

# University of Pretoria Yearbook 2022

## BScHons *Entomology* (02240704)

**Department** Zoology and Entomology

**Minimum duration of study** 1 year

**Total credits** 135

**NQF level** 08

### Admission requirements

1. Relevant BSc degree with Entomology (or equivalent) passed at final-year level
2. A weighted average of at least 65% at final-year level
3. An admission examination may be required

Note: Additional modules may be required in order to reach the desired level of competency

### Examinations and pass requirements

A pass mark is required for all the components of the honours study programme.

## Curriculum: Final year

**Minimum credits: 135**

Core credits: 81

Elective credits: 54

### Core modules

#### Statistics for biological sciences 780 (BME 780)

<b>Module credits</b>	15.00
<b>NQF Level</b>	08
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	2 Block weeks
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Statistics
<b>Period of presentation</b>	Semester 1

#### Module content

The principles of experimental design as required for the selection of an appropriate research design. Identification of the design limitations and the impact thereof on the research hypotheses and the statistical methods. Identification and application of the appropriate statistical methods needed. Interpreting of statistical results and translating these results to the biological context.

#### Research project 701 (ZEN 701)

<b>Module credits</b>	68.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Zoology and Entomology
<b>Period of presentation</b>	Semester 1 or Semester 2

#### Module content

Research project

#### Research methods and scientific communication 713 (ZEN 713)

<b>Module credits</b>	13.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.

**Language of tuition** Module is presented in English

**Department** Zoology and Entomology

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

### Module content

Basic skills in philosophy of science; research planning; scientific writing; scientific public speaking; an essay, two oral presentations, prescribed reading and an oral exam.

## Elective modules

### Land reclamation and restoration ecology 791 (BOT 791)

**Module credits** 15.00

**NQF Level** 08

**Service modules** Faculty of Humanities

**Prerequisites** No prerequisites.

**Contact time** Block: 6 weeks per semester, 3 discussions per week

**Language of tuition** Module is presented in English

**Department** Department of Plant and Soil Sciences

**Period of presentation** Semester 1

### Module content

This module will provide students with the skills to use biophysical information and data obtained by undertaking a natural resource inventory. This will be supported by taught methods of critically evaluating data and information obtained through assessment methodologies and an understanding of sampling design (choosing reference sites, spatial replication) and monitoring methods (e.g. recording biomass vs vegetation cover vs species richness; aspects of seed biology etc.). Through the additional understanding of ecological and agricultural concepts (e.g. productivity, decomposition rate, carbon uptake, pollinator abundance, erosion protection, dust reduction) students will acquire the skills to provide reclamation and restoration solutions to land degradation challenges in South Africa.

A site visit or field trip during which students will get exposed to the realities of reclamation and restoration and apply their knowledge and skills will be a compulsory component of this module.

### Systematics, evolution and biogeography 703 (ZEN 703)

**Module credits** 13.00

**NQF Level** 08

**Prerequisites** No prerequisites.

**Contact time** 20 lectures per week

**Language of tuition** Module is presented in English

**Department** Zoology and Entomology

**Period of presentation** Semester 1

## Module content

The object of this module is to introduce students to several contemporary problem areas in systematics, evolutionary theory and biogeography, and to use this as a basis for exploring current approaches and methods in systematics.

### Environmental physiology 704 (ZEN 704)

<b>Module credits</b>	13.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	4 discussion classes per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Zoology and Entomology
<b>Period of presentation</b>	Semester 1

## Module content

Photoperiodism and chronobiology – the ability of animals to measure daylength, the concept of circadian rhythm and the nature of the clock which drives such processes. Water availability and temperature – physiological responses of animals to changing water availability and temperature in the context of global climate change. Regulation of reproduction – physiological mechanisms which couple reproduction to external and internal environmental factors.

### Principles in applied ecology 705 (ZEN 705)

<b>Module credits</b>	13.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	4 discussion classes per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Zoology and Entomology
<b>Period of presentation</b>	Semester 1

## Module content

The module focuses on forces that drive population and community patterns and processes across temporal and spatial scales. Attention is given to the scientific application of ecological and macro-ecological principles that relate to short- and long-term population and community responses to environmental change. Group discussions based on current literature provide opportunities to apply theoretical principles to problem solving.

### Integrated pest management in Africa 707 (ZEN 707)

<b>Module credits</b>	13.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.

**Contact time** 1 discussion class per week

**Language of tuition** Module is presented in English

**Department** Zoology and Entomology

**Period of presentation** Semester 1

#### Module content

Pest outbreaks and the practice of integrated pest management using different control methods; philosophy of IPM; socio-economic implications; politics and legislation; pest models; decision tools and techniques.

### Mammal ecology 710 (ZEN 710)

**Module credits** 13.00

**NQF Level** 08

**Prerequisites** No prerequisites.

**Contact time** 4 discussion classes per week

**Language of tuition** Module is presented in English

**Department** Zoology and Entomology

**Period of presentation** Semester 2

#### Module content

Contemporary issues in mammal ecology; the focus will be on current understanding at individual, population, community and ecosystem levels.

### Behavioural ecology 712 (ZEN 712)

**Module credits** 13.00

**NQF Level** 08

**Prerequisites** No prerequisites.

**Contact time** 4 discussion classes per week

**Language of tuition** Module is presented in English

**Department** Zoology and Entomology

**Period of presentation** Semester 2

#### Module content

The use of ecological and evolutionary processes to explain the occurrence and adaptive significance of behaviour patterns. Empirical, comparative analyses relating behaviour to environment will be addressed, including the use of behavioural processes to predict ecological patterns.

### Insect-plant interactions 782 (ZEN 782)

**Module credits** 13.00

**NQF Level** 08

<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	4 discussion classes per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Zoology and Entomology
<b>Period of presentation</b>	Semester 2

#### Module content

An overview of the complex world of insect-plant interactions. Insects and plants have co-occurred and co-evolved on this planet for at least 400 million years, and in many systems insects are the primary consumers of plant tissue. The diverse strategies and counter-strategies that have evolved at the interface between herbivory and plant defences will be examined, using case studies and applying unifying theory wherever possible.

### Global climate change and biodiversity 783 (ZEN 783)

<b>Module credits</b>	13.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	1 lecture per week, 3 discussion classes per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Zoology and Entomology
<b>Period of presentation</b>	Semester 1

#### Module content

The module aims to provide students with an understanding of global climate change and its impact on the conservation of biodiversity.

### Contemporary research techniques 784 (ZEN 784)

<b>Module credits</b>	13.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	4 discussion classes per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Zoology and Entomology
<b>Period of presentation</b>	Semester 2

## Module content

Stable isotope ecology – applications of stable isotope-based techniques in zoological research, including (i) tracking animal movements, (ii) dietary reconstruction, (iii) delineation of trophic levels, (iv) tracing nutrient allocation to reproduction, (v) forensic applications, and (vi) doubly-labelled water and water tracer applications. Stress hormones – the spectrum of stress molecules, how they are regulated, what their impacts are, and how they are measured to reflect acute and chronic stress. Photogrammetry – (i) appropriate equipment for photogrammetry, (ii) photographic techniques for photogrammetric use, (iii) photogrammetry software, (iv) building three-dimensional models, (v) measuring models. Applications of molecular biology to conservation genetics, infectious disease epidemiology and ecology, forensics (host and pathogen-based) and diagnostics.

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