



Universiteit van Pretoria Jaarboek 2018

BScHons Meteorologie (02240074)

Minimum duur van studie 1 jaar

Totale krediete 135

Programinligting

Hierdie inligting is slegs in Engels beskikbaar.

Renewal of registration

1. Subject to exceptions approved by the Dean, on the recommendation of the head of department, and in the case of distance education where the Dean formulates the stipulations that will apply, a student may not sit for an examination for the honours degree more than twice in the same module.
2. A student for an honours degree must complete his or her study, in the case of full-time students, within two years and, in the case of after-hours students, within three years of first registering for the degree and, in the case of distance education students, within the period stipulated by the Dean. Under special circumstances, the Dean, on the recommendation of the head of department, may give approval for a limited extension of this period.

In calculating marks, General Regulation G.12.2 applies.

Apart from the prescribed coursework, a research project is an integral part of the study.

Toelatingsvereistes

In bykomend tot die bepalings van Algemene Regulasies G.1.3 en G.62, 'n toepaslike baccalaureusgraad 'n voorvereiste is: 'n kandidaat met 'n gemiddeld van minder as 60% in die hoofvakke nie in die finale jaar van die baccalaureus-graad sal slegs met toegelaat word die goedkeuring van die Dekaan op aanbeveling van die departementshoof. Bykomende voorwaardes kan deur die departementshoof voorgeskryf word.

'n BSc in Meteorologie graad of

'n toepaslike baccalaureusgraad met die tweede jaar wiskunde en eerste jaar fisika.

WKD 155 Atmosferiese struktuur en prosesse

WKD 164 Klimaat en weer van Suider-Afrika

WKD 261 Fisiese weerkunde

WKD 263 Inleiding tot dinamiese meteorologie

WKD 352 Atmosferiese vortisiteit en divergensie

WKD 361 Kwasi-geostrofiese analise

WKD 366 Beginsels van weervoorspelling

WTW 114 Calculus *



WTW 128 Calculus * EN WTW 126 Lineêre algebra * OF WTW 124

WTW 218 Calculus *

WTW 248 Vektoranalise *

PHY 171 Eerste kursus in fisika * of PHY 114 en 124

GMA 220 Afstandswaarneming

(* Of 'n ekwivalente kwalifikasie soos goedgekeur deur die hoof van die departement.)

Ander programspesifieke inligting

Appropriate honours modules from the other disciplines in the Department or Faculty may be taken on approval by the Honours coordinator or Head of Department.

Slaag met lof

The BScHons degree is awarded with distinction to a candidate who obtains a weighted average of at least 75% in all the prescribed modules and a minimum of 65% in any one module.



Kurrikulum: Finale jaar

Minimum krediete: 135

Kernmodules

Numeriese modellering: toepassings 704 (WKD 704)

Modulekrediete 12.00

Voorvereistes Geen voorvereistes.

Kontaktyd 1 besprekingsklas per week, 1 lesing per week

Onderrigtaal Module word in Engels aangebied

Departement Geografie, Geoinformatika en Meteorologie

Aanbiedingstydperk Semester 1

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

Initial atmospheric state, observation network, data assimilation, initialization, parameterisation, post-processing. Ensemble methods, probability forecasting, forecast verification. Global circulation models, limited-area and mesoscale models, variable resolution models, dispersion models. Seamless prediction. Practical applications.

Dinamiese weerkunde 706 (WKD 706)

Modulekrediete 16.00

Voorvereistes Geen voorvereistes.

Kontaktyd 1 praktiese sessie per week, 1 lesing per week

Onderrigtaal Module word in Engels aangebied

Departement Geografie, Geoinformatika en Meteorologie

Aanbiedingstydperk Semester 1 of Semester 2

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

Atmospheric oscillations: Linear perturbation theory (shallow water gravity waves, inertia gravity waves, Rossby waves). Baroclinic instability. Two-layer model. Energetics of Baroclinic waves. Zonally averaged circulation. Angular momentum budget. Lorenz energy cycle. Programming in meteorology.

Radar Weerkunde 707 (WKD 707)

Modulekrediete 12.00

Voorvereistes Geen voorvereistes.

Kontaktyd 1 besprekingsklas per week, 1 lesing per week

Onderrigtaal Module word in Engels aangebied



Departement Geografie, Geoinformatika en Meteorologie

Aanbiedingstydperk Semester 1 of Semester 2

Module-inhoud

Hierdie module word slegs in Engels aangebied.

Basic principles and characteristics of the weather radar. The influence of the atmosphere on the propagation of electro-magnetic waves. Weather radar equation. The influence of attenuation on observations. The measurement of precipitation with a radar. Doppler Radar. Convective storm analysis with radar.

Oorsig van tropiese en midbreedtemeteorologie 731 (WKD 731)

Modulekrediete 12.00

Voorvereistes Geen voorvereistes.

Kontaktyd 1 besprekingsklas per week, 1 lesing per week

Onderrigtaal Module word in Engels aangebied

Departement Geografie, Geoinformatika en Meteorologie

Aanbiedingstydperk Semester 1 of Semester 2

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

An overview of the weather and climate of the tropics and the mid-latitudes. Air masses. Instability and cloud formation. Weather systems of the tropics and mid-latitudes. Analysis of weather systems by utilising remote sensed data.

Satellietweerkunde 733 (WKD 733)

Modulekrediete 12.00

Voorvereistes Geen voorvereistes.

Kontaktyd 1 lesing per week, 1 besprekingsklas per week

Onderrigtaal Module word in Engels aangebied

Departement Geografie, Geoinformatika en Meteorologie

Aanbiedingstydperk Semester 1 of Semester 2

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

Overview of the basic principles of satellite imagery. Types of meteorological satellites. Basic principles of radiation. The different images available, their resolution and the advantages and limitations of each image. Image interpretation.

Navorsingsprojek 763 (WKD 763)

Modulekrediete 35.00

Voorvereistes Geen voorvereistes.



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| Kontaktyd | 1 lesing per week, 1 besprekingsklas per week |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Geografie, Geoinformatika en Meteorologie |
| Aanbiedingstydperk | Jaar |

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

Introduction to the philosophy of scientific research. Hypothesis testing. Reporting of scientific research. Identification of an appropriate research project. Compilation of a research proposal. Literature survey. Acquisition and manipulation of information. Introduction to innovative strategy and research management. Preparation of a research report (or paper). Presentation of research findings.

Keusemodules

Biometrie 780 (BME 780)

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| Modulekrediete | 15.00 |
| Diensmodules | Fakulteit Natuur- en Landbouwetenskappe |
| Voorvereistes | Geen voorvereistes. |
| Kontaktyd | 2 Blokweke |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Statistiek |
| Aanbiedingstydperk | Semester 1 |

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

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.

Natuurlike boomveld en woude: Ekologie en bestuur 700 (BOT 700)

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| Modulekrediete | 15.00 |
| Voorvereistes | Geen voorvereistes. |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Plant- en Grondwetenskappe |
| Aanbiedingstydperk | Semester 2 |



Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

Definitions of woodlands and forests and vegetation and forest resources in southern Africa; Classification of forest and woodland in southern Africa; Woodland dynamics including disturbance, recruitment, growth and mortality, recovery after disturbance; Ecosystem services (microclimate and nutrient cycling, carbon sequestration etc); Sustainable forest resource management (resource assessment, socio-economic assessment e.g. wood and non-forest products, participatory resource management processes); Forest health; Monitoring of resource-use impacts and adaptive management; Development of a framework for sustainable conservation and use of non-timber forest products; Climate change and resilience. Forest disease and pathology.

Basis van omgewingsgesondheid 772 (EHM 772)

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| Modulekrediete | 5.00 |
| Voorvereistes | Geen voorvereistes. |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Gemeenskapsgesondheid |
| Aanbiedingstydperk | Jaar |

Inleiding tot omgewings- en beroepsgesondheid 775 (EOH 775)

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| Modulekrediete | 10.00 |
| Voorvereistes | Geen voorvereistes. |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Gemeenskapsgesondheid |
| Aanbiedingstydperk | Jaar |

Gevorderde afstandswaarneming 705 (GMA 705)

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|---------------------------|---|
| Modulekrediete | 15.00 |
| Voorvereistes | GMA 320 of ekwivalent |
| Kontaktyd | 28 kontakure per semester |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Geografie, Geoinformatika en Meteorologie |
| Aanbiedingstydperk | Semester 1 of Semester 2 |

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

The aim of the module is to provide knowledge and understanding of image analysis and information extraction methods in remote sensing. The emphasis is on equipping students with knowledge and skills necessary to process imagery to extract diverse biophysical and geospatial information. The course gives insight into the possibilities and limitations of the application of modern remote sensing/image acquisition systems for Earth and atmosphere research purposes at different levels of detail.



Omgewingsbestuur 716 (GTX 716)

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| Modulekrediete | 15.00 |
| Voorvereistes | Geen voorvereistes. |
| Kontaktyd | 2 praktiese sessies per week, 2 lesings per week |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Geologie |
| Aanbiedingstydperk | Jaar |

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

Principles of integrated environmental management; environmental impact assessment; environmental management systems (ISO 14000 series); water resource management; environmental legislation; site investigation guidelines; natural hazard risk assessment; seismicity; project management and professional business practice. Geological models and software.

Verantwoordelike ekotoerisme-bestuur 714 (TBE 714)

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| Modulekrediete | 20.00 |
| Voorvereistes | Geen voorvereistes. |
| Kontaktyd | 1 ander kontak per week, 1 lesing per week |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Afdeling Toerismebestuur |
| Aanbiedingstydperk | Semester 1 |

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

This module focuses on managing ecotourism (including the natural and cultural resource base) following eco-principles and guidelines in order to provide a conceptual framework for sustainable/responsible tourism development in response to community needs within the Southern African context. The concepts of ecotourism, alternative tourism, responsible tourism and geotourism are debated. The management of ecotourism is studied from a theoretical perspective addressing issues such as the planning, design and sustainable development of eco-facilities and spaces; co-creation and the experienced tourist; the greening of the environment; and managing sustainable events; against the backdrop of climate change using local, national and international case studies. The aim is to provide students with a holistic perspective of ecotourism and to hone their entrepreneurial view to issues within this arena in order to apply sustainable eco-principles to various situations, ranging from green architectural structures and spaces to sustainable community and pro-poor tourism projects.

Seisonale klimaatmodellering 703 (WKD 703)

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| Modulekrediete | 12.00 |
| Voorvereistes | Geen voorvereistes. |
| Kontaktyd | 1 lesing per week, 1 besprekingsklas per week |



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| Onderrigtaal | Module word in Engels aangebied |
| Departement | Geografie, Geoinformatika en Meteorologie |
| Aanbiedingstydperk | Semester 1 of Semester 2 |

Module-inhoud

Fundamentals of seasonal forecasting. The El Niño/Southern Oscillation. Empirical orthogonal functions. Canonical correlation analysis. Empirical forecast models practical. Sea-surface temperature models. Fully coupled and two-tiered general circulation modelling. Dynamical and empirical downscaling techniques. *Hierdie inligting is slegs in Engels beskikbaar.

Significance testing using Monte Carlo techniques. Modelling pitfalls. User application forecasting. Projections of decadal and multi decadal climate anomalies.

Grenslaagweerkunde 719 (WKD 719)

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| Modulekrediete | 12.00 |
| Voorvereistes | Geen voorvereistes. |
| Kontaktyd | 1 lesing per week, 1 besprekingsklas per week |

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| Onderrigtaal | Module word in Engels aangebied |
| Departement | Geografie, Geoinformatika en Meteorologie |
| Aanbiedingstydperk | Semester 1 of Semester 2 |

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

Introduction to, and the importance of the boundary layer. Structure of the boundary layer. Transfer of heat (molecular and turbulent). Impacts of the turbulent nature of the boundary layer on the dynamics of atmospheric motions. Closure and boundary layer parameterisation. Applications to air pollution dispersion.

Mesoskaal weerkunde 734 (WKD 734)

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| Modulekrediete | 12.00 |
| Voorvereistes | Geen voorvereistes. |
| Kontaktyd | 1 besprekingsklas per week, 1 lesing per week |

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| Onderrigtaal | Module word in Engels aangebied |
| Departement | Geografie, Geoinformatika en Meteorologie |
| Aanbiedingstydperk | Semester 1 of Semester 2 |

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

An introduction to mesoscale meteorology. Surface mesoscale features, instability, severe storm classification and thunderstorms, flooding and flash flooding events.

Gekeurde temas 736 (WKD 736)

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| Modulekrediete | 12.00 |
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| Voorvereistes | Geen voorvereistes. |
| Kontaktyd | 1 lesing per week, 1 besprekingsklas per week |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Geografie, Geoinformatika en Meteorologie |
| Aanbiedingstydperk | Semester 1 of Semester 2 |

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

A module on an aspect or aspects of meteorology not covered in the existing options with special emphasis in Cloud microphysics and Basic concepts of numerical modelling.

Wolkdinamika 781 (WKD 781)

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| Modulekrediete | 12.00 |
| Voorvereistes | Geen voorvereistes. |
| Kontaktyd | 1 lesing per week, 1 besprekingsklas per week |
| Onderrigtaal | Module word in Engels aangebied |
| Departement | Geografie, Geoinformatika en Meteorologie |
| Aanbiedingstydperk | Semester 1 of Semester 2 |

Module-inhoud

*Hierdie inligting is slegs in Engels beskikbaar.

Scaling and interpretation of equations of motion for mesoscale processes. The role of stability and other trigger actions on initial cloud formation and the evolution of clouds. Shallow and deep convective processes. Tropical and mid-latitude cloud generation processes and characteristics. Cloud splitting. Parameterisation of radiation and heat in atmospheric models. Microphysics parameterisations in numerical models.

Die inligting wat hier verskyn, is onderhewig aan verandering en kan na die publikasie van hierdie inligting gewysig word.. Die [Algemene Regulasies \(G Regulasies\)](#) is op alle fakulteite van die Universiteit van Pretoria van toepassing. Dit word vereis dat elke student volkome vertrouwd met hierdie regulasies sowel as met die inligting vervat in die [Algemene Reëls](#) sal wees. Onkunde betreffende hierdie regulasies en reëls sal nie as 'n verskoning by oortreding daarvan aangebied kan word nie.