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# University of Pretoria Yearbook 2016

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## MSc Environmental Ecology (Coursework) (03251033)

**Duration of study** 1 year

**Total credits** 180

### Programme information

The Centre for Environmental Studies is a graduate school for multidisciplinary training and research focusing on the environment. Training aims to satisfy the need for environmental professionals for implementing current environmental legislation as well as industry-driven environmental management systems.

Coordinated by the Department of Zoology and Entomology.

The purpose of this focus area is to train environmental graduates who specialised in careers in the ecology of the environment, including conservation planning, environmental management and air quality management. On completion of the training, candidates should be conversant and be able to partake in, or render advice concerning, all aspects involved in the management of the ecological consequences of human existence. This includes a thorough grounding in ecosystem structure, composition and function, ecosystem services, notions of ecosystem health, the management of declining and small populations, captive propagation, control of invasive species, species and community restoration, conservation education, local communities and conservation, as well as aspects of biogeography and macro-ecology, conservation planning and monitoring, the structure, composition and function of biological communities, population and community variability.

The MSc degree is conferred on the grounds of a dissertation and such additional postgraduate coursework as may be prescribed.

### Renewal of registration

As long as progress is satisfactory, renewal of the registration of a master's student will be accepted for the second year of the study. Registration for a third and subsequent years will only take place when the Student Administration of the Faculty receives a written motivation that is supported by the head of department and Postgraduate Studies Committee.

### General

Candidates are required to familiarise themselves with the General Regulations regarding the maximum period of registration and the requirements on the submission of a draft article for publication.

### Admission requirements

Before application for admission to the MSc (Environmental Ecology) degree programme candidates must be in possession of a four-year degree qualification BScHons or equivalent degree status (SAQA NQF 8) which includes appropriate subjects in ecology. Admission is subject to the approval of the Director of the Centre and the appropriate head of department outside the Centre.



## Additional requirements

Candidates must demonstrate proficiency in the English language up to the level required by either the TOEFL test ([www.ets.org/toefl](http://www.ets.org/toefl)) or the IELTS language proficiency test ([www.ielts.org](http://www.ielts.org)).

## Other programme-specific information

One of the listed specialisation modules may be substituted with an elective module subject to the approval of the Director of the Centre. Choice of an elective is based on the academic background and/or anticipated career of the student but is expected to be relevant to either conservation biology or sustainable forestry management.

## Promotion to next study year

The progress of all master's candidates is monitored biannually by the supervisor and the postgraduate coordinator. A candidate's study may be terminated if the progress is unsatisfactory or if the candidate is unable to finish his/her studies during the prescribed period.

Subject to exceptions approved by the dean, on recommendation of the head of department, and where applicable, a student may not enter for the master's examination in the same module more than twice.

## Pass with distinction

The MSc degree is conferred with distinction to candidates who obtain a final average mark of at least 75% and a mark of at least 75% for the dissertation/mini-dissertation from each of the members of the examination panel. Where a member of the examination panel awards a mark of less than 75% for the dissertation/mini-dissertation, that member of the examination panel must offer, in writing, support for his/her decision, or indicate in writing that he/she supports the examination committee's decision to confer the degree with distinction.



## Curriculum: Year 1

Minimum credits: 180

### Core modules

#### Environmental paradigms 810 (ENV 810)

<b>Module credits</b>	15.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	5 discussion classes per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Zoology and Entomology
<b>Period of presentation</b>	Semester 1

#### Module content

Environmental philosophy and ethics, environmental ecology, environment, society and development, environmental economics, environmental management, critical resources management: water utilisation, air quality control, land-use planning: soil characteristics, biodiversity planning, critical resource management: determinism vs co-evolutionary environmental frameworks, research methodology and practice.

#### Research project 891 (ENV 891)

<b>Module credits</b>	90.00
<b>Prerequisites</b>	No prerequisites.
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Zoology and Entomology
<b>Period of presentation</b>	Year

#### Module content

The student needs to conduct a research project under the supervision of an academic member of staff associated with the Centre for Environmental Studies. This project needs to be of a sufficient quality to be publishable in the open scientific literature. The research report is examined as a manuscript for a suitable journal.

#### Environmental law 816 (ENV 816)

<b>Module credits</b>	15.00
<b>Service modules</b>	Faculty of Law
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	2 practicals per week, 1 web-based period per week, 1 lecture per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Zoology and Entomology



**Period of presentation** Semester 1 or Semester 2

**Module content**

Legislation for sustainable development within the framework of international agreements, the different acts affecting water quality and water use, the SEMAs within the NEMA framework, the NEMA EIA regulations, legislation pertaining to hazardous substances, interaction between mining development and NEMA, energy law, strategic environmental legislation, marine and coastal management.



## Curriculum: Final year

Minimum credits: 180

### Core modules

#### Environmental paradigms 810 (ENV 810)

<b>Module credits</b>	15.00
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	5 discussion classes per week
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Zoology and Entomology
<b>Period of presentation</b>	Semester 1

#### Module content

Environmental philosophy and ethics, environmental ecology, environment, society and development, environmental economics, environmental management, critical resources management: water utilisation, air quality control, land-use planning: soil characteristics, biodiversity planning, critical resource management: determinism vs co-evolutionary environmental frameworks, research methodology and practice.

#### Research project 891 (ENV 891)

<b>Module credits</b>	90.00
<b>Prerequisites</b>	No prerequisites.
<b>Language of tuition</b>	English
<b>Academic organisation</b>	Zoology and Entomology
<b>Period of presentation</b>	Year

#### Module content

The student needs to conduct a research project under the supervision of an academic member of staff associated with the Centre for Environmental Studies. This project needs to be of a sufficient quality to be publishable in the open scientific literature. The research report is examined as a manuscript for a suitable journal.

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<b>Language of tuition</b>	English
<b>Academic organisation</b>	Zoology and Entomology



**Period of presentation** Semester 1 or Semester 2

### Module content

Legislation for sustainable development within the framework of international agreements, the different acts affecting water quality and water use, the SEMAs within the NEMA framework, the NEMA EIA regulations, legislation pertaining to hazardous substances, interaction between mining development and NEMA, energy law, strategic environmental legislation, marine and coastal management.

## Elective modules

### Conservation planning and monitoring 808 (ZEN 808)

**Module credits** 15.00

**Prerequisites** No prerequisites.

**Contact time** 4 discussion classes per week

**Language of tuition** English

**Academic organisation** Zoology and Entomology

**Period of presentation** Year

### Module content

Biodiversity survey techniques; data and information management; data assessment; principles of data extrapolation; inventories; biodiversity risk assessment (PHVA, small and declining population paradigms, prioritisation); principles of reserve selection; surrogacy; reserve design; integrated land-use planning. Landscape theories and models (hierarchy, percolation, metapopulation, source-sink); scaling patterns and processes across landscapes (patches, corridors, mosaics and flows); emerging patterns and processes; principles of landscape dynamics; principles of landscape conservation, management and design (transformation, fragmentation); methods in landscape ecology (numerical and spatial data processing, fractal geometry approach, GIS, remote sensing, GPS, spatially explicit population models).  
Skills: GradSect, Access, Excel, Visual Basic, GIS (Arc View) reserve selection algorithms.

### Biogeography and macro-ecology 809 (ZEN 809)

**Module credits** 15.00

**Prerequisites** No prerequisites.

**Contact time** 4 discussion classes per week

**Language of tuition** English

**Academic organisation** Zoology and Entomology

**Period of presentation** Year



## Module content

Biogeographic consequences of plate tectonics, Pleistocene southern African climatic, geological, edaphic and geomorphological patterns. Reconstructing biogeographic histories (speciation, extinction, dispersal, vicariance, endemism, provincialism and disjunction); phytogeographical patterns, biomes, vegetation types.

Methodological issues in macro-ecology; patterns of body size, abundance and energetics; geographic range sizes; species dynamics in landscapes; implications of macro-ecological patterns to ecology; biogeography and evolution; macro-ecological perspectives on conservation: species richness, hierarchical diversity, hotspots, spatial and temporal patterns in diversity (genetic, taxonomic, functional); causal mechanisms, species diversity, biodiversity and global change.

## Trees in a multifunctional landscape 833 (ENV 833)

**Module credits** 15.00

**Prerequisites** No prerequisites.

**Contact time** 5 discussion classes per week, 1 web-based period per week

**Language of tuition** English

**Academic organisation** Plant Production and Soil Sc

**Period of presentation** Quarter 3

## Module content

Place and role of trees in multifunctional rural landscapes. Trees outside forests. Multipurpose trees. Trees and biodiversity. Trees and environmental services. Trees and sustainable development. Domesticated forests. Agroforestry (definition, classification, challenges and examples). Multiple use of forests and trees. Non-timber tree and forest products. Domestication of multipurpose trees. Forests and people. Trees and agricultural production systems (yield, interactions, synergy, competition, pests and diseases). Case-study examples from sub-Saharan Africa.

The information published here is subject to change and may be amended after the publication of this information. The [General Regulations \(G Regulations\)](#) apply to all faculties of the University of Pretoria. It is expected of students to familiarise themselves well with these regulations as well as with the information contained in the [General Rules](#) section. Ignorance concerning these regulations and rules will not be accepted as an excuse for any transgression.