the student with the tools to design and ettectively analyze the results of a
sample drawn from a finite population.

Content: Scope of sample surveys. Simple random sampling. Ratio and regression estimation. Stratified random sampling. Cluster sampling. Principles of questionnaire design. Estimation of population size.

Practicals: Computer-based exercises on the above topics.

Assessment: 2 tests (25%), 1 assignment (8%), 1 exam (67%).

Offered in Semester 1.

STAT220 - Statistical Inference

(PST21S2) (38L-36T-0P-0S-58H-20R-0F-8A-13W-16C)
Prerequisite: STAT210; passes in MATH110, 120. $

Corequisite: MATH224,

Aim: To introduce the student to the elements of statistical inference.

Content: Point and interval estimation. Properties of estimators. Pringiples of Bayesia n
estimation. Hypothesis testing.

Practicals: Computer-based exercises on the above topics.
Assessment: 2 tests (28%), assignments (5%), 1 exam (67%).
Offered in Semester 2.

STAT311 - Probability Theory

(PST3TP1) (38L-18T-0P-0S-76H-20R-OF-8A-13W-16C)
Prerequisite: Passes in MATH213, 224; STAT210.

Aim: To expose the student to a range of applications of probability theory and to prov ide
the student with the necessary techniques for recognizing and solving problems in probability.

Content: Combinatorial analysis. Union of events. Conditional probability. Random walks .
Generating functions. Markov chains. Exponential distribution and Poisson process.
Practicals: None. â\200\230

Assessment: 2 tests (30%), 1 assignment (3%), 1 exam (67%).

Offered in Semester 1.

STAT322 - Stochastic Processes ;

(PST3ST2) (38L-18T-OP-0S-76H-20R-0F-8A-13W-16C)
Prerequisite: Passes in MATH213, 224; STAT210, 311.

Aim: To expose the student to a range of applications of stochastic processes and to pr ovide
the student with the necessary techniques for recognizing and solving problems in this area.
Content: Birth-and-death models. Renewal ee Queuing theory. Monte Carlo methods.
Practicals: None.

Assessment: 2 tests (30%), 1 assignment (3%), 1 exam (67%).

Offered in Semester 2.

STAT325 - Statistical Modelling for Finance

(PST3SM2) (38L-18T-OP-0S-76H-20R-0F-8A-13W-16C)
Prerequisite: Passes in MATH213, 224; STAT210, 220.

Aim: To expose the student to a range of statistical models which are used in finance a
nd
elsewhere.

Content: Time series modeling. Forecasting. Loss distributions. Risk models. Sampling.
Practicals: Computer-based practicals on the above topics.

Assessment: 2 tests (30%), 1 assignment (3%), 3 h exam (67%).

Offered in Semester 2.

STAT710 - Time Series & Forecasting

(PST7TSM) (36L-0T-18P-0S-80H-20R-0F-6A-13W-16C)
Prerequisite: A first degree with MATH213, 224; STAT210, 220, 31 LES 25%

Aim: To provide the student with a thorough understanding of time series methodology an
d
forecasting and to expose the student to a range of practical problems in those areas.
Content: Descriptive techniques for time series. Probability models for time
series. Estimation in the time domain. Principles of forecasting. A miscellany of topic
s in
time series analysis which may include, inter alia, stationary processes in the frequen
cy
domain, spectral analysis, bivariate processes and state-space modeling.

Practicals: Computer-based exercises on the above topics.

Assessment: 2 tests (30%), assignments (3%), | exam (67%).

Offered in Semester 1 or 2.

STAT720 - Generalized Linear Models

(PST7GL1) (36L-0T-18P-0S-80H-20R-0F-6A-13W-16C)
Prerequisite: A first degree with BMET314; MATH213, 224; STAT210, 220.

Aim: To provide the student with a thorough understanding of generalized linear models
and
to expose the student to a range of practical problems in that area.

Content: The principles of model fitting. Exponential family of distributions and gener
alized
linear models. Estimation and inference for generalized linear models. Binary responses
and logistic regression. Contingency tables and log-linear models. A miscellany of
additional topics in generalized linear models. .

Practicals: Computer-based exercises on the above topics.

Assessment: 2 tests (30%), assignments (3%), 1 exam (67%).

Offered in Semester 1.

STAT722 - The Linear Model

(PST7LMM) (30L-18T-0P-0S-86H-20R-0F-6A-13W-16C)
Prerequisite: A first degree with MATH213, MATH224, STAT210, STAT220, BMET314
and BMET316.

Aim: To provide the student with a thorough understanding of the theory of the linear m
odel.

Content: Essential matrix algebra. Basic notions for multivariate distributions. The
multivariate normal and related distributions. Properties of quadratic forms. The linea
r
model of full rank. The linear model not of full rank.

Practicals: None.
Assessment: | test (33%), | exam (67%).

Offered in Semester | or 2.

STAT730 - Mixed Models & Spatial Statistics

(PST7MM2) (36L-0T-18P-0S-80H-20R-0F-6A-13W-16C)
Prerequisite: A first degree with BMET314,316; MATH213; STAT210.

Aim: To provide the student with a basic theory of linear mixed models and the particul
ar
extension to spatial forms of covariance. â\200\230 :

Content: Stationary and non-stationary mixed models. Kriging equations for
prediction. Co-kriging and validation. Practical examples using various computer packag
es.

Practicals: Computer-based exercises on the above topics.
Assessment: | test (23%), assignments (10%), 1 exam (67%). .
Offered in Semester 2.

STAT740 - Experimental Design
(PST7ED1) (36L-0T-18P-0S-80H-20R-0F-6A-13W-16C)
Prerequisite: A first degree with BMET314; MATH213; STAT210.

Aim: To provide the student with a basic theory of experimental design, particularly in incomplete blocks and in the design and analysis of complex experiments.

Content: Partial confounding in factorials. Fractional replication. Incomplete block de signs
and the recovery of inter-block information. Incomplete blocks from a mixed model perspective. Practical analysis of complex designs using GENSTAT.

Practicals: Computer-based exercises on the above topics.
Assessment: | test (28%), assignments (5%), 1 exam (67%).
Offered in Semester 1.

STAT750 - Sampling

(PST7SS1) (18L-0T-9P-0S-40H-8R-0F-5A-13W-8C)
Prerequisite: A first degree with MATH213; STAT210.

Aim: To equip the student with the theoretical understanding and practical tools to des ign
and effectively analyze the results of a sample drawn from a finite population.

Content: Scope of sample surveys. Simple random sampling. Ratio and regression estimation. Stratified random sampling. Cluster sampling. Principles of questionnaire design. Estimation of population size. :

Practicals: Computer-based exercises on the above topics.

Assessment: 2 tests (20%), assignments (13%), 1 exam (67%).

Offered in Semester 1.

STAT760 - Financial Statistics s :
(PST7FSM) (36L-0T-18P-0S-80H-20R-0F-6A-13W-16C)
Prerequisite: A first degree with MATH213, 224; STAT210, 220.

Aim: To provide the student with an understanding of the basic concepts pertaining to financial statistics and to expose the student to a range of practical problems in that area.
Content: Overview of loss distributions. The theory and practice of risk modeling. Ruin theory. :

Practicals: Computer-based exercises on the above topics.

Assessment: 2 tests (30%), assignments (3%), 1 exam (67%).

Offered in Semester I or 2.

STAT770 - Medical Statistics :

(PST7MSM) (36L-0T-18P-0S-80H-20R-OF-6A-13W-16C)
Prerequisite: A first degree with BMET314; MATH213; STAT210.

Aim: To provide the student with a thorough understanding of medical statistics and to expose the student to a range of practical problems in that area.

Content: Introduction to epidemiology including the standardization of mortality rates, morbidity studies and clustering of diseases. Clinical trials. Cohort studies. Survival

analysis.

Practicals: Computer-based exercises on the above topics.

Assessment: | test (17%), assignments (16%), 1 exam (67%).

Offered in Semester I or 2.

STAT780 - Advanced Experimental Design

(PST7AD2) (36L-0T-18P-0S-80H-20R-0F-6A-13W-16C)
Prerequisite: A first degree with MATH213, 224; STAT210, 220; STAT740.

Aim: To provide the student with extended theory of experimental design in complex situations.

Content: Experimental design for repeated measures including cross-overs. Optimal design. Alpha lattices and designs for spatial models.

Practicals: Computer-based exercises on the above topics.

Assessment: | test (28%), assignments (5%), 1 exam (67%).

Offered in Semester 2.

STAT790 - Project in Statistics
(PST7SPY) (OL-OT-OP-20S-220H-OR-OF-0A-26W-24C)
Prerequisite: A first degree with BMET314; MATH213; STAT210.

Aim: To provide the student with the opportunity to apply the understanding and skills acquired in the Statistics or Biometry programme to a real-world problem.

Content: Formulation of a real-life problem in which Statistics is applicable. Analysis of the
problem statistically and interpretation of the results. The drawing of meaningful conclusions from the results.

Practicals: None:

Assessment: Report presented in written form (90%), delivered orally (10%).

Year-long Module.

STAT792 - Recent Topics in Statistics

(PST7RTM) (15L-5T-4P-0S-43H-1 0OR-OF-3A-13W-8C)
Prerequisite: A first degree with MATH213, MATH224, STAT210, STAT220 and at least 16 credits in Statistics at level 3.

Aim: To provide the student with knowledge and skills in selected topics in Statistics.
Content: Miscellaneous topics from areas in Statistics which are of current interest to researchers and practitioners.

Practicals: Computer-based exercises.

Assessment: | test (33%), 1 exam (67%).

Offered in Semester lor2. â\200\224

STAT810 - Masters by Research
(PST8RM1) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None. :

Assessment: To be determined by the discipline.

Year-long Module.

SA 256 : Science & Agriculture

STAT910 - Doctor of Philosophy

(PST9PH1) ; (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Virology

Offered in the School of Applied Environmental Sciences

VIRO320 - Introduction to Viruses

(PVR3IV1) (40L-10T-40P-18S-24H-23R-0F-SA-13W-16C)
Prerequisite: MYCO211.

Aim: Many diseases of animals and plants are caused by entities smaller than bacteria, e.g.,
viruses. This module introduces these sub-microbial entities and the diseases they caus
e.

Content: An introduction to diseases of microbes, plants and animals caused by viruses, mycoplasmas, viroids and prions, covering taxonomy, transmission, epidemiology, identification, characterization and control.

Practicals: An introduction to the techniques used to detect and characterize plant and animal viruses. :

Assessment: Class tests (17%), prac assignments (17%), 3 h exam (66%).
Offered in Semester 1.

VIRO810 - Masters by Research

(PVR8RMM) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research on a topic involving a virus or other sub-microbi
al
entity.

Content: To be determined by the discipline and is dependent on the project for the deg
ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

VIRO910 - Doctor of Philosophy

(PVR9PHM) (OL-OT-OP-0S-1280H-O0R-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.
Assessment: Examination of thesis (100%).
Year-long Module.

Wildlife Science

Offered in the School of Applied Environmental Sciences

WILD301 - Conservation Areas Field Project

(PWS3GPW) (4L-0T-60P-2S-14H-OR-OF-0A-13W-8C)
Prerequisite: ECOL201; GRAS226, 228, or 8C at level 2 or 3, approved by the Dean.

Aim: To gather information to solve problems associated with the conservation and management of wild animals. .

Content: The identification of problems inhibiting optimal use of the wild animal resources.
Once the problem(s) has been clearly identified students will scrutinise relevant literature to identify data to be collected to try and provide scientifically based answers to the problem(s).
Thereafter, the class will spend one week in the field working in rotating groups gathering data for further analysis. Each student will be required to produce a report which integrates known facts and the new findings.

Practicals: 10 day field trip; 3 laboratory exercises.

Assessment: | assignment (20%), 1 report (80%).

Offered in the Winter Vacation.

WILD790 - Wildlife Research Project

(PWS7RPY) (1L-13T-OP-78S-546H-OR-OF-2A-26W-64C)
Prerequisite: WILD301.

Corequisite: GRAS728.

Aim: To familiarize learners with the basic principles involved in undertaking research to investigate issues pertaining to the conservation and sustainable utilization of wildlife resources.

Content: Learners either select a research topic from a list prepared by the Programme Coordinator or propose their own relevant topic to the Programme. Coordinator for vetting.
Thereafter, learners proceed with their research project under the supervision of a qualified member of the academic staff.

Practicals: Planning, execution, analysis of a project.

Assessment: 2 oral presentations (project proposal & research findings)(40%), written scientific paper (60%).

Year-long Module.

WILD791 - Wildlife Literature Review :

(PWS7SS1) (OL-OT-OP-79S-0H-OR-OF-1A-13W-8C)
Prerequisite: WILD301. :

Aim: To familiarize learners with the basic principles involved in undertaking a resear
ch
literature review and seminar pertaining to the conservation and sustainable utilizatio
n of
wildlife resources. â\200\230

Content: Identify and locate relevant literature then review and integrate information
contained therein into a rational and succinctly written document. Thereafter, a verbal
summary is delivered in a seminar session at which presenters are expected to defend th
eir
. presentations and initiate and participate in discussion which may arise from other
presentations.

SA 258 Science & Agriculture

Practicals: None.
Assessment: | document (60%), 1 oral presentation (40%).
Offered in Semester 1.

WILD810 - Masters by Research

(PWS8RMY) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and aoa by the oy Higher
Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is Sere nuG on the project for the degr
ee.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

WILD910 - Doctor of Philosophy

(PWS9PHY) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by
the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Zoology

Offered in the School of Botany & Zoology

ZOOL201 - Invertebrate Diversity & Functional Biology

(PZO2DF1) (38L-5T-46P-0S-48H-15R-OF-8A-13W-16C)
Prerequisite: A pass in ZOOL102.

Aim: To investigate a) the identity, classification, origin and evolution of invertebra
tes of
evolutionary, ecological and economic importance and b) features of the functional biol
ogy
of representative taxa. :

Content: Overview of the diversity of major groups including the Protista, Porifera,
Cnidaria, Platyhelminthes, Nematoda, Annelida, Onychophora, Arthropoda and Mollusca;
invertebrate phylogeny; the arthropod cuticle and implications; feeding, respiration,
locomotion, excretion and water conservation in invertebrates.

Practicals: 8 - 2 day-length sampling field trips.

Assessment: Theory/practical tests (12%), prac & field collection reports (18%), dissec
tion

(4%), essay (6%), 4 h theory & prac exam (60%).

Offered in Semester 1.

ZOOL206 – Vertebrate Diversity & Functional Biology
(PZO2VD2) (38L–5T–46P–0S–48H–15R–OF–8A–13W–16C)
Prerequisite: A pass in ZOOL102.

Aim: To enable learners to acquire an understanding of the relationships and comparativ
e
biology of vertebrate animals.

Content: Classification, origin and evolution, anatomy and physiology, adaptive radiati
on
and adaptation, life histories, behaviour, ecology, demography and social organisation
of
fishes, amphibians, reptiles, birds and mammals.

Practicals: Use of identification keys, dissection, biological illustration, life table
s, census,
capture mark-and-release, mist-netting and ringing, small-mammal trapping, scientific
writing in an integrated comparative style.

Assessment: Theory/practical tests (24%), practical reports (16%), 4 h theory and pract
ical
exam (60%).

Offered in Semester 2.

ZOOL301 - Energy & Water Balance of Animals

(PZO3EB1) : (1SL-3T-18P-0S-28H-10R-0F-6A-13W-8C)
Prerequisite: Passes in BIOS101, ZOOL102. :
Aim: Overview of energy and water balance in invertebrates and vertebrates.

Content: Principles of homeostasis; oxidative phosphorylation; thermogenesis (futile
cycling, shivering and NST); energy balance equation; measuring energy consumption;
factors influencing energy consumption (temperature; locomotion; photoperiod;
heterothermy; production; growth); Water balance equation; physical properties of water
and
water vapour; sources of water gain and water loss.

Practicals: 6 - energy and water balance in animals.

Assessment: Theory & prac test (8%), prac reports (25%), 3 h theory & prac exam (67%).
Offered in Semester !.

ZOOL302 - Behavioural Ecology

(PZO3BE2) : (27L-3T-39P-0S-71H-15R-OF-5A-13W-16C)
Prerequisite: BMET210.

Aim: Exposure to current concepts in the overlap between behavioural and ecological
research. :

Content: Historical overview of the development of behavioural ecology as a discipline;
adaptation, proximate causes of behaviour, trade-offs, optimality theory, evolutionary
stable
Strategies; foraging theory, competition for resources; sexual selection; sociality;
coevolution.

Practicals: 12 - including simulations of animal behaviour; 1 field trip; Mini-project.
Assessment: Theory tests (25%), prac reports (10%), mini -project report (15%), 3 h exa
m
(50%). :

Offered in Semester 2.

ZOOL303 - Vertebrate Nutrition & Reproduction

(PZO3VN1) : (15L-3T-18P-0S-28H-10R-OF-6A-13W-8C)
Prerequisite: Passes in BIOS101, ZOOL102.

Aim: Overview of the physiological structure –and function of digestive and reproductiv
e
systems in mammals and birds.

Content: Carbohydrate, fat and protein metabolism and digestion; morphology of vertebra
te
digestive systems; cellulose digestion and rumination; allometry of ruminant digestion;
vertebrate reproductive endocrinology and morphology (ovary and testis); factors
influencing reproduction (primary and secondary cues); reproductive life histories of
vertebrates.

Practicals: 6 - nutrition and reproduction in mammals and birds.

Assessment: Theory & prac test (8%), prac assignments (25%), 3 h theory & prac exam (67%).

Offered in Semester 1.

ZOOL701 - Applied Behavioural Ecology :

(PZO7BEM) (9L-ST-24P-0S-30H-10R-OF-2A-13W-8C)
Prerequisite: At least 64C in Zoological Sciences (including ZOOL302) at level 3.

Aim: An advanced module in the principles of behavioural ecology.

Content: Mathematical methods; principles of computer simulation; optimisation; optimal foraging theory and risk sensitivity; evolution of animal signals; sexual selection and territoriality; social behaviour and game theory; coevolution and brood parasitism; adaptation of life histories; integrating behaviour into conservation biology.

Practicals: Problem solving and presentation skills are enhanced through computer simulations of, and field-based recording of, behaviour. Two one-day field trips.
Assessment: Test (10%), weekly pracs (10%), tutorial participation (10%), 2 h exam (70%).
Offered in Semester | or 2.

ZOOL702 - Evolutionary Physiology :

(PZO7EPM) (14L-3T-18P-0S-32H-10R-OF-3A-13W-8C)

Prerequisite: Passes in BIOS101, ZOOL102; at least 64C at level 3, including ZOOL301,

303, or equivalent, with Deanâ\200\231s permission.

Aim: Contemporary trends in research in evolutionary physiology.

Content: The evolution of physiological traits; biotic and abiotic selection pressures;

population differentiation; the nature versus nurture debate; the common garden experiment;

geographical variation; phenotypic plasticity; modelling physiological problems; selected

advanced topics on animal metabolism.

Practicals: Research procedures (animal surgery, anaesthesia and blood sampling), manipulation of physiological equipment and basics of equipment-computer interfacing.

Assessment: Literature review (20%), assessed tutorials (10%), 2 h exam (70%).

Offered in Semester I or 2.

ZOOL790 - Zoology Research Project

(PZO7RPY) (OL-20T-0P-30S-590H-OR-OF-0A-26W-64C)
Prerequisite: Acceptance into Honours in Zoology.

Aim: To gain experience in the formulation, planning, execution, analysis, and reporting, of
their research project.

Content: Students will be provided with a list of supervisors and possible research topics at
the beginning of their Honours year. The final choice of research project will be decided by

discussion between the student and supervisor.

Practicals: Students will be expected to execute a research plan and, where necessary, demonstrate competence in the use of sophisticated research equipment to collect data f
or
their project.

Assessment: 2 oral presentations (project proposal & research findings) (10%), project proposal (5%), research report (85%).

Year-long Module.

ZOOL810 - Masters by Research
(PZO8RMM) (OL-OT-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Masters programme.

Corequisite: To be determined by the discipline and approved by the Faculty Higher Degrees Committee.

Aim: To undertake supervised research.

Content: To be determined by the discipline and is dependent on the project for the deg ree.
Practicals: None.

Assessment: To be determined by the discipline.

Year-long Module.

ZOOL910 - Doctor of Philosophy

(PZO9PHM) (OL-0T-OP-0S-1280H-OR-OF-0A-26W-128C)
Prerequisite: Acceptance into the Doctoral programme.

Aim: To conduct independent research.

Content: To be determined in collaboration with the Head of Discipline and approved by the
Faculty Higher Degrees Committee.

Practicals: None.

Assessment: Examination of thesis (100%).

Year-long Module.

Zulu

Offered in the Faculty of Human & Management Sciences (Pietermaritzburg)

ZULU101 - Zulu 101 Bridging Zulu 1

(PZU1011) (29L-10T-20P-0S-73H-20R-0F-08A-13W-16C)
Aim: This module aims to bridge the gap between spoken competence and shortcomings in writing and reading isiZulu. The module is primarily for competent Zulu-speakers who ha ve
little or no experience with Zulu grammar, reading or writing.

Content: Grammar lectures; highly structured reading programme with written reinforcement ;

Assessment: Class work: 33% Exam: 67%

ZULU121 - Zulu 121 Intro to Zulu Lang & Literature

(PZU1211) (39L-13T-OP-0S-20H-OR-85F-3A-13W-16C)
Prerequisite: Zulu first Language to matric or equivalent.

Aim: To introduce learners to the study of Zulu Grammar & Literature.

Content: Zulu phonetics, morphology as well as Poetry and novel.

Assessment: Class work: 33% Exam: 67%

University of Natal

General Prospectus
Student Rules

Faculty Handbooks
Available

CoN are med LL aCe)
Development Disciplines
(Durban)

Faculty of Education
(Durban, Edgewood and
Pietermaritzburg)

Faculty of Engineering
(Durban and Pietermaritzburg)

Faculty of Health Sciences
(Durban)

Faculty of Human Sciences
(Durban)

Faculty of Human and
Management Sciences
(Pietermaritzburg)

Faculty of Law
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